



Figure 1: Accuband C775FF Width Gage

1 DESCRIPTION

The ACCUBAND C775FF is a LED front lit width gage designed to measure material width in cold rolling mills and process lines. The width gage includes four CCD cameras. Each pair of cameras scans a region across one edge of the strip, accurately locating the position of the edge, regardless of pass line variations. The edge data is then combined with the camera separation distance, obtained during calibration, resulting in accurate strip width and centerline deviation measurements.

The compact design allows the width gage to be installed in tight spaces while still providing accurate measurements for material widths of up to 3 meters (118 in). LED front lights provide reliable performance with minimal maintenance.

2 APPLICATIONS

The ACCUBAND C775FF Width Gage is used for process measurement, quality control measurement and strip steering in:

- Cold Strip Mill locations including Tension Leveler, Side Trimmers (Entry and Exit) and Tandem Mill Exit
- Temper Mills
- Slitters / Rewinders
- Process Lines (including Galvanizing Lines)

3 FEATURES

- Accurate and reliable measurement of width and centerline
- Scan rate up to 1000 scans per second
- Integrated Front LED allows for long life, low maintenance and easy access for service
- Air nozzles to keep camera windows clean
- Low stand-off distance allows for compact installation
- KELK supplied calibrator with a Certificate of Accuracy traceable to the U.S. National Institute of Standards and Technology. Alternatively, user test plates can also be used for calibration and verification.
- Java based Maintenance Interface is accessible from any web browser connected via Ethernet network
- A comprehensive diagnostic system monitors the operation of the width gage and status signals are provided to the mill host computer. Additional diagnostics can be accessed by service personnel through a maintenance interface accessible over an Ethernet network.
- Modular design allows for easy maintenance

