

Revised

Ficep Capabilities

Minimum Beam Web Height	3-1/8"
Maximum Beam Web Height	43-7/8"
Minimum Beam Flange Height	1-5/8"
Maximum Beam Flange Height	17-3/4"
Minimum Channel Width	4"
Maximum Channel Width	43-7/8"
Minimum Channel Toe	1-3/4"
Maximum Channel Toe	11-3/4"
Minimum Angle Size	4 x 4 x 1/4"
Maximum Angle Size	9 x 9 x 1-1/2"
Minimum Flat Bar Size	4"
Maximum Flat Bar Size	43-1/4"
Minimum HSS Size	4 x 4 x 1/4"
Maximum HSS Size	17-3/4 x 17-3/4"
Maximum Hole Diameter	1-9/16"
Maximum Thickness	3"
Maximum Weight	1880 ¹⁹⁰⁰ lbs / 5400 kg
Maximum Length	55'
Minimum Length	5'-3"

TECHNICAL DESCRIPTION

For the web and flange drilling of structural sections according to the following specifications:

I-Beams

Beam depth	Minimum	3-1/8"
	Maximum	43-7/8"
Flange height	Minimum	1-5/8"
	Maximum	17-3/4"

Channels (with flanges oriented downward)

Channel depth	Minimum	3-1/8"
	Maximum	43-7/8"
Flange height	Minimum	1-3/4"
	Maximum	11-3/4"

Angles

Leg height (unequal legs as well)	Minimum	3-1/8" x 3-1/8" x 3/8"
	Maximum	10" x 10" x 1-9/16"

Flats

Width	Minimum	4"
	Maximum	43-1/4"

Note: Requires tack welding of a small angle to the trailing end of the stock.

Square Tubes

Size	Minimum	3-1/8" x 3-1/8"
	Maximum	17-3/4" x 17-3/4"

Rectangular Tubes

Size	Minimum	3-1/8" x 1-9/16"
	Maximum	43-1/4" x 17-3/4"

All Beams

Maximum thickness that can be drilled 3"

Note: Material thickness greater than 3" can be provided as an option.

Maximum length (can be expanded with options)

~~40 ft.~~ SEE OTHER LIST 55'-0"

Minimum length to be transferred

8 ft.

Drilling Capacities

Drill heads

1

Spindles per drill head

1

Tool-change system (with 6 positions)

1

Maximum hole diameter

2"

Spindle rotation motor per head (AC)

15 HP

Infinitely variable and programmable spindle speed for each spindle

180 - 2500 RPM

Other Specifications

Maximum section weight as standard

~~11,900 lbs.~~ 18000 lbs

Maximum carriage speed

164 FPM

Passline

34"

Note: Specifications are based upon mill tolerances per AISC standards.

**MECHANICAL, ELECTRICAL, HYDRAULIC & PNEUMATIC
GROUP DESCRIPTIONS**

IC *INFEEED CONVEYOR (FOR SECTIONS UP TO 40 FT IN LENGTH)*

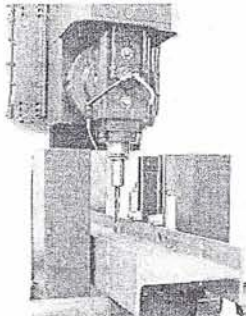
IC-1 *Powered Conveyors*

Powered conveyors are used to support the section, suitably spaced to allow the eventual inclusion of transfer tables.

- ▶ Centerline of conveyor rolls 28-1/2"
- ▶ Roller diameter 4"
- ▶ Roller shaft diameter 1-3/16"
- ▶ Roller width 43-7/8"
- ▶ A.C. drive motor, 2 traverse speeds 49/98 FPM
- ▶ Capacity 300 lbs/ft.

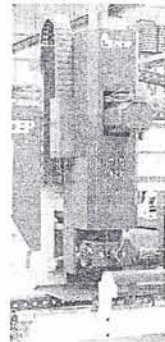
WU *WORKING UNITS*

WU-1 *Monospindle Rotating Drill Head*



One monospindle drill head complete with an automatic rotation device.

The spindle can be automatically oriented by the CNC to three angles — -90°/0°/+90° — to process the top flange, the bottom flange and the web of the section without requiring the beam to be rotated. Rotational time for 180° is 0.7 second.



Technical Specifications:

- ▶ Maximum drilling capacity in grade 50 material 2"
- ▶ Flange gauge line 3/8" – 17-3/4"
- ▶ Web gauge line 3/4" – 39-3/16"

The above drill head is supplied with:

- One 15 HP motor to ensure spindle rotation.
- Drill head positioning to the programmed web and flange gauge line is accomplished with a ball screw and servomotor controlled by the CNC.
- Drill feed system is accomplished with a ball screw and servomotor controlled by the CNC.

Each spindle is equipped with:

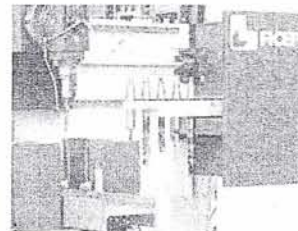
- Spindle probing to ensure rapid advance, drilling and rapid return of the drills. With this system, there is no need to adjust cams and it is also possible to use twist drills of different lengths to compensate for material distortion thus reducing the cycle time.
- Layout marks can be performed with the drill fitted into the spindle for drilling purposes by automatically changing the feed and speed functions in the program.
- Internal/external coolant system pneumatically operated.
- Automatic timed lubrication system reduces maintenance.

