ALMECO
air and water technologies

DRYING SYSTEMS
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EP10A compact blower

EP10A Compact blower
Installation-, operation & maintenance
Instruction manual

TABLE OF CONTENTS

1. KEY POINTS FOR MAINTAINING THE EP10A COMPACT BLOWER

Health and safety

- Never operate the blower without a belt guard fitted or without the inlet filter/ ducting fitted to the blower inlet.
- The blower incorporates high speed moving parts that can cause injury.

Electrical

- Ensure that any ducting and equipment fitted to the discharge has a suitable resistance to ensure the motor does not draw too much current.
- Only use a suitable starter with overload protection.
- Soft start starters are recommended. Direct on line starting is not recommended.
- If using a frequency inverter or soft starter then ensure ramp up and down times are at least 5 seconds.
- Check the direction of rotation. **PLEASE NOTE:** if the rotation is incorrect, air will continue to flow out of the discharge, but at approximately 60% of normal performance.

Control

- The units are designed to run continuously. Avoid frequent stop starts - we recommend no more than 6 per hour unless used with an inverter or soft start. Soft start overruns should be 2 ½ minutes.
- If the blower control is linked to other equipment then ensure that this does not go above the recommended number of starts and stops, if so then use a timer delay in the control to avoid frequent switching.
- The EP10A blower needs to have airflow passing through it to ensure temperatures are not exceeded. The use of control valves should be limited to ensure that at least 150 CFM passes through the head at all times.
- Avoid using fast-acting valves and diverter valves in the ducting. This can cause sudden back pressure changes.

Siting

- Mounting - ensure the blower is isolated from vibration.
- Allow for access to the belt guard for maintenance and for movement of the head for adjustment of the belt.
- Ensure adequate ventilation of motor. If the blower is fitted into an acoustic enclosure, adequate ventilation must be provided to ensure the internal enclosure temperature does not exceed 50°C / 122°F.
- During operation, avoid moisture or debris entering the blower, keep in a clean and dry area.

Critical maintenance

- Keep filter clean – Almeco recommend cleaning every month depending on the working environment. The maximum filter element life is 6 months.
- Only filters and belts supplied by Almeco or its distributors should be fitted to the EP10A/EP10AH Blower.
- Belt tension should be checked regularly (Once per 500 working hours).
- Keep the motor clean (once per month) and free from dust build up.
- Check regularly for excessive noise and vibration.

Use and operation of the EP10A blower contrary to these conditions state above will immediately invalidate any warranty agreement

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2. GENERAL EP10A COMPACT BLOWER INFORMATION

All service procedures and electrical work should only be performed by trained personnel. Please read the following installation, operation and maintenance instructions carefully.

Always ensure that the power is isolated and locked off before commencing any maintenance on the EP10A blower unit.

a. Description and model identification

Almeco's EP10A blower is an industrial type variable speed centrifugal unit capable of producing high velocity hot and cold air. The unit is available as a standard version (EP10A) for handling air in normal ambient conditions, or as a hot–air version (EP10AH) where air temperatures of up to 365 ºF (185 ºC) can be processed.

Almeco clearly labels each EP10A/EP10AH blower unit on the back of the blower head, as well as the motor cowl label (See below). The serial number is located on this label.

Figure 1: Typical Motor label

b. Equipment arrival

- Important information
  Please read the following installation, operation and maintenance instructions carefully. Always ensure that the power is isolated before commencing any maintenance on the EP10A/EP10AH unit.

- Equipment arrival/inspection
  If there are any shortages, discrepancies or damage to your product upon delivery of your EP10A /EP10AH unit, please immediately contact Almeco.

