

# WEST·BOND. INC.

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## **Model 7KF / 7KFH Series: Manual X-Y-Z, Wedge-Wedge, Ball-Wedge Triple-Convertible Wire Bonders with 7" Capacitive Touch Screen**

*Last revised: 02/24/22*

### **Series Overview**

#### *Application and Function:*

Series 7KF models are ESD Protected, three-way convertible wire bonders of a gantry design, embodied with unique West·Bond three-axes micro-manipulator in which the entire mechanism is arrayed above the work plane, so that it is wide open to accommodate different size and style of work packages. Cross roller bearing guided X, Y, and Z axes are moving orthogonally, with independent pneumatic brakes applied on signal, which significantly aids to obtain consistent operation control at the time of ultrasonic bonding. Dual counterweights balance the pantograph arm and the tool support individually, and they are complemented by an adjustable spring to counterbalance different tool assemblies. Bonding tools are guided manually by the operator using hand/eye reference to bond targets and elevations.

The 7KF adds Programmable Force from 15-120 grams, and for ball bonding primary and secondary ball sizes are available. The radiant tool heat now a programmable buffer setting.

With simple exchange of clamp assemblies, bond tool, and wire path provided with the software mode will allow quick conversion between conventional 45° wire feed, deep access wire or ribbon, ball bonding, insulated wire and single point tab / lead bonding. All programmed bond variables as well as machine settings for each bond mode are retained in the machines memory.

#### Programming and Interface:

All machine configuration constants and bond settings are programmable by using our 7" LCD Capacitive Touch Screen. The machine may be programmed for up to thirty devices per mode of operation in separate buffers. Each buffer may have up to 21 stitch bonds with individual ultrasonic power, time, force, and loop elevation control data.

All programmed values are displayed during bonding. At "home", various options are enabled.

#### *Definitions of Models of this Series*

- |              |  |
|--------------|--|
| <b>7KF</b>   | <b>Low Frequency (63kHz) Wedge-Wedge and Ball-Wedge Bonding Machine come with Standard -79 Adjustable Height Working Platform.</b>   |
| <b>7KFX</b>  | <b>Low Frequency (63kHz) Wedge-Wedge and Ball-Wedge Bonding Machine specified as Model 7KE without Base or Working Platform.</b>     |
| <b>7KFH</b>  | <b>High Frequency (110kHz) Wedge-Wedge and Ball-Wedge Bonding Machine come with Standard -79 Adjustable Height Working Platform.</b> |
| <b>7KFHX</b> | <b>High Frequency (110kHz) Wedge-Wedge and Ball-Wedge Bonding Machine specified as Model 7KE without Base or Working Platform.</b>   |

## *Mechanical*

Ultrasonics:	
Frequency	63 kHz;           Optional: 110kHz
Time	up to 999 ms; programmable
Power	Low Power:2.5 Watts; High Power 4 Watts; programmable
Bond Force:	Programmable motion control: 15 – 120 grams
Ball Formation:	Negative EFO: Primary and Secondary ball sizes can be programmed to specific buffers for BBOS and BSOB.
Bond Tool:	
Diameter	1/16"
Length	0.625" capillary, 0.750" 45 & 90 degree wedge (Model 7KE Series) 0.750" capillary, 0.828" 45 & 90 degree wedge (Model 7KEH Series)
Tool Heat:	Programmable radiant heater
Wire Clamps:	
Actuation	Air opened / spring closed
Adjustment	X/Y/Z position; clamp force (through change of spring); opening gap
Bond Wire:	
Size	Au / Al: 0.7 to 3 mil Ribbon: 0.5x2 to 1x10 mil Au Ball Bonding: 0.7 to 2 mil Cu Ball Bonding: 0.7 to 1.5 mil (Special Wire Clamp Assemblies required for wire size above 2 mil or ribbon)
Spool	1/2" diameter Standard, 2" Optional
X/Y/Z Manipulator:	
X axis	linear motion; 8 : 1 reduction; 0.625" travel
Y axis	linear motion; 8 : 1 reduction; 0.625" travel
Z axis	linear motion; 5 : 1 reduction; 0.688" travel
Z encoder	0.0004" resolution
Brakes	X, Y & Z axes
Balance	Counterweighted & sprung; biased away from work
Work Elevation:	5.00" nominal above tabletop, actual work elevation vary with different tool configurations and work holder combination

## *Electrical Software and Hardware*

Process Control:	Cortex M7 Microcontroller
Memory:	2MB Solid State RAM / 2GB $\mu$ SD card for buffer settings
Data Entry:	7" LCD Capacitive Touch Screen
Program Buffers:	30 individual buffers of bond settings for a wire type can be entered and selected during bonding by a selector switch. Each wire type can have approximately 21 stitch bonds, each with its own settings of ultrasonic power and time. All programmed values are displayed during bonding.
Display:	7" LCD Capacitive Touch Screen
Z encoder:	High-resolution optical encoder is fitted to the Z-axis to provide position measurement of each bond elevation and then to initiate clamp re-closing to control wire loop arch consistency. This encoder enables a second function unique to West-Bond, upon touchdown, contact is sensed by opening of firing switch contacts but initiation of ultrasonic energy, and the setting of the axis brakes, is withheld until the control is moved downward an additional amount sufficient to follow the deformation of the wire during bonding.