4 SYSTEM CONFIGURATION

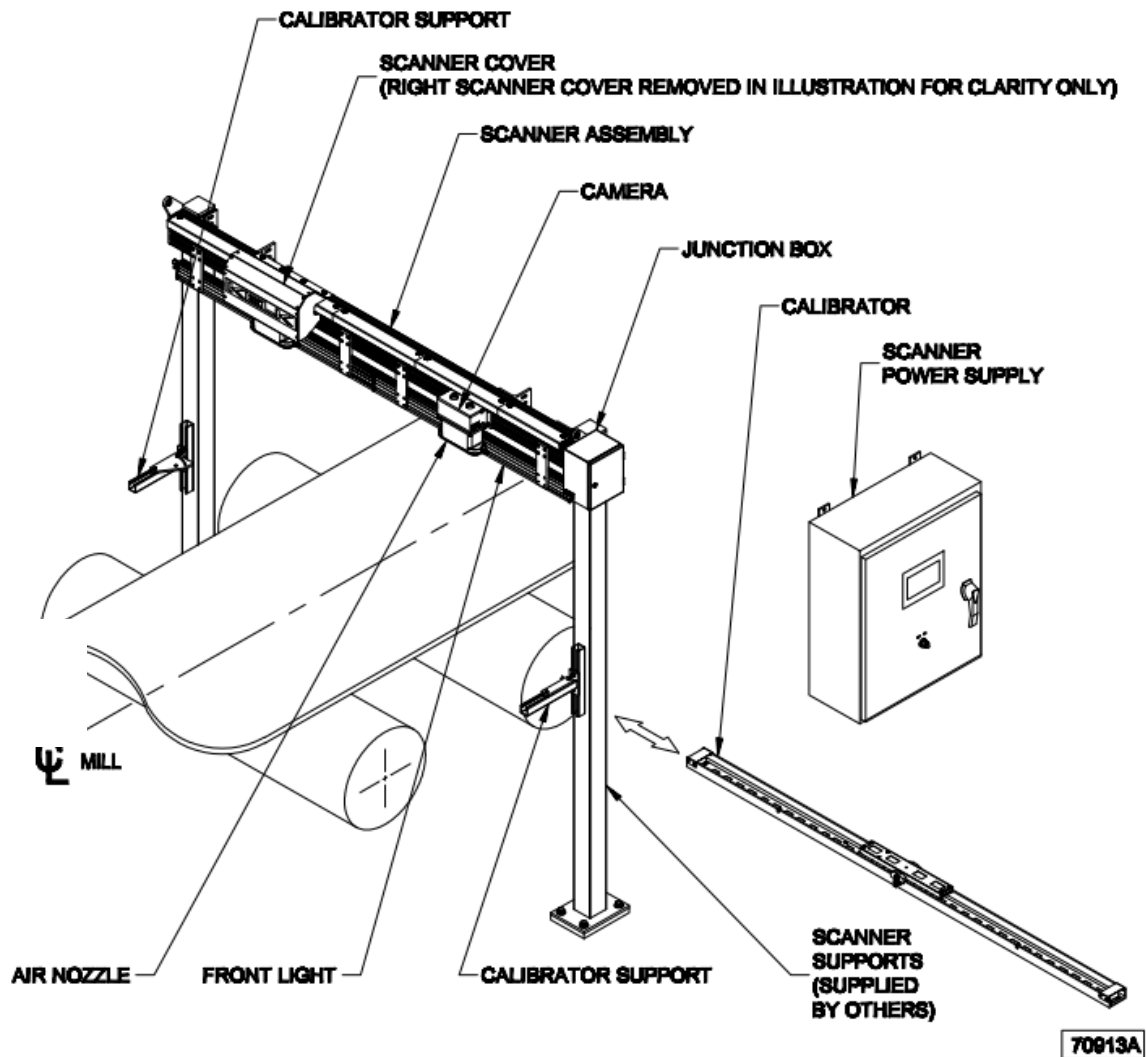


Figure 2: Accuband C775FF Full System Setup

4.1 SYSTEM COMPONENTS

4.1.1. SCANNER

The scanner consists of two pairs of CCD stereo cameras and LED front lights positioned above the strip. All parts are sealed and/or protected for use in a cold mill environment. Air purging nozzles keep the camera windows free of contaminants. Modular design allows for easy maintenance of all major components. The standard installation height is 1000 mm (40 in) above the strip. Consult KELK Engineering about other installation heights.

4.1.2. SCANNER POWER SUPPLY & PROCESSOR

The scanner power supply provides DC power to the front lights. It is housed in a wall-mounted NEMA 4 / IP65 cabinet and also serves as the junction box for wiring between the scanner and width gage processor.

The processor with an Ethernet link to the user's host computer controls the entire functionality of the system and is conveniently installed in the same enclosure as scanner power supply.

Typical installations require the power supply & processor box to be installed in an accessible location within 10 m (33 ft) of the scanner and within 100 m (328 ft) of the Mill equipment¹.

4.1.3.CALIBRATOR

The calibrator is used to calibrate the width gage after installation and following any service work, if necessary, to assure the user of optimum performance. The calibrator also provides a quick, easy, and reliable means of checking gage accuracy.

A thermally stable precision mask provides a series of edges in accurately known positions along the calibrator. The mask is supplied with a Certificate of Accuracy traceable to the U.S. National Institute of Standards and Technology.

4.1.4.DISCRETE I/O

A discrete I/O system is used for status and measurement signals between the scanner and host PLC. Discrete I/O systems for a width gage usually consist of two analog inputs, four analog outputs, two digital inputs and five digital outputs. Analog signals typically use voltage ranges of ± 10 V, while current ranges of 4 - 20 mA are also available. The discrete I/O system is connected to the scanner processor via an Ethernet connection so it can be located up to 100 m from the scanner processor. It is recommended that the discrete I/O be located in a floor or wall mounted cabinet close to the Mill PLC.

4.1.5.PROFIBUS / PROFINET INTERFACE

An additional Profinet or Profibus interface is available through an Anybus X-gateway Modbus-TCP PROFIBUS DP-V1 module or Anybus X-gateway Modbus-TCP PROFINET module respectively. Reference: KELK document TS549.

