

4-Point Force Distribution Tester

Manual Number 6902907



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INTRODUCTION

This manual is for the Cascade 4-Point Force Distribution Tester. Contents include trolley Installation and setup, measuring clamp force, display configuration, reviewing recorded data and parts.

IMPORTANT: For service, technical and software questions about the display, contact the service support department of Antibus Scales & Systems, Inc. (574) 233-3160 (US only). International countries should contact a local Rice Lake[®] Weighing Systems dealer.

Special Definitions

The statements shown appear throughout this manual where special emphasis is required. Read all WARNINGS and CAUTIONS before proceeding with any work. Statements labeled IMPORTANT and NOTE are provided as additional information of special significance or to make the job easier.



WARNING – A statement preceded by WARNING is information that should be acted upon to prevent **bodily injury**. A WARNING is always inside a ruled box.

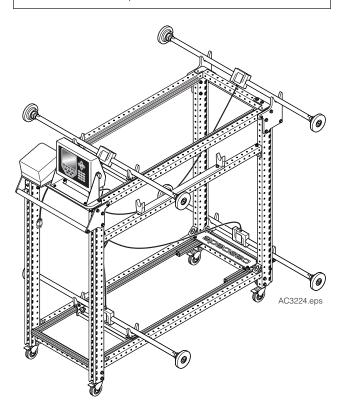
CAUTION – A statement preceded by CAUTION is information that should be acted upon to prevent machine damage.

IMPORTANT – A statement preceded by IMPORTANT is information that possesses special significance.

NOTE – A statement preceded by NOTE is information that is handy to know and may make the job easier.

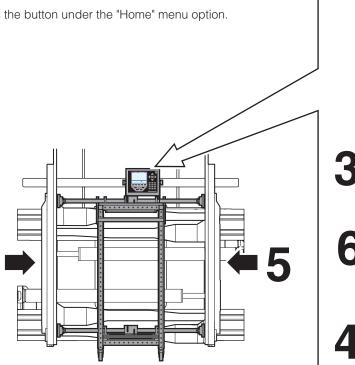


WARNING: When operating the attachment and 4-Point Force Distribution Tester, verify that all personnel are clear of the 4-Point Force Distribution Tester prior to clamping on the spindles.



Quick System Check

- 1 Plug the display's power connector into a 120V power source.
- 2 Once the display shows the Home screen, press the button under "Start" menu option.
- **3** Then press the button under "Clamp" menu option.
- 4 Once the display shows the Clamp screen, press the button on the "Zero" menu option.
- **5** Clamp on the trolley's spindle pads.
- 6 The display should show four clamp force values and four percentages. The display is working properly.
- 7 Release and OPEN the clamp arms.
- 8 Press the button under the "Home" menu option.



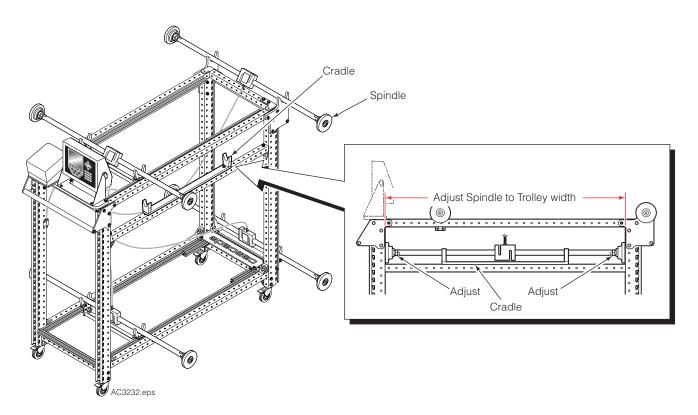
 \sim cascade **— —** тм 4 POINT CLAMP FORCE DISTRIBUTION TESTER www.cascorp.com 1-800-CASCADE Setup Start Data 2 07/12/201 SCALE #1 START ID Number: Pressure: PSI ID Clamp Home SCALE #1 Upper Front 07/12/2015 Upper Back 08:00AM Pressure 150.8 Truck ID 150.2 24.54 % 24.64 % 6 Total l ower Back l ower Front 612.0 154.2 156.8 PEAK 25.20 % 25.62 % Print Zero Save New Home AC3225.eps

Verify Spindle Length

Perform the following for each spindle:

- **1** Place the spindle in the cradle located on the side of the trolley, as shown. Use the trolley width to set the overall length of the spindle. Adjust the length at the spindle pads.
- **2** Turn on the display. Adjust the spindle to show a preload of 5 ft-lbs. (6.8 Nm) on the display. Tighten locknuts.
- **3** Tap the spindle out to remove.

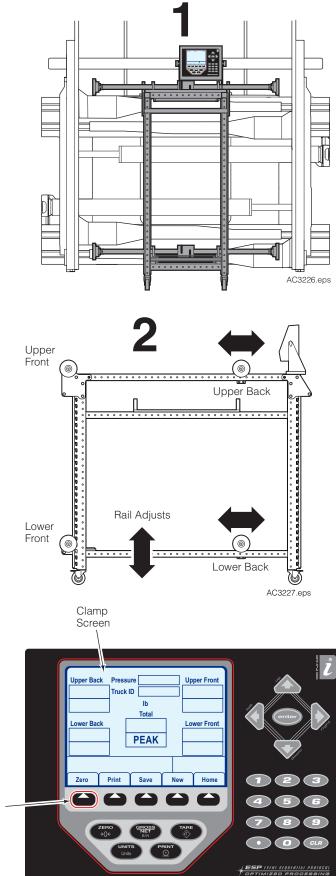
CAUTION: Failure to set the overall length of each spindle assembly to same length, will result in inaccurate clamp force results.



Adjust Spindle Supports

IMPORTANT: Perform this procedure with the aid of a Cascade sales representative to determine the optimal location of spindle pads for proper clamp force distribution.

1 Position the trolley between the carton clamp contact pad.



2 If required, adjust the supports to align the spindle pads to four locations on each of the carton clamp contact pads. The four locations on the contact pad, are determined by the type of products being handled. Contact a Cascade sales representative to determine optimal pad and spindle positioning.

