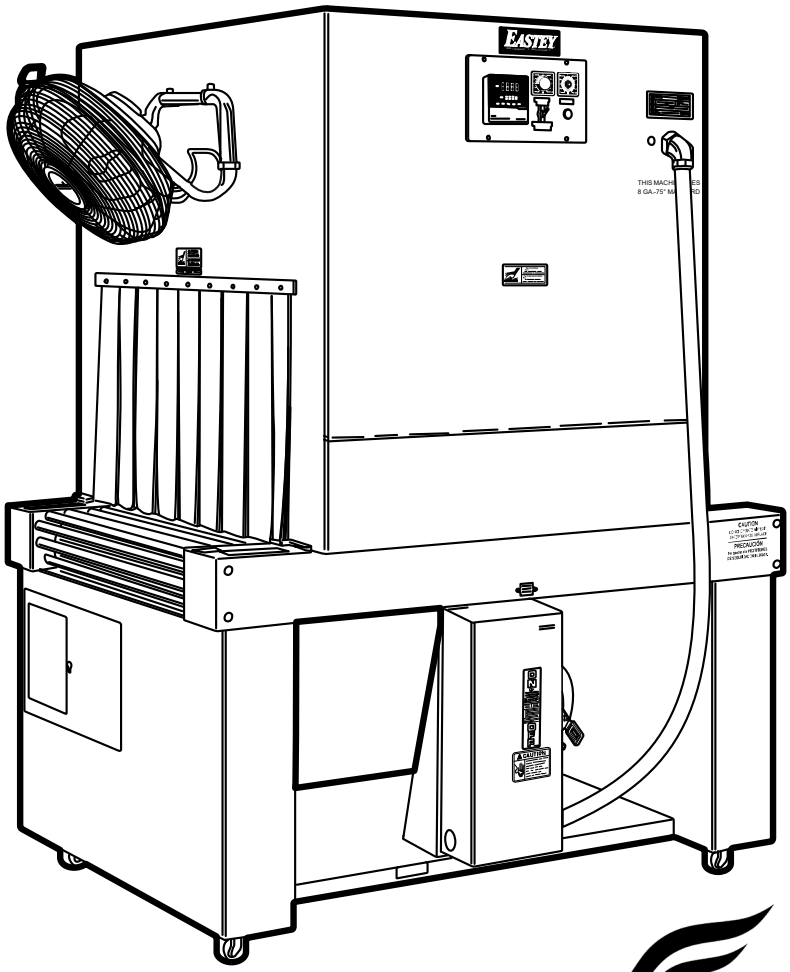
ETB

ETB3012-PBV2, ETB3012-DRV2, ETB3012-PBV6, ETB3012-DRV6, ETB3020-PBV2, ETB3020-DRV2, ETB3020-PBV6, & ETB3020-DRV6, Standard & UL

Bundling Tunnels
Performance Series

User Guide



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ETB

ETB3012-PBV2, ETB3012-DRV2, ETB3012-PBV6, ETB3012-DRV6, ETB3020-PBV2, ETB3020-DRV2, ETB3020-PBV6, & ETB3020-DRV6, Standard & UL

Performance Series Bundling Tunnels

User Guide

This User Guide is also available in digital form at:
Eastey.com/Support/User-Guides-Drawings

Check periodically for the most current revision.

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Contents

We Help Companies Deliver Products to the World

Thank you for choosing the Eastey Performance Series Bundling Tunnel for your packaging needs. Eastey is part of Engage Technologies, an ISO 9001-2015 certified company that has steadily built a solid reputation for quality since 1979. Engage is known for providing rugged, durable, reliable packaging equipment to help companies deliver their products to the world.

Each Engage Technologies company – Squid Ink, Eastey, and American Film & Machinery (AFM), focuses on a different part of the packaging section of the production line.

ENGAGE *technologies corporation*

Squid Ink (www.SquidInk.com)
Coding and marking equipment, inks, and fluids for product identification and traceability

Eastey (www.Eastey.com)
Automated shrink wrapping and bundling, automated case sealing, case erecting and product handling

AFM (www.AFMSleeves.com)
Automated shrink sleeve labeling equipment, tamper-evident banding equipment, shrink tunnels and shrink sleeve consumables

When you purchase your packaging equipment from the Engage Technologies family of companies, you can feel confident that you have a machine that is first in quality and built to last. Thank you for choosing us for your packaging needs.

This User Guide is available online

This User Guide is also available from the Eastey Support Website in electronic format for web browsers and e-readers. Go to Eastey.com/Support/User-Guides-Drawings to see available User Guides, or scan the QR Code at right using the camera app on your mobile device to go directly to the online version of this User Guide.

Safety

Read this manual carefully and make it available to everyone connected with the supervision, maintenance, or operation of this machine. Additional copies are available on request (Eastey.com/contact-us).

The development of a good safety program that is rigidly enforced is absolutely imperative when involved in the operation of industrial equipment. Our machinery is well designed and includes extremely important safety features. However, proper installation, regular maintenance, and safe operation procedures are of far greater importance for safety of the operator and others than our design. Only properly-trained individuals following rigidly enforced safety rules, as recommended by ANSI and OSHA should be allowed to operate these machines.

Lockout / Tagout

Lockout/tagout procedures are safety-related practices developed, documented, and implemented by your company. Lockout/tagout procedures require safely shutting down and disabling the energy input to the machine and any connected equipment that could result in injury or equipment damage in accidental startup were to occur during inspection, maintenance, adjustment, or repairs. Part of disabling the energy input typically involves applying physical lock(s) to the energy input(s) so that the system cannot be accidentally restarted. Typical energy inputs include electrical, air, fluid, hydraulic, gravity, heat, or steam.

Your company must have lockout/tagout procedures in place for this machine before use. To prevent injury or equipment damage due to accidental startup, all inspection, maintenance, adjustments, or repairs to the machine must be governed by your company's lockout/tagout procedures and OSHA requirements and best practices,

WARNING: Failure to follow lockout/tagout practices can result in serious injury and/or equipment damage and may void the warranty

Note: OSHA provides information on lockout/tagout best practices consistent with Title 29, Code of Federal Regulations (CFR), Part 1910.147 and 1910.333, as a basis for companies to develop their own lockout/tagout procedures.

Be very careful when operating, adjusting, or servicing this equipment. If in doubt, stop and obtain qualified help before proceeding.

Lockout/Tagout on the Eastey ETB Performance Series Bundling Tunnels

Energy input for the Eastey ETB Performance Series Bundling Tunnels is electrical. To power down the system prior to Lockout/Tagout, refer to special notes about the tunnel shutdown sequence in this User Guide. Shutting down the tunnel using the preferred shutdown sequence helps prevent damage to the conveyor and internal components from excess prolonged exposure to heat inside the tunnel.

After the heater bank switches have been switched off, it will take some time (which may vary depending on heat settings) for the tunnel to cool down completely. When the tunnel cools to approximately 150° F or 66° C (unless a different cool-down temperature has been set) the tunnel conveyor and blowers will shut off automatically. At this point, the tunnel is in a standby state, where power has been shut off to the conveyor and heating elements, but the lights and controller are using minimal power. Shutting off the main power switch shuts off main power to the tunnel, but there is no provision for lockout/tagout on the main power toggle switch. Toggle the Power switch to the Off position and disconnect (unplug) the power cord from electrical energy input and follow the lockout/tagout rules and procedures developed by your company,

Be sure to follow your company's lockout/tagout procedures for the Eastey ETB Performance Series Bundling Tunnel and all equipment connected to it, for example, Automatic Bundlers, printers or scanners or other equipment in accordance with your company's lockout/tagout procedures.

Note: Lockout mechanism(s), padlock(s), and identification tag(s) are the responsibility of your company in accordance with your company’s lockout/tagout rules and procedures, and are not provided by Eastey.

Safety Precautions

Before installing, operating or servicing this equipment, please read the following precautions carefully:

- Always disconnect electrical power before attempting maintenance for any electrical or moving parts, following the Lockout/Tagout best practices as governed by your company and OSHA. Do not place hands, head, or any part of the body inside the confines of the machine unless the mechanism is securely fastened and the electrical supply is shut off and all sources of energy have been neutralized and locked out/tagged out in accordance with your company’s lockout/tagout best practices.
- Do not tamper with electrical wiring. Use only the specified power-supply cable. Use only licensed electricians to check or repair electrical wiring.
- In order to prevent damage to the machinery or injury to personnel, do not increase the factory settings on either the electrical or mechanical overload safety devices. Do not operate a machine if such modifications have been made.
- Keep hands away from moving conveyors and moving parts. Conveyor belts that have become worn or frayed can be hazardous and should be replaced promptly.
- Never operate this or any moving equipment without all covers and guards in place. The internal mechanism of most packaging machinery contains numerous shear, pinch, and in-running nip points, many of which are capable of causing severe injury and permanent disfiguration.
- To minimize the potential for personal injury, always be sure that the machine operators and others working on the machinery are properly trained in the correct

usage of the equipment and properly instructed regarding the safety procedures for operation.

- Tunnel sides and conveyor surfaces can become very hot after a period of use. Keep hands away while in operation and use caution if the machine has been running recently. Allow the machine to cool to ambient temperature in accordance with the special notes about the tunnel shutdown sequence and in accordance with your company's lockout/tagout rules and procedures.
- Do not make any modifications to either the electrical circuitry or the mechanical assemblies of this machinery. Such modifications may introduce hazards that would not otherwise be associated with this machinery. Eastey Corporation will not be responsible for any consequences resulting from such unauthorized modification. Do not operate a machine if any modification has been made.
- This equipment is designed for indoor operation in a typical clean, dry factory environment. Do not operate the machine in any extremely wet or oily environment that may exceed operating specifications. Outdoor use is not recommended.
- The use of certain types of plastic films in sealing and/or shrink-wrapping equipment may result in the release of hazardous fumes due to degradation of the film at high temperatures. Before using any plastic film in this equipment, the manufacturer or supplier of the film should be contacted for specific information concerning the potential release of hazardous fumes. Adequate ventilation should be provided at all times.
- Keep combustible materials away from this equipment. The equipment may be a source of ignition.
- Do not wear loose clothing such as ties, scarves, jewelry, etc. Long hair should be pulled back and/or covered while operating this machine.

Explanation of Symbols

Caution sign or Safety Alert symbol. Indicates caution, be alert, Your safety is involved. Knowledge of safe operation is required.

Ground symbol. Indicates ground. Use Class-3 (lower than 1000) cable to ground to earth. Incomplete grounding may lead to electrical shock.

Electrical hazard. Indicates electrical danger. Only a trained electrician should be allowed to open or perform work inside the electrical panel or box.

Electrical shock hazard. Indicates electrical shock danger from exposed or broken wires or electrical components. Only a trained electrician should be allowed to open or perform work inside the electrical panel or box.

Burn hazard. Indicates a hot surface. Do not place your hand on or touch the hot surface, as doing so could result in burns. Shut down the machine and allow the surface to cool before touching surface.

Pinch hazard. Do not place your hands or any object on the moving mechanism. Shut down the machine before performing maintenance.

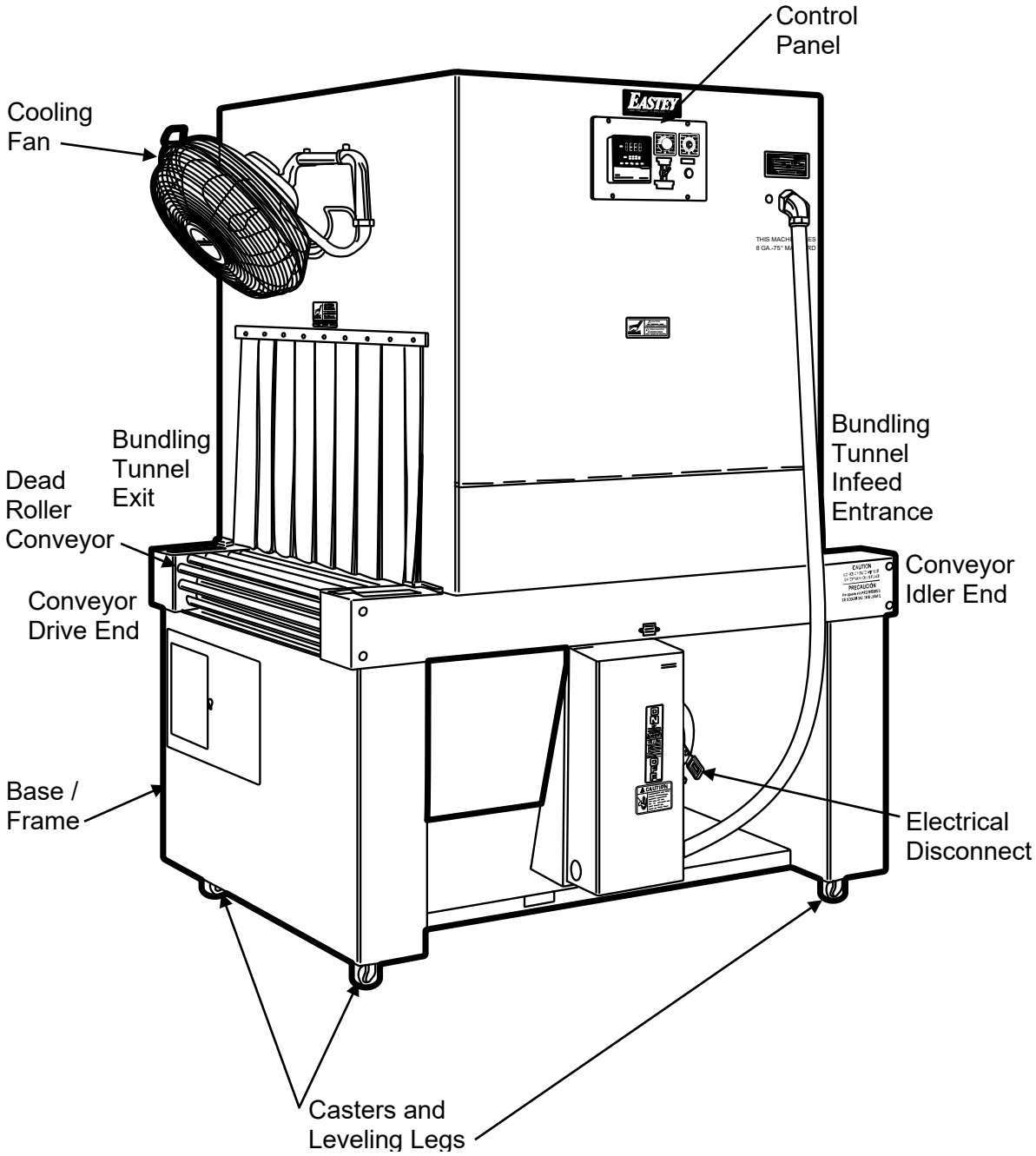
Moisture hazard. Keep equipment dry. This equipment is designed for indoor operation in a typical clean, dry factory environment, protected from rain and moisture. Do not operate the machine in any extremely wet or oily environment that may exceed operating specifications.

THIS MACHINE REQUIRES
8 GA. - 75° MAIN POWER CORD

Introduction

Eastey ETB Performance Series Bundling Tunnel Overview

The following illustration identifies primary functional components and features of the Bundling Tunnel.



Specifications

Table 1 Machine Dimensions

Model Number	Machine Dimensions			Chamber Dimensions			Conveyor		Floor	Shipping
	Width (A)	Height (B)	Length (C)	Width	Height	Length	Width Nominal	Length Overall	Weight	Weight
ETB3012	45 in. 114 cm	67 in. 170 cm	59 in. 149 cm	30 in. 76 cm	12 in. 30 cm	39 in. 99 cm	30 in. 76 cm	59 in. 149 cm	1200 lbs. 544 kg	1300 lbs. 589 kg
ETB3020	45 in. 114 cm	75 in. 190 cm	59 in. 149 cm	30 in. 76 cm	20 in. 50 cm	39 in. 99 cm	30 in. 76 cm	59 in. 149 cm	1250 lbs. 566 kg	1350 lbs. 612 kg

Table 2 Power Requirements – Optional and Standard

Voltage / Phase Designator	Standard Power		
	Volts	Amps	Phase
V1	220	83.4	1
V5	480	41.7	1

Voltage / Phase Designator	Standard Power		
	Volts	Amps	Phase
V2	220	50	3
V6	480	25	3

Explanation of Model Numbers

- E = Manufactured by Eastey, packaging group division of Engage Technologies.
- T = Tunnel
- B = Bundler
- _ _ = 30 — First two digits indicate the nominal width of the chamber opening and conveyor belt in inches: Nominal width of the conveyor belt and chamber opening is 30 inches.
- _ _ = 12 or 20 — The next two digits (preceding the dash) indicate the nominal height of the chamber opening in inches: 12 or 20-inch chamber opening heights are available.
- _ _ = PB or DR — Two conveyor options are available, a high-temperature plastic belt or dead roller. PB indicates a plastic belt (high temperature plastic belt sections linked together by metal rods) conveyor; DR indicates the dead roller option.
- V2 or V6 = Voltage and Phase. V2 indicates 220V 50A three-phase, or V6 indicates 480V three phase input power.
- UL — If UL is included in the model number, it indicates the UL wiring option.
- Additional letters and numbers after the voltage and phase indicate additional information if required.

Example:

- Model number ETB3020-DRV2: ETB indicates that the model is an Eastey Shrink Tunnel Bundler. 3020 indicates the chamber width is 30 inches (chamber and conveyor width are approximately the same) and chamber height is 20 inches. (Conveyor length and machine length will be 20 inches longer than the chamber length, figure twelve inches before the infeed/entrance and eight inches past the exit.) DR indicates a dead roller type conveyor. V2 indicates 220 volts, 50 amperes and three-phase input.
- If UL appears in the suffix, it indicates that the bundling tunnel wiring conforms to UL.
- If SP appears in the model number suffix, this indicates it is a custom model (special project) and the numbers following SP (final numbers of the model number) indicate the project number.