4.1.6.OPERATOR'S STATION

The operator's station consists of a PC, monitor, mouse and keyboard. The PC can be supplied with configuration, diagnostic and monitoring software, including KELK Interface Panel (KIP) and optional data logger. All software is configured beforehand and can be customized on site to meet user's requirements.

4.1.7.DATA LOGGER

The ibaPDA data logger is accompanied with one license key and allows for 256 signals (analog and digital channels) to be recorded and stored. The signals must be configured in both the scanner and data logger software, and can be customized for user requirements. Additional software packages and license keys can be accommodated if more than 256 signals are required for logging.

4.1.8.COMMUNICATION PROTOCOL

The following level 2 communication protocols are available: Ethernet TCP/IP, EGD or Modbus TCP. Standard communication protocols include setup, real time process information, real time measurements and time synchronization messages. Reference: KELK document TS542.

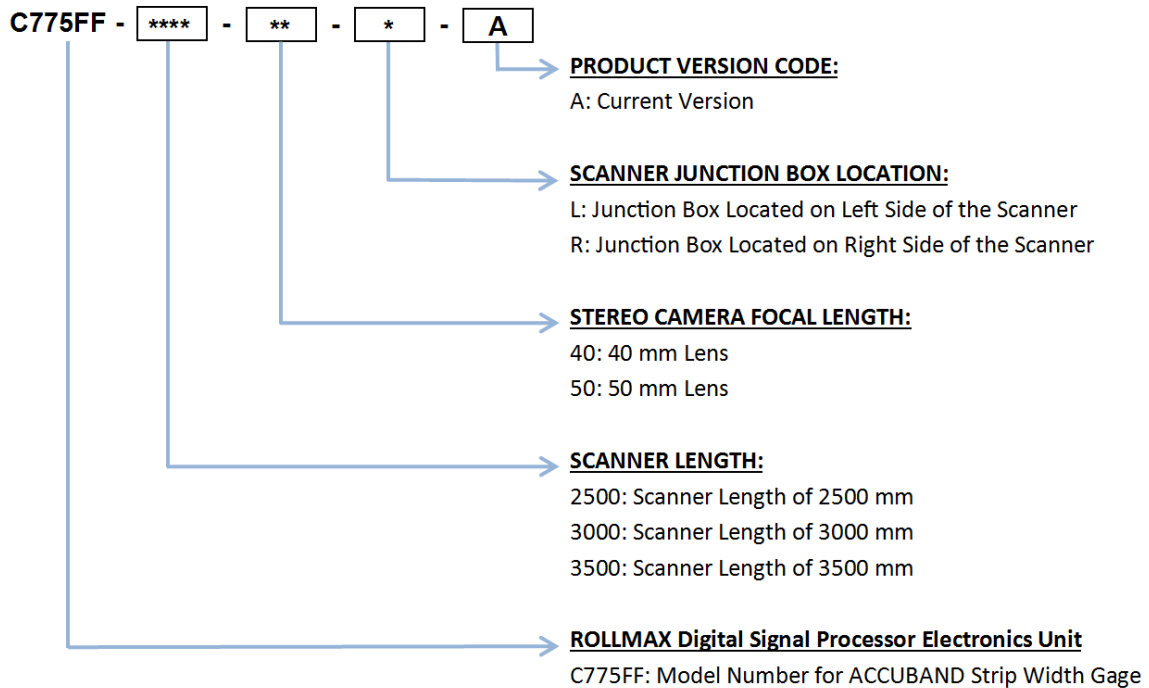
¹ Longer distances may be accommodated; consult KELK for details.