3 From the *Clamp screen* on the display, press the button

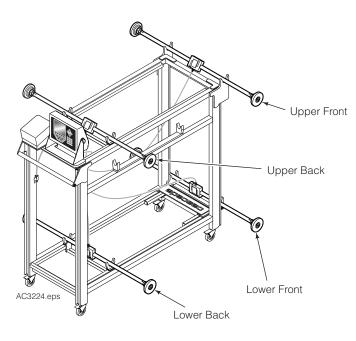
on the "Zero" menu option.

4 Clamp on the trolley's spindle pads.

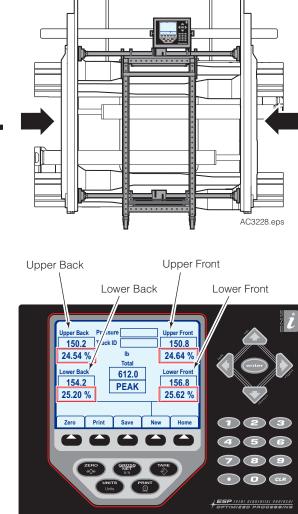
5 Refer to the display's four percentages. Verify that the clamp force distribution is within the desired percentages and tolerances.

If the tolerance difference is greater than allowable tolerance difference, the carton clamp pads require shimming. Refer to installation instructions for the carton clamp to shim:

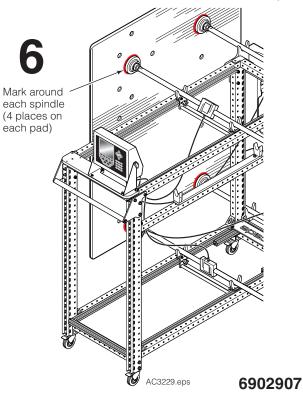
- D-Series Carton Clamp Installation Instructions, Part No. 670488
- G-Series Carton Clamp Installation Instructions, Part No. 6033701.
- J-Series Carton Clamp Installation Instructions, Part No. 6871082.



6 Use a contrasting permanent marking device to outline each spindle pad on the contact pads.



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The following section covers the general procedure for measuring the clamp force of a carton clamp attachment. For further details on a specific step of the procedure, refer to Display Configuration section, pages 7-12. There are two methods of measuring, peak clamp force (procedure below) or live clamp force (procedure on the following page). Peak force is the highest clamp force measured. While in peak mode, the percentage distribution will also show. Live force is the real time clamp force measured.

Measure Peak Clamp Force

Peak Force is the maximum measured force applied to the spindles. Also, the display will show the distribution of the force applied to each spindle's load cell.

- **1** Align the attachment pads with the trolley spindle pads.
- 2 From the Home Screen, press the button under "Start" menu option.

- **3** If required, enter the truck identification and pressure in the ID screen. Refer to Display Configuration, "Start Screen" for details, page 9.
- 4 Press the menu selection button under "Clamp" menu option.
- 5 Verify that the screen shows "PEAK". Refer to page 9, Step 2 to toggle between "PEAK" and "LIVE".
- 6 If required, zero the loads cells.
- 7 If required, change the units, lb, (pounds-force) or N (newtons). Refer to Display Configuration, "Start Screen" for details, page 9.
- Inner Back Pressure Upper Front 150.2 Truck ID 150.8 (lb) 24.54 % 24.64 % Total Lower Front Lower Back 612.0 1 - 1 - 2 156.8 PEAK 25.20 % 25.62 % Zero Print Save New Home If required If required AC2964.eps AC3230.eps

cascade

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C 4 POINT CLAMP FORCE DISTRIBUTION TESTER

08:00AM

START

Data

Start

7/12/2015

ID Number:

Pressure:

ID

If required

Clamp

БСТМ

Setup

SCALE #

PSI

Home

- **8** Clamp on the spindle pads. The display will show force values and clamp force distribution percentages.
- 9 Release the spindle pads.
- **10** Information shown on the display can be saved and/or printed. Refer to Display Configuration, "Start Screen" for details, page 9.

MEASURING CLAMP FORCE

Measure Live Clamp Force

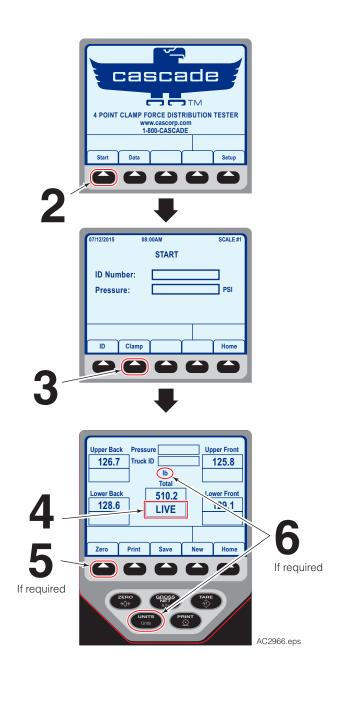
Live clamp force is the real time (current moment in time) measured force applied to the spindles.

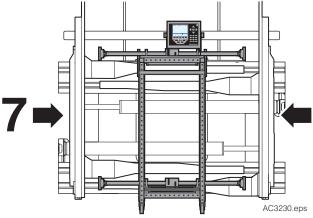
IMPORTANT: When measuring clamp force in "LIVE" mode, the data can not be saved or printed.

- **1** Align the attachment pads with the trolley spindle pads.
- 2 From the *Home Screen*, press the button under "Start" menu option.
- 3 Press the button under "Clamp" menu option.

- 4 Verify that the screen shows "LIVE". Refer to page 9, Step 2 to toggle between "PEAK" and "LIVE".
- 5 If required, zero the loads cells.
- **6** If required, change the units, Ib, (pounds-force) or N (newtons). Refer to *Display Configuration*, "Start Screen" for details, page 9.

- 7 Clamp on the spindle pads. The display will show force values. Clamp force for each spindle and clamp force will show on the display.
- 8 Release the spindle pads.