Standard Features

- Designed to shrink polyethylene film —proven Eastey tunnels provide reliable positive shrinking of polyethylene film
- All-of Eastey's top of the line bundling tunnels are expertly-welded on-12 gauge steel frames
- 39" chamber length to ensure proper shrinking of film
- Dead roller conveyor designed specifically for polyethylene films
- Sealed bearings (not bushings) on drive and idler shafts
- Adjustable solid state temperature control for a variety of films
- Four-directional air flow provides positive shrinking
- Variable air flow and air velocity for a variety of products and applications
- Large ducting creates more air volume inside tunnel
- Optional side plates (top and sides) for air flow patterning and quick changeover for different products
- Delayed cool-down and over-temperature protection
- Heavy-duty casters for transportation within plant
- Leveling legs provide sturdy base once in place
- Custom two-part epoxy finish resists scratching
- Available in 220V single- or three-phase
- Easy to use design requires minimal training and maintenance, and provides trouble-free operation — control panel allows users to easily adjust for their specific application
- Made in the USA

Options

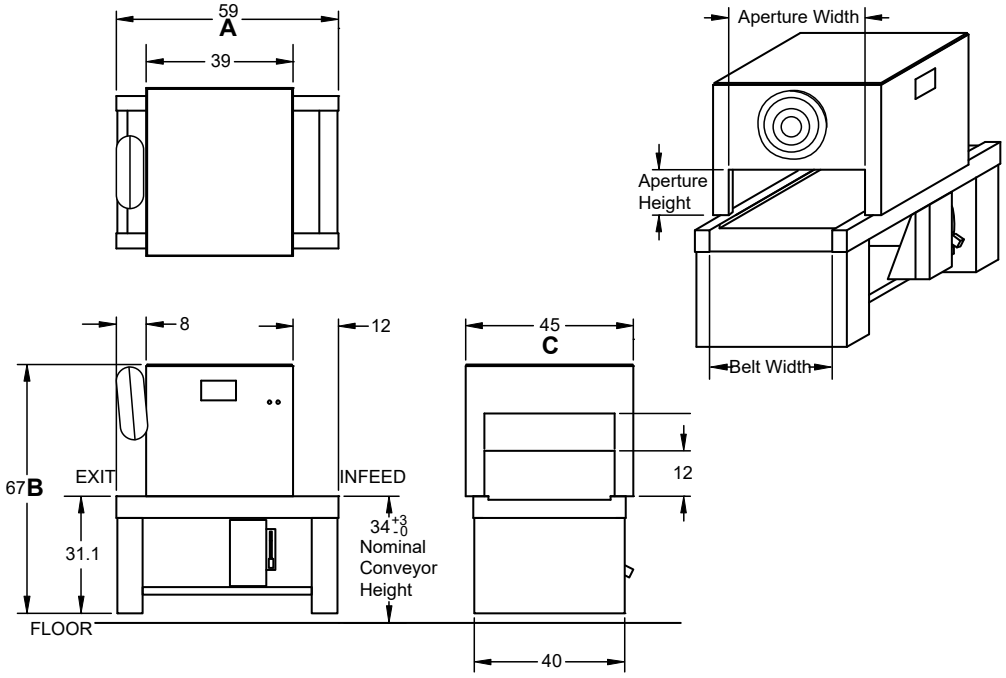
- Wipe down rollers – standard or pneumatic
- Raised head – additional 4” or 8” product height
- UL approved electronics and control box
- Available in 220V or 480V three-phase power input
- Left-hand and right-hand machines available
- Custom sizes and configurations available upon request*

*Ask us about custom equipment

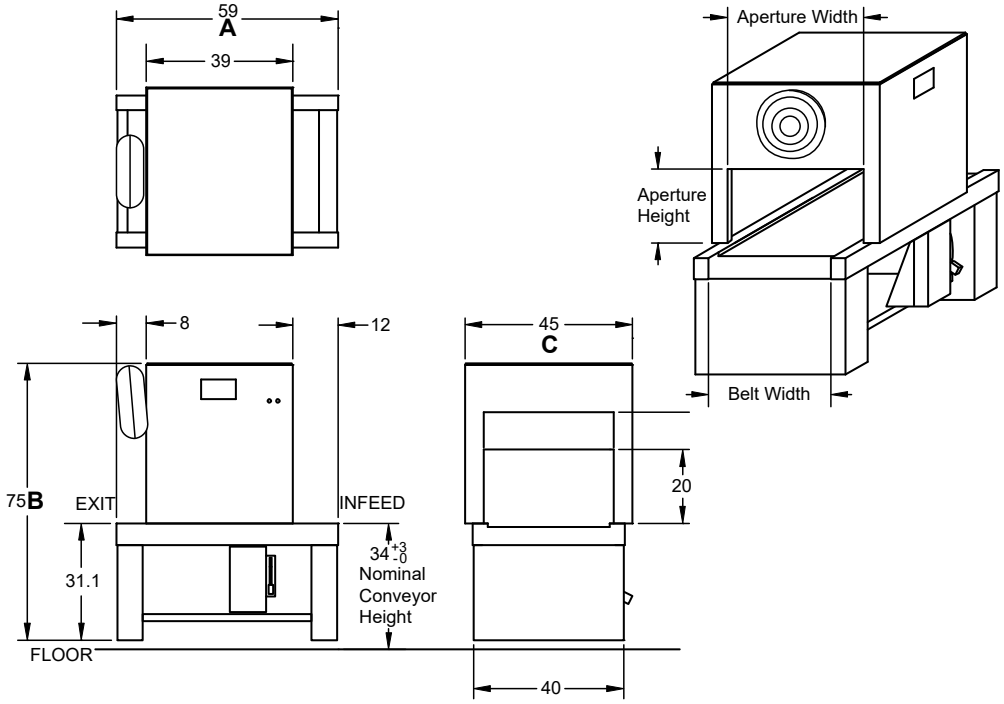
Dimensions

All dimensions are shown in inches. See A, B, and C dimensions in the Specifications table for overall machine length, height, and width.

Models ETB3012-PBV2, ETB3012-DRV2, ETB3012-PBV6, ETB3012-DRV6, Standard & UL



Models ETB3020-PBV2, ETB3020-DRV2, ETB3020-PBV6, ETB3020-DRV6, Standard & UL



Machine Serial Number

The machine serial number can be found on the serial plate on the side of the machine near the control panel.

The serial plate displays the Model number, Date of manufacture, weight, Serial number, and electrical power requirements.

EASTEY

Model		Date MFG.	
Volts		Amps	Phase
Cycle		Weight	
Serial			

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Record the serial number and date of manufacture for future reference.

Note the electrical power characteristics listed below the model number. These specify the electrical power requirements of the conveyor.

Typical Applications

Eastey ETB Performance Series Bundling Tunnel

Eastey ETB Performance Series Bundling Tunnel can be used for bundle wrapping a wide range of products, limited only by package width and weight of contents. The bundling tunnel is designed to shrink seal polyethylene film.

Eastey ETB Performance Series Bundling Tunnels are particularly suitable for packaged goods of moderate size and weight, and are designed and manufactured with maximum compatibility for use with Eastey's full line of auto bundlers and L-sealers.

Do NOT use the Eastey ETB Performance Series Bundling Tunnel for the following types of products:

- Explosive Products
- Flammable Products
- Hazardous Products
- Wet Products or Corrosives
- Products that are heavier or larger than allowed by the machine specifications.

Do not operate the Eastey ETB Performance Series Bundling Tunnel in any extremely wet or oily environment that may exceed operating specifications. This equipment is designed for indoor operation in a typical clean, dry factory environment protected from rain and moisture.

Unpacking

Thoroughly inspect the equipment and packaging immediately on arrival.

Carefully remove the outer protective shipping wrapper. Inspect the machine for any damage that may have occurred during transit. If goods are received short or in damaged condition, it is important that you notify the carrier's driver before they leave your company and insist on a notation of the loss or damage across the bill of lading. Otherwise no claim can be enforced against the transportation company. Please note that a copy of this document is attached to the outside of every crate.

If concealed loss or damage is discovered, notify your carrier at once and request **insist** on an inspection. This is absolutely necessary. A concealed damage report must be made within ten (10) days of delivery of shipment.

Unless you do this, the carrier will not entertain any claim for loss or damage. The agent will make an inspection and grant a concealed damage notation. If you give the transportation company a clear receipt for the goods that have been damaged or lost in transit, you do so at your own risk and expense.

All claims must be filled within **five** (**5**) months of the delivery date, or the carrier will not accept them.

We are willing to assist you in every reasonable manner to help you collect claims for loss or damage. However, this willingness on Eastey's part does not make Eastey or its parent or related companies responsible for collections or claims or replacement of equipment damaged or lost in transit.

Loading and Unloading Instructions

- ☐ The machine is fully crated on pallets.
- ☐ A forklift with long forks is required for unloading.
- ☐ A loading dock must be available at the facility where the Bundling Tunnel is to be unloaded.

Installation

Carefully unpack the outer carton and shipping material. Although the exterior of the bundling tunnel is coated with a custom two-part epoxy finish that resists scratching, avoid denting, scratching, or otherwise damaging the oven exterior.

Lift the machine up and off of the shipping pallet.

CAUTION! **ETB Performance Series Bundling Tunnels are heavy and may require a forklift, floor crane, or several people to move the machine safely. Use proper equipment when lifting the bundling tunnel and ensure it is secure and will not shift while being moved off the shipping pallet.**

Place the bundling tunnel in the desired location with the required electrical power source available. (See power requirements for the specific model in the Specifications table.) Make sure the electrical wiring is adequate to provide the required voltage. If the voltage provided is too low, the equipment will not operate correctly.

Selecting the proper location is one of the most important considerations for initial setup. When selecting the location, take into consideration the following factors.

1. Adequate power supply nearby?
2. Where is the bundling tunnel in relation to the power source?
3. Where is the bundling tunnel in relation to the sealer and any conveyor(s) necessary to move wrapped and bundled (finished) product? (Alignment with packaging line.)
4. Convenience for the operator.

Note: **Avoid locating the bundling tunnel in cold or drafty areas, as heat may be unintentionally drawn from the tunnel and reduce its efficiency.**

If there is any doubt, get qualified assistance with your initial installation.

Location Requirements

When installing the bundling tunnel please be aware of the following considerations:

1. The surface on which it is located is flat and level.
2. Conveyor or packing table height.
3. Alignment with packaging line.

When the bundling tunnel is positioned in the operating location you will need access to the control panel.

Provision should be made for finished exiting packages. For example, a table or bin where packages that have been sealed will be placed until they can be picked up or moved out.

Take into consideration the entrance conveyor height in relation to adjacent machinery, such as the sealer feeding into it, for example.

The machine should be placed on a flat, level floor so that it does not rock or move. We recommend that the leveling feet be used to level the machine.

Set up the bundling tunnel and move it to its location. The casters allow easy movement over smooth flat surfaces.

CAUTION! If the bundling tunnel must be lifted for moving, use proper equipment when lifting and moving it to ensure it is secure and will not shift.

When the bundling tunnel has been moved to its location, use the leveling legs to level the conveyor and adjust it to its final height. A power cord to the main electrical disconnect switch (with optional electrical plug) should be installed by a licensed electrician.

Note: This machine requires 8 gauge – 75° main power cord.

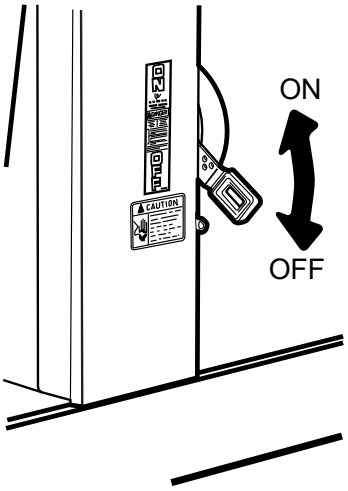
Refer to instructions in the following section for instructions to power up or shut down the machine.

Special Notes About the Bundling Tunnel Shutdown Sequence

- When shutting down the tunnel, be sure to first turn the heater-bank switch to Off.
- Once the heater-bank switch is switched off, it will take some time (this will vary depending on heat settings) for the tunnel to cool down completely.
- When the tunnel cools down to approximately 150°F or 66°C (unless a different cool-down temperature has been set), the tunnel conveyor and blowers will shut off automatically.
- Bringing the tunnel down this way helps prevent damage to the conveyor and internal components from excess prolonged exposure to heat inside the tunnel.
- When the tunnel is in the resulting standby state, it shuts off the power to the conveyor and heating elements but the lights and controller use only minimal power in a standby state. This allows the tunnel to be readily brought up for the next production run once the heater bank is switched on and the rest of the normal daily sequence of operation is followed.
- It is not necessary to shut the main power lever Off and then move it back to the On position to “reset” or “reboot” the system after each production run, and this can actually result in undue, premature wear of the main power switch.

Operation

Main Power Disconnect



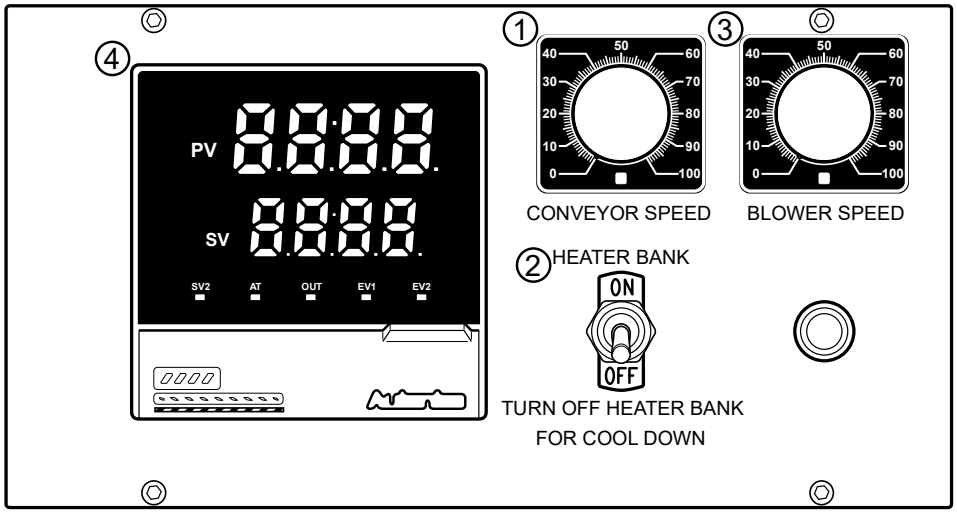
Main Power Disconnect — The Main Power Disconnect switch is the lever with the orange handle on the right side of the electrical box in the base frame below the tunnel

- Lifting the lever to the On position turns on (connects) the system power necessary to power the Eastey Bundling Tunnel.
- Pushing the lever down to the Off position cuts (disconnects) all power to the system.

Note: **See the Special Notes About the Bundling Tunnel Shutdown Sequence, later in this section.**

Control Panel

The control panel contains controls for the conveyor speed, heater bank on or off, and blower speed, all in a central location. It is located on the side of the tunnel near the top of the unit.



1. **Conveyor Speed** — Speed setting dial control for controlling speed of the conveyor.
2. **Heater On-Off Switch** — Toggle switch for turning the heater bank on or off.
3. **Blower Speed Control** — Speed setting control for blower speed.

4. **Thermostat Control** — Temperature setting (SV, for Set Value, also sometimes called the set point) and current temperature (PV, for Present Value) inside the chamber is displayed.

CAUTION! **When the power is turned on be aware of heat inside of the tunnel and hot surfaces and moving belts or rollers.**

Sequence of Operation

1. If the Main Power Disconnect lever has not been lifted to the On position, turn on power to the bundling tunnel by lifting the Main Power Disconnect lever to the On position. (It should not be necessary to turn this lever off and on in the normal day-to-day operation of the bundling tunnel. See the Special Notes About the Bundling Tunnel Shutdown Sequence at the end of this section.) The temperature in the tunnel will be displayed on the thermostat control.
2. Turn the Heater Bank toggle switch below the conveyor speed control dial to the On position. (This switch also controls all motors.)
3. Set the conveyor speed control at about midrange for initial operation. This can be fine-tuned later. (Exact desired conveyor speed can be determined later, based on package size and sealer speed.)
4. Set the temperature controller to the temperature recommended for your shrink-wrap material. This temperature may need to be adjusted higher or lower until you have achieved satisfactory shrink sealing. Once the correct temperature for a product has been set, you should not need to adjust the temperature again as long as you are running the same product.
5. Adjust the blower speed or chamber ventilation for proper air flow.
6. Turn on the product cooling fan. There is a three-speed selector switch on the cooling fan. Adjust the cooling fan speed to help shrink the film. (Polyethylene film shrinks as it cools.