4.2 SCOPE OF SUPPLY

4.2.1.TYPICAL EQUIPMENT

- Scanner
- Scanner Power Supply & Processor
- Calibrator and Calibrator Support Kit
- KELK Standard Communication Protocol for Host Computer Interface (TS542)
- Documentation

4.2.2.ACCUBAND C775FF ORDER CODE



4.2.3.OPTIONAL EQUIPMENT

- Discrete I/O Kit for Analog and Digital I/O
- Profibus Interface Kit
- Profinet Interface Kit
- ibaPDA Data Logger
- Floor or Wall Mounted Cabinet
- Fiber Optic Media Convertors for communication connections longer than 100 m (328 ft)
- Scanner Support Posts
- Vortec Cooling System for Power Supply & Processor Enclosure

4.2.4.TYPICAL SPARES

- CCD Stereo Camera Assembly
- LED Front Light Assembly
- 24 V DC Power Supply
- Air Nozzle Assembly
- Flash Card, 32 GB

4.2.5.DOCUMENTATION

User manuals, installation drawing packages, installation checklist and commissioning documents are provided in electronic format. English language is standard; other languages are available as an option.

5 SPECIFICATIONS

Measurement Range	Installation Height²	1000 mm - 1500 mm (39.4 in to 59 in)		
	Material Width³	500 mm - 3000 mm (20 in to 118 in)		
	Material Temperature	0 °C – 200 °C (32 °F to 392 °F)		
	Vertical Strip Movement	± 30 mm (1.2 in)		
	Lateral Strip Movement	± 100 mm (3.9 in)		
Performance	Accuracy	± 0.4 mm (0.016 in) at 2 sigma		
	Maximum Measurement Frequency	1000 measurements per second		
	Head End Response Time	Less than 4 ms		
Communication	Mill Computer Interface	Link layer:	Ethernet	
		Network layer:	MODBUS/TCP	
		Physical layer:	Cat5e, Fiber Optic	
Dimensions	Equipment Size	Scanner	Scanner Power Supply & Processor	Calibrator
	L x W x H	2700 x 417 x 323 mm (106.3 x 16.4 x 12.7 in)	610 x 343 x 819 mm (24 x 13.5 x 32.25 in)	2600 x 102 x 60 mm (102 x 4 x 2.4 in)
	Equipment Weight	70 kg (155 lbs)	37.4 kg (82.5 lbs)	8.4 kg (18.5 lbs)
	Input Power	Power received from Scanner Power Supply	120-240 V~, 20 A max, 50/60 Hz	N/A
Operating Environment	NEMA Rating	5	4	N/A
	IP Rating	52	65	N/A
	Maximum Ambient Temperature	50 °C (122 °F)	50 °C (122 °F)	40 °C (104 °F)
	Maximum Humidity	90%, non-condensing		

6 WHAT USERS MUST PROVIDE

Installation	Mechanical	Mounting structure with access for maintenance An unobstructed clear view from Scanner to material surface ⁴ Area under the roll table free of reflecting surfaces
	Electrical	Power to the Scanner Power Supply & Processor Interconnecting power, and signal cables not specified in scope of supply
System Services	Air (at 20 °C / 68 °F)	142 l/min at 276 KPa (5 CFM at 40 PSI). Air filtered at 40 µm.
	Cooling	No Cooling Required