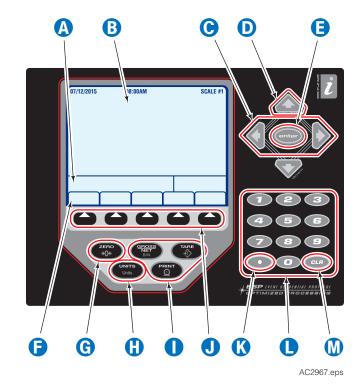




Display Buttons

The following is the basic layout of the display for reference:

Text Box Α **Display Screen** B Left and right arrows toggle between PEAK and G LIVE (Clamp Screen) D Accesses Character Menu Box Enter button – Accepts a value B B Menu Options A Zeros clamp force (Clamp Screen) Ð Toggle between units - Imperial and Metric NOTE: Buttons are not functional П A Buttons for selecting menu options Decimal button Ω Numeric buttons



Accessing the Home Screen

Plug the display power cord into a 120V power source.
 NOTE: If equipped with printer, plug the printer's power cord into a power source.

CLR button - backspace when changing a value

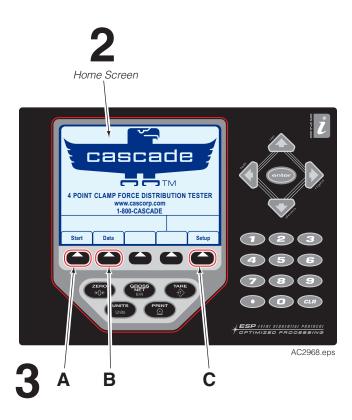
- 2 Wait for the screen to load to the Home screen.
- **3** The *Home screen* will show. Press a menu option button:
 - Start (A) Goes to the Start screen. This screen is for obtaining clamp force values. Refer to page 9.
 OR
 - UR

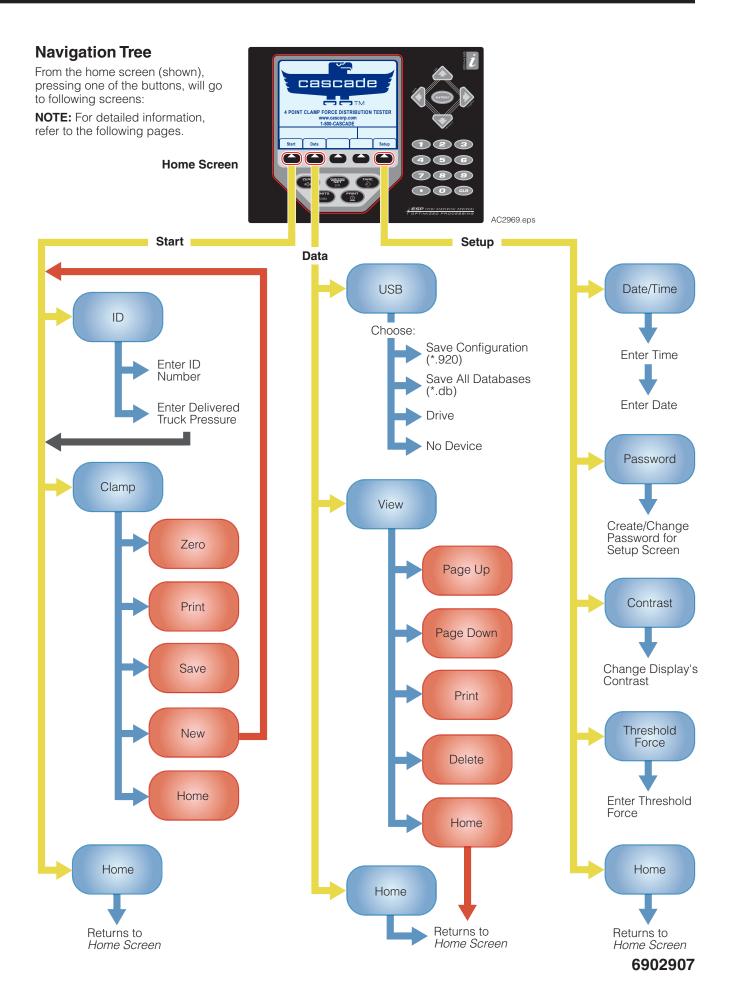
 Data (B) – Goes to the *Data screen*. This screen allows the user to view data stored or download stored data. Refer to page 10.

OR

 Setup (C) – Goes to the Setup screen. This screen has options for changing data/time, create/change password, change the screen's contrast and adjust the threshold force value. Refer to page 11.

NOTE: Refer to the following page for the display's layout.





Start Screen

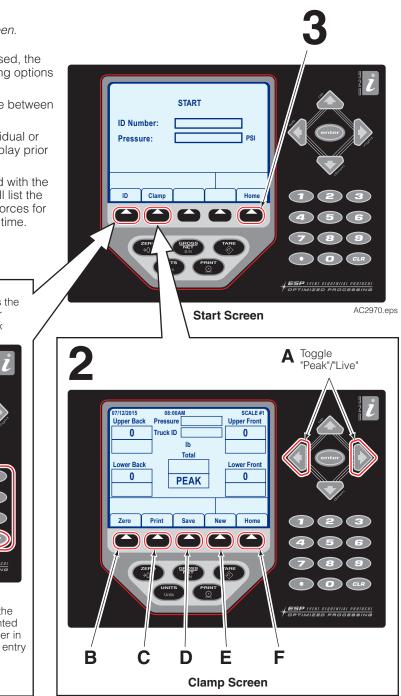
After the "Start" menu option button is pressed, the *Start screen* will show. From the *Start screen*:

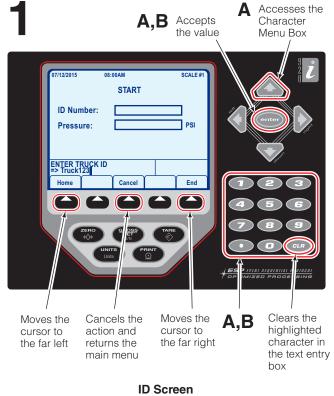
- **1** When the "ID" menu option button is pressed, the screen goes to the *ID screen*. The screen will prompt:
 - A Enter the truck identification To enter the truck identification, use the numeric buttons and character menu box. To accept the truck identification, press the "enter" button.

NOTE: Refer to *Appendix*, "Letters and Special Characters", page 24 for more detail.