WU-2 Tool-Change System with Six (6) Positions

The line is equipped with a tool-change system.

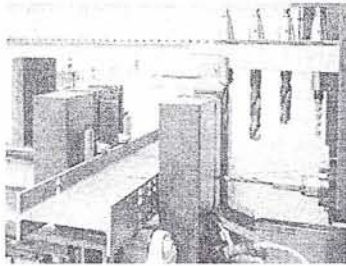
Technical Specifications:

- | | |
|----------------------------------|--------|
| ▶ Adapter | ISO 45 |
| ▶ Number of tools to be inserted | 6 |



The changing of the tool and its selection is made automatically through the CNC program. Based upon the tool life parameters, the tools will automatically be changed to a tool of the same diameter when it is time for re-sharpening. The tool-change system, in the standard version, is equipped with an ISO 45 adapter.

WU-3 Hydraulic Double Jaw Vise Assembly



Automatic hydraulic double jaw vise assembly ensuring positive clamping of the workpiece during the drilling operation, both horizontally and vertically.

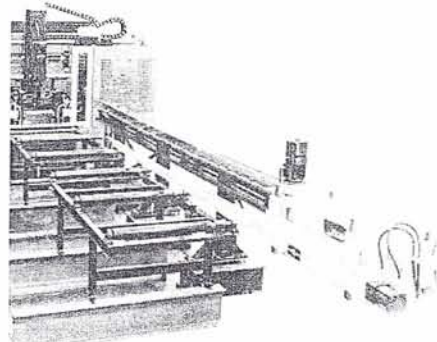
Clamping jaws can operate independently (fixed reference for the web on the beam flange). The clamping pressure of the roller clamping jaws automatically adjusts during the material positioning and drilling cycle. No special program functions are required.

The non-datum clamp is provided with an encoder so the vertical drill head positioning can be centered around the actual section depth. This feature also permits the web holes to be referenced from either flange.

OC OUTFEED CONVEYOR (FOR SECTIONS UP TO 40 FT IN LENGTH)

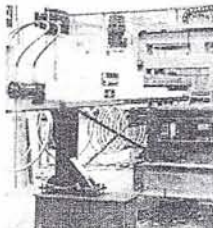
OC-1 Carriage Supporting Structure

The carriage supporting structure is suitable to handle sections up to 40 feet. The carriage supporting structure and carriage includes two separate rack pinion assemblies. The larger is used to power the carriage and structural section on the conveyor and the smaller assembly provides positional feedback to the CNC control system.



feet.
and
to

OC-2 Carriage



The carriage with material gripper is for longitudinal positioning of the section which is controlled by the CNC control. The gripper can be rotated and adjusted to clamp either the web or flange of the section. The arm can be lifted by the operator by means of a pushbutton control.

OC-3 Idler Conveyors

Idler conveyors are used to support the section, suitably spaced to allow the eventual inclusion of transfer tables.

▶ Centerline of conveyor rolls	28-1/2"
▶ Roller diameter	4"
▶ Roller shaft diameter	1-3/16"
▶ Roller width (net)	43-7/8"
▶ Capacity	300 lbs/ft.

HY HYDRAULIC AND PNEUMATIC SYSTEM

HY-1 Hydraulic Power Unit

The system includes:

- Hydraulic power unit to generate the high pressure and low pressure for the working units and auxiliary circuitries.
- Hoses and connections.
- Circuitry for cooling with an air/oil heat exchanger.
- Hydraulic system on the machine complete with solenoid valves and hoses connected.

▶ Working Pressure	725 PSI
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HY-2 Pneumatic System

The system consists of:

- Solenoid valves and related manifolds.

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**.

CN FICEP ARIANNA CNC CONTROL SYSTEM

The new generation control unit, with required 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.



have

All the input and output cards are connected to the bus and located on the machine. Also the electromechanical components and the drives (which enable the connection from the bus to the CNC) are located on the machine. In this way, the initial connection and start up are reduced to the minimum.

The CNC is equipped with:

- digital inputs (24V)
- digital outputs (24V)

The control panel is an industrial PC containing the CNC and having the following specifications:

- 850 Mhz Celeron CPU with 128 MB RAM, 10 GB HD, FDD
- Color video TFT 12.1"
- Keyboard panel and auxiliary pushbutton panel
- 10/100 RJ45 Ethernet port
- USB modem
- 4 serial ports RS232
- 1 parallel port

- 1 additional USB port to enable the connection with an external floppy drive (not included in this quotation)
- WINDOWS XP operating system

Programming

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

Processing

- Tool position tracking
- Automatic system offset
- Quantity tracking

Execution

- Automatic section length survey and re-calculation for the optimized accumulation
- Automatic cycle stop for setup, modification and on-screen indication of the tools to be changed
- Multi-tasking of the drill head with the automatic tool changer
- Automatic safeguards to prevent collision of the drills
- Drilling parameters table

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 Arianna 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 the system can be connected by a phone line 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:

- ♦ 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 Arianna 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 7038 |
| • Black Grey | RAL 7021 |
| • Yellow | RAL 1028 |

Note: Requests of different colors are optionally available.

TD TECHNICAL DOCUMENTATION

The system is supplied with the following technical documentation:

- Oil and lubricants.
- Customer specified material for parts that are to be processed on the line is not included in the quoted price.

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.

N/A	MACHINE PRICING	ALL PRICES U.S. DOLLARS
	Price of CNC Drilling Line — Model 1101 DZ as described above-----	

OPTIONS

**ALL PRICES
U.S. DOLLARS**