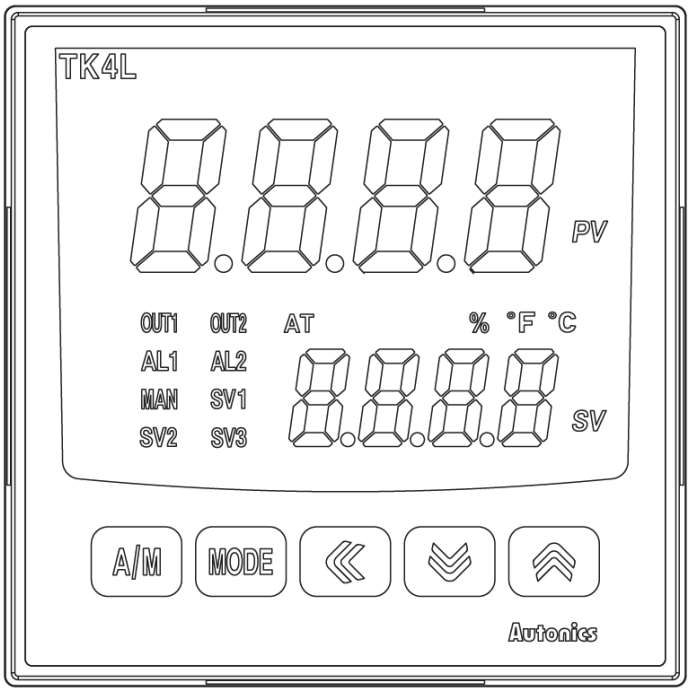
CAUTION! **When shutting down the tunnel, be sure to turn the Heater Bank toggle switch to Off and wait for the tunnel to cool down. (Refer to the procedure for setting the cool-down temperature. Temperature will be displayed on the thermostat control.) Once cool-down temperature is reached the conveyor and blower motors will shut down and stop. It is not necessary to shut off Main Power for normal day-to-day operation. See the following Special Notes About the Bundling Tunnel Shutdown Sequence.**

Special Notes About the Bundling Tunnel Shutdown Sequence

- When shutting down the tunnel, be sure to first turn the heater-bank switch to Off.
- Once the heater-bank switch is switched off, it will take some time (this will vary depending on heat settings) for the tunnel to cool down completely.
- When the tunnel cools down to approximately 150°F or 66°C (unless a different cool-down temperature has been set), the tunnel conveyor and blowers will shut off automatically.
- Bringing the tunnel down this way helps prevent damage to the conveyor and internal components from excess prolonged exposure to heat inside the tunnel.
- When the tunnel is in the resulting standby state, it shuts off the power to the conveyor and heating elements but the lights and controller use only minimal power in a standby state. This allows the tunnel to be readily brought up for the next production run once the heater banks are switched on and the rest of the normal daily sequence of operation is followed.
- It is not necessary to shut the main power lever off and then move it back to the On position to “reset” or “reboot” the system after each production run, and this can actually result in undue, premature wear of the main power switch.

Adjustments

Temperature Controller Settings (ETC00031)



Temperature Controller Default Settings

Temperature Controller

Par5
USEr=HIGH
Pyd=100
PAr3
In-t=JIC.H
Unit=F
L-SC=32
H-SC=450
In-b=-4
H-t=50
PAr4
AL-1=PUCC
AL-2=PUCC
PAr1
AL1.H=150
AL2.H=450

Maintenance

Unless specifically stated otherwise, shut down the bundling tunnel and all connected equipment and disable input power before performing any adjustments, maintenance, or repairs. Be sure to follow your company's lockout/tagout rules and procedures for the Eastey ET Performance Series Bundling Tunnel and all equipment connected to it, for example, auto bundler or L-sealer or any coding/marking or printing equipment. Refer to the special notes about the tunnel shutdown sequence earlier in this User Guide to allow for proper cooldown of belts and internal components for shutting down.

WARNING: Failure to follow lockout/tagout practices can result in serious injury and/or equipment damage and may void the warranty.

Note: Lockout mechanism(s), padlock(s) and identification tag(s) are the responsibility of your company in accordance with your company's lockout/tagout rules and procedures and are not provided by Eastey.

To aid in the high reliability of the bundling tunnel, inspect the machine regularly and perform maintenance as required. Disconnect electrical power before making any repairs. Be very careful when servicing or adjusting this equipment. If in doubt, stop and obtain qualified help before proceeding.

CAUTION! When replacing motors, if the tunnel chamber is below 160 degrees, the heater bank switch may need to be turned on to apply power to motors for testing.

Preventative Maintenance

- ☐ Lubricate roller chains every 60 hours with a high temperature oil. Use a brush to apply lubricant while running the conveyor slowly.
- ☐ Inspect the rollers of the conveyor regularly to ensure that no scrap pieces of film are wrapped around the rollers to cause sticking packages.

To Clean Rollers:

- Run the conveyor until the affected rollers are inside the heat chamber to heat the film residue and soften the film so it will clean easier.
- Advance and then stop the conveyor so the heated rollers are out of the chamber and accessible for cleaning.

  CAUTION! Make sure the conveyor is stopped before putting your fingers or anything else in the conveyor area.
- Remove film residue. If necessary, use a dull blunt-edged tool. Do not use any sharp instruments, as nicking silicone may result in damage that requires replacing the roller covering.

Perform the following maintenance checks each month.

- ☐ Check and clean the intake screens.
- ☐ On dead roller tunnels, clean and lubricate the conveyor chains. Check the chains and adjust as needed.
- ☐ Check the condition of the silicone covering on the rollers. Repair or replace as necessary.
- ☐ On plastic belt conveyors, check for material stuck in or on the belt. Check and adjust the belt tension as needed.
- ☐ Check and clean the motor-to-conveyor drive chain. Adjust tension as needed.
- ☐ Check for loose fasteners. Tighten as necessary.
- ☐ Check the condition of the power cord for wear, especially if it is exposed to traffic.
- ☐ Check that the tunnel is able to maintain the set temperatures. If not, refer to the Adjustments Section of this User Guide for instruction.
- ☐ Check that you are able to vary the conveyor speed. If not, refer to the Adjustments Section of this User Guide for instruction.
- ☐ Check for overall wear on dead roller guide rails and starter rails. Repair as needed.
- ☐ On plastic belt conveyors, check the condition of the plastic belt. Repair or replace as needed.
- ☐ Check the condition of all warning and instruction labels. Replace as necessary.

Preventative Maintenance for Modular Plastic Conveyor Belts

Modular plastic conveyor belts typically do not require day-to-day maintenance and are generally trouble-free when installed and operated properly.

Following are a few recommendations to obtain maximum life of the belt and avoid down-time.

- ☐ Check belt tension on a routine basis (weekly or monthly) to ensure proper drive. Adjust screw take-up if necessary. (Belts experience thermal expansion while hot.)
- ☐ Sprocket alignment should be checked before installing the belt to ensure that all the teeth are in line. (A misaligned sprocket can cause the belt to break or go off track.) On round-bore sprockets, it is good practice to check the keyways and tighten keyway setscrews when required.

- ☐ If a small section of the belt or a module breaks, it is important to replace it as soon as possible. Failure to do so could incur further damage to the belt. Try to determine the cause of the break before restarting to avoid the break from happening again.

  Make sure that when you join the belt, the metal connecting rod is locked in with a plastic tab.
  - To replace a belt section See the Belt Assembly and Disassembly section that begins on page 32 and outlines procedures To assemble the belt on page 32 and To disassemble the belt on page 34.
  - Remove a steel connecting rod by pulling it out from the left.
  - To lock the tab in, put the tab in from the top of the belt and press it into place.

- ☐ When performing repairs to the conveyor, it is important to remove or protect the belt to avoid damage from welding sparks or from other tools.

Avoid using the belt for uses other than for what it was specified. If you need to utilize the belt in a different application, consult the manufacturer first.

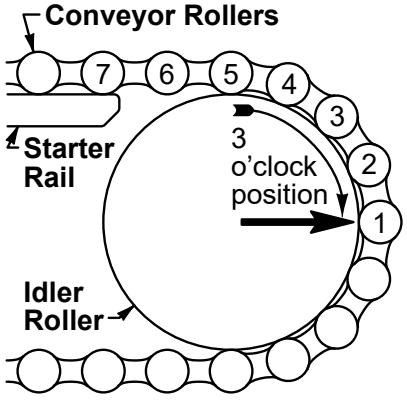
Conveyor Belt Tension Adjustment

Check the belt tension of the package conveyor occasionally to ensure that it is not excessive, as this will cause unnecessary wear on the conveyor sprockets.

To check or adjust tension, shut off power to the tunnel, remove the drive end caps, and loosen the two outer jam nuts on the drive end of the conveyor. Adjust the tensioning bolts as required to for correct belt tension. (Belt should touch lower rails approximately 11 inches in from the outside edge of the leg). If there is no more adjustment available through the tensioning bolts, a link can be taken out. To remove a link, loosen the belt by removing two (2) pins. (Remove the plastic keeper tab on the end of the pin.) Eliminate one row of links, pull the conveyor belt together, and reinsert one (1) l pin. A new plastic keeper must be used to hold the pin in place.

To Check or Adjust Conveyor Chain Tension

1. Bring a roller to the three o'clock position (the center of the end) of the idler end of the conveyor.
2. Shut off power to the tunnel, and then remove the idler end caps.
3. Begin with the roller in the three o'clock position and count the conveyor rollers. The seventh roller should be evenly touching the conveyor starter rails.



Replacing Conveyor Components

Caution! **Disconnect main power source before performing any procedure to replace any conveyor component(s).**

Roller Silicone Covering Replacement

1. Disconnect power to the machine.
2. Remove idler end caps, disconnect drive chain, loosen the four (4) bolts that hold the drive motor and then, through the access hole, take the drive chain off the drive motor sprocket.

   NOTE: You must take the chain off the drive motor sprocket or the conveyor will not move freely. You must be able to move the conveyor to replace silicone covering on the rollers.
3. Remove old covering, by carefully slitting the covering and then pulling it off.
4. Clean all rollers using steel wool or a wire wheel. Make sure all rollers are smooth and free of residue and burrs.
5. Fit the new silicone rubber tubing onto each roller and work on by hand at least ½ inch. At the opposite end of the tubing, fit on and secure an air supply hose of low pressure, maximum pressure 5 lbs. While tubing is slightly expanded by air pressure, push the tubing onto the roller and work it on to the roller. Be careful to hold the roller at all time so it does not fly from the air pressure.
6. Replace rollers on conveyor by inserting roller end holes into the extended pins of the chain. Reconnect drive chain around drive motor sprocket. Adjust tension on drive chain by retightening the four (4) bolts. Place access-hole cover back on, and replace idler end caps.
7. Check conveyor chain tension by following the steps explained earlier.

Idler, roller shaft, bearings, or sprockets replacement

Refer to the Roller Silicone Covering Replacement section above to access and remove rollers as required. Note the location and orientation of sprockets (make a sketch and note measurements if necessary). Loosen the jam nuts on the tensioning bolts at the drive end of the conveyor. Remove the four (4) ¼-20 bolts for the bearings. Slide the shaft left or right and then the shaft and sprockets will come off. Identify and replace any damaged or worn parts and reassemble in reverse order of disassembly.

Drive shaft, bearings, or sprockets replacement

Refer to the Conveyor belt tension adjustment section above to open up the conveyor belt. Remove the drive end caps. Disconnect the conveyor belt. Note the location and orientation of sprockets (make a sketch and note measurements if necessary). Loosen

four (4) set screws on the drive sprockets. Keep the keyway key for the driveshaft and replace as necessary. Slide the shaft left or right. The shaft sprockets must be adjusted for position. All sprockets are fastened to the shaft by set screws. Identify and replace any damaged or worn parts and reassemble in reverse order of disassembly.

Conveyor motor replacement

Shut off the machine and disconnect main power. Remove the drive end cap, disconnect two (2) electrical wires from the drive motor, and disconnect the motor from the drive chain by removing four (4) bolts that hold the drive motor. Remove the sprocket from the old motor and place it on the new drive motor and reassemble parts in the same as they were disassembled. For electrical connections, refer to the electrical schematics.

Replacing Tunnel Components

Caution! **Disconnect main power source before performing any procedure to replace any tunnel component(s).**

Fuse replacement or electrical component replacement

Major electrical components, except the conveyor motor (whose replacement procedure is provided on the previous page) and the heater bank and blower motor (whose replacement procedures are provided separately below), are located behind the fold-down electrical control panel for easy maintenance. See the Panel Layout in Appendix A for description and approximate location of electrical components.

Heater bank replacement

Shut off the machine and disconnect main power. Remove the side panel cover. Pull insulation out. Marking the wire positions so they can be reconnected in the same positions, remove the wires on the heater bank with a 3/8-inch nut driver, and then set the wires off to the side. Noting the heater bank position so it can be replaced in the same position, remove the heater bank. Reassemble components in the same manner in which they were disassembled.

Important! **Ensure that the heater bank frames are pushed completely in. The end of the frame should be flush with the housing.**

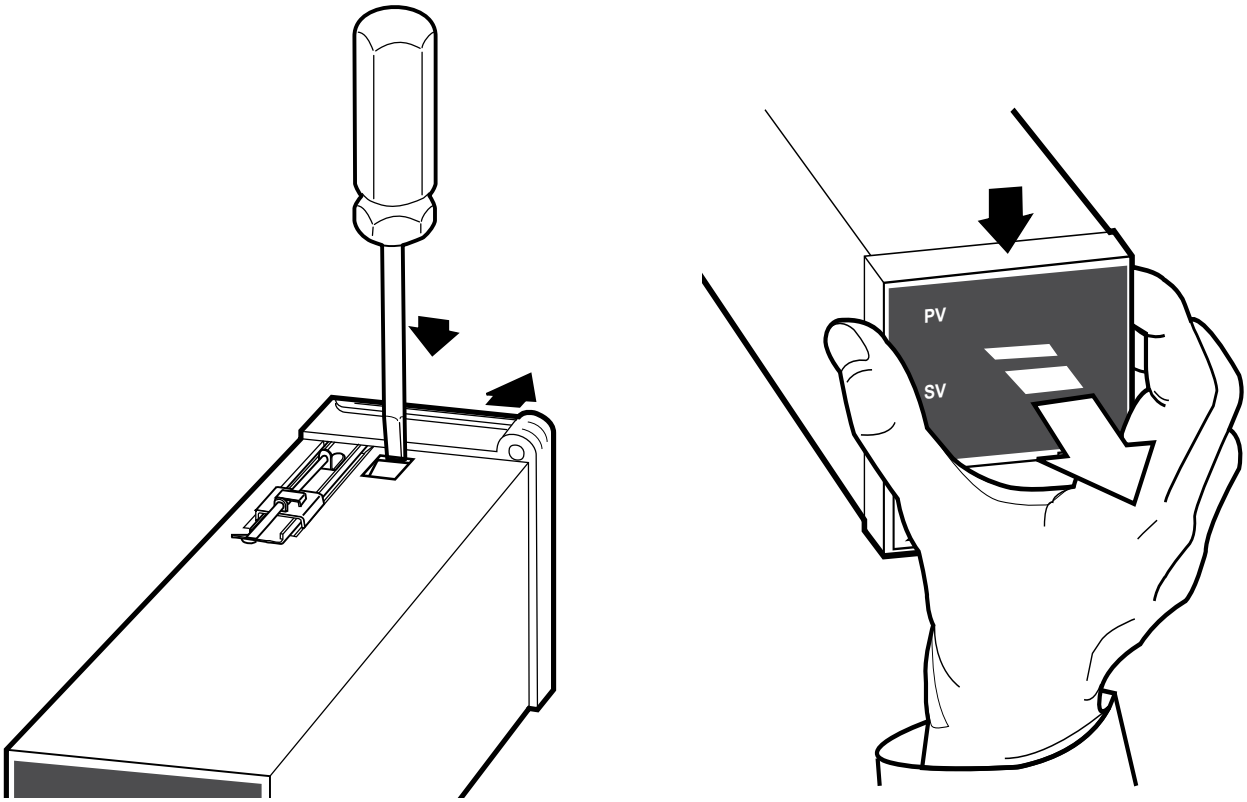
Temperature controller replacement

Note: **Shut off power to the machine before opening the panel door on the side of the machine to access internal electronics and temperature controller.**

There are two options for removing the temperature controller.

1. The first and easiest option is to remove and replace only the controller, which reuses the receptacle sleeve and leaves all wiring intact.
2. The second option is to disconnect all wiring and replace the controller and sleeve together.

To reuse the housing and replace only the interior components of the controller, use a flat screwdriver to carefully press down on the tab, inside on top of the controller. (Take care to not break or deform the tab permanently. See the following illustration.) While the tab is depressed, pull on the front face of the controller to slide it out of the housing.

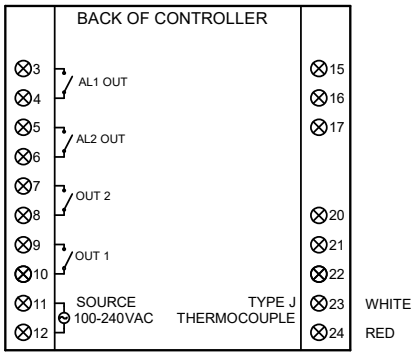


For the second option (to replace entire controller and receptacle), first take note of wire locations (make a sketch and label the wires with tape, if necessary), and then disconnect wires from the temperature controller and thermocouple. Slide the controller and receptacle out of the front of the panel. Replace with a new controller and reconnect wires to the temperature controller and thermocouple. (Refer to notes made during disassembly or the electrical schematic if necessary.)

Note that the wire connections have changed on the newer model of the temperature controller installed after January 2023 that replaces the earlier model temperature controller installed before January 2023. Refer to the following wiring terminal diagram for the Temperature Controller Conversion.

