

Controlled Document
Confirm revision before using



Lick Automated Planet Finder

2.4m Telescope

Telescope to Instrument ICD

ICD-5042-2

This document and enclosed information is the property of EOS Technologies, Inc. The information contained herein is confidential and cannot be used for commercial or any other purposes. This document may not be copied nor disclosed without prior written approval of EOS Technologies, Inc.

DOCUMENT CONTROL

© 2008 EOS Technologies, Inc., Tucson, AZ, USA

This document and enclosed information remains the property of EOS Technologies, Inc. Information herein may not be copied nor disclosed without written consent of EOST Management.

Issue: 2

Prepared:	D. Shelby Stubbe	Date:	9/8/2008
Checked:	Kerry Gonzales	Date:	9/8/2008
Approved:	D. Shelby Stubbe	Date:	9/8/2008
Configured:	Edith Hatch	Date:	9/8/2008

Document Revisions

Issue	Date	Description	Prep	Chk	Appr
1	10/21/2003	Initial Release	RLM	JL	
2	9/8/2008	Updated figures to reflect as-built configuration, added ADC mounting interface details.	DSS	KG	DSS

TABLE OF CONTENTS

1	INTRODUCTION	4
1.1	SCOPE	4
1.2	CONFIGURATION STATUS.....	4
1.3	DEFINITIONS.....	4
2	INSTRUMENT PACKAGE SIZE	4
2.1	WEIGHT AND BALANCE.....	4
2.2	AVAILABLE VOLUME.....	4
3	ATTACHMENT	5
3.1	METHOD.....	5
3.2	LOCATION.....	6
3.3	CONFIGURATION	6
4	ADC MOUNTING INTERFACE	7
5	CABLE INTERFACE	11
6	MAINTENANCE AND AUXILLARY EQUIPMENT.....	11

List of Figures

Figure 1	Cavity inside fork tine.....	5
Figure 2	Kinematic attachment pad locations	7
Figure 3	ADC mounting location	8
Figure 4	ADC mounting hole pattern	9
Figure 5	Available depth for mounting ADC	10

Lick Automated Planet Finder Telescope

Telescope to Instrument ICD

1 INTRODUCTION

1.1 SCOPE

This document defines the interface between the Automated Planet Finder Telescope and the Instrument. The Automated Planet Finder Telescope includes the telescope, telescope control cabinet and any ancillary equipment supplied with the telescope. The instrument includes the spectrograph, calibration system mounting hardware required to attach the instrument to the telescope and any associated handling equipment. Only physical interfaces are described in this document. Optical characteristics of the light beam entering and leaving the instrument are discussed elsewhere.

1.2 CONFIGURATION STATUS

This document has been configured as **ICD-5042-2** and is a designated controlled document under the EOST Quality System.

1.3 DEFINITIONS

All items in this document are defined with respect to the telescope. Inputs are inputs to the telescope that must be provided by the instrument. Outputs are outputs from the telescope and must be handled by the instrument. The connector definitions and part numbers are the connectors as supplied with the telescope. The mating connector is to be supplied by the instrument.

In some instances, both SI and English units are included for convenience. In all cases, the SI units shall govern.

2 INSTRUMENT PACKAGE SIZE

The primary physical interface between the instrument and the telescope will be three mounting pads provided for attaching kinematic mounting hardware provided with the instrument.

2.1 WEIGHT AND BALANCE

The weight and inertia of the instrument are limited to the following:

Weight (mass)	< 1000 kg
Moment about azimuth axis	< 2500 kg m

2.2 AVAILABLE VOLUME

The instrument may occupy the following space relative to the telescope.

Height above elevation axis	< 750 mm
Extension below elevation axis	< 2600 mm
Width, centered about elevation axis	< 1000 mm
Thickness, outboard of mounting datum	< 500 mm

In addition, a space inside the telescope fork will be available. The dimensions of that space are shown in Figure 1.

