FICEP CORPORATION

FOR INFORMATIONAL PURPOSES ONLY

1001 DFB–R

Non-Contact Measuring CNC Drilling & Sawing Line

YEAR OF MANUFACTURE: 2010

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	40” (saw)
	Maximum	44” (drill)*
Flange height	Minimum	1-5/8”
	Maximum	17-3/4”

Channels *(with flanges oriented downward)*

Channel depth	Minimum	3-1/8”
	Maximum	40” (saw)
	Maximum	44” (drill)*
Flange height	Minimum	1-3/4”
	Maximum	11-3/4”

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TECHNICAL DESCRIPTION (continued)

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	40” (saw)
Note: Requires tack welding of a small angle to the trailing end of the stock.	Maximum	44” (drill)*

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	40” x 17-3/4” (saw)
	Maximum	44” x 17-3/4” (drill)*

* Passage of members exceeding 40” in depth requires the removal of the horizontal saw clamps.

All Beams

Maximum thickness that can be drilled	4”
Maximum length (can be expanded with options)	40 ft.
Minimum length to be transferred	98”
Minimum length to be transferred in working zone (with saw rotation +45°/-60°)	
Loading Side A	106”

Drilling Capacities

Drill heads		1
Spindles per drill head		1
Maximum hole diameter		1-9/16” (2”)
Spindle rotation motor per head (AC)		20 HP
Infinitely variable and programmable spindle speed for each spindle		180 - 2500 RPM

Band Sawing Unit Model SCS 100

Sawing capacity at 90°	Minimum Maximum	3-1/8” x 3/8” 40” x 17-3/4”
Sawing capacity at 60°		13-3/4” x 13-3/4”
Sawing capacity at 45°		24-3/8” x 17-3/4”
Blade size (width x kerf)		1.61” x 0.051” x 310.24”
Band saw drive motor		7.5 HP
Programmable blade speed		65 – 328 FPM

Other Specifications

Maximum section weight as standard	11,900 lbs.
Maximum linear weight of section	300 lbs/ft
Maximum carriage speed	164 FPM
Passline	33-1/2”

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

MECHANICAL, ELECTRICAL, HYDRAULIC & PNEUMATIC GROUP DESCRIPTIONS

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

IC-01 Powered Conveyors

►Centerline of conveyor rolls	28-7/16”
►Roller diameter	4”
►Roller shaft diameter	1-3/16”
►Roller width	44”
►Bearing style	Flange mount
►Powered conveyor chain	#50
►A.C. drive motor, 2 traverse speeds	49/98 FPM
►Capacity	300 lbs/ft.
►Installation height adjustment*	Included

** Note: The elevation adjustment of our conveyor assembly facilitates floor elevation changes of not more than ± 1”.*

WU WORKING UNITS

WU-01 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	1-9/16” (2”)
►Flange gauge line	3/8” – 20”
►Web gauge line	3/4” – 47-1/2”

The above drill head is supplied with:

- One 20 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.

WU-02 Tool-Change System with Six (6) Positions

The line is equipped with a tool-change system.

Technical Specifications:

►Adapter	HSK-A80
►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.

WU-03 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.

WU-04 Non Contact Measuring System

The 1001 DFB-R is supplied with an internally mounted optical measuring system that accurately monitors the section movement in conjunction with the programmed lineal position. The system is not affected by mill scale and any slippage that is associated with mechanical measuring disc systems.

OWU-04 Automatic Web Probing (Top Side)

Device for the automatic zero reference setting of the drill spindle gaugeline when the head is horizontally positioned to the web axis. The device consists of one button (probe sensing unit) that locates the position of the web top side and the flange height.

SU SAWING UNIT

SU-01 Band Sawing Unit Model SCS 100 — 40” Capacity

Band sawing unit for the sawing of sections with the following characteristics:

- ► The bridge-type frame structure provides the maximum guidance of the saw blade throughout the cutting process.
- ► The cutting head is complete with the drive wheel assembly with gearbox, hydraulically adjustable idler blade wheel, an adjustable blade guide to accommodate different size sections and chip removal brush to clean the blade of chips as it exits the cut.
- ► System for structural section clamping.
- ► Base for saw mitering at +45°/-60° complete with angle positioning system with survey by means of the CNC.
- ► Spray mist blade lubrication/cooling system.
- ► Removable chip bin.

Note: Hydraulic oil and oil coolant liquid for operation of the saw not included.

SU-02 Conveyors with Liftable Rollers

Conveyors with liftable rollers which lift the material above the saw bed as sections are positioned into and out of the saw. These rollers are positioned in the infeed and outfeed conveyor sections next to the saw and are lifted automatically.

SU-03 Unloading Device with Magnet for Short Pieces

This special magnetic device, with controlled axis, is for the automatic unloading of short parts and trim-cut pieces. This system can be used with I beams having the following specifications:

►Minimum width	3-1/8”
►Maximum piece weight to be transferred	330 lbs.

Pieces or trim-cut pieces with a length between 1-9/16" and 47-1/4"

Thanks to the magnetic device, the piece or scrap is transferred onto a shutter unloading device for short pieces (see relevant option) and then onto the first area of the outfeed conveyor.

Finished pieces having a minimum length of 47-1/4" — (max. weight 330 lbs.)

Thanks to the magnetic device, the piece is transferred onto the first area of the outfeed conveyor.

OSU-02 Vertical Hold-Downs

Two (2) vertical hold-downs for clamping of the section, one on each side of the blade.

OC OUTFEED CONVEYOR (FOR SECTIONS UP TO 20 FT IN LENGTH)

OC-01 Powered Conveyors

►Centerline of conveyor rolls	28-7/16"
►Roller diameter	4"
►Roller shaft diameter	1-3/16"
►Roller width	44"
►Bearing style	Flange mount
►Powered conveyor chain	#50
►A.C. drive motor, 2 traverse speeds	49/98 FPM
►Capacity	300 lbs/ft.
►Installation height adjustment*	Included

** Note: The elevation adjustment of our conveyor assembly facilitates floor elevation changes of not more than ± 1".*

OOC-04 Short Pieces Unloading Device

Shutter device at the exit of the saw for the automatic unloading (operator side) of short pieces or scraps having a minimum length of 1-9/16" and maximum length of 47-1/4". Pieces are unloaded into a bin (not included in the supply).

HY HYDRAULIC AND PNEUMATIC SYSTEM

HY-01 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

HY-02 Pneumatic System

The system consists of:

- Solenoid valves and related manifolds.

EL ELECTRIC SYSTEM

EL-01 Interconnecting Machine Wiring

EL-02 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.

CN FICEP MINOSSE CNC CONTROL SYSTEM

The new generation control unit, with six (6) 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. 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:

- 600 Mhz CPU with L2 512 KB “cache”
- 512 MB RAM memory
- Touch screen color video TFT 12.1”
- Keyboard panel and auxiliary pushbutton panel
- 10/100 RJ45 Ethernet port
- USB modem
- 1 additional USB port
- WINDOWS XP embedded operating system

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
- Nesting of different workpieces into the same stock length, with on-screen graphics
- Automatic multing

Processing

- Tool position tracking
- Automatic system offset
- Quantity tracking
- Automatic optimization on the basis of the quantities left for each single workpiece

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
- 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

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 manual
- ●Electric schematics
- ●Pneumatic schematics

SP SAFETY PROTECTIONS

SP-1 Protections on the Machine (Included)