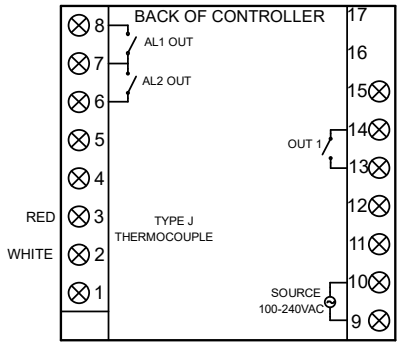
Temperature Controller Conversion

AUTONICS
TK4L-24RN
ETC00031



NEW POST JAN. 2023

AUTONICS
TZ4L-24R
ETC00011



OLD PRE JAN. 2023

PAr5
USEr=HIGH
Pyd=100
PAr3
In-t=JIC.H
Unit=F
L-SC=32
H-SC=450
In-b=-4
H-t=50
PAr4
AL-1=PUCC
AL-2=PUCC
PAr1
AL1.H=150
AL2.H=450

WIRE FROM PIN 2 (TZ4L) WILL GO TO PIN 23 (TK4L)
WIRE FROM PIN 3 (TZ4L) WILL GO TO PIN 24 (TK4L)
WIRE FROM PIN 6 (TZ4L) WILL GO TO PIN 6 (TK4L) "IF USED"
WIRE FROM PIN 7 (TZ4L) WILL GO TO PIN 5 (TK4L) "IF USED"
WIRE FROM PIN 8 (TZ4L) WILL GO TO PIN 4 (TK4L) "IF USED"
WIRE FROM PIN 9 (TZ4L) WILL GO TO PIN 12 (TK4L)
WIRE FROM PIN 10 (TZ4L) WILL GO TO PIN 11 (TK4L)
WIRE FROM PIN 13 (TZ4L) WILL GO TO PIN 9 (TK4L)
WIRE FROM PIN 14 (TZ4L) WILL GO TO PIN 10 (TK4L)
A JUMPER WIRE WILL NEED TO BE ADDED FROM PIN 3 TO PIN 5 OF (TK4L) "IF USED"

Replace with a new controller and reconnect wires to the temperature controller and thermocouple. (Refer to notes made during disassembly, electrical schematic, and the above diagram as necessary.)

Warning: If there is no control over heat, interchange the thermocouple wires.
Caution: Do not exceed 500 degrees.

Blower motor replacement

Shut off power to the machine. Remove the top lid on the hood of the tunnel. Disconnect the wires on the blower motor(s). (Note: there may be more than one blower motor.) Remove four (4) 5/16-18 bolts on the motor mount(s). Once the blower housing is out and on the bench, loosen the two (2) set screws holding the blower wheel in place. The blower wheel shaft set screws are installed with thread-locking compound and may require a torch to remove the blower wheel — if force is necessary, apply it between the motor and blower wheel hub. Remove the motor mount bolts and remove and replace the motor. Rotation on the blower motor needs to be counter-clockwise as viewed from the electrical inlet and hub side. Reassemble the new motor and blower

wheel housing and reassemble components in the same manner in which they were disassembled.

Note: Do not rest blower housing on blower wheel! Blower wheel will not work if bent or out of balance.

Blower wheel replacement

Shut off power to the machine. Refer to **Blower motor replacement** instructions above.

Placement of upper wear rails

Shut off power to the machine, move the conveyor by hand if necessary to gain access. Remove the #10-32 screw on the idler end. Replace parts in the same manner in which they were disassembled.

Chamber cooling fan motor replacement

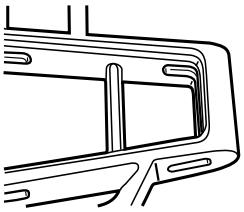
Shut off power to the machine. Remove the top lid of the hood. Disconnect the wires. Remove four (4) ¼-20 screws which hold the cooling fan motor in place. Take the motor out of the machine, replace with the new motor, and reassemble with four (4) ¼-20 screws removed earlier. Reconnect wires to new cooling fan motor.

Belt Assembly and Disassembly

When repairing or replacing the belt, it is important to orient the belt correctly.

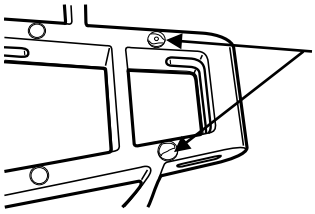
- The top side of the belt is relatively smooth and the ribs are recessed.

Top view



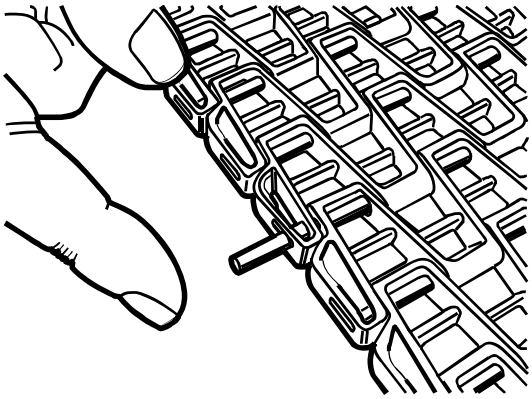
- The bottom side of the belt has metal disks visible and the ribs are flush.

Bottom view

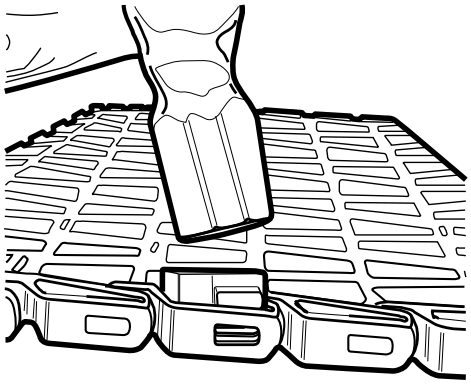


To assemble the belt

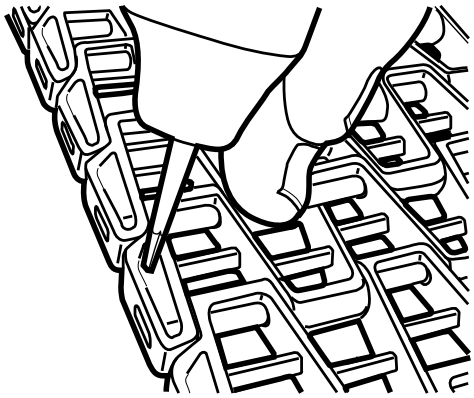
1. Bring ends of the belt together, and aligning holes, insert metal rod through holes for the entire width of the belt.



2. Insert a plastic retainer clip into place to retain the metal rod. Use a hammer, if necessary, to gently tap the retainer clip into place.

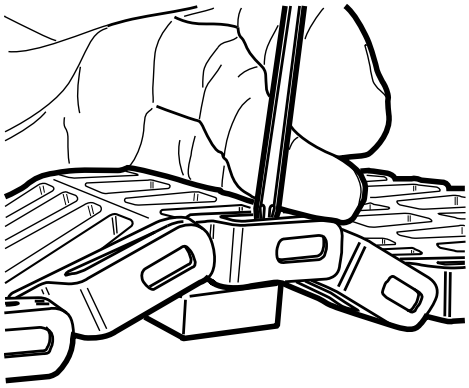


3. Use a flat-blade screwdriver to give the retainer clip a “double click” to finish seating it in place

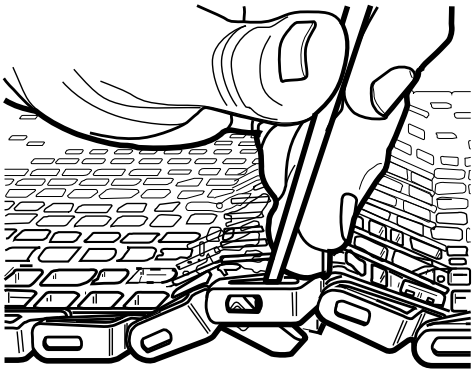


To disassemble the belt

1. Place a block under the belt and place the belt upside-down over the block, so the link to be opened is positioned close to the block.



2. Use a screwdriver to push down on the retainer clip to unseat it.



3. Continue to push down on the retainer clip to move it out of the end link.

4. Slide the metal rod out to unlink the belt and the belt will unzip.

Troubleshooting

D.C. Drive Board Troubleshooting Information

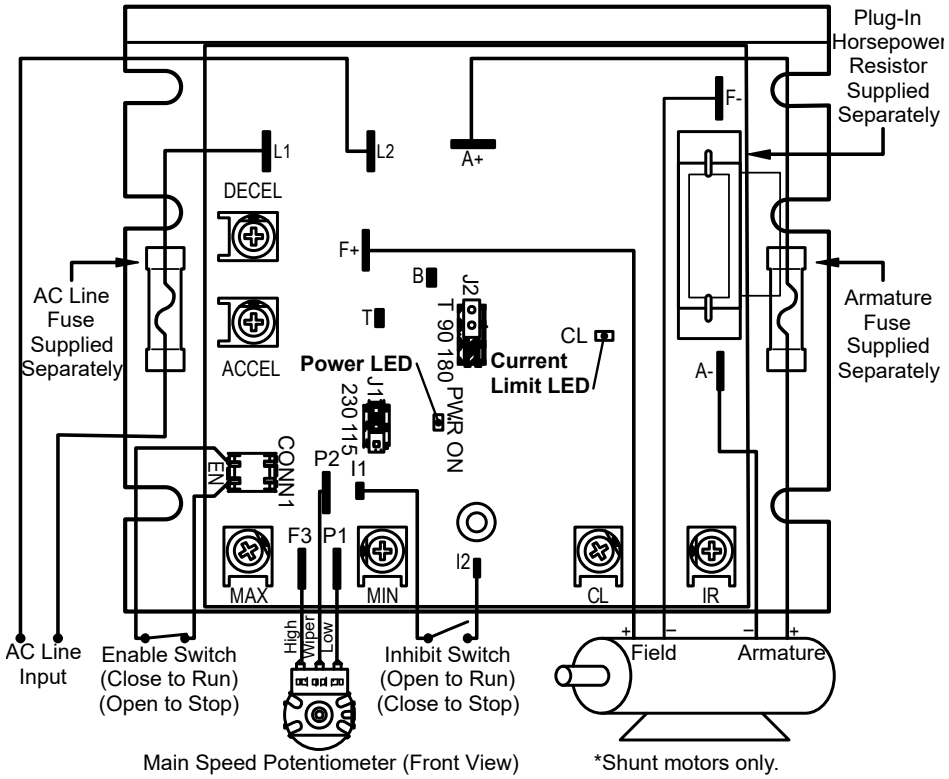
Video: Tunnels - DC Board Troubleshooting

To view an Instructional video showing how to troubleshoot the DC Board and explaining the proper trimpot settings to adjust the tunnel to achieve desired results, click the following link: Tunnels – DC Board Troubleshooting or scan the QR Code at right using the camera app on your smartphone or mobile device.

This video also shows information for setting up a new board, or replacing the Horsepower resistor, or removing and replacing fuses.

The following illustration shows a D.C. board similar to the D.C. drive board used in the Eastey ETB Bundling Tunnels. Characteristics of motor motion, such as maximum and minimum motor speed, motor acceleration and deceleration time, and current load and motor internal resistance compensation are fine-tuned by adjusting trim-potentiometers (trim pots) on this board. Some of the solutions to problems identified in the troubleshooting table that follows refer to adjustments made by tuning potentiometers on this board.

Sample KBMM™ Drive Board Diagram, Showing Locations of Trim Pots and Required Fuses, And Available Connections.



For more information refer to the *KBMM™ Series Installation and Operation Manual* (available from KB Electronics, manufacturer of the KBMM 225D D.C. controller board).

An LED labeled PWR ON (for Power On) is located just below-center on the control board. This LED will illuminate solid green when it is getting correct power and will not illuminate if it is not receiving power. A second LED labeled CL (for Current Limit), if illuminated red, indicates a blown Armature fuse or problem with the Plug-In Horsepower Resistor (PHP).

LED Label	LED Indicator	Controller Board Drive Status	LED Color
PWR ON	Power On	Normal Operation (Run)	Green = Power
CL	Current Limit	Overload (120% – 160% Full Load)	Red = Problem

⚠KBMM Control Board Related Safety Messages! – Please Read Carefully!⚠

The KBMM 225D Controller board must be installed and serviced by a qualified electrical maintenance technician or electrician familiar with its operation and the hazards involved. Proper installation, which includes electrical connections, fusing or other current protection, and proper grounding can reduce the chance of electrical shocks, and/or fires in the control board and equipment with which the control board is used, such as electric motors, switches, coils, solenoids, and/or relays. Do not use this control board in any application which requires explosion-proof operation. Eye protection must be worn, and insulated adjustment tools must be used when working with the controller under power. This product is constructed of materials (plastics, metals, carbon, silicon, etc.) which may be a potential hazard. Proper shielding, grounding, and filtering of this product can reduce the emission of radio frequency interference (RFI) which may adversely affect sensitive electronic equipment. It is the responsibility of the equipment manufacturer and individual installer to supply this safety information to the ultimate end user of this product.

The control must be mounted in an enclosure. Care should be taken to avoid extreme hazardous locations where physical damage to the control can occur due to moisture, metal chips, dust, and other contamination including corrosive atmosphere. If such contamination is present, special enclosures may be required, such as NEMA type 4X. Use caution to prevent accidental contact with high voltage.

The control contains electronic Start/Stop circuits which can be used to start and stop the controlled circuits and motors. However, these circuits are never to be used as safety disconnects since they are not fail-safe. Disconnect the input power and observe and comply with the lockout/tagout rules and procedures developed by your company for this purpose. Be sure to read, understand, and follow all instructions carefully. Fire and/or electrocution can result due to improper use of this product.

Information contained in these instructions is intended to be accurate. However, the manufacturer retains the right to make changes in design which may not be included herein.

Plug-In Horsepower Resistor® (PHR)

The PHR is supplied by your distributor and must be installed for the control to operate. It is used to automatically calibrate the IR Compensation and Current Limit based motor horsepower and voltage. It eliminates the need to recalibrate the control in most applications. Select the correct PHR in accordance with the PHP specified for the DC board application. Be sure it is inserted completely into the mating sockets. The Horsepower resistor required is 1 HP, Eastey's part number ET000081 as shown in the table below. The video (Tunnels – DC Board Troubleshooting) referenced at the beginning of this Troubleshooting section shows how to remove and install the Horsepower resistor and how to remove and install fuses in the fuse holder if required,

Fuses – AC Line and Armature Fusing

All fuses should be Littelfuse 3AB, Bussmann ABC, or equivalent. On domestic 230 Volt AC lines, separate branch circuit protection for each line must be used. An AC Line Fuse (supplied separately) must be installed in the AC line fuse holder and an Armature Fuse (supplied separately) must be installed in the Armature Fuse Holder. Fuse each AC line conductor that is not at ground potential. Select the correct fuse in accordance with the table below.

ETB2012-PBV2, ETB2012-DRV2, ETB3020-PBV2 & ETB3020-DRV2

Description	Rating	Part Number
Electrical Panel Subassembly	—	SUBA0374
Electrical Schematic Drawing Number	—	SUBA0374S
Electrical Panel Layout Drawing Number	—	SUBA0374L
Conveyor Drive Motor	1/8HP 54RPM	ETL00228
"Horsepower" Resistor	1 HP	ET000081
D/C Fuse	2.5 Amp	ET000185
A/C Fuse	5 Amp	ET000186

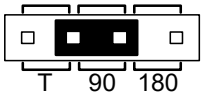
ETB2012-PBV6, ETB2012-DRV6, ETB3020-PBV6 & ETB3020-DRV6

Description	Rating	Part Number
Electrical Panel Subassembly	—	SUBA0374-V6
Electrical Schematic Drawing Number	—	SUBA0374-V6S
Electrical Panel Layout Drawing Number	—	SUBA0374-V6L
Conveyor Drive Motor	1/8HP 54RPM	ETL00228
"Horsepower" Resistor	1 HP	ET000081
D/C Fuse	2.5 Amp	ET000185
A/C Fuse	5 Amp	ET000186

Jumper Settings – J2, Motor Voltage and DC Tach-Generator

The control board has a selectable jumper, J2 which must be set correctly before it can be used. Jumper J1 setting is not applicable, as it is not selectable on this board. Jumper J2 is factory set to the “90” position and must be set for this setting, as shown in the following table.

AC Line Input and Motor Armature J2 Jumper Setting

Control Board Model Number	AC Line Input		Motor Armature	
	Line Voltage (Volts AC)	Jumper J1 Setting	Motor Voltage (Volts DC)	Jumper J2 Setting
KBMM-225	208/230	N/A	0 – 90°	

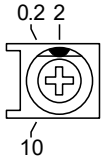
Adjustable Trimpots

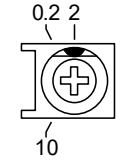
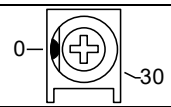
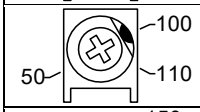
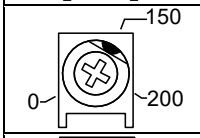
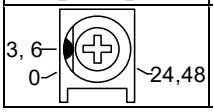
Trimpots on the control board have been factory adjusted to provide near-optimum motor regulation when using the EB Auto Bundler under normal operation. More specific information about the trimpots and adjustment is provided below. Refer to the illustration of the control board at the beginning of this section for location of each of the six trimpots on the board.

Note: Do not attempt to change the setting of the trimpots unless absolutely necessary since they are factory adjusted to near optimum settings. Instructions in this section assume the proper Plug-In Horsepower Resistor® (PHP) is installed for the particular motor and input voltage being used.

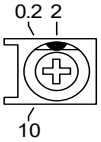
WARNING! For the IR Compensation and Current Limit settings to be correct, the proper Plug-In Horsepower Resistor® must be installed for the particular motor and input voltage being used.

Typical factory-set trimpot settings are shown in the following table (expressed as value in the range shown):

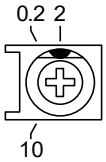
Appearance	Trimpot Descriptor	Value	Range
	ACCEL (acceleration start)	2	0.2 - 10

Appearance	Trimpot Descriptor	Value	Range
	DECEL (deceleration)	2	0.2 - 10
	MIN (minimum speed)	0%	0% - 30%
	MAX (maximum speed)	100%	50% - 110%
	CL (current limit/torque)	150%	0% - 200%
	IR (IR compensation)	3, 6	24, 48

Acceleration and Deceleration trimpots are labeled ACCEL and DECEL and are located near the left side of the control board. Maximum and Minimum trimpots are labeled MAX. and MIN. and are located near the bottom edge of the board on the left. Current Limiting and Internal Resistance trimpots are labeled CL and IR and are located near the bottom edge on the right. Refer to the control board layout shown earlier in this section for location of trimpots.

