



Kuster Company

2900 E. 29th Street

Long Beach, CA USA 90806

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KUSTER K10 DEPTH BOX

OPERATION MANUAL



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Scope. The manual applies only to the Kuster Company K10 Depth Box.

Purpose. The purpose of this manual is to describe in sufficient detail all necessary steps to assemble, program, disassemble, download and maintain the Depth Box.

Definitions. There are three specific definitions, which are used throughout this document, which are necessary to understand.

Note: A note indicates a step, procedure, or process, which is necessary to highlight for successful operation.

CAUTION: A caution indicates a step, procedure, or process which if not followed correctly could result in damage to equipment.

WARNING: A warning indicates a step, procedure, or process which if not followed correctly could result in damage to equipment and/or injury to personnel.

Description. The K10 Depth Box is a simple and independent device designed to gather data from an encoder, store it to memory, so that it may be retrieved later via computer, downloaded and merged with data from the K10 memory tool indexed by a time stamp resident in both. The K10 Depth Box does not take into account weight or line stretch or the affects of temperature, pressure, or well bore media affects down hole.

A. Specifications.

1. Dimensions:
2. Weight: 7Lbs 1.5Oz
3. Power:
 - a) External Power Sources: 12 Vdc
4. Operational Battery Life: 14 hours
5. Memory Capacity: 24 Mb
6. Sampling Rate: Fixed at 1 seconds.
7. Environmental: The unit is not to be used in an environment that requires explosion proof equipment and carries no NEMA rating. It should be protected from direct sunlight and inclement weather by keep the lid snapped closed whenever possible.

B. Function (Fig. 1)

1. Panel Mount Screws
2. On/Off Switch: This switch turns the Depth Box on and off.
3. USB Port: Provides communication between computer and depth box.
4. Encoder I/O: Encoder cable attaches to this connector, supply power and receiving data.
5. External Power Receptacle: 12 VDC input.
6. Depth Zero: Pushing this recessed momentary switch sets the depth to zero.
7. Box Power: This LED is on steady bright when power is applied and the on/off switch is in the on position.

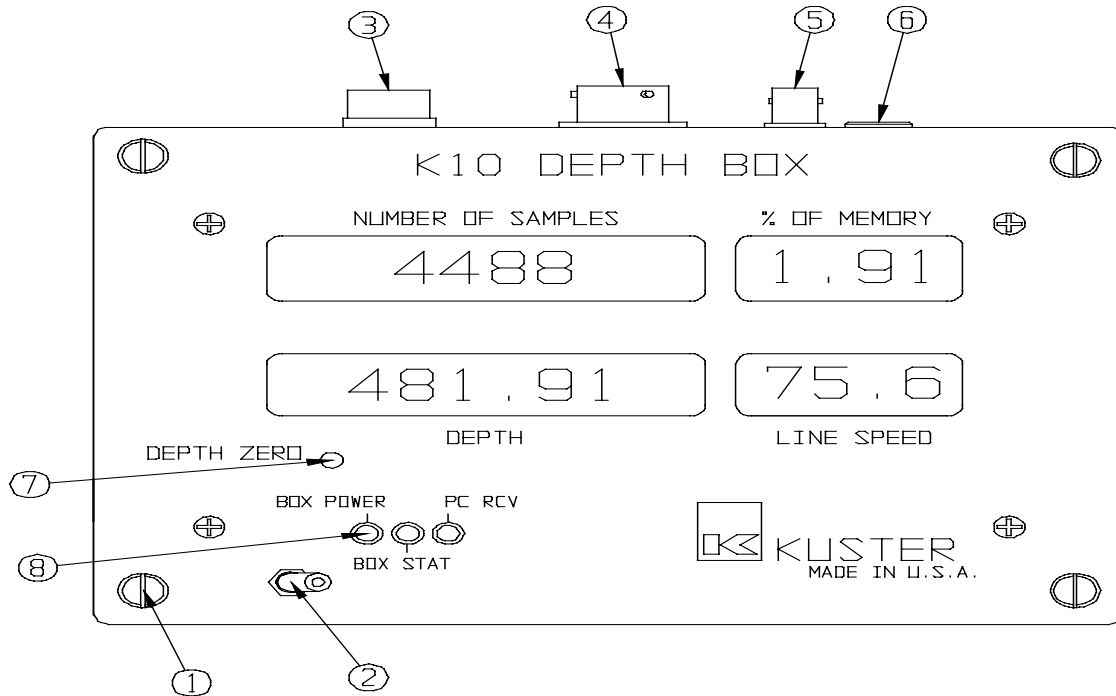


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C. Performance. The K10 Depth Box

Facilities & Equipment.

