

AUTOMATIC
CONVEYORIZED
SOLDER & LEAD
FINISH SYSTEMS

DTS™ SERIES



Magazine/Cassette Loader



Component Input Pickup



Wave Fluxer



Convection Pre Heater



OVERVIEW

The Corfin DTS Series is a line of advanced, conveyORIZED systems which automate the soldering and solder coating processes for a wide variety of components such as TO's, SOIC's, SIP's, diodes, coils, bobbins, small transformers and the like. The DTS systems are designed to provide a high quality, durable solder finish on component leads and soldered component terminals. DTS systems can be configured to handle single components, components in strip form or reel to reel applications.

High throughput, up to 90,000 UPH, can be achieved with the CF (continuous feed) conveyor, depending on the degree of handling automation, component dimensions and process requirements. Typical run rates for components, which require singulation, are in the 7,000 to 15,000 UPH range.

A full range of automated and manual handling equipment permits users to specify the degree of automation which best suits their application. Devices can be automatically fed into the load station from tube, tray, magazine or cassette handlers or from vibratory bowls and slides. Unloading can be similarly automated to reload processed devices into tubes, trays, magazines or cassettes or to unload to a bulk receptacle. Devices may also be manually loaded and unloaded.

When configured with in-line singulators or accumulators and automated handling equipment, these systems can be interfaced directly with upstream and downstream operations.

FEATURES

The DTS systems are simple to set up and operate and incorporate Corfin's proven solder coating technology.

- User-friendly operating controls with industrial PLC.
- Stainless steel, precision chain conveyor system.
- Custom grippers and titanium fingers optimize efficiency and throughput.
- Handles components in strips, reels or singulated format.
- Continuous feed handling and grippers available for high throughput.
- Constant level, dynamic flux and solder waves.
- Fully compatible with lead-free processes.
- Nitrogen inerted solder module.

CONVEYOR

The variable speed component conveyor has an operating range of 0 - 30 ft/min. The standard system is equipped with 6 component carrying grippers per foot of conveyor chain, but may optionally be equipped with 8 or 12 grippers per foot depending on component size and process requirements. The available CF conveyor system allows singulated parts to be fed continuously into the conveyor at high speed.

The cam-actuated gripper assemblies, with snap-fit titanium fingertips, can be customized to handle a wide range of component types. The conveyor chain and grippers are all constructed of stainless steel to withstand corrosive process fumes.

PRECLEANER

Some DTS models may be equipped with a preclean system to remove heavy oxides from component leads prior to the soldering process. The preclean system consists of a CPVC tank with pumped wave of acid solution. The solution can also be heated by Teflon[®] immersion heaters. A separate water rinse module washes off the residual acid and a drying module uses air jets to dry the components before they pass on to the downstream fluxing module.

WAVE FLUXER

The PVC fluxing module has a variable-speed pump which generates a smooth wave with precise wave height control. Air knives remove excess flux thereby eliminating solder splash and solder balls during the soldering process. This module can accommodate all standard RA, RMA and OA flux types.

The flux density controller option automatically adds fresh flux or thinner from on-board reservoirs to maintain the required specific gravity and the proper level in the flux module.

PREHEATER

The standard 18" (457mm) preheating module utilizes radiant heating elements in a stainless steel enclosure. A digital temperature controller maintains precise preheat process control.

The optional convection preheater uses compressed air fed through in-line heaters to create a hot air stream. This is directed at both sides of the components by a stainless steel heater chamber to provide highly efficient and uniform heat transfer.

SOLDER MODULE

The solder module has a stainless steel liner and all wetted parts of the pump and nozzle are fabricated in stainless steel. A variable speed pump provides precise wave height control in the custom nozzle. The module is mounted on linear bearings with a lead screw to facilitate position adjustment and access for maintenance. For high temperature and/or lead-free soldering applications, the module is available with special passivated surface treatment.

INERTING SYSTEM

The solder module is equipped with an inert gas enclosure around the solder wave. The rear of the solder module, including the pump area, is also purged with inert gas to reduce the formation of dross and black powder around the pump shaft. Corfin pioneered the use of nitrogen-inerted solder waves. This system provides optimal lead tinning with shiny, icicle-free solder finish. It inhibits dross formation, greatly reducing consumption of solder and maintenance requirements.

COOLING MODULE

A compressed air cooling module, using an amplifier air knife, follows the soldering module to reduce the temperature of the device. This minimizes any thermal shock when the components enter the water cleaning section.

POST CLEANER MODULE

The standard configuration for aqueous cleaning has a recirculating wave wash section followed by a spray jet rinse section. Heated feed water, which may be tap, RO or DI, is supplied to the rinse section, ensuring that the components are rinsed clean before exiting the module. The used rinse water then cascades to the wash section.

An immersion heater in the wash section maintains wash water temperature. Overflow from the wash section goes to drain or may be recycled through an existing or optional recovery/treatment system. The exit end of the cleaning module is equipped with two air blow-off nozzles which remove the larger droplets of water. Devices then enter the drying module.

