

WAGNER FORCE TEST™

MODELS FTS 100 AND FTC 100

MANUAL 100LBF CAPACITY MECHANICAL TEST STANDS

OPERATION MANUAL

Including instructions for

Model FT/DDI Optional Dial Deflection Indicator Kit

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FTS 100 and FTC 100 Test Stands Operation Manual

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1. List of Included Items

1.1 FTS 100

<u>QTY</u>	<u>P/N</u>	<u>Item</u>
1	FT/BC	Base and Column Assembly
1	FT/GB	Gage Bracket – Slides onto Column
1	FTS/EM	Elevating Mechanism Assembly
1	FD/CPST	Compression Plate – 2” diameter with unthreaded stud
1	FD/CP2	Compression Plate – 2” diameter with #10-32 female thread
1	FD/S-1	Steel Hook
1	FT/SHSS10-114	Threaded Stud - #10-32 x 1¼” - For attaching grips to rack
1	FT/HXKY332	Hex Key – 3/32” – For attaching mounting plate to gage bracket
1	FT/HXKY564	Hex Key – 5/64” – For adjusting rack tension
1	FT/MNL	Operation manual
1	FT/XXX	Gage Mounting Kit – See section 1.3

1.2 FTC 100

<u>QTY</u>	<u>P/N</u>	<u>Item</u>
1	FT/BC	Base and Column Assembly
1	FT/GB	Gage Bracket – Slides onto Column
1	FTC/EM	Elevating Mechanism Assembly
1	FD/CP2	Compression Plate – 2” diameter with #10-32 female thread
1	FD/S-1	Steel Hook
1	FT/SHSS10-114	Threaded Stud - #10-32 x 1¼” - For attaching grips to rack
1	FT/HXKY332	Hex Key – 3/32” – For attaching mounting plate to gage bracket
1	FT/MNL	Operation manual
1	FT/XXX	Gage Mounting Kit – See section 1.3

**1.3 Gage Mounting Kits – One kit included with each test stand.
Specify required kit at the time of order.**

<u>QTY</u>	<u>P/N</u>	<u>Item</u>
FT/FDK – For use with Wagner FDK Series		
1	FT/MP	Mounting Plate – Universal
1	FT/SB5	Spacer Block: 0.437”
2	FT/FHMS8-1	Flat Head Socket Screw: #8-32 x 1”
3	FZ/SHTMS6-12	Sheet Metal Screws: #6 x 1/2”
FT/FDL – For Use with Wagner FDL Series		
1	FT/MP	Mounting Plate – Universal
1	FT/SB1	Spacer Block: 0.125”
2	FT/FHMS8-34	Flat Head Socket Screw: #8-32 x 3/4”
2	FT/BKHS10-38	Brass Knurled Screw: #10-32 x 3/8”
FT/FDV – For Use with Wagner FDV Series		
1	FT/MP	Mounting Plate – Universal
1	FT/SB5	Spacer Block: 0.437”
2	FT/FHMS8-1	Flat Head Socket Screw: #8-32 x 1”
2	FT/BKHS8-38	Brass Knurled Screw: #8-32 x 3/8”
FT/FDI – For Use with Wagner FDI Series		
1	FT/MP	Mounting Plate – Universal
1	FT/SB4	Spacer Block: 0.375”
2	FT/FHMS8-1	Flat Head Socket Screw: #8-32 x 1”
2	FT/BKHS10-38	Brass Knurled Screw: #10-32 x 3/8”
FT/FDX – For Use with Wagner FDX Series		
1	FT/MP	Mounting Plate – Universal
1	FT/SB2	Spacer Block: 0.250”
2	FT/FHMS8-34	Flat Head Socket Screw: #8-32 x 3/4”
2	FT/BKHS10-38	Brass Knurled Screw: #10-32 x 3/8”

Mounting Kits are available for other popular force gages. Inquire at time of order.
FT/AM – Ametek AFIII / Cadet / L Gage Adapter Kit
FT/CH – Chatillon DFIS / DFM Adapter Kit
FT/DPP – Chatillon DPP Adapter Kit
FT/MK – Mark 10 BG / EG / MG Adapter Kit