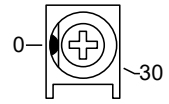


Acceleration Trimpot (ACCEL)
The ACCEL trimpot allows for a smooth start over an adjustable time period each time the AC power is applied or the main speed potentiometer is adjusted to a higher speed. The ACCEL trimpot has been factory set to two (2) seconds, which is the amount of time it will take for the motor to accelerate to full speed. To increase the acceleration time, adjust the ACCEL trimpot clockwise. To decrease acceleration time, adjust the ACCEL trimpot counterclockwise. Units associated with the Acceleration trimpot indicate seconds.



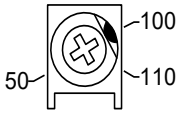
Deceleration Trimpot (DECEL)
The DECEL trimpot controls the amount of ramp-down time when the main speed dial potentiometer is adjusted to a lower speed. The DECEL trimpot has been factory set to two (2) seconds, which is the amount of time it will take for the motor to decelerate from full speed to zero speed. To increase the deceleration time, adjust the DECEL trimpot clockwise. To decrease the deceleration time, adjust the DECEL trimpot counterclockwise. Units associated with the Deceleration trimpot indicate seconds.

Note: The deceleration time cannot be set to less than the natural coast time of the motor and actual load.



Minimum Speed Trimpot (MIN)
The MIN trimpot sets the minimum speed of the motor when the main speed dial potentiometer is set fully counterclockwise. The MIN trimpot has been factory set to 0% of the base motor speed. To increase the minimum speed, adjust the MIN trimpot clockwise. To decrease the minimum speed, adjust the MIN trimpot counterclockwise. Units marked indicate percentage of base speed.

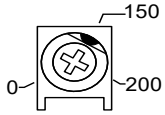
Note: Readjusting the MIN trimpot will affect the maximum speed setting. Therefore it is necessary to readjust the MAX trimpot if the MIN trimpot has been adjusted. It may be necessary to repeat these adjustments until both the minimum and maximum speeds are set to the desired levels.



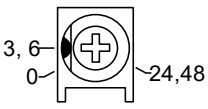
Maximum Speed Trimpot (MAX)
The MAX trimpot sets the maximum speed of the motor when the main speed dial potentiometer is set to fully clockwise. To decrease the maximum speed, adjust the MAX trimpot counterclockwise. Units marked indicate percentage of base speed.

CAUTION! Do not attempt to adjust the maximum speed above the rated motor RPM since unstable motor operation may occur.

Note: For moderate changes to the maximum speed, there will be slight effect on the minimum speed setting when the minimum speed is set to zero. There may be significant variation in the minimum speed setting if the minimum speed is set higher than zero.



Current Limit Trimpot (CL)
The CL trimpot sets the current limit (overload), which limits the maximum current (torque) to the motor. The CL also limits the AC Line inrush current to a safe level during startup. The CL trimpot is factory set to 1.5 times the full load rating of the motor. To increase the current limit, adjust the CL trimpot clockwise (do not exceed 2 times the motor current rating (maximum clockwise position). To decrease the current limit, adjust the CL trimpot counterclockwise. Units marked indicate percentage of full load.



IR Compensation Trimpot (IR)
The IR compensation trimpot sets the compensating voltage required to keep the motor speed constant under changing loads. If the load does not vary substantially, the IR trimpot may be set to a minimum level (approximately ¼ of full clockwise rotation) The units marked indicate Volts DC.

Application Information

Motor Type: The control is designed for permanent magnet (PM) and Shunt-Wound EC motors. Controls operated on 115 Volt AC line input are designed for 90 Volt SCR rated motors. Controls operated on 230 Volt AC line input are designed for 180 and 90 Volt SCR rated motors. Use of motors with higher rated voltage will result in a reduction of the available maximum speed. Also, if the motor is not an SCR rated type, the actual AC line current at full load and full speed should not exceed the motor's DC nameplate current rating.

Torque Requirements: The motor selected for the application must be capable of supplying the necessary torque. Be sure the current under full load does not exceed the motor nameplate rating.

⚠**CAUTION! Consult customer service technical support before using this control on constant horsepower applications. Do not use this control in an explosive atmosphere. Be sure the control is used within its ratings. Follow all instructions carefully.**

Armature Switching: WARNING! Do not switch the armature in and out of circuit or catastrophic failure will result. If armature switching is required for reversing or dynamic braking, use Model KBMG, KBRG, KBPB, or KBCC-R.

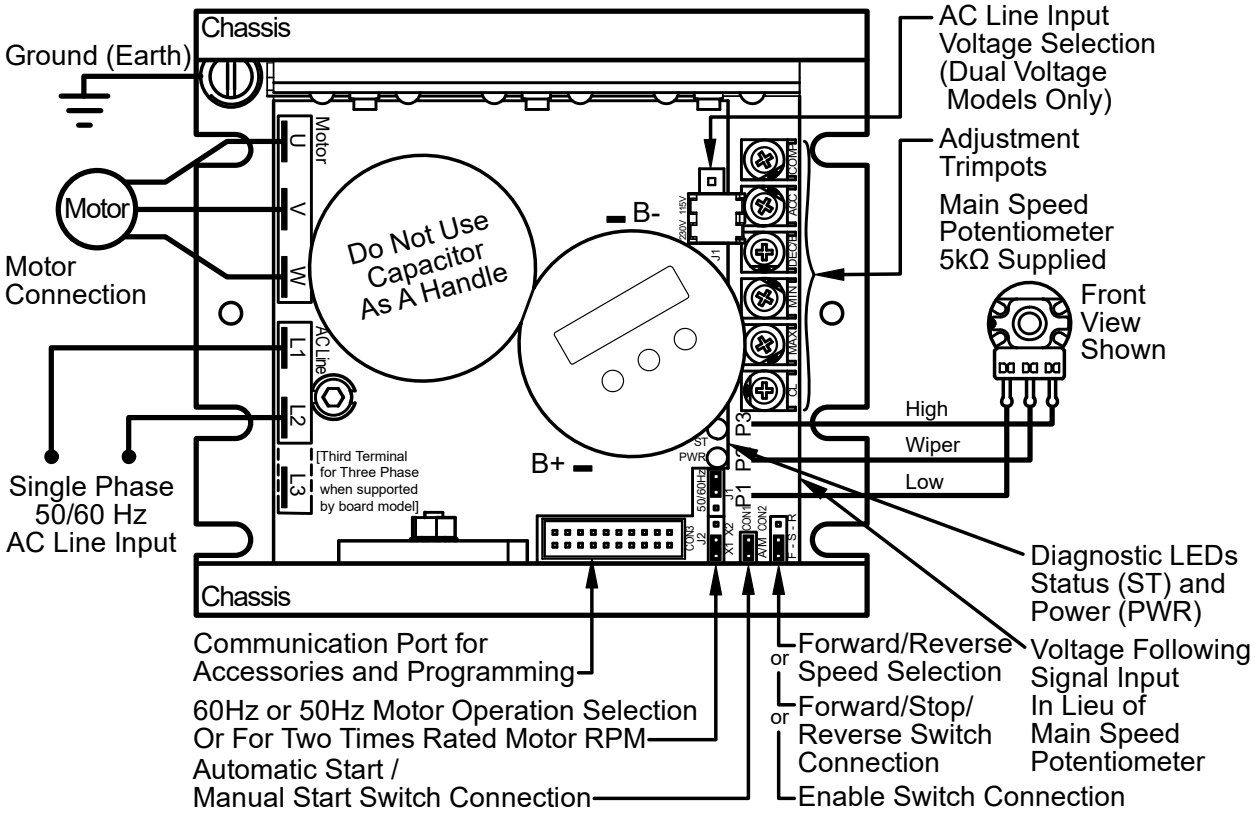
Step-Down Transformer and AC Line Switching: When using a step-down transformer (460 Volts AC to 230 Volts AC), be sure the output current rating of the transformer is at least 3 times the current rating of the motor. Do not switch the primary side of the transformer to disconnect power or catastrophic failure can result. Always disconnect the control from the secondary side of the transformer.

For more detailed information refer to instructions in the previous pages or refer to the KBMD-225 Control Board Installation and Operation Manual, provided by the D.C. board manufacturer.

AC Drive Board Troubleshooting Information

The following illustration shows an A.C. drive board similar to the A.C. drive board used in Eastey ETB Performance and Professional Series Bundling Tunnels. Characteristics of motor motion, such as maximum and minimum motor speed, motor acceleration and deceleration time, and current load and motor internal resistance compensation are fine-tuned by adjusting trim-potentiometers (trim pots) on this board. Some of the solutions to problems identified in the troubleshooting table refer to adjustments made by tuning potentiometers on this board.

Sample KBVF Drive Board Diagram, Showing Locations of Trim Pots, Jumpers, and Connection Terminals.



For more information refer to the *KBVF Series Installation and Operation Manual* (available from KB Electronics, manufacturer of the KBVF A.C. drive board).

An LED labeled PWR (for Power) is located just below the capacitor near the adjustment trim pots on the drive board. This LED will illuminate solid green when the board is receiving correct power and is off when powered off. A second LED labeled ST (for Status – located just above the PWR LED), may blink green, yellow, or red, in sequence to provide status information about current operating conditions of the drive board. More specific information is provided in the Diagnostic LEDs table that follows.

⚠ KBVF Drive Board Related Safety Messages! – Please Read Carefully! ⚠

The KBVF Series Drive board must be installed and serviced by a qualified electrical maintenance technician or electrician familiar with its operation and the hazards involved. Proper installation, which includes electrical connections, fusing or other current protection, and proper grounding can reduce the chance of electrical shocks, and/or fires in the drive board and equipment with which the drive board is used, such as electric motors, switches, coils, solenoids, and/or relays. Do not use this drive board in any application which requires explosion-proof operation. Eye protection must be worn, and insulated adjustment tools must be used when working with the drive board under power. This product is constructed of materials (plastics, metals, carbon, silicon, etc.) which may be a potential hazard. Proper shielding, grounding, and filtering of this product can reduce the emission of radio frequency interference (RFI) which may adversely affect sensitive electronic equipment.

The drive must be mounted in an enclosure. Care should be taken to avoid extreme hazardous locations where physical damage to the control can occur due to moisture, metal chips, dust, and other contamination including corrosive atmosphere. If such contamination is present, special enclosures may be required, such as NEMA type 4X. The enclosure must be large enough to allow for proper heat dissipation so that the ambient temperature does not exceed 45°C (117°F). Allow enough space to allow for AC line, motor connection, and other wiring that is required. To prevent accidental contact with high voltage, it is required that the finger-safe cover be properly installed onto the control after all connections are complete. Be sure drive board and enclosure are properly grounded before operation.

The drive board contains electronic Start/Stop circuits which can be used to start and stop the controlled circuits and motors. However, these circuits are never to be used as safety disconnects since they are not fail-safe. Disconnect the input power and observe and comply with the lockout/tagout rules and procedures developed by your company for this purpose. Be sure to read, understand, and follow all instructions carefully. Fire and/or electrocution can result due to improper use of this product. It is the responsibility of the equipment manufacturer and individual installer to supply this safety information to the ultimate end user of this product.

Information contained in these instructions is intended to be accurate. However, the manufacturer retains the right to make changes in design which may not be included herein.

CE **Note:** This drive is factory-set for 60 Hz motors. For 50 Hz motors contact Eastey Customer Service Technical Support. c UL us

High Voltage Dielectric Withstand Test (Hi-Pot Test

Warning! Disconnect all AC power before performing hi-pot test. Consult and follow your company's lockout/tagout rules and procedures.

Testing agencies such as UL, CSA, etc., usually require that equipment undergo a Hi-Pot test in order to prevent catastrophic damage to the control, which has been installed in the equipment. It is recommended that the procedure outlined in the Installation and Operation Manual for the drive board (viewable online and downloadable) be followed. Do not exceed 1500 VAC for 115 VAC controls and 1700 VAC for 230 VAC controls. Control damage may result if hi-pot voltage is exceeded.

Note: *Controls have been factory hi-pot tested in accordance with US508C Standard.*

Do Not Use This Device With GFCI

Special programming is required to make the drive board compatible with GFCI. If drive operation with GFCI is required, contact Eastey Customer Service Technical Support.

CE Information

The drive board complies with all CE directives pertinent at the time of manufacture. Contact our Customer Support Technical Service for Declaration of Conformity. Installation of a CE approved RFI filter is required. Additional shielded cable and/or AC line cables may be required.

Note: *To meet CE requirements, a separate CE approved filter must be installed.*

UL Notice

This drive board is UL approved as an electronic overload protector for motors.

230 VAC Controls

Suitable for use on a circuit Capable of delivering not more than 5kA RMS symmetrical amperes, 230 Volts Maximum.

Use copper conductors rated 75°C.

Suitable for operation in a maximum surrounding air temperature of 40°C.

Reconditioning The Bus Capacitors

If this drive board has been in storage for over one year, it is necessary to recondition the power supply bus capacitors. To recondition the bus capacitors, apply the AC line, with the drive in the Stop Mode, for a minimum of one hour. Not following this procedure will cause the bus capacitors to fail.

CAUTION! The large capacitors on the drive board are capable of storing residual charge for considerable time after the main power to the board has been shut off. With power to the drive board off, discharge the capacitors using a resistor bleed circuit before working on the drive board.

Diagnostic LEDs

Two LEDs on the drive board provide diagnostic information about the board status.

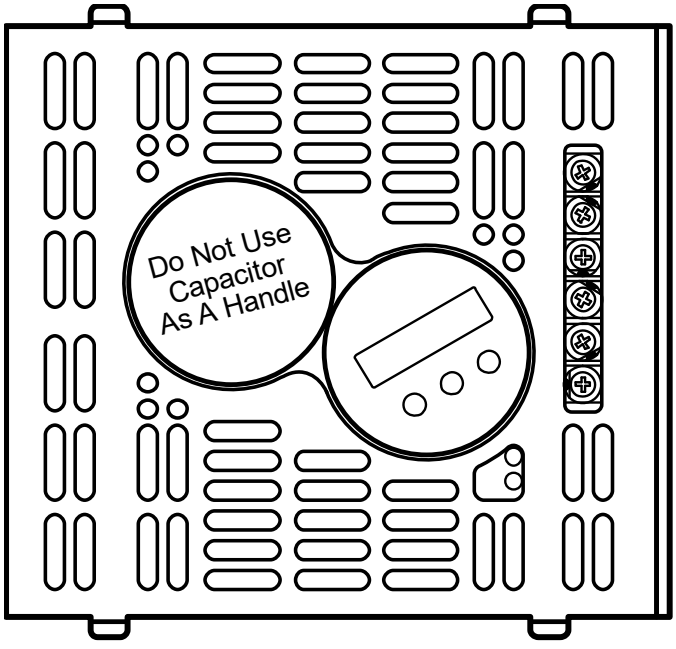
LED	Drive Status	LED Color and Blink Sequence	Blink Rate	Color & Sequence[4] After Recovered Fault
PWR (Power)	Bus and Logic Power Supply	Green	On Continuous	——
ST (Status)	Normal Operation (Run)	Green	1 Sec. On / Off	Green
	Overload (120% – 160% Full Load)	Red	On Continuously	Green
	I^2t (Drive Timed Out)	Red	0.25 Sec. On / Off	——
	Short Circuit	Red	1 Sec. On / Off	——
	Undervoltage	Red / Yellow	0.25 Sec. On / Off	Red / Yellow / Green[5]
	Overvoltage	Red / Yellow	1 Sec. On / Off	Red / Yellow / Green[5]
	Stop	Yellow	On Continuous	——
	Phase Loss Detection[2]	Yellow	0.04 Sec. On / Off	——
	Communication Error[3]	Green / Red	1 Sec. On / Off	Green

Notes:

1. Phase Loss Detection on Drive Board Models KBVF-23P, 24P, 29, 45, 48
2. Requires AC Line restart.
3. With DIVF Modbus Communication Module Installed.
4. All LED flash rates, after recovered vaults are 1 Sec. On / Off.
5. Drive will require manual restart to return the Status LED color to its normal flashing green.

Finger-Safe Cover

The AC drive board is equipped with a finger-safe cover to provide protection against accidental contact with high voltage and IP20-level protection for the drive board. All trimpots can be adjusted with the finger-safe cover in place as installed. The finger-safe cover is designed with a removable panel covering the trimpots. To access only the trimpots, remove the small panel covering them, without removing the complete cover.



If it is necessary to remove the finger-safe cover to access wiring or to set selectable jumpers, shut off power to the system following your company's lockout/tagout rules and procedures.

Note the orientation of the finger-safe cover before removing it to aid reinstalling it correctly later when finished.

WARNING! Disconnect main power before removing the finger-safe cover or working on the board with this cover removed. Refer to and follow your company's Lockout/Tagout rules and procedures,

WARNING! To prevent accidental contact with high voltage, it is required that the finger-safe cover is properly reinstalled onto the drive board after all wiring and setup is complete. It offers protection against electric shock.