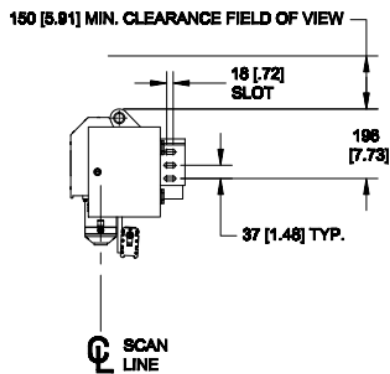
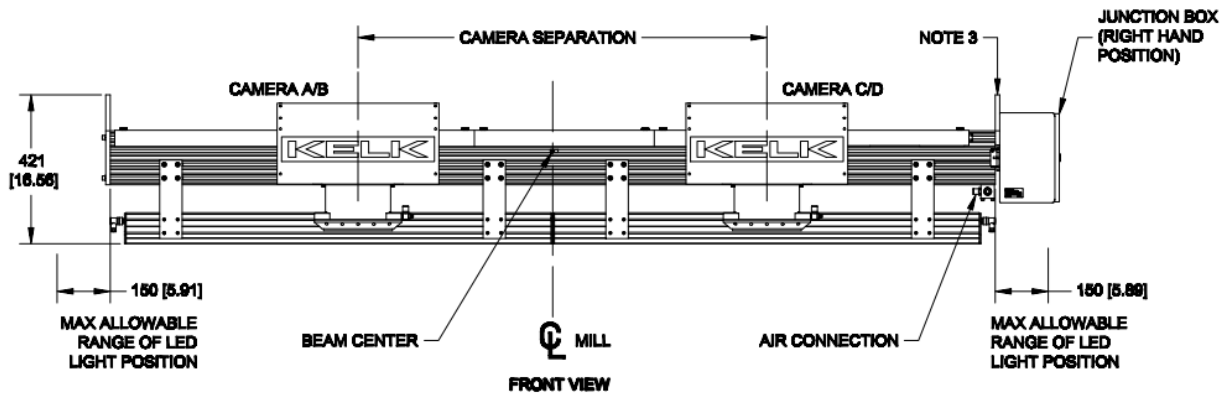
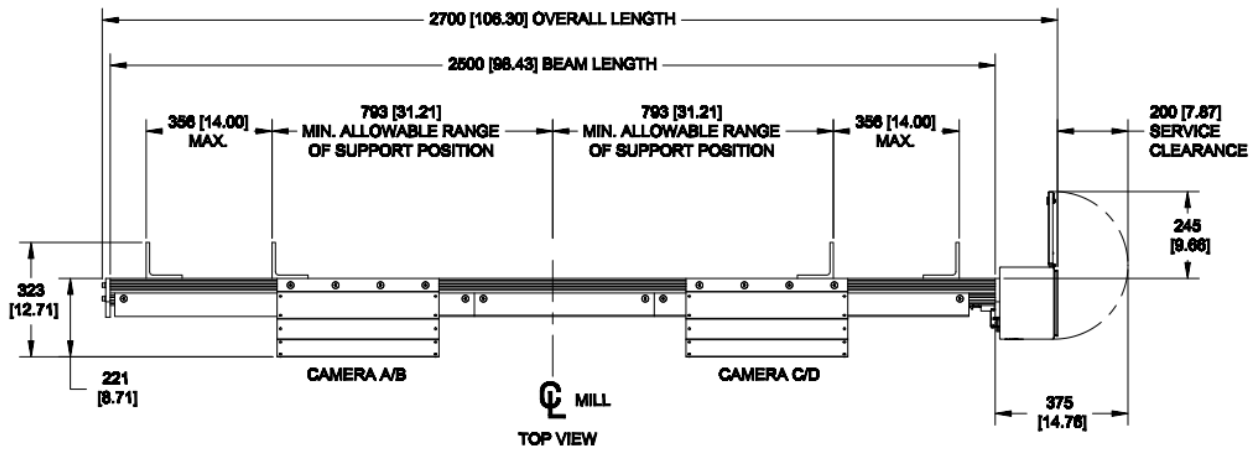
² Installation height is measured from mounting bracket lowest slot to pass line.

³ Width range from min to max must not exceed 1000 mm for Model C775FF-2500-L(R)-50 and 1500mm for Model C775FF-2500-L(R)-40.

⁴ Installations with severe steam or dirt conditions may require additional fans in order to obtain clear field of view from the Scanner to the detection area.