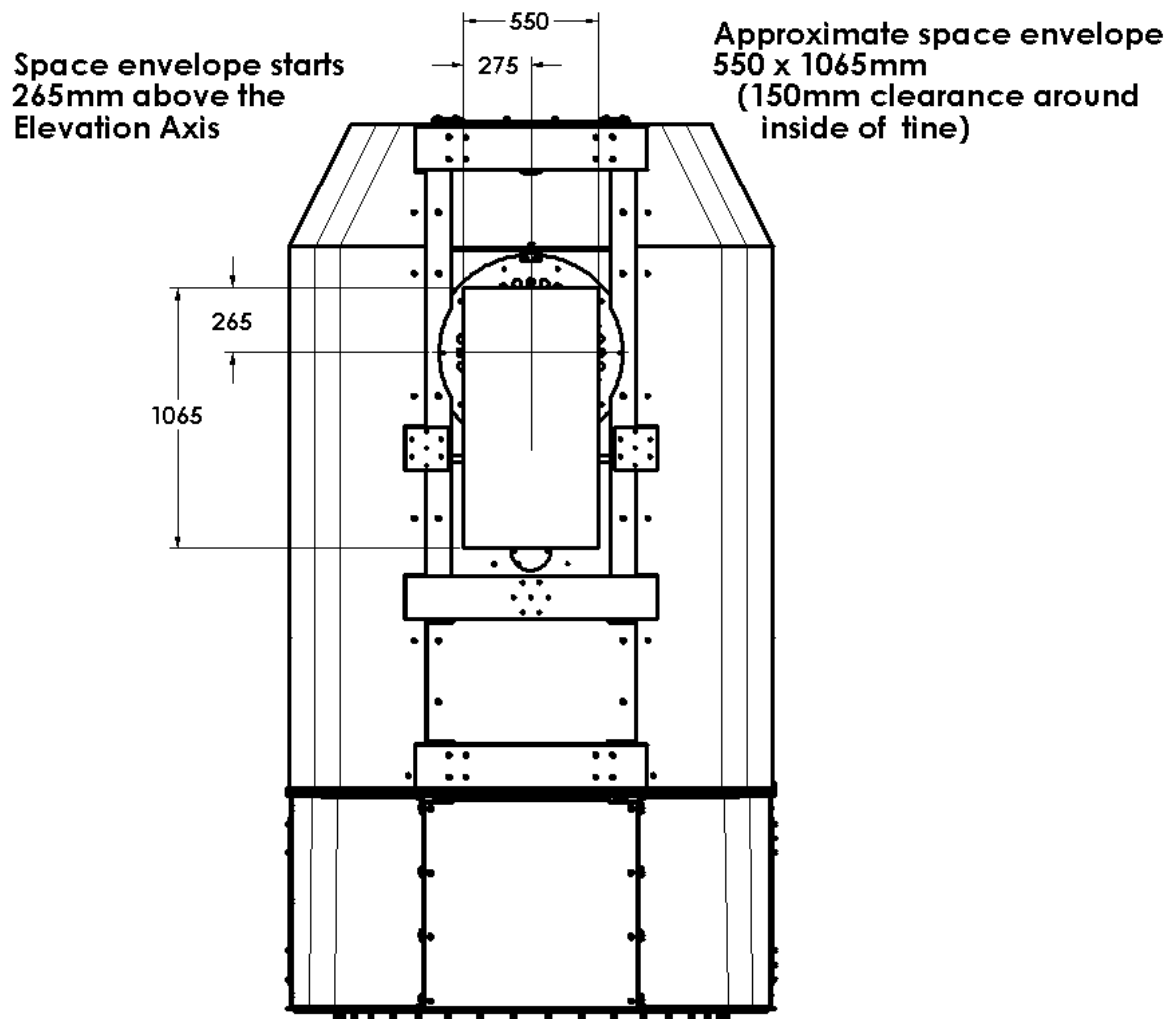


Figure 1 Cavity inside fork tine

3 ATTACHMENT

3.1 METHOD

The instrument will attach to the telescope through a kinematic mount system. The kinematic mounting components are not part of the telescope and are not described here. Only the surfaces to which they attach are described.

3.2 LOCATION

The instrument attaches to the left fork of the telescope as described by the primary mirror pointed at a star at the horizon. For a person on the horizon looking into the telescope, the instrument is on the person's right.

The instrument mounting datum is a theoretically exact plane oriented at a fixed position relative to the elevation and azimuth axes of the telescope.