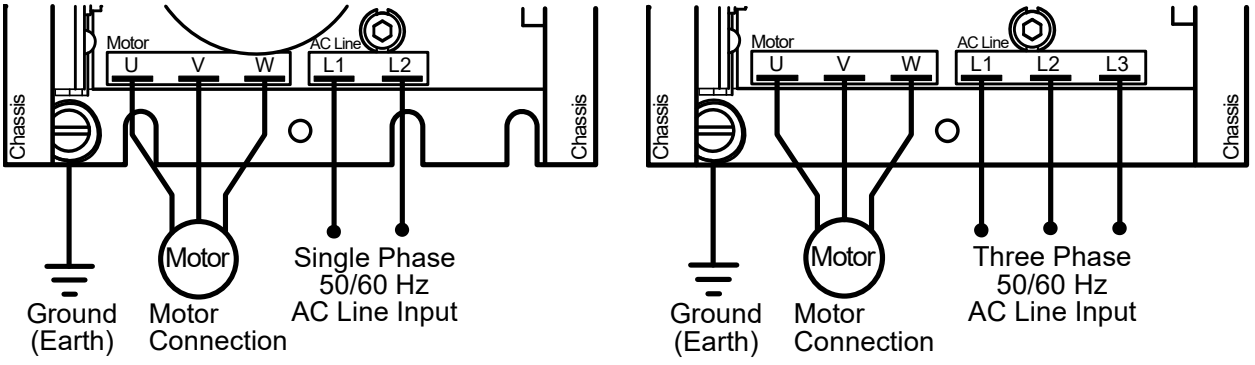
Trimpot Adjustment Tool

The drive board contains trimpots which are set at the factory for use in the Eastey ETB Performance and Professional Series Bundling Tunnels. If it becomes necessary to make adjustment, an insulated adjustment tool is provided with the board. More specific information about the trimpots and trimpot function is presented later in the Troubleshooting section of this user guide.

WARNING! Whenever possible, do not adjust trimpots with the main power applied. Follow your company's rules and procedures for lockout / tagout. If adjustments are required to be made with the main power applied, wear safety glasses for eye protection and use the insulated adjustment tool provided. High voltage exists in this drive board when powered. Fire and/or electrocution can result if caution is not exercised. Safety messages on the previous pages must be read and understood before proceeding.

Ground Connection

The drive board must be connected to ground (earth). To make ground connection, the green ground wire must be connected to the green ground screw and the other end to earth ground. The ground screw is located on the heat sink as shown below.



Note: The highest capacity drive board, due to its double-insulated design, does not have an on-board ground screw.

AC Line Connection and Fusing

This drive board does not contain AC line fuses. Most electrical codes require that each ungrounded conductor contains circuit protection. **Do not fuse neutral or ground connections.** It is recommended to install a fuse (Littelfuse 326, Buss ABC, or equivalent) or a circuit breaker (Square D QOU, or equivalent) in series with each ungrounded conductor. **Do not fuse motor leads.** For the recommended fuse rating and part number, see the table that corresponds to your bundling tunnel model number in the Fuses – AC Line and Armature Fusing section for the DC Board. Wire the drive in accordance with the National Electrical Code requirements and any local electrical codes that may apply to the application.

Application Note: ***Do not wire this drive board to a GFCI!*** If operation with a GFCI is required, contact Eastey Customer Service Technical Support.

AC Line and Motor Connections

WARNING! Disconnect main power before making connections to the drive board. Refer to your company's Lockout/Tagout rules and procedures,

The drive board connection diagram above shows the locations of the terminals for AC Line and Motor Connection.

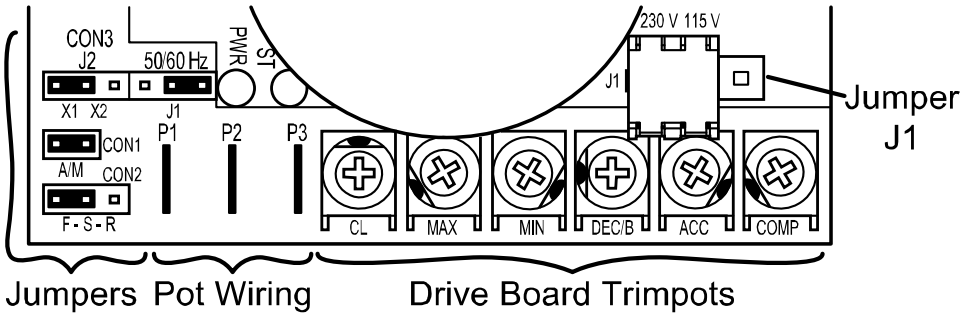
Application Note: *To avoid erratic operation, do not bundle the AC line and motor wires with each other or with wires from signal following, start/stop contacts, or any other signal wires. Also, do not bundle motor wires from multiple drives in the same conduit. Use shielded cables on all signal wiring over 12" (30 cm). The shield should be earth grounded on the drive side only. Wire the drive in accordance with the National Electrical Code requirements and other local codes that may apply.*

AC Line Connection – Wire the AC line input the AC line connection terminals.

- For single phase AC line input, use terminals L1 and L2.
- For three phase AC line input, use terminals L1, L2, and L3.

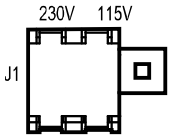
Motor Wiring Connection – Wire the motor to terminals U, V, and W.

Detail of Drive Board Edge Showing Jumpers and Trim Pots

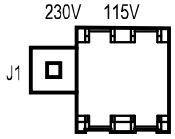


Jumper Settings

Dual voltage drive boards have a selectable jumper which must be set correctly before the drive board can be used. The following figures show the drive board J1 jumper setting for 230 V or 115 V AC Operation. This jumper is only present on a drive board that supports dual voltage (220V or 115V) selection option. Not all drive boards have this jumper/option, but when it does, it is important to have it set correctly for the voltage being supplied.



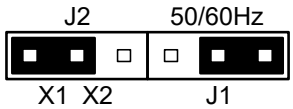
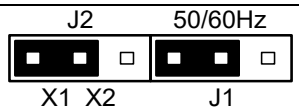
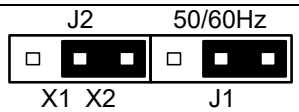
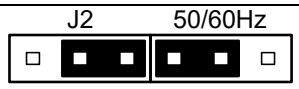
Jumper J1 is factory set to the 230 V position for 208/230 Volt AC line input. For 208/230 V AC operation, do not reposition the jumper from its factory-set position.



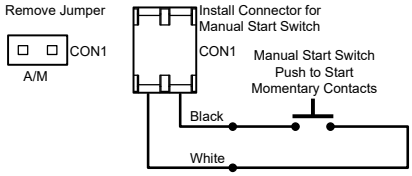
For 115 Volt AC line input, reposition the jumper for the 115 V position as shown.

Jumpers for Motor Operation Frequency J1 (50 or 60 Hz) & J2 (X1 or X2 Multiplier)

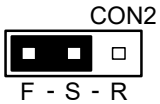
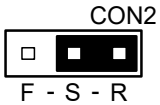
The drive is factory-set to operate 60 Hz motors. Jumpers J1 & J2 are factory set to the 60 Hz position. Other settings require special programming and are not recommended or supported in this application.

J2 X1 & X2 and J1 Jumpers	Jumper Setting Explanation
	This is the factory default setting for 60 Hz motor operation and should not be changed from this configuration, as using the drive board to operate motors at other frequencies requires special software reconfiguration on the drive board. (J1 is set to the 60 Hz end, and J2 is set to the X1 end. 60 Hz ×1 = 60 Hz.) This is the only recommended setting used with Eastey ETB Series Bundling Tunnels.
	This jumper setting indicates 50 Hz motor operation. (J1 is set to the 50 Hz end and J2 is set to the X1 end. 50 Hz ×1 = 50 Hz.) This setting is not recommended.
	This jumper setting indicates 120 Hz motor operation. (J1 is set to the 60 Hz end and J2 is set to the X2 end. 60 Hz ×2 = 120 Hz.) This setting is not recommended.
	This jumper setting indicates 100 Hz motor operation. (J1 is set to the 50 Hz end and J2 is set to the X2 end. 50 Hz ×2 = 100 Hz.) This setting is not recommended.

A/M Jumper — Automatic or Manual Restart After Recovery

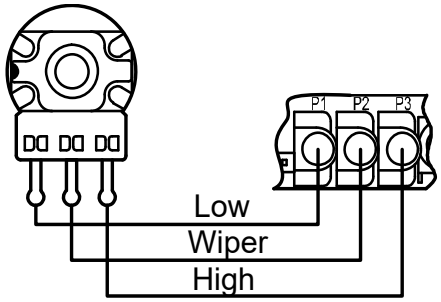
A/M Jumper (CON1)	Jumper Explanation
	The drive board is factory-set for Automatic Start mode. A jumper is typically in place connecting the two contacts. A/M is for Automatic or Manual restart after a recovered fault due to undervoltage, overvoltage, or a short circuit.
	For an I^2t trip due to a prolonged overload, the drive must be manually restarted. For manual restart, a momentary contact must be installed onto this jumper. If this becomes necessary, contact Customer Service Technical Support.

Forward or Reverse Operation Jumper Selection

F - S - R Jumper (CON2)	Jumper Setting Explanation
	The factory default setting for this jumper is the Forward setting, connecting the two contacts to the left labeled F and S. F - S - R is for Forward, Stop, and Reverse. When F and S are connected, the drive board is set for Forward operation.
	If the jumper is moved to the two contacts to the right labeled S and R, the board has been set for Reverse operation. This setting is normally not used. If Reverse operation is required or if a Forward Stop Reverse switch is required to be wired, contact Customer Service Technical Support.

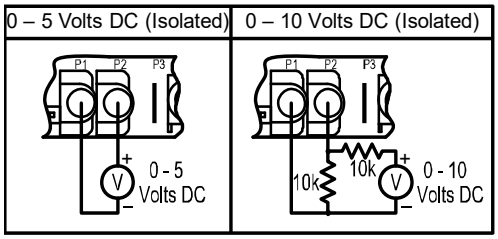
Wiring the Main Speed Potentiometer

The drive board is supplied with a 5 KΩ Main Speed Potentiometer to control motor speed. Wire the Main Speed Potentiometer to terminals P1 (Low), P2 (Wiper), and P3 (High). The terminals are located on the lower drive board between the jumpers and the adjustable trimpots.



Warning! Do not earth ground any Main Speed Potentiometer terminals.

Note: When mounting the Main Speed Potentiometer, be sure to install the insulating disc (supplied) between the potentiometer and the front panel.

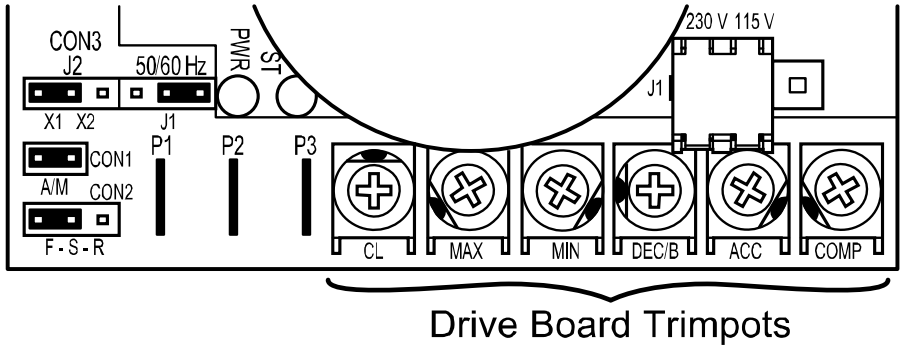


Adjustable Trimpots

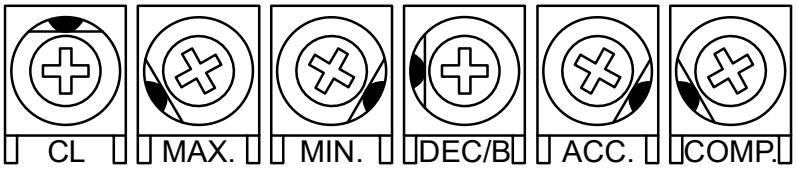
Trimpots on the drive board have been factory set for Eastey ETB Performance and Professional Series Bundling Tunnels. More specific information about the trimpots and adjustment is provided below.

The adjustable trimpots are located aligned in a row near the edge of the board near the jumpers, as shown in the detail of the drive board edge. All trimpots can be adjusted with the finger-safe cover in place as installed. The finger-safe cover is designed with a removable panel covering the trimpots. To access only the trimpots, remove the small panel covering them, without removing the complete cover.

Detail of Drive Board Edge Showing Jumpers and Trim Pots



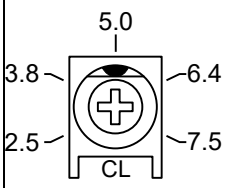
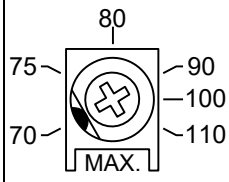
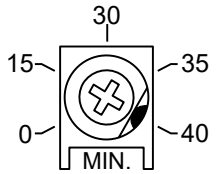
The trimpots are arranged in a row in the order shown and approximate initial trimpot settings for the Eastey ETB Bundling Tunnel application are shown.

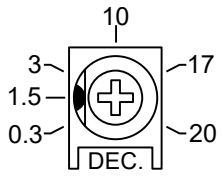
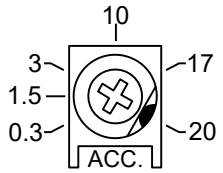
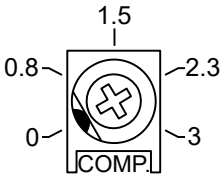


Note: Do not attempt to change the setting of the trimpots unless absolutely necessary and directed to do so by Customer Service Technical Support since the trimpots are factory adjusted for Eastey ETB Performance and Professional Series Bundling Tunnels in which the drive board is installed.

WARNING! Whenever possible, do not adjust trimpots with the main power applied. Follow your company's rules and procedures for lockout / tagout. If adjustments are required to be made with the main power applied, wear safety glasses for eye protection and use the insulated adjustment tool provided with the drive board. High voltage exists in the drive board when powered. Fire and/or electrocution can result if caution is not exercised. Safety messages on the previous pages must be read and understood before proceeding.

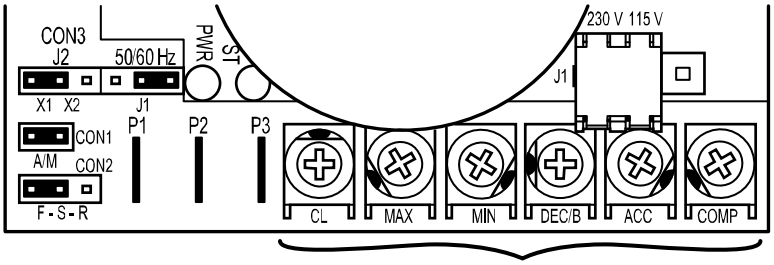
Typical factory-set trimpot settings are shown and explained in the following table (expressed as value indicated on control board):

Trimpot	Descriptor / Function	Value	Range
	CL (current limit — motor overload I^2t with RMS current limit) Sets the current limit (overload), which limits the maximum current to the motor, prevents motor burnout, and eliminates nuisance trips. The CL trimpot is factory set to 5.0 Amps. To increase the current limit setting, adjust the CL trimpot clockwise. For a lower current limit setting, adjust the CL trimpot counterclockwise.	6.4	2.5 – 7.5
	MAX (maximum speed) — Sets the maximum speed of the motor. The MAX trimpot is factory set to 70% of frequency setting. For a higher maximum speed setting, adjust the MAX trimpot clockwise. For a lower maximum speed setting, adjust the MAX trimpot counterclockwise.	100	70 – 100
	MIN (minimum speed) — Sets the minimum speed of the motor. The MIN trimpot is factory set to 40% of frequency setting. For a lower minimum speed setting, adjust the MIN trimpot counterclockwise. For a higher minimum speed setting, adjust the MIN trimpot clockwise.	0	0 – 40

Trimpot	Descriptor / Function	Value	Range
	DEC/B (deceleration) — Sets the time required for the motor to decelerate from full speed to zero speed. The DEC/B trimpot is factory set to 1.5 seconds. For longer deceleration time, adjust the DEC/B trimpot clockwise. For more rapid deceleration, rotate the DEC/B trimpot counterclockwise.	1.5	0.3 – 20
	ACC (acceleration start) — Sets the time for the motor to accelerate from zero speed to full speed. The ACC trimpot is factory set to 20 seconds, the maximum. For more rapid acceleration, adjust the trimpot counter-clockwise. For longer acceleration time, adjust the ACC trimpot clockwise.	1.5	0.3 – 20
	COMP (Slip compensation) Sets the amount of Volts/Hz to maintain the set motor speed under varying loads. The COMP trimpot is factory set to 0 Volts/Hz, the minimum setting. To increase the slip compensation, adjust the COMP trimpot clockwise. To decrease the slip compensation, adjust the COMP trimpot counterclockwise.	1.5	0 – 3

For more detailed information: Refer to the Control Board Installation and Operation Manual for the KBVF series of AC drive boards available from Eastey Customer Service Technical Support or the drive board manufacturer.

Problem	Solution
Conveyor not moving	1. The conveyor motor is controlled by a D.C. control board. Input is 220 VAC in and variable 0 to 90 VDC out. 2. Is a green light on? If not, check the input fuse. 3. If fuse is good and a green light is not on, check for 220 VAC on L1 and L2. If there is voltage, check the output DC voltage. 4. Check output fuse. 5. The KBMM-225 has a current overload. Is there a red light on the board? If so, below are some conditions that could cause this light to turn on. • This could be caused by a jammed conveyor. • Locate the ceramic horsepower resistor and check its resistance. If the ohmmeter indicates open (infinite resistance), the resistor is damaged; replace it — but, there is a reason the resistor went out. There will be a point number (for example, .1 or .25) you will need this number when ordering a replacement resistor. • The motor is pulling more amps than the board is allowing. Try adjusting the CL potentiometer on the motor controller board. • Bad idler or drive bearing. 6. If the red light is on, disconnect the drive motor from the drive chain. Power up the machine and operate the motor without any load and see if the red light goes off. If the board works and the red light does not light, it does not mean that the motor is good; it could be weak under load. Check the brushes. Also pull the conveyor by hand, checking to make sure it pulls smoothly and checking for bad bearings. 7. If the light remains on, replace the motor. 8. If the red light is not on and a green light is, with the speed pot set at 100%, check for 90 VDC on terminals A+ and A–. If voltage is not correct, try adjusting the MAX potentiometer to obtain 90 VDC.