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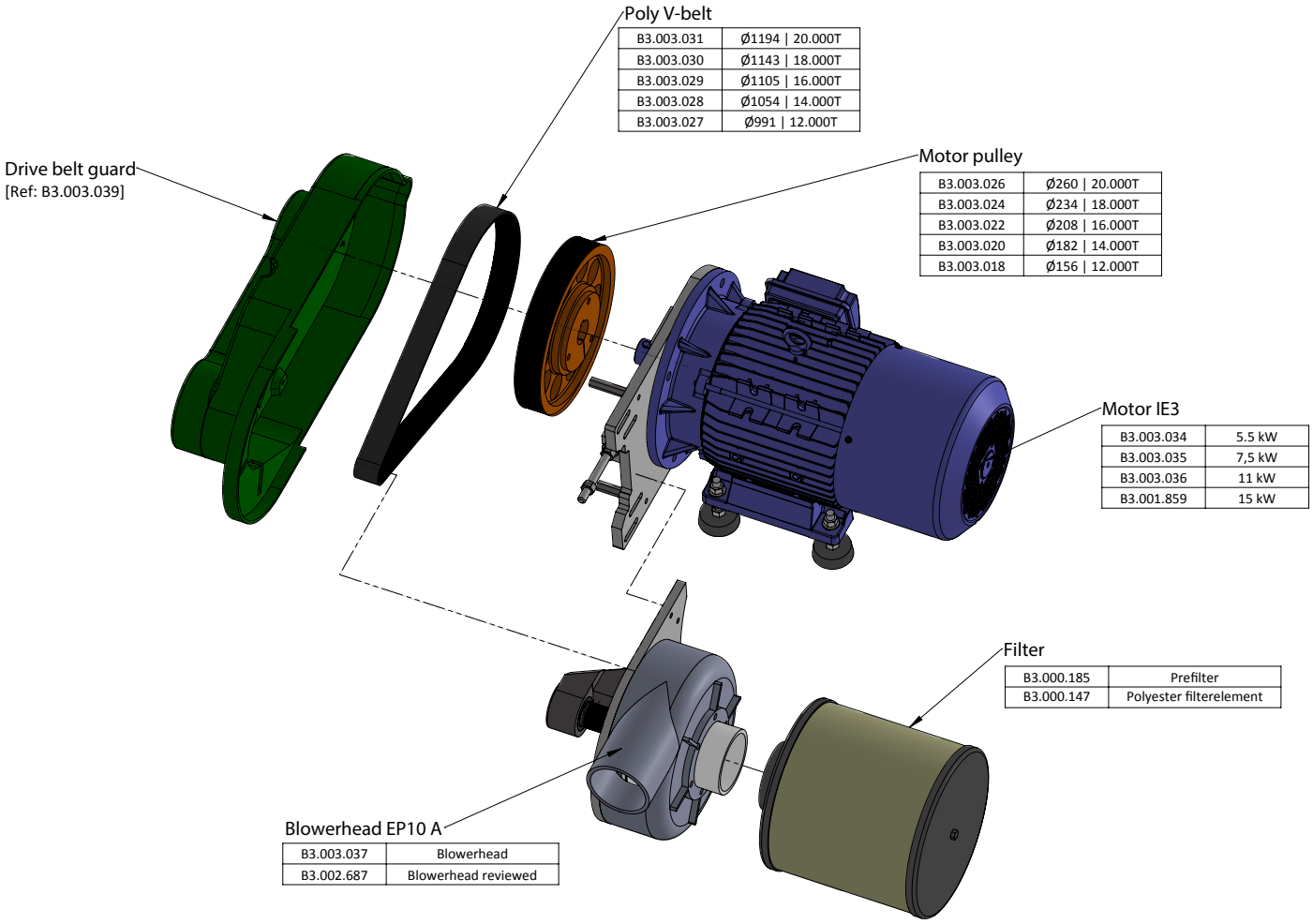
3. KEY FEATURES AND DIMENSIONS

a. Key EP10A features



Complete EP10A Head Assembly [Ref: B3.003.037]

If the head is returned to Almeco for refurbishment, it must be complete, otherwise the warranty will be void

Filter Assembly [Ref: ACKB-233/PRE & ACKB-234]

The pre-filter should be cleaned regularly and the main element replaced every six months