2. Set-up and Preparation for Use

- Carefully unpack the test stand and inspect for any damage. Inspect the contents to ensure that you have received a complete test stand with all accessories – see Section 1. Report any damage promptly to the transportation company that delivered the test stand.
- Place the stand on a firm, flat, and level working surface free from vibration or movements that may affect force readings of both mechanical and electronic force gages. Consider any electromagnetic radiation from machinery that may affect the force readings of electronic force gages.
- The test stand can be secured to your work bench with two screws or bolts through the two clearance holes on the left and right of the base plate. Also available is the optional FT/SP, Stability Plate, which provides a 12” x 12” base and lessens the possibility of tipping. The test stand is attached to the stability plate with the screws provided.
- Mount the force gage to the test stand using the appropriate Gage Mounting Kit specified at the time of test stand purchase. See Section 1.3. Each Mounting Kit is furnished with a spacer block to align the gage load shaft with the center of the lower testing platform on the stand. Using the flathead socket screws in the mounting kit, attach the mounting plate to the test stand gage bracket, inserting the spacer block between the plate and the gage bracket. Attach the gage to the mounting plate using the remaining screws in the mounting kit. Firmly tighten the screws to prevent looseness of the force gage and possible errors during testing.
- **For tension testing**, attach the gage hook to the end of the gage shaft. Install the #10-32 threaded stud and the hook provided with the test stand into the threaded hole at the end of the rack (FTS 100) or the threaded hole in the center of the lower platform (FTC 100). Test grips with #10-32 female threads are attached in the same manner.
- **For compression testing**, attach the 2” threaded compression plate to the end of the gage shaft and insert the 2” compression plate with unthreaded stud into the hole on the end of the FTS 100 rack. The FTC 100 features a large 3” lower platform for compression testing.
- **Other gripping fixtures** are available for other applications – consult a current Wagner catalog for a full selection of test grips or the Wagner website at www.wagnerinstruments.com.

3. Description

The Wagner Force Test™ Model FTS 100 and FTC 100 are portable 100lbf capacity test stands designed for tension and compression testing with most popular push-pull force gages. A variety of optional gripping accessories and an optional dial deflection indicator (FTC 100 only) enhance the versatility of these test stands.

3.1 Force Test Model FTS 100

The Model FTS 100 uses a quick-acting rack and pinion drive for the application of force to test specimen. The FTS 100 is best used in applications requiring rapid testing where close control of movement is less important.

3.2 Force Test Model FTC 100

The Model FTC 100 uses a worm screw drive for the application of force to the test specimen. The positive control and self-locking features of the FTC 100 are particularly well suited for applications such as spring testing, where close control and measurement of vertical movement is important. For precise measurement of travel, the FT/DDI Dial Deflection Indicator Kit is offered as an option.

3.3 Interchangeability and Adaptability

The FTS 100 and FTC 100 use a common set of components: gage bracket, base and column. By interchanging the two different elevating mechanisms the testing mode is converted from rapid testing to self-locking positive control.

Adapter kits are available for ease of mounting a wide variety of popular force gages to 100lbf capacity on the FTS 100 and FTC 100 test stands. Should quick changeover from one capacity force gage to another capacity become necessary, the two force gages can be attached to two separate gage brackets and slid on and off the column with ease. Additional gage brackets are optional.

3.4 Grips and Accessories

A wide variety of grips and gage accessories are available from Wagner Instruments to assist in testing. Consult the current Wagner catalog or see the complete catalog on the Wagner website: www.wagnerinstruments.com.

4. Specifications

	<u>FTS 100</u>	<u>FTC 100</u>
Maximum Load Capacity: 100 lbf	100 lbf	100 lbf
Maximum Vertical Clearance	9-11" depending on gage	
Clearance from Gage Centerline to Column	3"	3"
Maximum Vertical Travel	4"	4"
Compression Platen Diameter		
Tester	2"	3"
Gage	2"	2"
Overall Height of Stand	24"	24"
Width of Base	6"	6"
Depth of Base	7"	7"
Elevating Drive Ratio	3" per 1 revolution	1" per 10 revolutions
Weight	11 lbs.	13 lbs.

* Optional 30" and 36" extended length columns are available. Optional 48" and 60" extended length columns are available by special order with a 3-4 week delivery time.

5. Test Stand Operation

5.1 General

- Once assembled, ensure that the force gage shaft centerline is aligned with the centerline of the elevating assembly. If not, check that the force gage is securely mounted, that the spacer block is in place, and is the correct size.
- Note that mechanical force gages use opposite ends or either end of the force gage to measure tension and compression. Ensure that the gage is mounted with the correct end of the shaft, compression or tension, facing down. The force gage dial will be inverted in some configurations and must be read upside-down.
- Digital electronic gages have a single shaft for use in both tension and compression testing. If the digital display is inverted, separating the two halves of the gage and rotating the display 180° can reverse it. Prior to mounting the digital gage on a test stand, reverse the display, if necessary, so that the shaft points down and the display and be read normally. Consult the gage manufacturer's manual to confirm that the display can be inverted.
- Position the test specimen to ensure that sufficient travel of the elevating mechanism is provided to meet the deflection requirements of the test. For example, if the test stroke requires 2", ensure that the elevating mechanism will travel more than 2" before stopping. Adjust either height of the gage bracket or height of the elevating mechanism to provide sufficient travel.
- Prior to testing, ensure that the test specimen is centered on the lower platform for compression testing or aligned vertically between hooks or grips for tension testing. Proper alignment will ensure axial loading of force gage, reducing the chance of side load errors.
- Zero the force gage before testing.