Problem	Solution
No air flow	1. Check AC Drive Board adjustable trim pot settings below. • C.L.: Set at approximately 12 o'clock. • MAX.: All the way counterclockwise. • MIN.: All the way clockwise. • DEC./B: Set at approximately 3 o'clock. • ACC.: All the way clockwise. • COMP.: Set all the way counterclockwise. Detail View of Jumpers and Trim Pots  Drive Board Trimpots **Important Application Information:** Motor with External Fan Cooling – Most totally-enclosed fan-cooled (TEFC) and open-ventilated 3-phase AC induction motors will overheat if used beyond a limited speed range at full torque. Therefore, it is necessary to reduce motor load as speed is decreased. **Note:** Some fan-cooled motors can be used over a wider speed range. Consult the motor manufacturer for details. ⚠ **WARNING!** Some motors have low speed characteristics which cause overheating and winding failure under light-load or no-load conditions. If the motor is operated in this manner for an extended period of time, it is recommended that the unloaded motor current be checked from 1–15 Hz (60 – 450 RPM) to ensure motor current does not exceed the name-plate rating. Do not use motor if the motor current exceeds the nameplate rating. 2. Check intake screens inside upper chamber to see if they are clogged. 3. Blower motors are controlled by 220 volt single-phase input and three-phase output. (Check lead to lead. Not lead to ground.) 4. Is there a steady green and a slowly-flashing green light? If not, check input fuses. If fuses are good, replace AC inverter. 5. If there is a steady green light and not a slowly-flashing green light, refer to the table that follows for information about what the flashing LEDs indicate.

Two LEDs on the drive board provide diagnostic information about the board status.

LED	Drive Status	LED Color and Blink Sequence	Blink Rate	Color & Sequence[4] After Recovered Fault
PWR (Power)	Bus and Logic Power Supply	Green	On Continuous	——
ST (Status)	Normal Operation (Run)	Green	1 Sec. On / Off	Green
	Overload (120% – 160% Full Load)	Red	On Continuously	Green
	I^2t (Drive Timed Out)	Red	0.25 Sec. On / Off	——
	Short Circuit	Red	1 Sec. On / Off	——
	Undervoltage	Red / Yellow	0.25 Sec. On / Off	Red / Yellow / Green[5]
	Overvoltage	Red / Yellow	1 Sec. On / Off	Red / Yellow / Green[5]
	Stop	Yellow	On Continuous	——
	Phase Loss Detection[2]	Yellow	0.04 Sec. On / Off	——
	Communication Error[3]	Green / Red	1 Sec. On / Off	Green

Notes:

1. Phase Loss Detection on Drive Board Models KBVF-23P, 24P, 29, 45, 48
2. Requires AC Line restart.
3. With DIVF Modbus Communication Module Installed.
4. All LED flash rates, after recovered vaults are 1 Sec. On / Off.
5. Drive will require manual restart to return the Status LED color to its normal flashing green.

Problem	Solution
No air flow (Continued)	6. If one motor is running and one is not, replace the faulty motor. 7. If all motors are not running, check for approx. 220 VAC output voltage. If there is no voltage and the green lights are on and slowly flashing, replace the AC inverter. (Remember this is three-phase: test from lead to lead. Do not test to ground.) U to V, U to W, V to W. If you lose voltage on one of these legs, replace the AC inverter. 8. One bad motor could cause the steady-flashing green light to change. Disconnect all motors and run one motor at a time to find the bad motor. 9. Motors should be running counter-clockwise. Check that all motors are running the correct direction. If not, change the two output terminals to obtain correct phase.

Problem	Solution
No heat	1. Is the display on the temperature controller on? If not, check for 220 Volts on terminals 9 and 10. If there is voltage, replace the temperature controller. 2. If the display is on and SV is set higher than PV, is there a red light on? If not, replace the thermocouple. 3. If there is a red light on, check for 220 VAC from any wire number 8 to terminal 13, and then terminal 14. If no voltage, replace the temperature controller. 4. If there is 220 VAC, check for 220 VAC on coil of heater contactor. If there is voltage and the contactor is not pulling in, replace contactor. 5. If there is no 220 VAC, check heater bank on / off switch. The best way to check this is to disconnect the wires and check resistances (Ohms).
Delay cool-down does not work	Adjust temperature controller TT1 using the menus, Menu #1 and Menu #2, that follow. Refer to adjustment procedure to adjust the Delay Cool-Down setting.

Temperature Controller Default Settings

Temperature Controller

Par5
USEr=HIGH
Pyd=100
PAr3
In-t=JIC.H
Unit=F
L-SC=32
H-SC=450
In-b=-4
H-t=50
PAr4
AL-1=PUCC
AL-2=PUCC
PAr1
AL1.H=150
AL2.H=450

Parts List

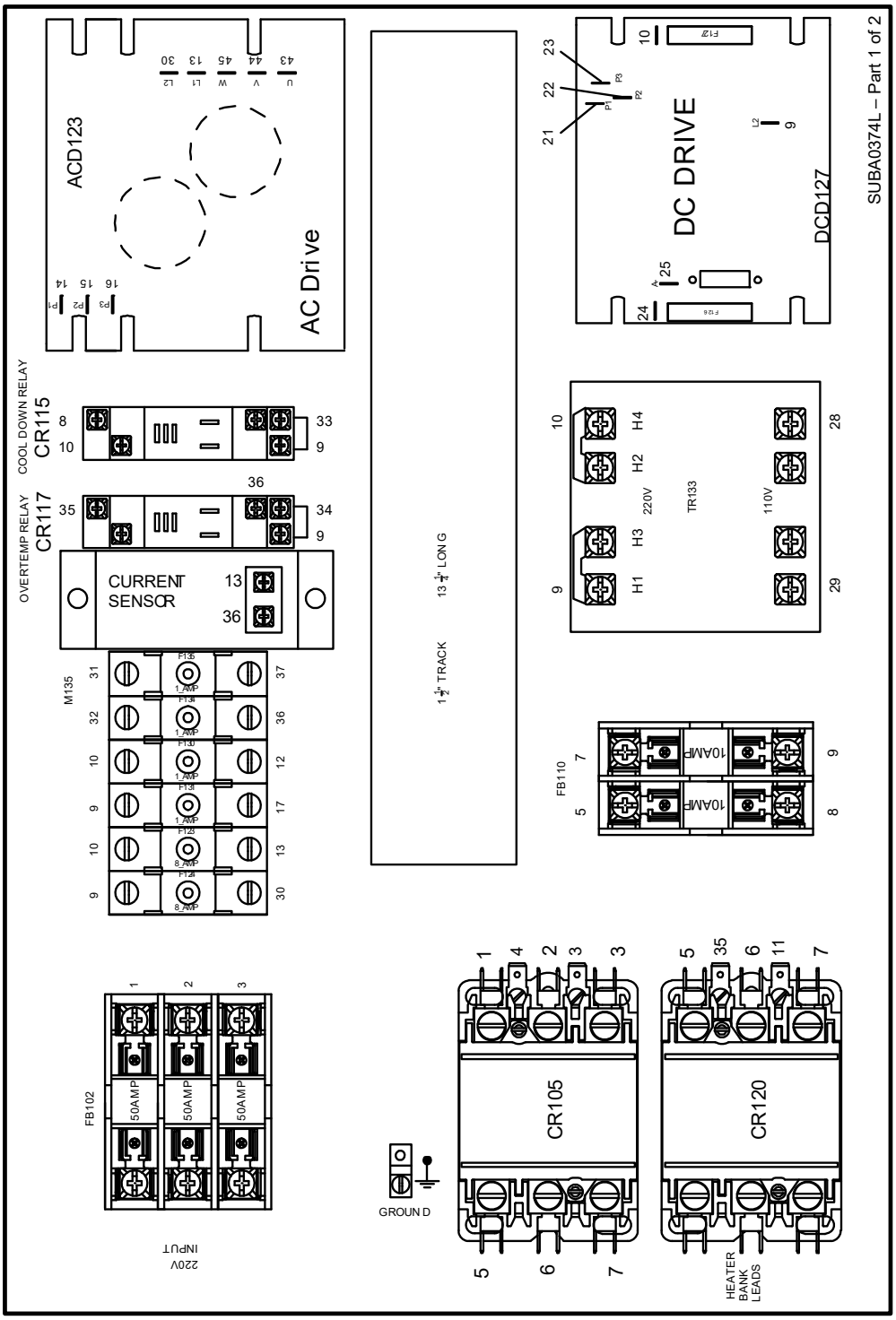
ETB3012-V2 & ETB3020-V2 220VAC 50 Amp 3 Phase Spare Parts List

Part Number	Description
ETC00304	Blow Cool Motor
ESC00641	14” Cooling Fan
ETL001001	60 Amp 3-Pole Contactor
ETC00021	Thermocouple
ETC00011	Temperature Controller
ET000205	10 Amp Small Glass Fuse
ET000185	2.5 Amp Small Glass Fuse
ET000186	5 Amp Small Glass Fuse
ESC00071	0.05 Resistor
EAST1009	20 Amp 250V Fuse
EAST0349	A/C Speed Control
EAST0315	DC Control Board
EAST0210	1 Amp Small Glass Fuse
ETL00317	16 KW 220V 3 Phase Heater Bank
ETL00202	Large Blower Wheel
ETL00109	¾ HP Variable Speed Blower Motor
ETL00228	Conveyor Drive Motor
ET300019	Silicone Covered Rollers, 30”
ETC00008	Bearing $^{5}/_{8}$” ID