- **B** Enter the pressure value. Use the numeric buttons to enter a value. To accept the value, press the "enter" button.
- C The screen will then return to the Start screen.
- **2** When the "Clamp" menu option button is pressed, the screen goes to the *Clamp screen*. The following options are available:
 - Use the left and right arrow button to toggle between "Peak" and "Live". (A)
 - "Zero" menu option button (B) Zeroes residual or unladen force values appearing on the display prior to clamping.
 - "Print" menu option button (C) If equipped with the printer, the data will print out. The ticket will list the truck identification, pressure, peak clamp forces for each load cell, total clamp force, date and time.

- **2** (continued)
 - "Save" menu option button (D) The peak value is saved to the display's internal memory.
 - "New" menu option button (E) Returns to the Start screen.
 - "Home" menu option button (F) Returns to the *Home screen.*
- **3** When the "Home" menu option button is pressed, the screen returns to the *Home screen*.





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Data Screen

All clamp force data is stored in a database table format and can be downloaded to a USB flash drive. Data can also be viewed on the display screen.

IMPORTANT: Prior to pressing the "USB" menu option button, install a USB flash drive into the display's USB port.

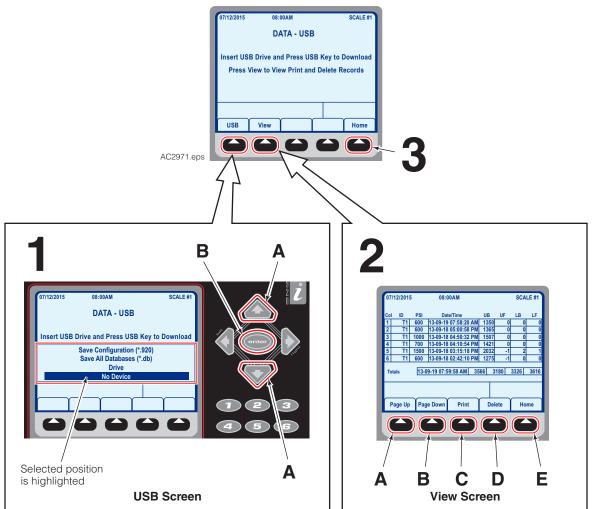
After the "Data" menu option button is pressed, the *Data screen* will show. From the *Data screen*:

1 When the "USB" menu option button is pressed, the screen goes to the USB screen. The screen will prompt:

NOTE: If a USB flash drive is not installed, the text entry box will show, "No Device available".

- A Use the arrow buttons to highlight "Save All Databases (*.db)".
- **B** Press the "enter" button to save the database files to the USB flash drive.
- **2** When the "View" menu option button is pressed, the screen goes to the *View screen*. The following options are available:
 - "Page Up" menu option button (A) The previous table page will show.
 - "Page Down" menu option button (B) The next table page will show.

- **2** (continued)
 - "Print" menu option button (C) Allows for one row to be printed. The screen will prompt for the row number. Press the "enter" button to accept entered row number and create the printout.
 - "Delete" menu option button (D) Deletes all data stored in the table.
 - "Home" menu option button (E) Returns to the Home screen.
- **3** When the "Home" menu option button is pressed, the screen returns to the *Home screen*.



Data Screen

Setup Screen

The *Setup Screen* contains five menu options. Four options change the following settings: Date and time, password enabled *Setup screen*, screen contrast and threshold force. The fifth option returns to the *Home screen*.

After the "Setup" menu option button is pressed, the *Setup screen* will show. From the *Setup screen*:

- 1 When the "Date/Time" menu option button is pressed, the following steps will show in the text entry box:
 - **A** Use the numeric buttons to change the time, in HHMMSS format.
 - **B** To accept the time value, press the "enter" button.
 - **C** Use the numeric buttons to change the date, in MMDDYY format.
 - **D** To accept the time value, press the "enter" button.

E The screen returns to the main *Setup screen*.

- 2 When the "Password" menu option button is pressed, the following steps will show in the text entry box:
 - A To create/change the password. Use the numeric buttons and character menu box.

NOTE: Refer to *Appendix*, "Letters and Special Characters", page 24 for more detail.

- **B** To accept the new/changed password, press the "enter" button.
- C The screen returns to the main Setup screen.