Distance from azimuth axis	2191 mm
Angle made with elevation axis	90°, both directions

3.3 CONFIGURATION

The telescope interface to the instrument shall consist of four mounting locations for attaching kinematic hardware or structural connections. Each mounting location will consist of a flat, machined area with threaded holes possessing the following characteristics.

Size	
Upper	175 mm square
Lower	175 mm square
Holes in pads	
Bolt Circle Size	140 mm
Quantity of holes (equispaced)	
Including central hole	7
Thread (SI)	M10x1.5, 22 mm deep
Proof force per hole	30 kN
Location relative to mounting datum	
Distance outboard	±3 mm
Parallelism	±0.5 mm
Location relative to elevation axis (EA)	
Upper pad center separation	856 mm
Upper pad center height below EA	390 mm
Lower pad center height below EA	1000 mm

Figure 2 depicts this interface.

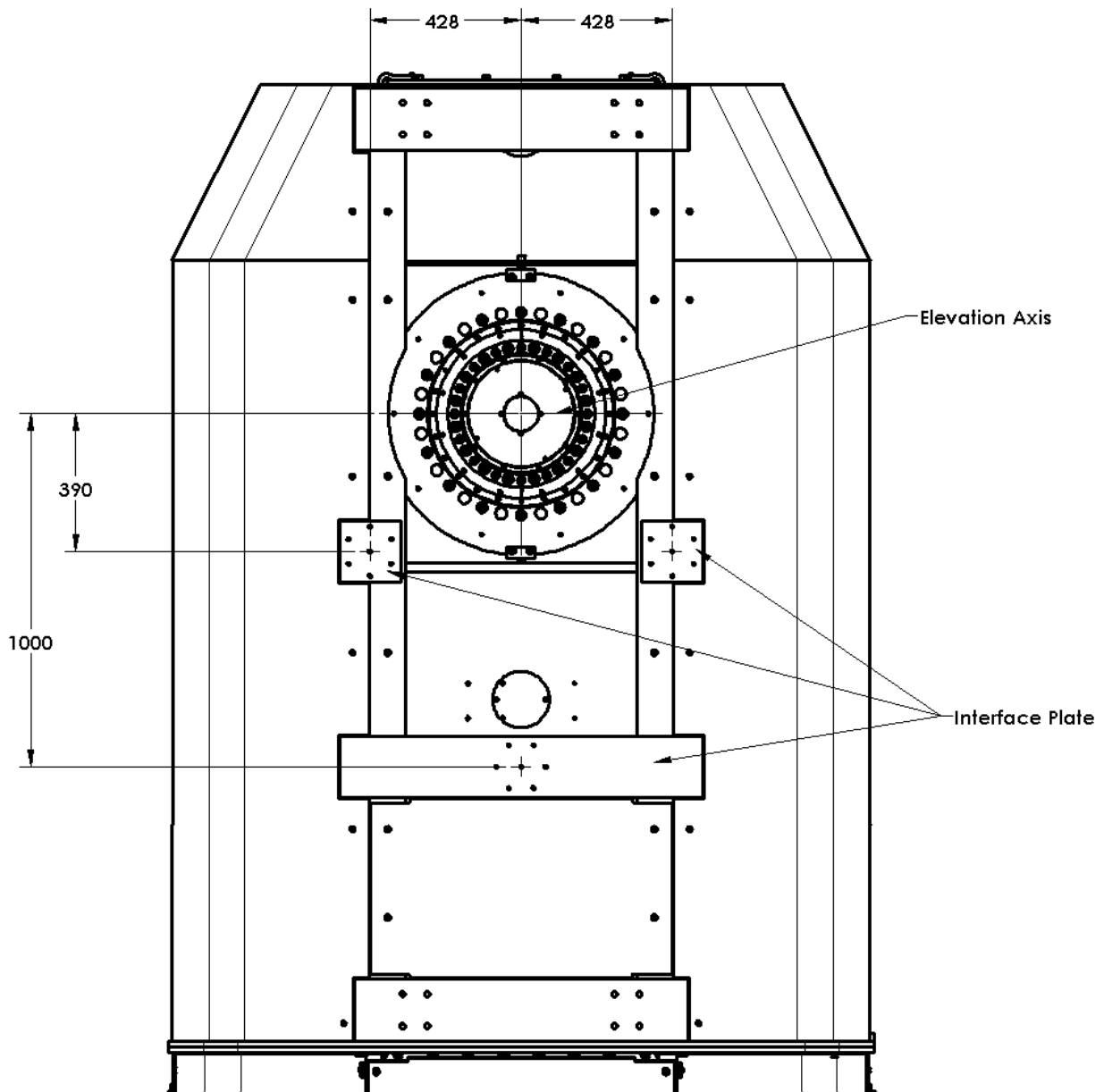


Figure 2 Kinematic attachment pad locations

4 ADC MOUNTING INTERFACE

Ten M10 tapped mounting holes are provided in the Bearing Housing on the non-drive side of the center section (see Figure 3). These mounting holes are on a 318mm bolt-hole pattern (see Figure 4). A maximum depth of 489.1mm is available inside the fork tine that may be used for mounting the customer supplied ADC assembly (see Figure 5).