Appendix A: Electrical Panel Layouts & Electrical Schematics

Panel Layout for ETB3012 & ETB3020 -DRV2 & -PBV2 — Part 1 of 2

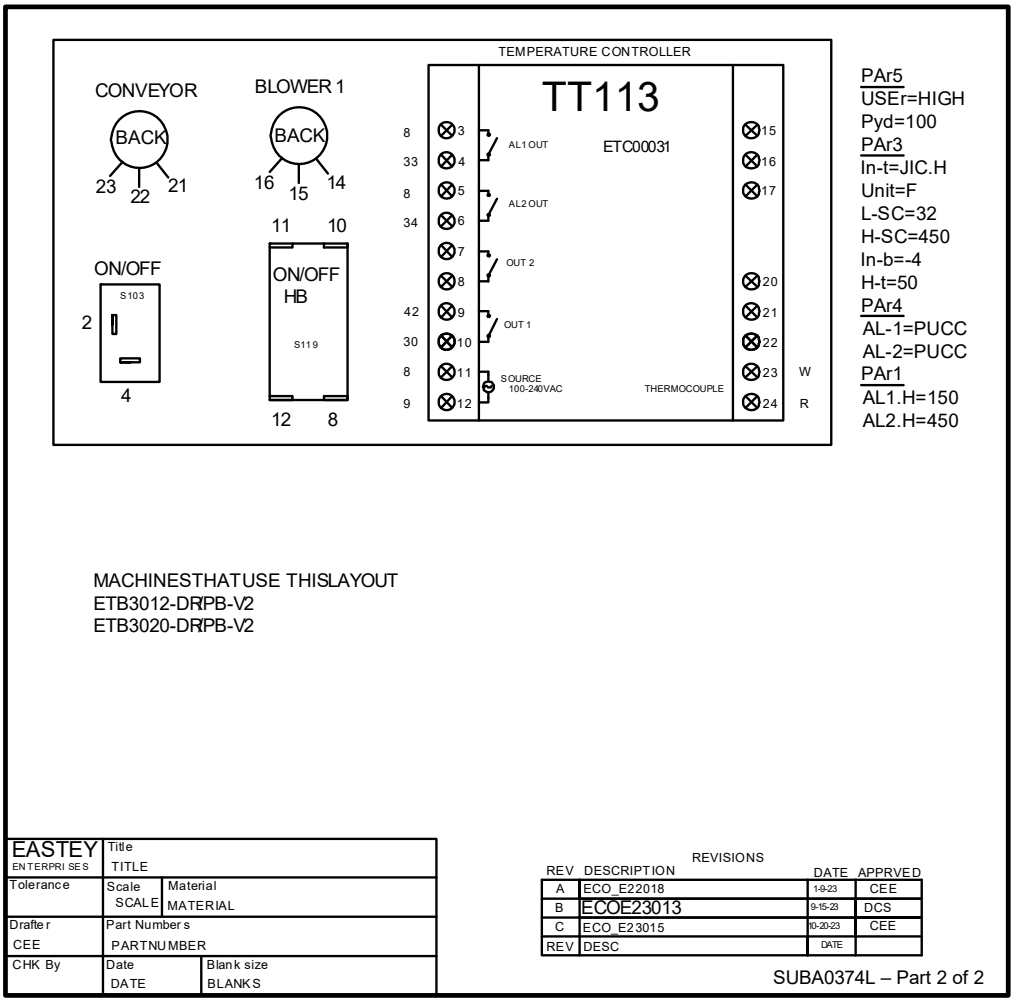
7PL



SUBA0374L Part 1 of 2

Panel Layout for ETB3012 & ETB3020 -DRV2 & -PBV2 — Part 2 of 2

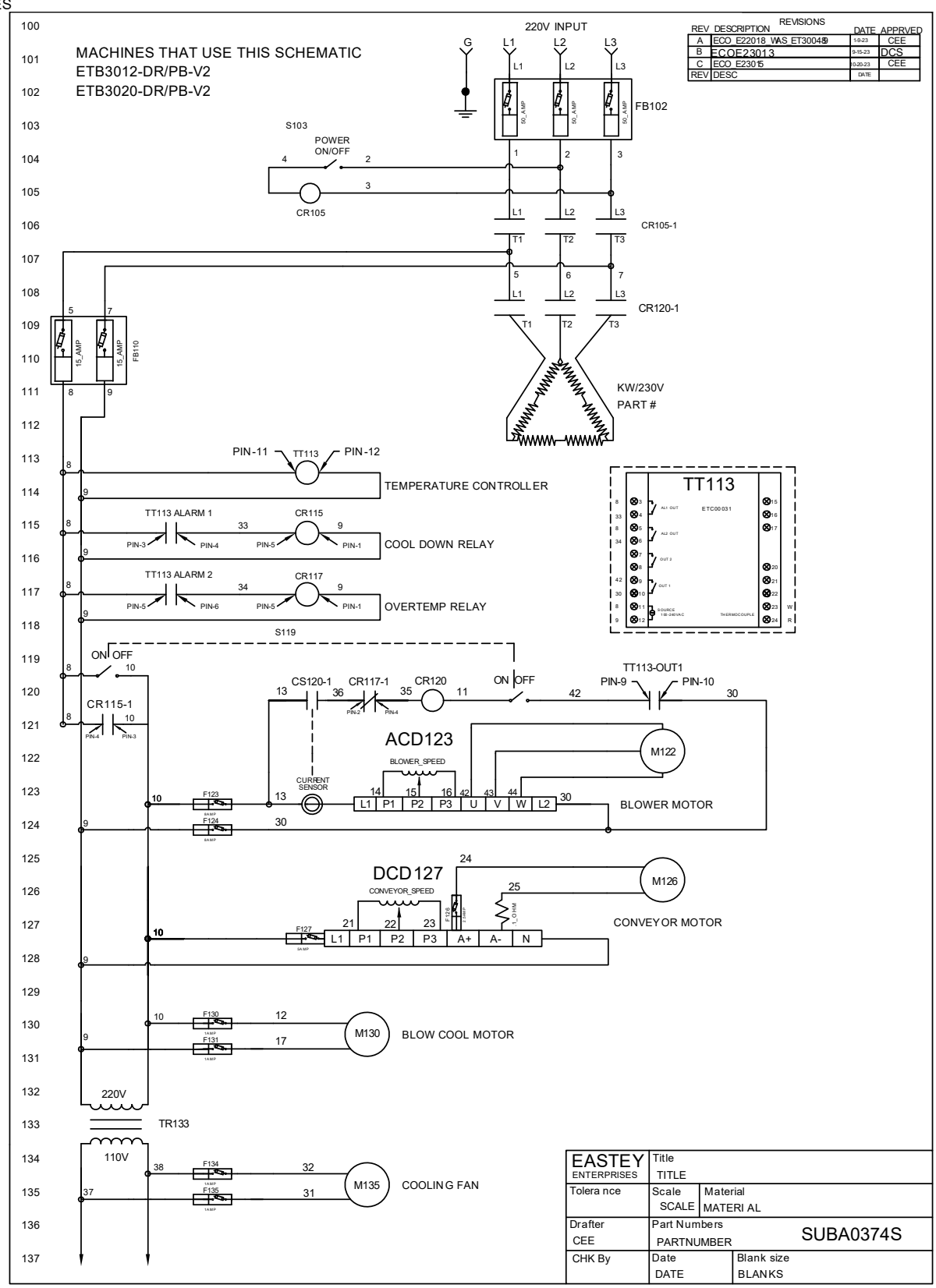
7PL



SUBA0374L Part 2 of 2

Electrical Schematic for ETB3012 & ETB3020 -DRV2 & -PBV2

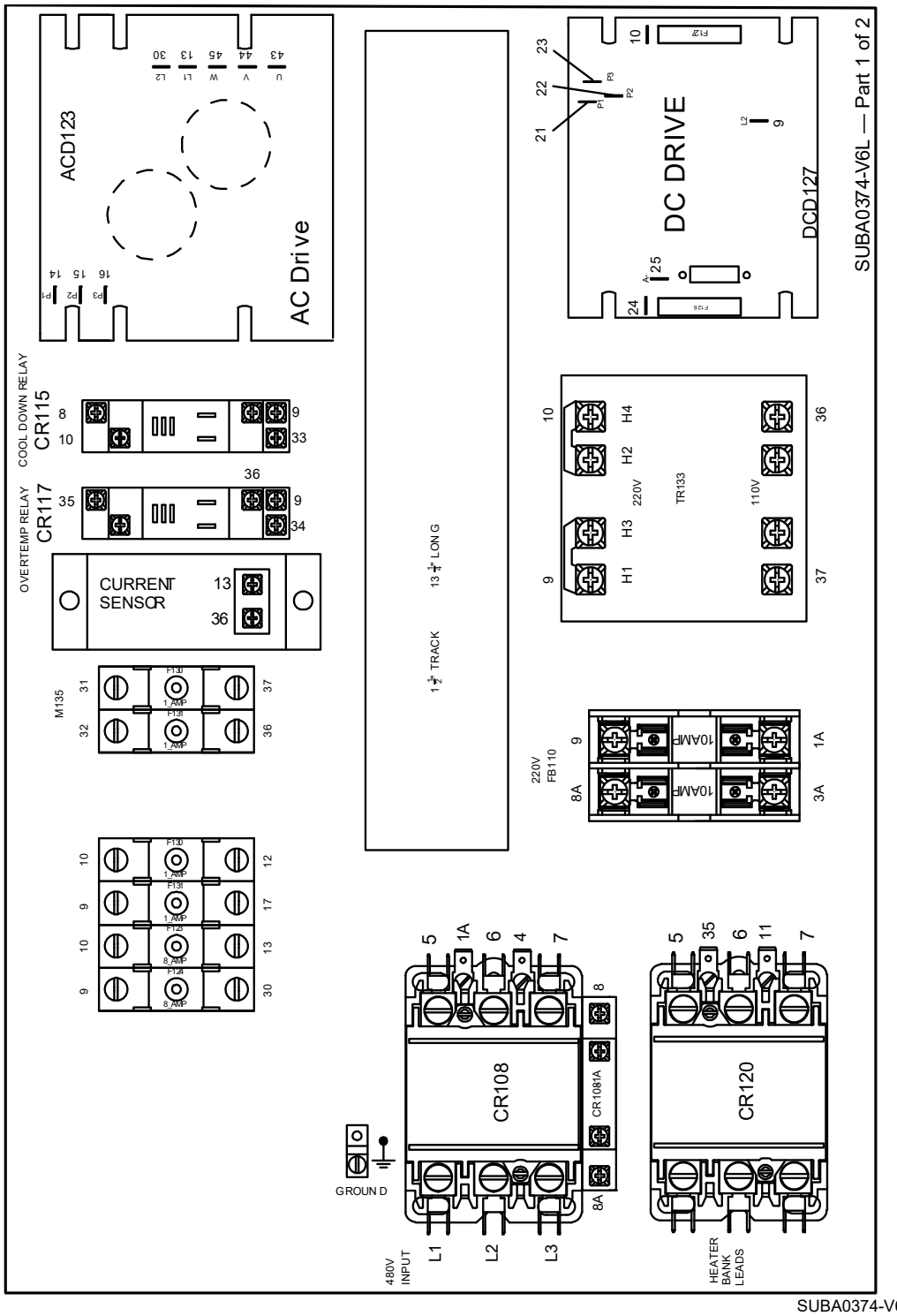
6ES



SUBA0374S

Panel Layout for ETB3012 & ETB3020 -DRV6 & -PBV6 Part 1 of 2

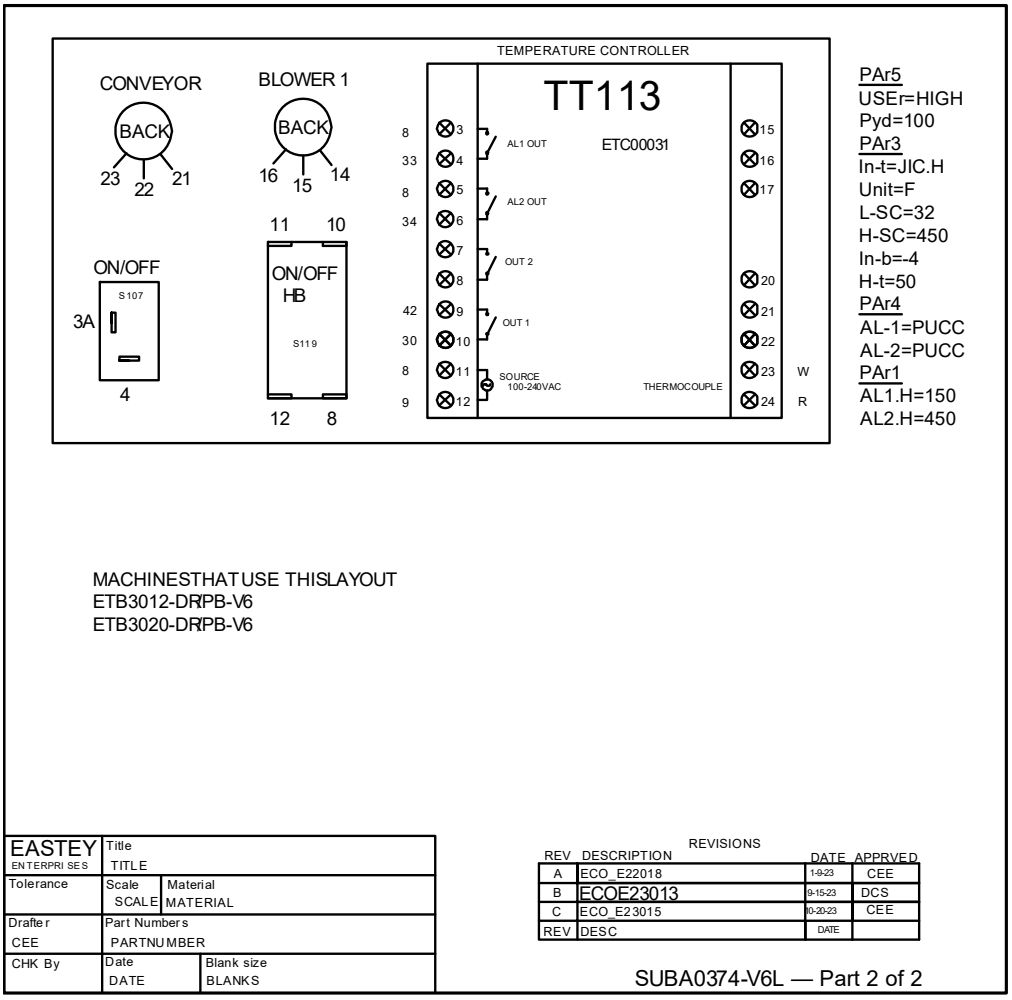
6PL



SUBA0374-V6L Part 1 of 2

Panel Layout for ETB3012 & ETB3020 -DRV6 & -PBV6 Part 2 of 2

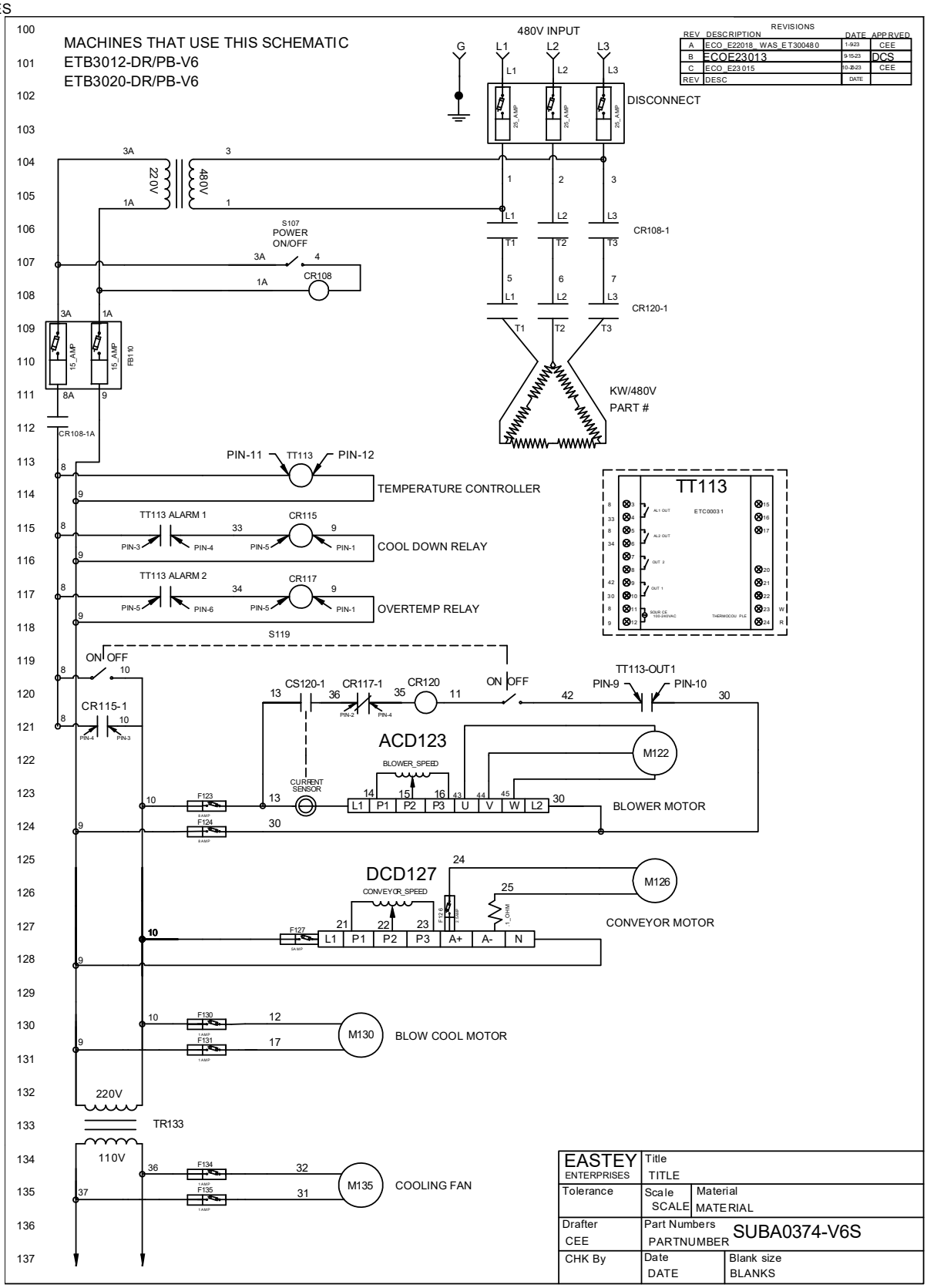
6PL



SUBA0374-V6L Part 2 of 2

Electrical Schematic for ETB3012 & ETB3020 -DRV6 & -PBV6

6ES



SUBA0347-V6S

Warranty Statement
Shrink Packaging Equipment

This Warranty Statement Is Available Online

This Warranty Statement is also available from the Eastey Support Website in electronic format for web browsers and e-readers. Go to Engage Technologies.net >> Eastey >> Case Sealing & Shrink Packaging Equipment >> Warranty >> Shrink Packaging Warranty or scan the QR Code at right using the camera app on your mobile device to go directly to the online version of the most current version this Warranty Statement.

Warranty Statement

Eastey warrants that all of the products it ships will be in good working order and free from defects in material and workmanship for a period of two (2) years from the date of shipment by Eastey and will conform to the published specifications for that product. Purchased parts will be warranted for one (1) year.

Damage caused during transport is the responsibility of the carrier and is not covered under this warranty. All damages detected upon receipt of equipment should be reported immediately to the carrier and Eastey should be notified.

Warranty Period – Specific Items

Any moving or wear parts are covered for 180 days after the date of purchase. This includes items such as conveyor belt, silicone tubing (roller covering), end curtains, felt pad, bearings, and wear rails. The seal pad and fuses are consumable items and are not covered under warranty.

Repairs

All in-house repairs are rigorously tested for optimum operation and performance and warranted to be, under normal and proper use, free from defects in materials and workmanship for a period of 90 days from the date of service.

Shrinking Quality

Shrinking quality achieved in a given application is dependent on the film, product, installation, material handling, and the maintenance provided. Eastey makes no warranty that the shrinking quality achieved in an application will be the same as that achieved on a test piece in our demo facility.

Shipping Policy

Customer pays all incoming shipping charges for replacement components. If the item is defective and under warranty, Eastey will pay all return shipping charges via the least costly method. If expedited shipping is desired, the customer must furnish their shipping account number and shipping fees will be charged to that account.

Exclusions

Damage due to tampering, abuse, improper adjustment, electrical interference, or the use of non-approved components will void any and all warranties by Eastey and its distributors.

EASTEY
7041 Boone Avenue • Brooklyn Park, MN 55428
1-800-835-9344 • (763) 795-8856 • Fax (763) 795-8867
info@eastey.com • www.eastey.com

Warranty Verification

If you believe that a product may be defective and may be covered by warranty, obtain a Return Material Authorization number by calling our technical support number (toll free at 1-800-835-9344, or 763-428-4846 or Fax: 763-795-8867) or e-mail info@eastey.com. Based on the recommendation from Eastey technical support, replacement components may be shipped out via UPS Ground or similar method. If expedited shipping is desired, customer must furnish their shipping account and shipping fees will be charged to that account.

Customer is required to return the defective component to Eastey. If after 30 days, Eastey hasn't received the defective component, the customer will be invoiced for the replacement component. If the returned component is found to not be eligible for warranty, Eastey will contact the customer and the customer will be invoiced for the replacement component.

Warranty within 60 days of invoice

For warranty questions that take place within 60 days of the original invoice, Eastey will allow cross-shipment of a replacement component to an end-user customer or Eastey distributor. The customer will be invoiced for the replacement component 60 days after it ships. Upon receipt of the returned component, Eastey will evaluate it and issue credit where necessary.

For components that have been misused or externally damaged, Eastey will not issue credit, and will contact the customer to determine whether or not they want the component repaired and/or returned.

Warranty after 60 days of invoice

For warranty questions that take place more than 60 days from the original invoice, Eastey requires the end-user or Eastey distributor to return the component to Eastey for repair. Upon receipt of the returned component, Eastey will evaluate it and repair as necessary.

Components that fall within our warranty policy will be repaired normally within 5 business days of receipt and returned to the customer via standard ground shipping at Eastey's expense. If expedited shipping is required, the customer must furnish their shipping account number and shipping fees will be charged to that account.

For components that have been misused or externally damaged, Eastey will contact the customer to determine whether or not they want the component repaired and/or returned.

Warranty Eligibility

The warranty provided by Eastey will only be covered provided that:

- Equipment usage is proper and normal
- Equipment is still owned by the original buyer
- Equipment has been operated in accordance with generally approved practice and in accordance with Eastey's specifications and instructions
- No repairs, alterations, or replacement have been made by others without Eastey's prior written approval
- Genuine Eastey repair components are used during the warranty period

Limited Warranty

THIS WARRANTY SHALL NOT APPLY IF ANY MODIFICATION, ALTERATION OR ADDITION IS MADE TO THE PRODUCT WITHOUT EASTEY'S PRIOR WRITTEN APPROVAL. FURTHERMORE, THIS WARRANTY DOES NOT APPLY TO PRODUCT DEFECTS DUE TO MISUSE, ABUSE, NEGLECT, OR FAILURE TO FOLLOW THE RECOMMENDED PROCEDURES. ANY PRODUCT REPAIRED OR ALTERED BY PERSONS OTHER THAN

AUTHORIZED EASTEY REPRESENTATIVES WILL NOT BE COVERED BY THIS WARRANTY. THIS WARRANTY DOES NOT APPLY TO CONSUMABLE ITEMS.

EXCEPT AS EXPRESSLY PROVIDED IN THIS WARRANTY, EASTEY MAKES NO REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED WITH RESPECT TO THE PRODUCT, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OR ANY OTHER MATTER. EASTEY SHALL HAVE NO LIABILITY TO ANY PERSON FOR INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES OF ANY DESCRIPTION WHETHER ARISING OUT OF WARRANTY OR ONTHER CONTRACT, NEGLIGENCE OR OTHER TORT, OR OTHERWISE. NO AGENT, EMPLOYEE, OFFICER, OR OTHER REPRESENTATIVE OF EASTEY HAS AUTHORITY TO BIND EASTEY TO ANY REPRESENTATION OR WARRANTY EXCEPT AS STATED HEREIN. UNDER NO CIRCUMSTANCES SHALL EASTEY'S LIABILITY HEREUNDER, FOR ANY REASON OR CAUSE EXCEED THE PRICE PAID TO EASTEY FOR THE PRODUCT.

Disclaimer of Damages

REGARDLESS OF WHETHER ANY REMEDY SET FORTH HEREIN FAILS OF ITS ESSENTIAL PURPOSE, IN NO EVENT WILL EASTEY BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL, INDIRECT OR SIMILAR DAMAGES, INCLUDING LOST PROFIT OR LOST OPPORTUNITIES OF ANY TYPE ARISING OUT OF THE USE OR INABILITY TO USE THESE PRODUCTS EVEN IF EASTEY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Terms and Conditions

Eastey's Terms and Conditions of Sale are set forth separately at WWW.EASTEY.COM and are hereby incorporated by reference into this warranty statement as if fully set out within.

Customer Support

Eastey Technical Service

For help setting up or operating the ET Performance Series Bundling tunnels. please contact Eastey Technical Service at one of the numbers listed below.

Toll-Free Phone	800-835-9344
Phone	763-428-4846
Fax	763-795-8867
E-mail	info@eastey.com
Web	www.eastey.com

Thank you again for your purchase of Eastey products. We are pleased to be a part of your packaging needs.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