POST CLEAN AIR DRYER

The post clean air dryer uses compressed air jets to remove water from devices. The air jets are arrayed on both sides of the conveyor. Air jets are adjustable to allow optimal positioning for the device being processed.

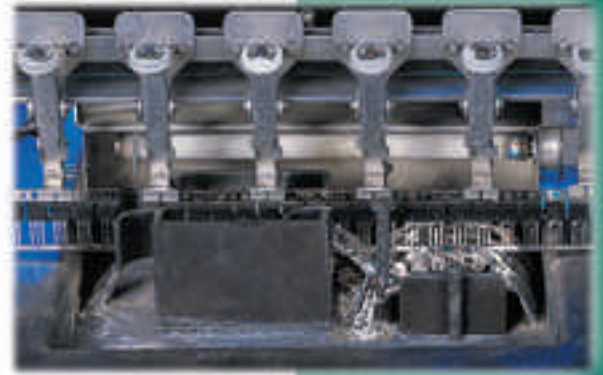
HOT AIR DRYER MODULE

A hot air dryer is installed just prior to the discharge of the components assuring that components are completely dry prior to unloading. The dryer uses compressed air with inline heaters in a similar configuration to the preheater module.

SAFETY FEATURES

Many important safety features are built into the DTS systems. Audible and visual alarms are standard on the systems to monitor all solder and fluid levels and temperatures. If the conveyor is stopped for any reason while processing components the entire conveyor assembly automatically lifts clear of all process modules eliminating the potential for thermal or chemical damage to components in process. All systems are equipped with interlocked exhaust ports to remove process fumes from the machine. Where appropriate, local venting at the process modules supplements the exhaust system of the process chamber. Door and window interlocks protect the operator from electrical hazards and from moving parts in the process chamber.

Solder Module



Post Cleaner



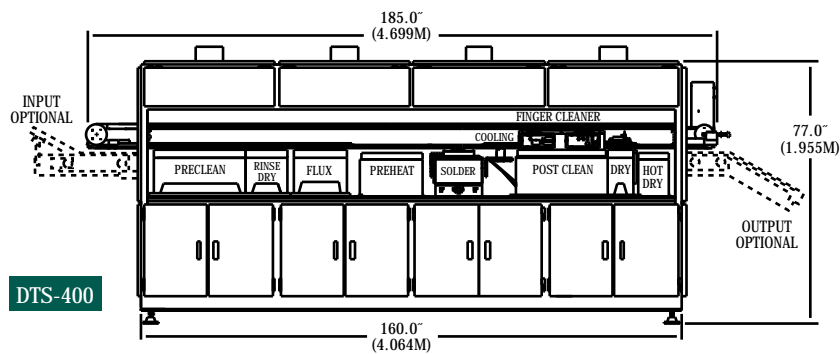
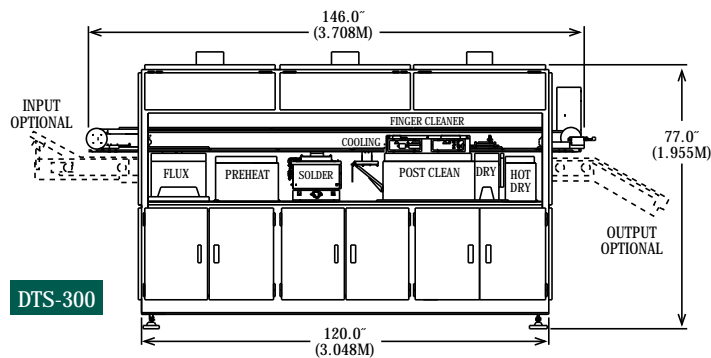
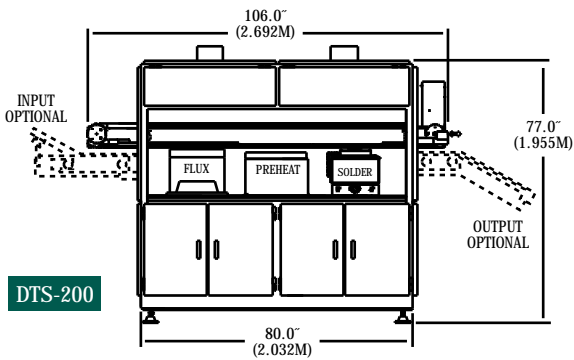
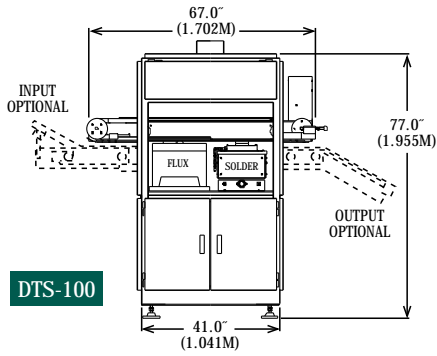
Air Dryer Module



Component Release/Reload



STANDARD SYSTEM CONFIGURATIONS



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