7 DIMENSIONS

7.1 SCANNER



DIMENSIONS IN: mm [INCH]

70916A

Figure 3: Side and Top view of Accuband C775FF Width Gage

7.2 SCANNER POWER SUPPLY & PROCESSOR

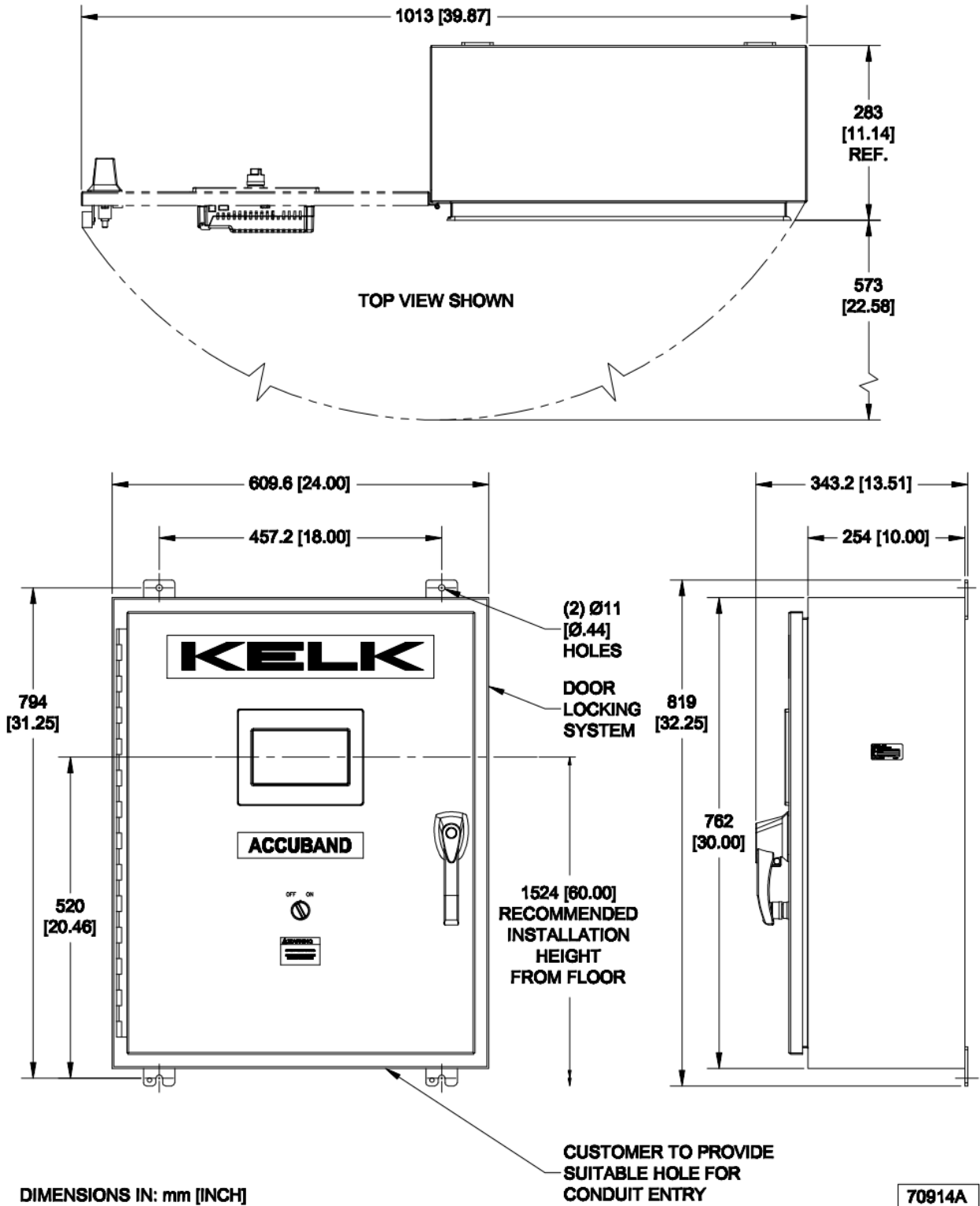


Figure 4: Front, Side and Top view of Accuband C775FF Power Supply & Processor Enclosure

