

**JD GRAY ASSOCIATES  
MANUFACTURING PRODUCTIVITY CONSULTANTS**

**THE STANDARDS GUIDE**

As an adjunct to our manufacturing productivity systems, we have a special service for companies who wish to undertake the improvement program themselves, within the printed circuit board assembly industry. Entitled **THE STANDARDS GUIDE**, the service can be used for your existing bench operation in setting standards or for line balancing purposes when your volume warrants conveyerization.

If you're current method of operation is characterized by:

**HISTORICAL STANDARDS  
POOR OPERATOR PERFORMANCE LEVELS  
UNMEASURABLE DOWNTIME  
INACCURATE PRODUCT COSTING  
OVERDUE SCHEDULES  
EXCESSIVE LABOR BURDEN**

**Our Standards Guide can save you money! JD Gray Associates has developed component assembly insertion time values for printed circuit boards and plotted same on a work sheet format allowing standards to be set accurately from a Bill of Material. The Standards Guide incorporates the many variations of manual thru-hole component lead insertion, including snap-in (insert only); insert, cut and bend with pneumatic tool; insert, cut and bend with hand tool; insertion of tabbed components and bending with hand tool; and insertion of pinned components.**

Time values are plotted by the number of leads, tabs or pins and are similarly classified for component groupings, including resistors, transistors, diodes, capacitors, hybrids, suppressors, jumpers, transformers, terminal blocks and strips, switches, connectors, integrated circuits, relays as well as the secondary operations of hand soldering and the assembly of spacers, sleeving, masking tape. A narrative describing work tasks by grouping, reach distances, size of components covered, as well as instructions in development of the standard is included as backup to our Standards Guide.

We are offering this service to the printed circuit board industry for the nominal consulting fee of \$1000, which should accompany your request for the Standards Guide. This is a fraction of the cost you would incur to employ an industrial engineer for development of this data.

**LET OUR EXPERIENCE WORK FOR YOU!**



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