Button Menu Options continued on the next page

Setup Screen

shold

Home

23

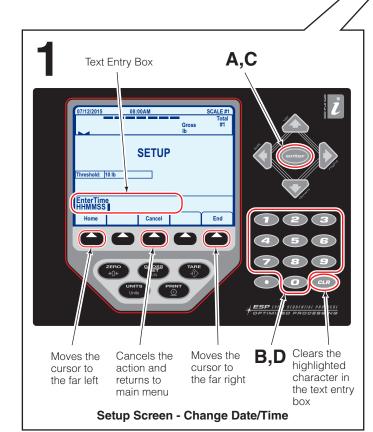
ESP IVINI SIQUENTIAL PROTOCOL

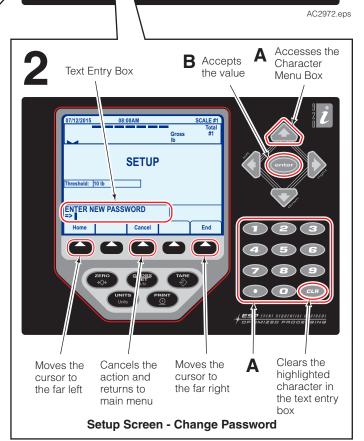
08:00AN

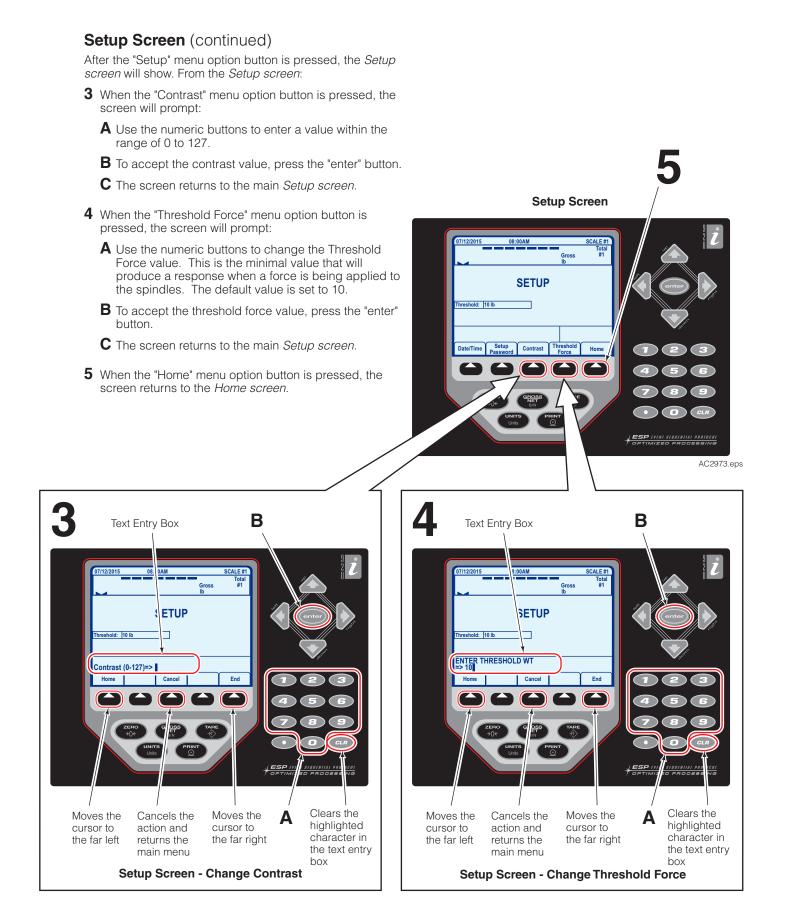
Date/Time

SETUP

Contrast



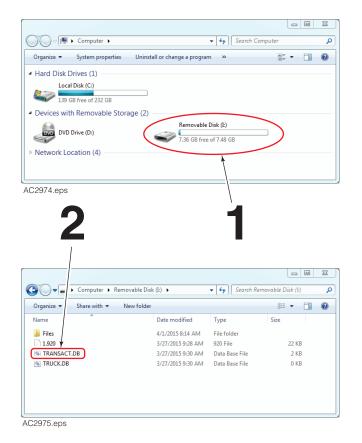




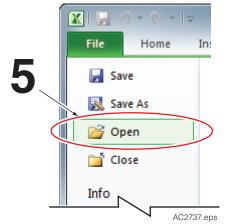
The original file saved to the USB flash drive is a database file (file extension: ".DB"). If a database program is not available to view, the file can be opened by performing the following procedure.

NOTE: The following procedure uses Excel 2010. Other similar software may have a different procedure than the one shown below.

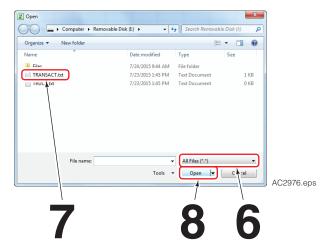
- **1** Plug the USB flash drive into a computer USB port. Navigate to the root directory (top level) of the USB flash drive.
- 2 Locate the file called "TRANSACT.DB". Create a copy of the file on the USB flash drive or to a specified file location.
- **3** Change the copied file's file extension from "DB" to "txt". Example: TRANSACT.**DB** becomes TRANSACT.**txt**



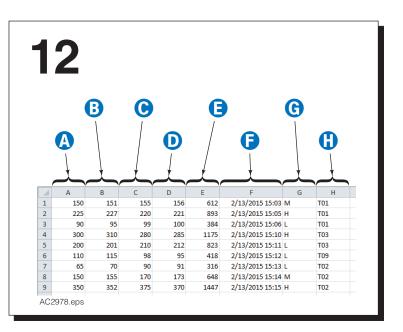
- 4 Launch Excel software.
- 5 In the Excel menu, choose "File" and then "Open".



- 6 In the "Open" dialog box, change the filter to "All Files (*.*)".
- 7 Choose the file "TRANSACT.txt" from the file location the file was copied to (Step 2).
- 8 Click the "Open" button.



- **9** A "Text Important Wizard" dialog box will 8 8 Text Import Wizard - Step 1 of 3 appear. Verify that the following options are selected: The Text Wizard has determined that your data is Delimited. If this is correct, choose Next, or choose the data type that best describes your data Original data type A Original Data Type: Delimited that best describes your data: Characters such as commas or tabs separate each field Delimited **B** Delimiters: check "Other", add "|" in w wuth - Fields are aligned in columns with spaces between each field the text box next to the check box. 8 23 Text Import Wizard - Step 2 of 3 NOTE: The character "|" (vertical This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below. bar), can be found on the keyboard Delimiter above the backslash (reverse Previev Tab. 10.00 20.00 30.00 41.00 solidus). To add the character press Treat consecutive delimiters as one Semicolor <u>C</u>omma the "shift" key + "\" key. Text gualifier: • В ☑ <u>O</u>ther: C Column Data Format: "General" . 23 Data pre Text Import Wizard - Step 3 of 3 9 This screen lets you select each column and set the Data Format 0.000 += format O General to dates, and all 'General' cr С remaining values to text. .000 0.0000 -◎ <u>D</u>ate: MDY Advanced... • Do not import column (skip) Data preview 200000 | 200000 43.00000 215-02-13 03:03:06 PM 4 000000 | 200000 43.00000 215-02-13 03:03:06 PM 4 000000 | 200000 43.00000 215-02-13 03:03:04 PM 4 000000 | 200000 44.00000 215-02-13 03:03:04 PM 4 000000 | 200000 41.00000 215-02-13 03:13:04 PM 4 000000 | 200000 31.00000 215-02-13 03:13:04 PM 4 000000 000000 000000 000000 Cancel < Back Next > Einish AC2977.eps
- **10** Choose the "Finish" button. The file will open.
- **11** Save the file as an Excel document (file type ".xlsx").
- 12 The file is ready to review.
 - Upper Back Clamp Force B Upper Front Clamp Force Lower Back Clamp Force C Lower Front Clamp Force П Total A Date and Time ß Pressure Type G 0 Truck ID