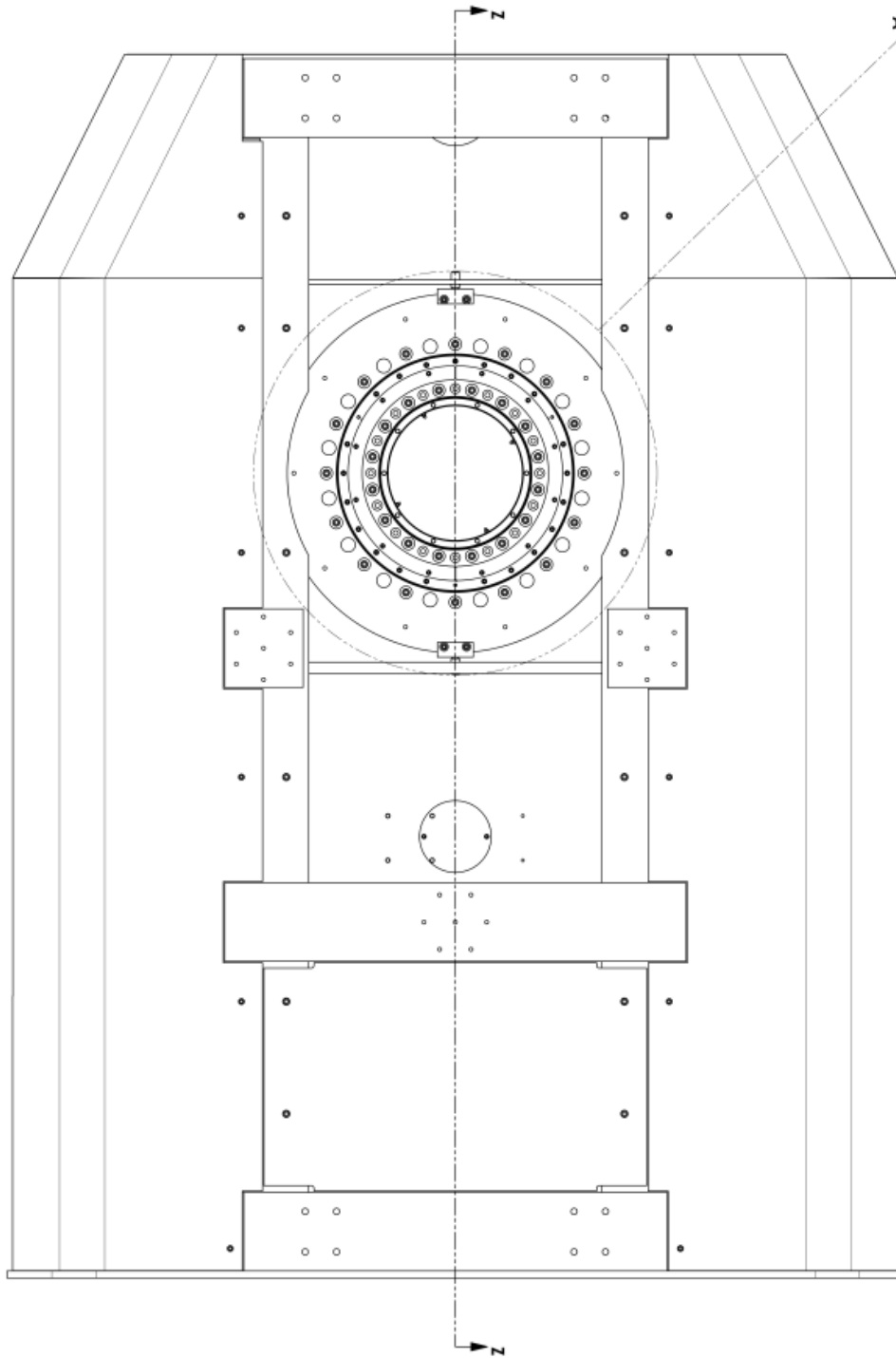


Figure 3 ADC mounting location

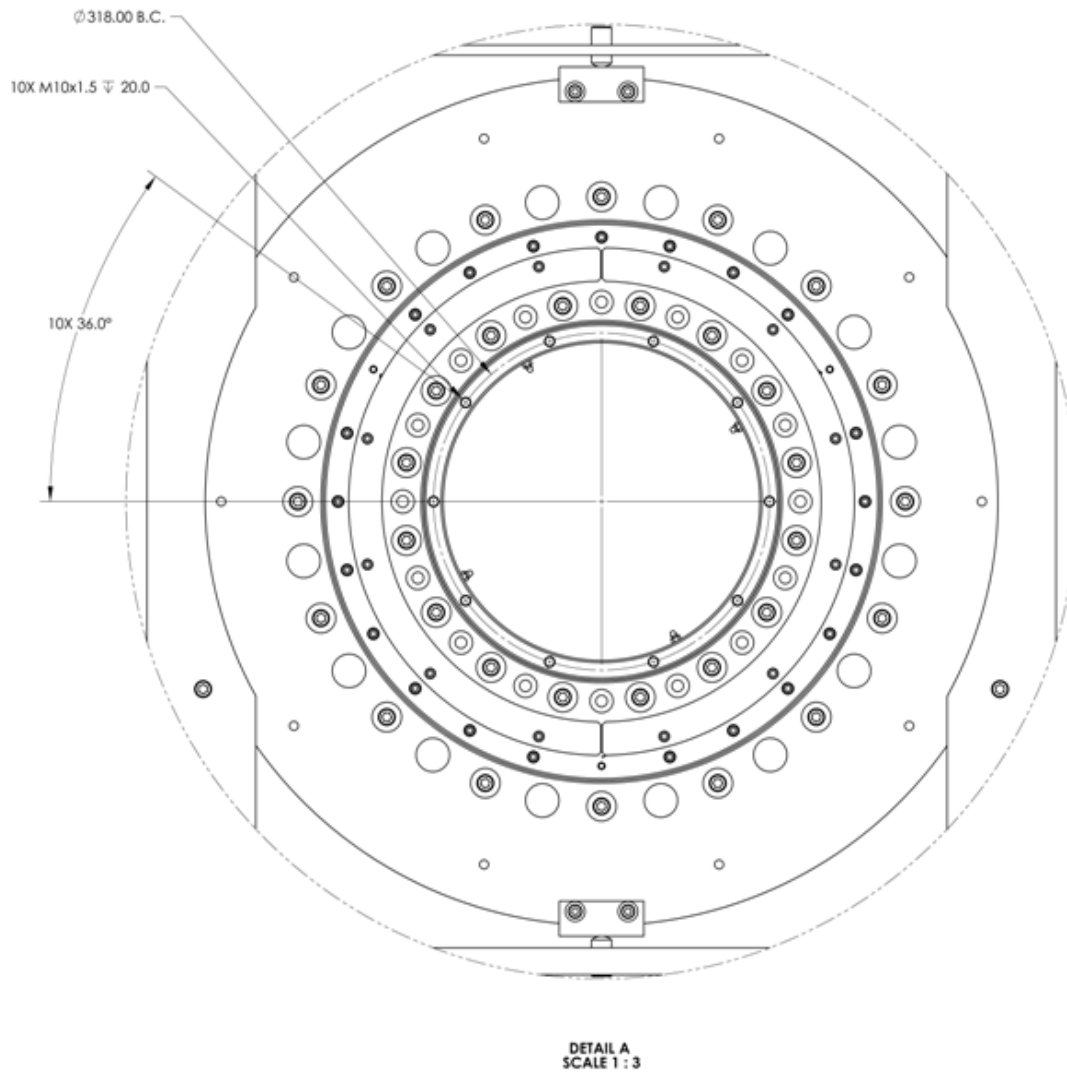


Figure 4 ADC mounting hole pattern

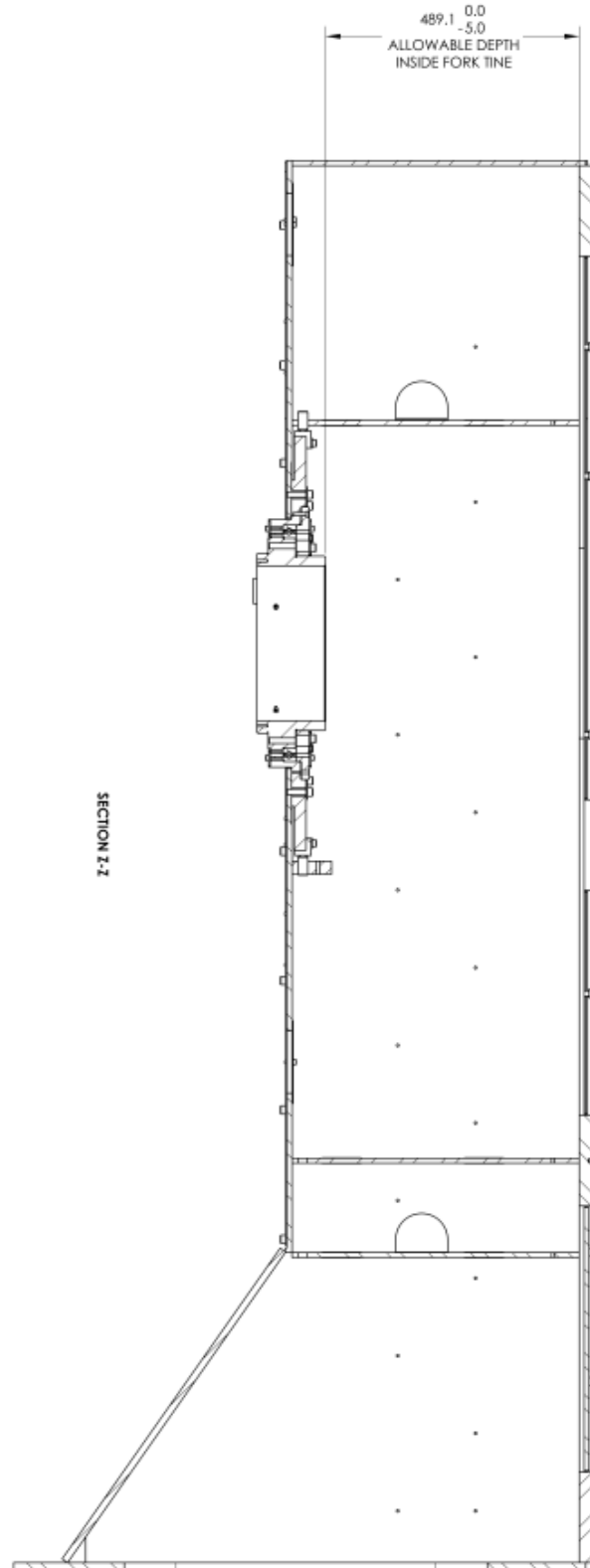


Figure 5 Available depth for mounting ADC

5 CABLE INTERFACE

A circular hole, 150 mm diameter, will be provided for passing connectors and cables between the telescope and instrument. This hole will be located on the outside of the telescope fork near the instrument mounting datum.

6 MAINTENANCE AND AUXILLARY EQUIPMENT

The maintenance requirements of the instruments do not place constraints on the telescope design. Exclusive of any loads described in this document, any maintenance or operational requirements of the instrument will be met without applying loads to the telescope.