Caution: If using a light capacity force gage, note that full gage capacity is diminished by the weight of the hooks, platens, or grips.

Prevent overloading the force gage when applying load to the test specimen.

5.2 FTS 100 Operation

- Force is applied by raising or lowering the handle on the elevating mechanism.
- The FTS 100 rack and pinion travels 3” per revolution of the handle.
- The FTS 100 elevating mechanism can be reversed to provide either right or left hand operation.
- Rack tension can be adjusted by tightening or loosening the four set screws on the elevating mechanism adjacent to the rack using the allen wrench provided.
- The FTS 100 rack can be locked in place only for test preparation or storage, using the finger knob on front of the elevating mechanism.

Caution: The locking screw will not hold the rack in place under load.

5.3 FTC 100 Operation

- Force is applied by rotating the hand wheel left to raise or right to lower the platform.
- The FTC 100 lower platform travels 1” per 10 revolutions of the hand-wheel.
- The FTC 100 elevating mechanism features a self-locking worm drive that will hold its position when the hand-wheel is released.
- The FTC 100, with its self locking worm drive, is recommended for applications where vertical travel distance measurements are required.
- Deflection measurements can be made while testing with the FTC 100 by using the FT/DDI Dial Deflection Indicator kit - see Section 6.

6. FT/DDI Dial Deflection Indicator Kit Instructions

6.1 Introduction

The FT/DDI is only used on the FTC 100 Test Stand. The FT/DDI measures up to 1” deflection of a test specimen under load. The FT/DDI is not suitable for use with the FTS 100 test stand, since it requires the control offered by the FTC 100 self-locking worm drive elevating mechanism.

6.2 List of Included Items

QTY	P/N	Item
1	FT/DDI-BRK	Mounting Bracket
1	FT/DDI-IND	Dial Deflection Indicator
1	FT/DDI-SHCS1412	Dial Indicator Plunger rest
1	FT/KNB	Dial Indicator Knob
1	FT/SHCS1420	Dial Indicator Mounting Screw: ¼” - 20 thread

6.3 FT/DDI – Mounting and Operation

- After assembly, the FT/DDI is slid onto the test stand column below the gage bracket. It can be mounted for use to the left or to the right of the column by inverting the bracket before sliding it onto the column.
- The dial indicator plunger rests on the plunger rest which is screwed into the left or right threaded hole on the elevating mechanism platform.
- The test specimen is positioned on the test stand prior to positioning the FT/DDI vertically. Position the test specimen with no force applied to the test specimen prior to the start of the test. Zero the force gage prior to the beginning of the test.
- Lower the dial indicator plunger to a point just touching the plunger rest and zero at this position. Zero the force gage at this point.
- Although the dial indicator supplied with the FT/DDI is a 1” x 0.001” stroke dial type instrument, other dial indicators may be used including digital electronic dial indicators. The only requirement is that the indicator has the standard AGD lug on the back side for mounting.
- Commence the test. Each revolution of the large indicator pointer indicates .001”. The inner indicator reads in two levels; 0.1- 0.5” and 0.6- 1.0”.

7. Optional Accessories

<u>P/N</u>	<u>Description</u>
FT/GB	Gage Bracket *
FT/HF	Horizontal Mounting Extra Base
FT/SP	Large Stability Plate – 12” x 12”
FT/DDI	Dial Deflection Indicator Kit – 1” x 0.001”
FTS/EM	FTS 100 Elevating Mechanism **
FTC/EM	FTC 100 Elevating Mechanism **
FTC/EC	Extended Columns: 30” and 36”, others available upon request
FT/FDV	Wagner FDV / FDI Adapter Kit
FT/FDL	Wagner FDL / Chatillon DFGS Adapter Kit
FT/FDK	Wagner FDK Adapter Kit
FT/AM	Ametek AFIII / Cadet / L Adapter Kit
FT/MK	Mark 10 BG / EG / MG Adapter Kit
FT/CH	Wagner FDX / Chatillon DFIS/DFM Adapter Kit

* One gage bracket included, additional units available for quick change over to other gage(s).

** One elevating mechanism included, additional units available to change from FTS 100 to FTC 100 or FTC 100 to FTS 100 operation.