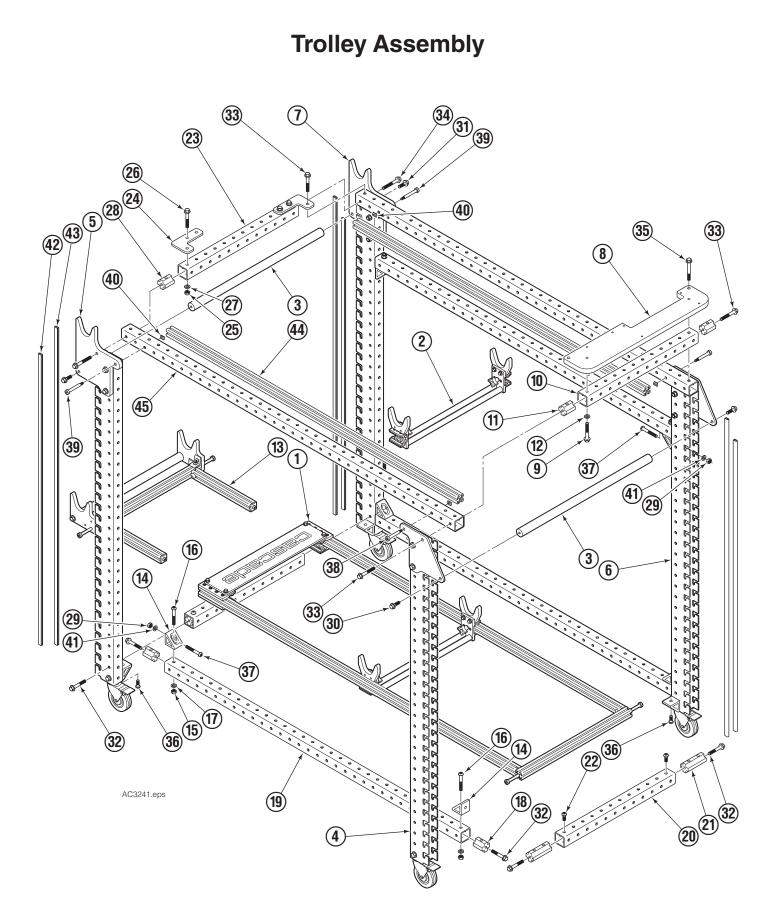
2 (6) 5 $(\mathbf{8})$ (10) (9) 3 4 (11) Printer Paper Replacement 0 Use Epson Thermal Paper Manufacturer's Part No.: NTP080-80 Paper Width: 3.15 in. (80 mm) Maximum Diameter: 3.27 in. (83 mm) Spool Diameter: 0.47 in. (12 mm) ID 0.71 in. (18 mm) OD 000 1 NOTE: Install paper in the direction as shown. AC3233.eps

REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
		6841756	4-Point Force Distribution Tester ◆		1	6887156	Display Bracket
		6859239	Printer and Mounting Group		4	1880155	Capscrew, M6 x 12
1	1	6886768	Trolly Assembly		1	6842181	Printer
2	1	6887193	Display 🔻		1	6842218	Printer Mounting Bracket
3	4	6854155	Spindle/Pad Assembly		2	6889110	Self Tapping Capscrew, #5 x .5
4	1	6894510	Gauge		2	1880248	Capscrew, M6 x16
5		6868083	Hook and Loop Kit ${ m O}$				

- ♦ Includes items 1–7.
- ▲ Includes items 8–11.
- See Trolly Assembly page for parts breakdown.
- ▼ Includes items 6 and 7.
- Quantity as required.

O Kit contains 15 ft. (4.5 m) of hook and loop tie and 10 buckles. The kit makes 8 to 10 ties.

Reference: 4-Point Force Distribution Tester with Printer, part no. 6842303.



Trolley Assembly

REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
		6886768	Trolley Assembly	21	2 🗙	6886784	Tube Insert
	1	6886959	Mounting Plate Assembly	22	2 🗙	689151	Capscrew, M8 x 20
	1	6886960	Upper Tube Assembly 🔻	23	1 🗙	6886766	Tube, 18 in.
	3	6886908	Tube Assembly ●	24	2 🗙	6886785	Bracket
	2	6886935	Tube Assembly	25	4 🗙	767414	Nut, M8
1	1	6886826	Bottom Rail Assembly ◆	26	4 🗙	6030448	Capscrew, M8 x 55
2	1	6889286	Upper Cradle Assembly O	27	4 🗙	221494	Washer, M8
3	2	6889187	Handle	28	2 🗙	6886748	Tube Insert
4	1	6886948	Leg Assembly, Left Front 🗅	29	6	767414	Nut, M8
5	1	6886944	Leg Assembly, Left Rear 🗅	30	2	6002668	Capscrew, M8 x 20
6	1	6886947	Leg Assembly, Right Front 🗅	31	2	1852657	Capscrew, M8 x 25
7	1	6886937	Leg Assembly, Right Rear 🖵	32	10	1852661	Capscrew, M8 x 50
8	1 🗙	6886786	Mounting Plate	33	4	6030448	Capscrew, M8 x 55
9	2 🗙	6030448	Capscrew, M8 x 55	34	2	6030449	Capscrew, M8 x 60
10	1 🗙	6886766	Tube, 18 in.	35	2	6819533	Capscrew, M8 x 65
11	2 🗙	6886748	Tube Insert	36	4	689151	Capscrew, M8 x 20
12	2 🗙	221494	Washer, M8	37	6	6886882	Capscrew, M8 x 55
13	1	6886849	Rail Adjuster Assembly 🛠	38	2	6886981	Capscrew, M6 x 45
14	2 🗙	6886783	Corner Bracket	39	2	6886880	Capscrew, M6 x 50
15	2 🗙	767414	Nut, M8	40	4	6886803	T-Nut
16	2 🗙	6886882	Capscrew, M8 x 55	41	6	221494	Washer, M8
17	2 🗙	221494	Washer, M8	42	4	6889308	Plastic Edge Trim, 1035 mm
18	2 🗙	6886748	Tube Insert	43	4	6889311	Plastic Edge Trim, 1130 mm
19	1 🗙	6886763	Tube, 48 in.	44	2	6886793	Top Rail
20	1 🗙	6886766	Tube, 18 in.	45	2	6886767	Tube, 54 in.