## *ESD Protection*

Protection against Electrostatic Discharge are implemented by finishing exposed tool assemblies and other moving parts by Electroless Nickel plating, which is conductive; and all exposed painted parts with a powder-coated paint that is dissipative (1 - 10 M $\Omega$ ) with a direct path to Edison gram.

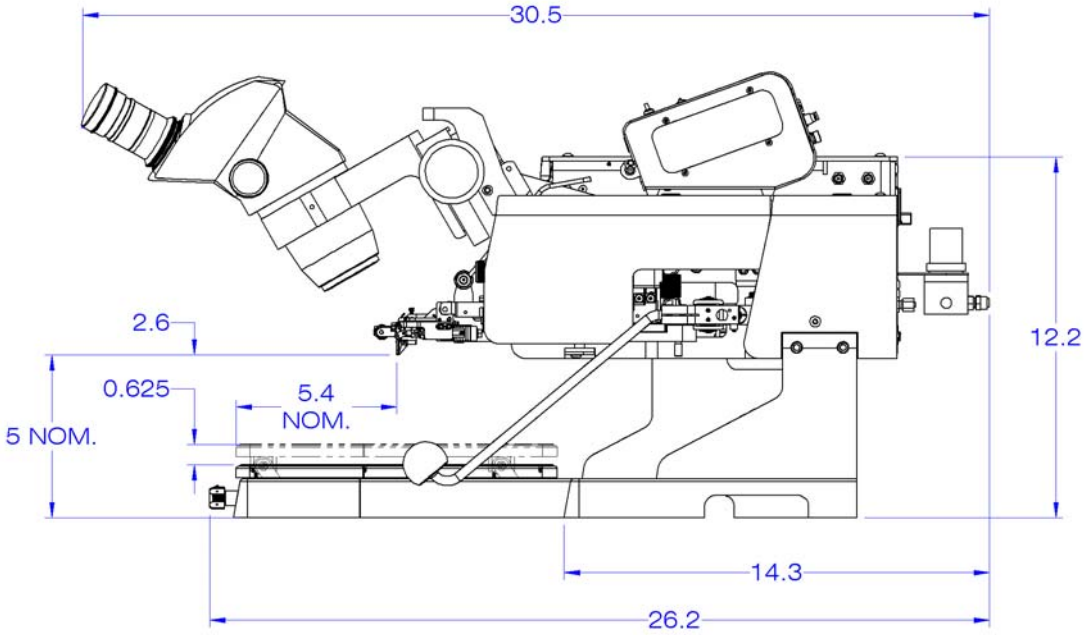
## *Services Required*

Compressed Air:	50 psi; clean dry air Regulating valve & pressure gauge provided. Connection is via 1/4-inch tubing.
Vacuum:	22 in/Hg min. (Required if equipped with Vacuum Clamping Work holder)
Electrical:	50-60 Hz, single-phase, either 115 VAC or 230 VAC; selected automatically. A fuse and three-prong power cord connector is provided for 115 VAC: For 230 VAC, these must be changed to conform to local requirements.