D. Installation

Note: Depth Box batteries should be re-charged prior to each run by connecting the power supply to the Depth Box with the On/Off switch in the OFF position and charging the batteries for approximately 8 hours.

E. Programming

1. Connect depth unit to computer using USB cable.
2. Turn on computer
3. Start K10 Program
4. Turn on depth unit by moving the toggle switch to the 'On' position.
5. The Depth Box will go through some initial Power On Self Tests before beginning to sample. Ignore the sample readings.
6. In the Main software window click on 'File' and chose 'Depth Box' option
7. Enter Wheel diameter and corresponding units and click 'Sent to box' button. In left lower corner of the screen you supposed to see a message, saying that wheel diameter was sent to the box.
8. Click on 'Set Clock' button and it will synchronize Box time and a computer time.

Note: Ensure that the time and date on the computer used is correct, and that both the K10 Instrument and K10 Depth Box are both programmed with the same computer. Invalid indexing of data from K10 Instrument and K10 Depth Box may occur if this not followed.



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9. The Depth Box is now ready to be transported to the well site.
10. Turn the On/Off Switch to the Off position.
11. Turn Off program and disconnect.

Wheel Diameter:

If wheel's Diameter is not known, just run the survey with any set wheel Diameter; write down the maximum depth from Wireline depth counter as well as Depth box. Download data from Depth Box. In 'Depth Box Data' window click 'Setting'. Enter Deepest recorded depth taken from Depth Box and 'Actual Deepest Depth, recorded by Wireline depth Counter. Click "Adjust Depth File" and 'Update Wheel Diameter' buttons. You will see updated wheel diameter in the upper window and software will save that setting for future.

F. Rigging Up

1. Set the Depth Box up in an area, out of the way, and preferably out of inclement weather and direct sunlight.
2. Connect the encoder to the wireline unit see drawing 18600-701A for reference.
3. Connect the encoder cable to the encoder and then to Depth Box. String the encoder cable so that it is out of the way of the operation.
4. Move On/Off switch to the On position.
5. Depress the Depth Zero black button with some sharp end, like a pen, for 5 seconds and release. Note the depth on the mechanical counter and rig up tool string. Write down the time when the Depth box start taking first sample.
6. With tool string at datum level (e.g. KB, CF, etc.) compare display on depth box and mechanical counter and they should agree.
7. Zero the mechanical counter and then the Depth Box by pressing the Zero Depth Button for 5 seconds then releasing.
8. The Depth Box will go through some initial Power On Self Tests before beginning to sample
9. Write down to your log time, when depth box start sampling.
10. RIH as per program or SOP.

G. Rigging Down

1. AFTER THE TOOL IS AT THE SURFACE, ALLOW DEPTH BOX TO RUN AT LEAST 5 MINUTES BEFORE SWITCHING IT OFF. Turn On/Off switch to the Off position.
2. Disconnect Depth Box from Encoder Cable, disconnect Encoder Cable from Encoder.
3. Remove Encoder from measuring head and replace hardware.

H. Downloading Depth Box. Usually downloads after K10 Gauge is already downloaded.

1. Connect depth unit to computer using USB cable.
2. Turn on depth unit by moving the toggle switch to the ON position.
3. The Depth Box will go through some initial Power On Self Tests before beginning to sample. Ignore the carry over sample reading.
4. Go to File and chose Depth Box option.
5. If K10 Gauge is already downloaded, go to 'Depth' area of the Screen and click Download button.



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Note: When the dialogue box pops up and prompts you for a file name, it is suggested to use the same file prefix as that of the K10 Instrument that was run with it.

6. Note: You can only merge the data with the K10 Instrument data if the K10 Instrument has already been downloaded and only if that file is presently opened in the program

7. Click on Merge Depth Data and it create a combine file P/T/S data vs Time. If for some reason the Depth data on a graph is mirrored down in negative field of the graph, go back to Depth Box window and Click 'Reverse Polarity' option.

References.

- A. Performance curves.
- B. Drawings.
- C. Bill of Materials.
- D. Calibration Verification Table.