▲ Includes items 8-12.

▼ Includes items 23-28.

Includes items 14-19.

■ Includes items 20-22.

• See Rail Assembly page for parts breakdown.

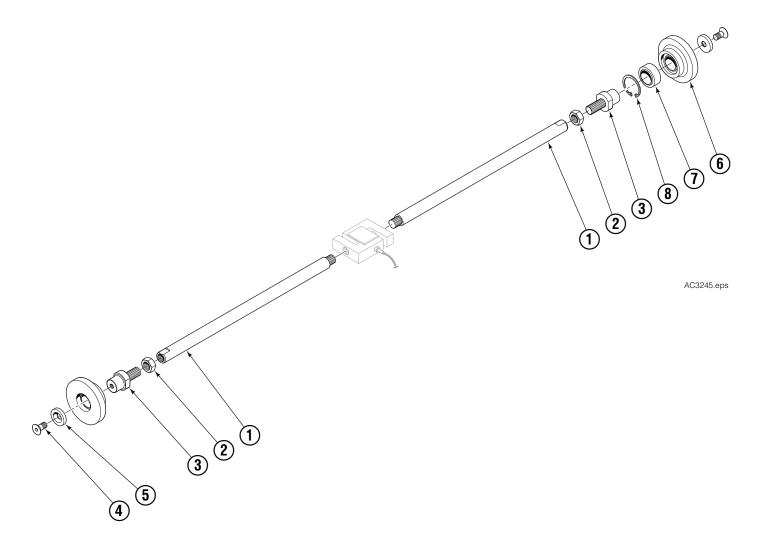
O See Cradle Assembly page for parts breakdown.

□ See Leg Assembly page for parts breakdown.

See Rail Adjuster Assembly page for parts breakdown.

✗ Quantity for one assembly.

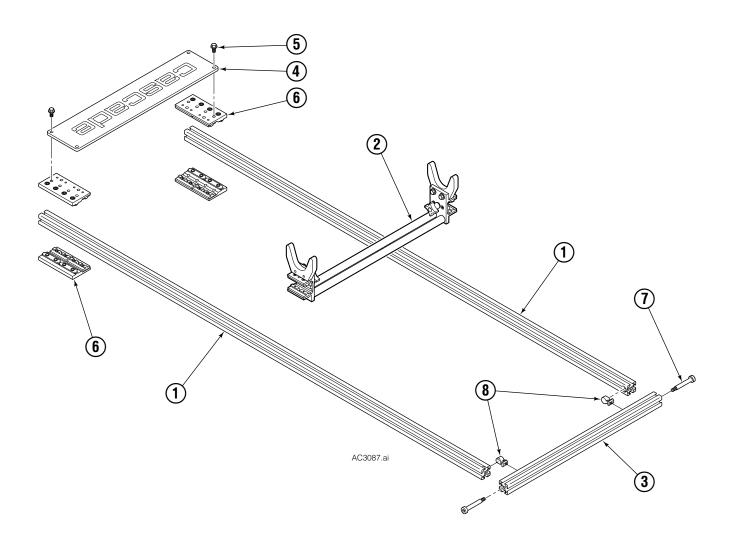
Swivel Pad Assembly



REF	QTY	PART NO.	DESCRIPTION
		6854155	Swivel Pad Assembly
	2	6854195	Swivel Pad Sub-Assembly ◆
1	2	6839315	Rod
2	2	5721	Jam Nut
3	2	6854149	Pin
4	2	768704	Capscrew, M1 25
5	2	6854158	Washer
6	1	6854545	Flange
7	1	6854165	Bearing
8	1	6854179	Retaining Ring

♦ Includes items 6-8.

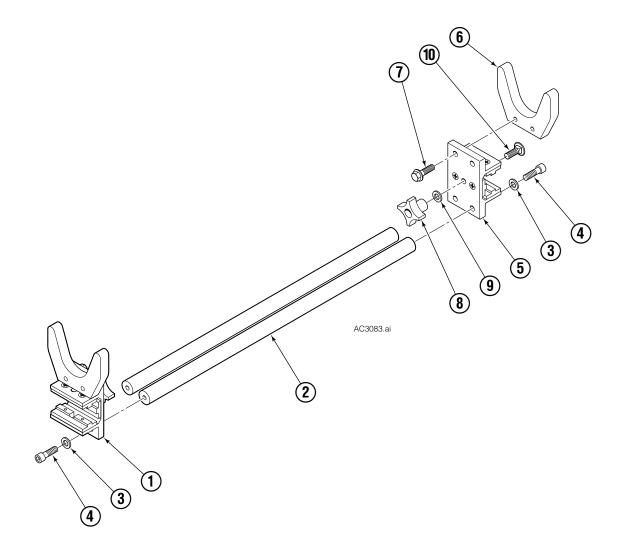
Bottom Rail Assembly



REF	QTY	PART NO.	DESCRIPTION
		6886826	Bottom Rail Assembly
1	2	6886825	Bottom Rail
2	1	6889285	Cradle Assembly
3	1	6886813	End Bar
4	1	6886841	Nameplate
5	4	1880155	Capscrew, M6 x 12
6	4	6886747	Unibearing
7	2	6886981	Capscrew, M6 x 45
8	2	6886820	Anchor Fastener

See Cradle Assembly page for parts breakdown.

