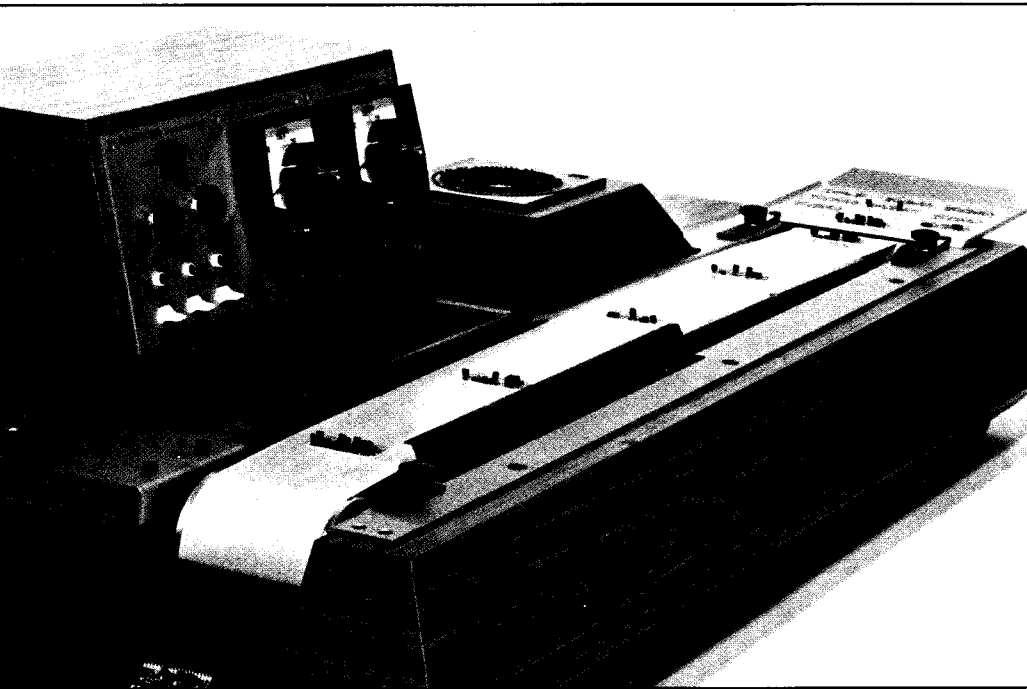


INSTRUMENT FEATURES

Designed for medium production high speed soldering of ceramic hybrid circuits, the Model LR-6 offers control features not available in conventional infrared or oven type reflow systems. Based on an entirely new principle of bottom side heating through a thin teflon fiber glass transfer belt,* the system offers the double advantage of greatly increased heating speeds and absolute temperature control for heat sensitive components. Unlike other bulk reflow systems that apply heat equally to both components and substrates, the Linear Reflow Soldering System subjects components to considerably lower temperatures for much shorter durations. The two heating zones are held within 2°C. of preset temperatures and feature high efficiency long life cartridge type heating elements. The system includes a self contained exhaust hood and optional heat reflector. The variable speed drive permits selection of belt speeds up to 80" per minute. The entire system is contained within a rugged pressure laminated wood grained cabinet. Belt changes and system lubrication is easily accomplished through a convenient top access servicing design.



Shown above are a group of hybrid circuits being processed through the LR-6 system. Preloaded substrates are being fed onto the transfer belt from the attached carrier tray in the background. Following processing the substrates slide down the unloading ramp to another carrier tray or a cleaning station.

INSTRUMENT OPERATION

Soldering is accomplished using proven high reliability solder reflow techniques. Parts can be positioned through the use of solder paste applied to circuit pads, or they can be aligned using liquid flux in conjunction with a pretinned substrate. Reflow characteristics will be identical with either process. In production use, the preloaded substrates are brought to the system on aluminum transfer trays. The trays attach to the loading end of the instrument and the substrates are slid directly onto the moving belt. The belt first traverses across a temperature controlled preheat stage. Heat transfers rapidly and uniformly through the belt and into the bottom of the substrate, bringing the substrate to optimum preheat temperature. The belt continues moving onto the reflow stage where the substrate is brought rapidly to the preprogrammed reflow temperature. Throughout the preheat and reflow process, flux vapors are drawn off from the heating zone and discharged away from the operators station by a variable intensity exhaust blower. Total heat exposure time for circuits varies from 20 to 40 seconds for optimum reflow results. Following the rapid reflow cycle, the circuit moves into the cooling zone. The circuit is cooled simultaneously by heat sinking into a cooling stage and also by gentle turbulent cooling air flow across the upper surface of the substrate. Resolidification is rapid and uniform, preventing leaching of metalizations or thermal stress within the connections. At the completion of the cooling cycle, the circuits are gravity fed down an unloading ramp to a waiting substrate carrier. The 4" wide belt has a substrate reflow capacity equal to thousands of circuits per day.

*Patent Pending

SPECIFICATIONS

SUBSTRATE CHARACTERISTICS: The system will accommodate substrates up to 3½" square and up to 1/8" thick. Mechanical or header assemblies of smaller size and up to ½" thick can also be accommodated.

SUBSTRATE CAPACITY: Total throughput rates will vary according to part dimensions and heat sinking characteristics. Standard one inch square substrates of .030" thickness can be processed at the rate of 200 square inches per minute with a twenty second heating cycle.

HEATING TEMPERATURES: Two 8" long heating zones, individually thermocouple feedback controlled with a range up to 375°C. maintained within 2°C. of set point.

TRANSFER BELT: Made of 4" wide laminated teflon fiber glass. One to two year production life expectancy.

COOLING ZONE: Forced air cooled aluminum heat sink with turbulent air cooling for components.

BELT DRIVE: Solid state D.C. motor drive, direct geared, belt speeds to 80" per minute.

EXHAUST SYSTEM: Variable intensity exhaust blower with anodized reflector hood.

ELECTRICAL REQUIREMENTS: Maximum system demand is 14 amps, 120 VAC. Recommend 20 amp, 120 VAC grounded supply. Average operating demand is 500 watts.

CABINET: Pressure laminated wood grained teak formica. All panels and hardware are brush finished anodized aluminum or teflon coated aluminum.

PHYSICAL CHARACTERISTICS: Width 48", depth 24", height 16", weight 80 pounds.

EQUIPMENT WARRANTY: Unconditional one year warranty excluding substrate transfer belts.

DELIVERY: Two week delivery from Santa Barbara stock.

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