Technical Support. Technical support can be obtained by contacting:

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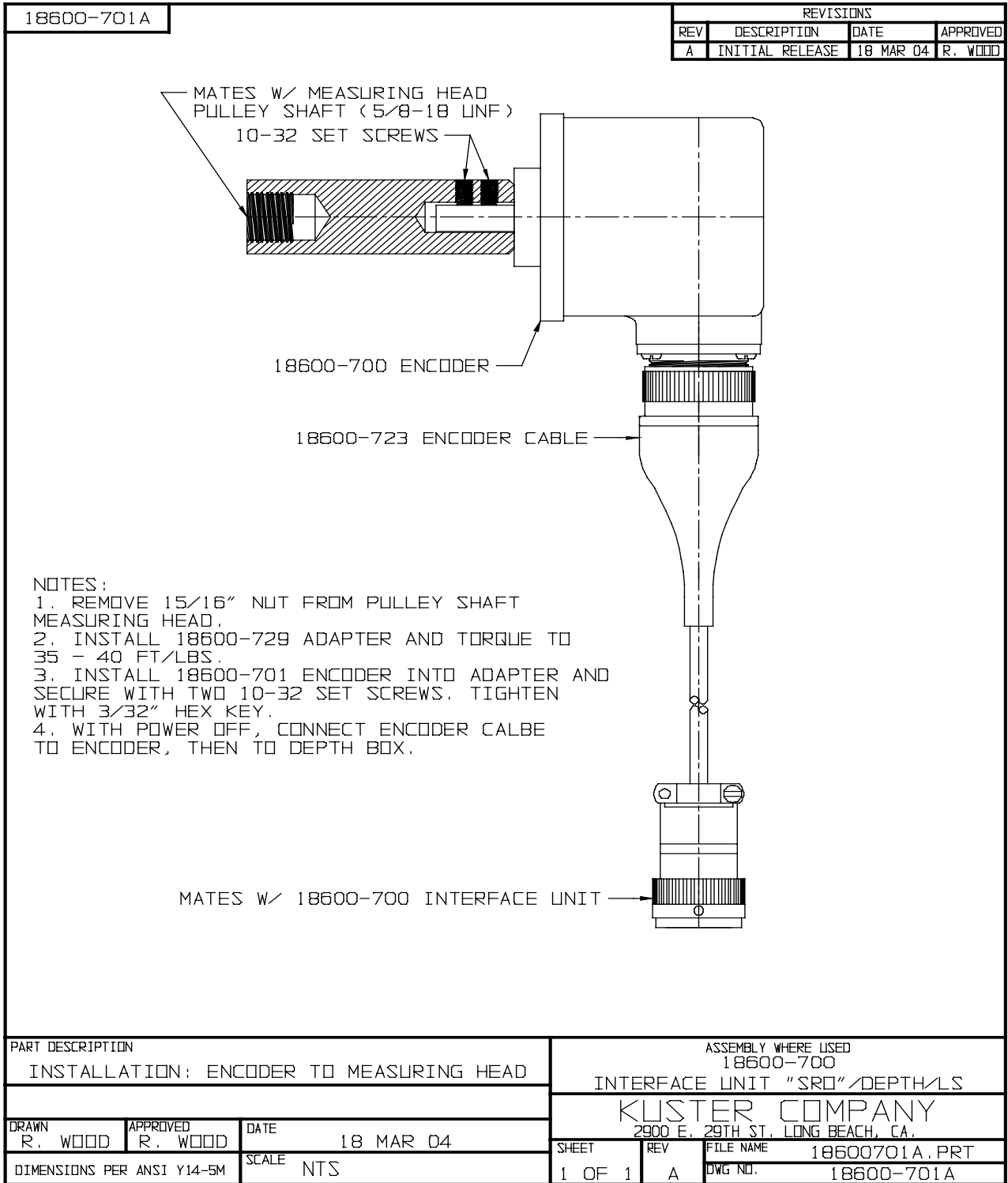


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PART DESCRIPTION INSTALLATION: ENCODER TO MEASURING HEAD			ASSEMBLY WHERE USED 18600-700 INTERFACE UNIT "SR0"/DEPTH/LS		
DRAWN R. WOOD			APPROVED R. WOOD		
DATE 18 MAR 04			KUSTER COMPANY 2900 E. 29TH ST. LONG BEACH, CA.		
DIMENSIONS PER ANSI Y14-5M		SCALE NTS	SHEET 1 OF 1	REV A	FILE NAME 18600701A.PRT
					DWG NO. 18600-701A