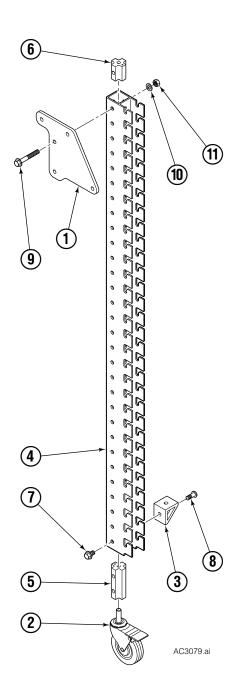
Cradle Assembly



REF	QTY	LOWER PART NO.	UPPER PART NO.	DESCRIPTION
		6889285	6889286	Cradle Assembly
1	2	6886808	6886808	Cradle Assembly with Brake
2	2	6886837	6886811	Spacer Bar
3	4	202346	202346	Washer. M6
4	4	761170	761170	Capscrew, M6 x 20
5	1	6886745	6886745	Bearing
6	1	6886809	6886809	Cradle Bracket
7	2	6887052	6887052	Capscrew, M6 x 20
8	1	6886752	6886752	Knob
9	1	202346	202346	Washer, M6
10	1	6887076	6887076	Carriage Bolt

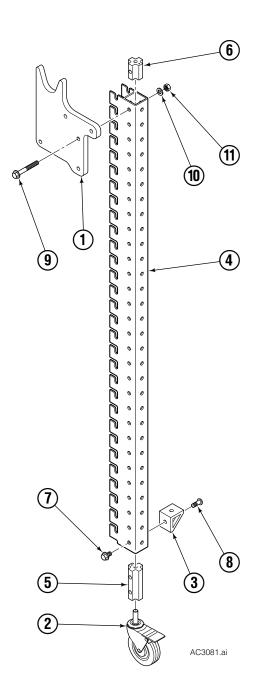
■ Includes items 5-10.

Front Leg Assembly



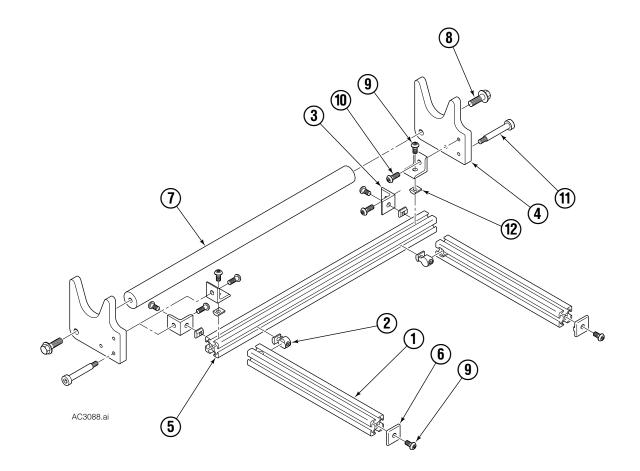
REF	QTY	PART NO.	DESCRIPTION
		6886947	Leg Assembly, Right Front
		6886948	Leg Assembly, Left Front
1	1	6886875	Cradle Bracket
2	1	6886751	Caster, Swivel
3	1	6886783	Corner Bracket
4	1	6886756	Tube, 45 in.
5	1	6886750	Tube Insert
6	1	6886748	Tube Insert
7	1	1852637	Capscrew, M8 x 12
8	1	689151	Capscrew, M8 x 20
9	2	6030448	Capscrew, M8 x 55
10	2	221494	Washer, M8
11	2	767414	Nut, M8

Rear Leg Assembly



REF	QTY	PART NO.	DESCRIPTION
		6886937	Leg Assembly, Right Rear
		6886944	Leg Assembly, Left Rear
1	1	6886787	Cradle Bracket
2	1	6886751	Caster, Swivel
3	1	6886783	Corner Bracket
4	1	6886756	Tube, 45 in.
5	1	6886750	Tube Insert
6	1	6886748	Tube Insert
7	1	1852637	Capscrew, M8 x 12
8	1	689151	Capscrew, M8 x 20
9	2	6030449	Capscrew, M8 x 60
10	2	221494	Washer, M8
11	2	767414	Nut, M8

Rail Adjuster Assembly



REF	QTY	PART NO.	DESCRIPTION
		6886849	Rail Adjuster Assembly
1	2	6886851	Adjuster Rail
2	2	6886820	Anchor Fastener
3	4	6886884	Corner Bracket
4	2	6886883	Cradle Bracket
5	1	6886852	End Bar
6	2	6889113	End Cap
7	1	6889189	Handle
8	2	1852657	Capscrew, M8 x 25
9	6	6874680	Capscrew, M6 x 12
10	4	220436	Capscrew, M6 x 16
11	2	6886981	Capscrew, M6 x 45
12	4	6886803	T-Nut

NOTE: When installing Rail Adjuster Assembly into the trolley, remove items 6 and 9 prior to installation (or removal). After the assembly is positioned in the trolley, reinstall items 6 and 9.

Letters and Special Characters

Refer to the following when text, special characters or numbers are required.

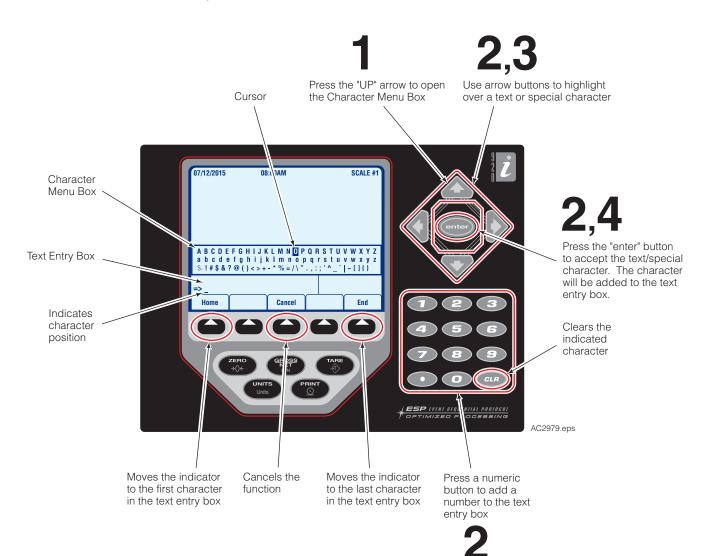
- 1 When text or special character(s) is required, press the "Up" arrow button to open the Character Menu Box.
- **2** For each character position:
 - Press a numeric button

OR

- Use the arrow buttons to move the cursor to highlight a letter or special character and then press the "enter" button.
- **3** When finished with entering numbers, letters and/or special characters, use the arrow buttons to move the cursor into the text entry box.

NOTE: Always verify that the cursor is **not** in the character menu box. Pressing the "enter" button will add the highlighted character to the text entry box rather then accepting the entered text.

4 Press the "enter" button to accept the value.



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