7.3 CALIBRATOR

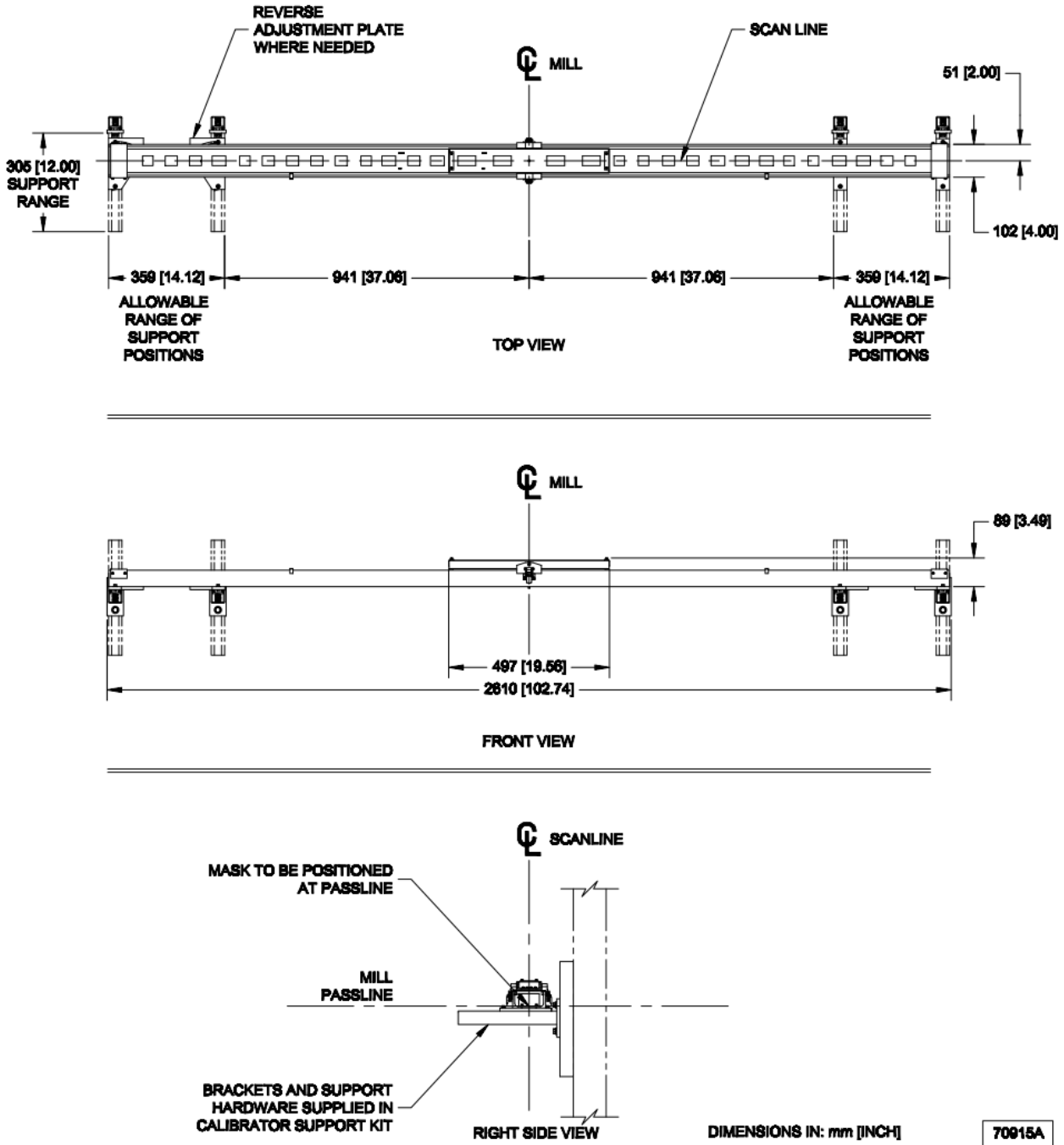


Figure 5: Top and Side View of Calibrator



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