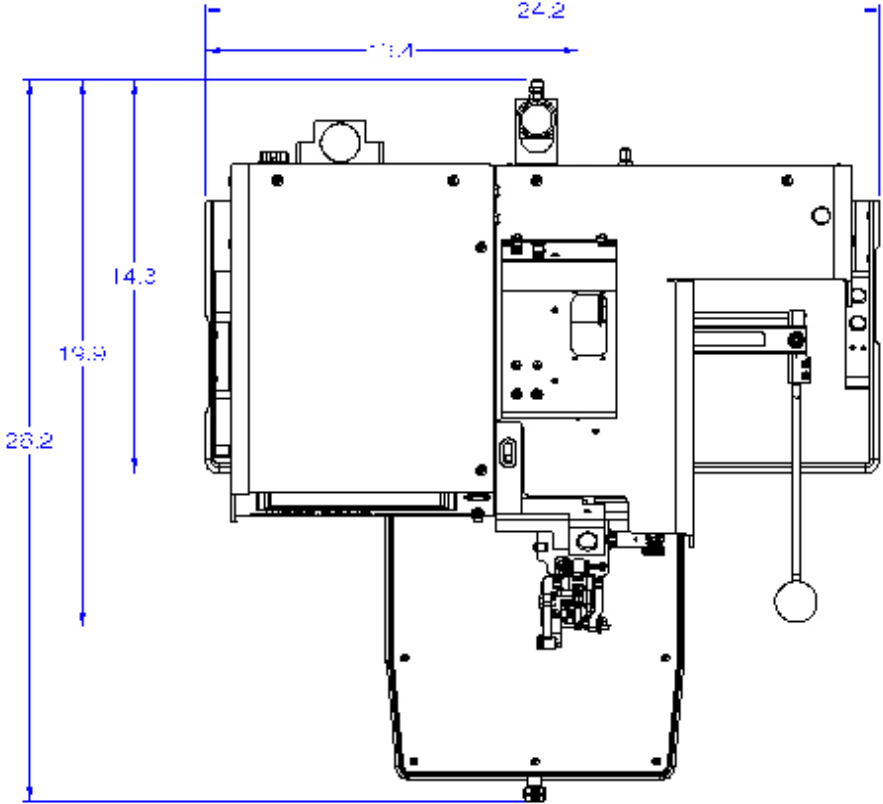
## *Weights & Dimensions*

Uncrated:	70 lbs.
Crated:	155 lbs. w/ accessories
Overall Dimensions:	
Width	24.2"
Depth	26.2"
Height	12.2" w/o microscope

*Dimensional Drawings*



**Side View  
West Bond 7KF Wire Bonder**



**Top View  
West Bond 7KF Wire Bonder**

## **Machine Configuration**

Microscope:	Olympus SZ51-60E (recommended; not included)
Illumination:	"Luxuray" #10265 (recommended; not included)
Bond Tool:	(1) 1 mil, capillary, (1) 1 mil, 45 degree wedge & (1) 1 mil, 90 degree wedge tool (included)
Work Holder:	Work holders are not included, and priced separately. A large number of previously designed special work holders are available. Those with Status of <i>Current</i> can be selected for delivery in the same time span as the machine, while those of Status <i>Available Not Stocked</i> must be ordered separately. Workholders for new work pieces requiring custom design and fabrication will be quoted upon receipt of drawings and samples: These must be ordered on separate purchase orders.
Temperature Controller:	West-Bond K~1200D / 1201D (not included)

## ***Options Available for this Series***

- K~1100: Automatic Wire Despooler**  
Pays out bond wire at 1.0 in. /sec. from ½ in to 2 in. wire spool. Maintains constant slack with zero drag. Announces end of wire stock.
- 72E: External View TV Camera**  
Color external view TV camera with magnification adjustment within a range of 30X to 55X. Flat screen monitor & power supply included.
- 4141.006: Spool Mount, 2" Nickel Plated**  
Universal 2" dia. spool mount housed in a Nickel-plated aluminum enclosure. The wire fed through a 6" long Stainless Steel funnel, which serves as a wire guide.
- 9048.004: Assembly, Clamp Blade 45°, 4 Mil Wire**  
45° Feed Clamp Blade Assembly to hold 2 to 3 mil wires.
- 9049.003: Assembly, Clamp Blade 90° 1/2-1Mil X 1-5 Mil Wide Ribbon**  
90° Vertical Feed Clamp Blade Assembly to hold ½ to 1 x 1 to 5 mil ribbon.
- 9049.004: Assembly, Clamp Blade 90°, 1/2-1Mil X 6-10 Mil Wide Ribbon**  
90° Vertical Feed Clamp Blade Assembly to hold ½ to 1 x 6 to 10 mil ribbon.
- 9221.001: 20" x 20" Platform with extended manipulator arm, Extra 1" Risen, Model**  
Extra-large 20" x 20" Work Platform Assembly with extended manipulator arm. Extra 1" Risen.
- 9221.002: 20" x 20" Platform with extended manipulator arm, exclude Legs, Model**  
Extra-large 20" x 20" Work Platform Assembly with extended manipulator arm. Exclude Mounting Legs.
- 10600.xx: Assembly, Machine Spacer Block**  
Spacer block kit for shimming machine up to specific height requirements. Check for different height specification available.
- 11067: Thin Clamps Assembly, 45° Guide**  
45° Feed Clamp Blade Assembly with exceptional back and side clearance to hold 1 to 1.5 mil wires.
- 11630.03: Adapter Kit, Inert Atmosphere for Cu Ball Bonding**  
Attachment to provide Inert Atmosphere to protect the Cu Ball formation from oxidation.