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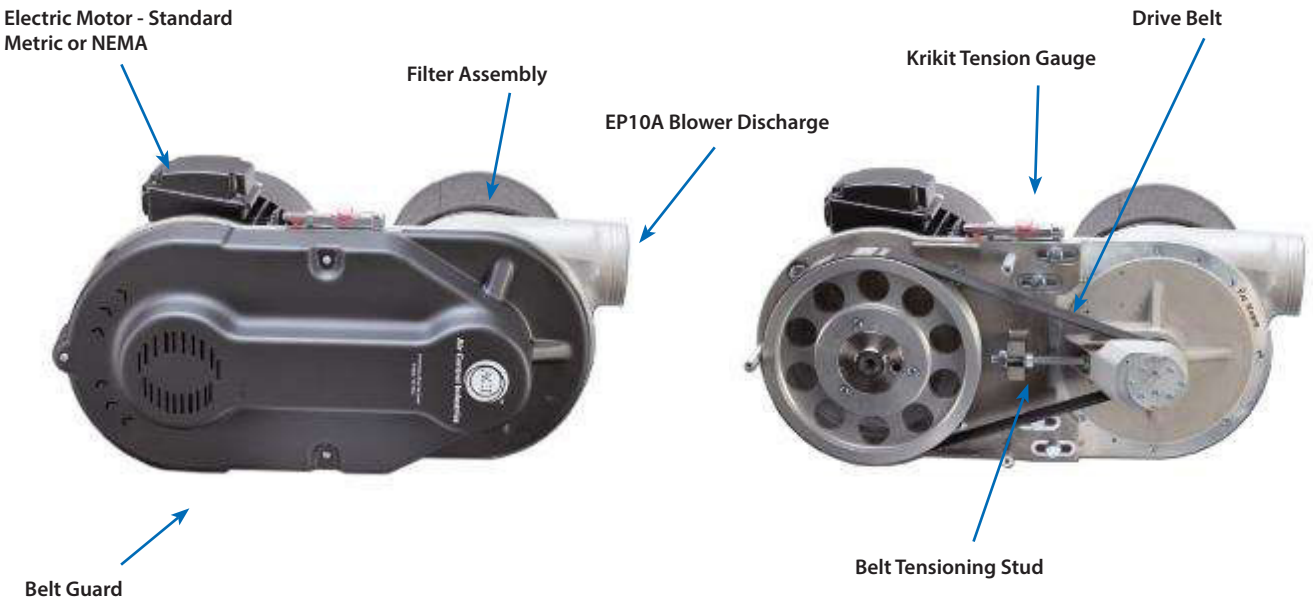
c. Illustration - further EP10A Key Features



d. EP10A Head Options:

Ref: B3.003.037

Thermal cut

Ref: ACEP-250H

Hot air

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4. INSTALLATION/ OPERATION INSTRUCTIONS

a. General Safety Procedures

- Ensure all safety instructions are fully understood by the personnel undertaking the work and that those personnel are familiar with any emergency apparatus.
- Only qualified electrical and competent mechanical personnel should be used for installation and maintenance procedures for the EP10A/EP10AH units.
- Before any installation or maintenance work is carried out, ensure all electrical connections are disconnected from the motor starter, fuse box, or circuit breaker and check that the power cannot be switched on.
- IEE and other relevant regulations should be observed when installing the unit.
- For correct power supply requirements; please refer to the motor nameplate.

When operating this unit, please ensure good safety practices are followed. For example:

1. Ensure that the belt guard is fitted.
2. The unit is not operating independently of the system without securely blanking off the outlet or inlet.
3. All tools, clothing and hands should be kept away from rotating or moving parts.
4. Ensure adequate eye, ear and foot protection is worn.
5. Lifting equipment is used to move the blower into position. When lifting please ensure that the blower is secure and do not use the blower's inlet spigot as a lifting point.

b. Mounting

Units are normally supplied free standing from the motor mounting feet. The EP10A/EP10AH blower head is belt driven and normally mounted from the large flange of a standard metric motor.

NEMA frame motors can be used with the blower and a special motor mounting plate is provided to suit the large 'C face' configuration.

NOTE: Allow room for bracket movement during belt replacement. Very low vibration levels of these units allow them to be bolted to any type of foundation or framework without significant effect. Vibration isolation mounts are recommended if other motor driven equipment is to be mounted to the same structure.

c. Location

The unit assembly must be suitably located to allow access for drive belt and filter replacement. Ambient temperature conditions should range from -10ºC to + 50ºC (14ºF to 122ºF) and adequate ventilation provided for the motor. In factory locations subject to high-pressure water or caustic wash-down cycles, protect or relocate the blower to prevent damage. If the unit has been supplied with an acoustic enclosure, an internal enclosure temperature of + 50ºC (122ºF) must not be exceeded.

d. Blower connections

The unit is supplied with an inlet filter and discharge connection, suitable for attaching flexible hose. Spigots are Ø100mm. It is recommended that the unit discharge be coupled to system piping via a short length of flexible hose and directed away from personnel and silenced to reduce noise levels to within occupational safety standards.

Flexible hose can introduce a high-pressure drop and lengths should therefore be kept to a minimum. The inlet filter must not be removed, re-circulating systems are not recommended and any deviation from standard use as a blower must be approved by Almeco. Recommended inlet air temperature is less than 50°C/122°F. The blower is designed to give a continuous, stable supply of pressurised air and should not be subjected to frequent or large changes in back-pressure from shut-off or diverted valves other than advised by Almeco. The blower should not be operated until it has been fully connected to the complete system it will be operating.

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e. Electrical connections

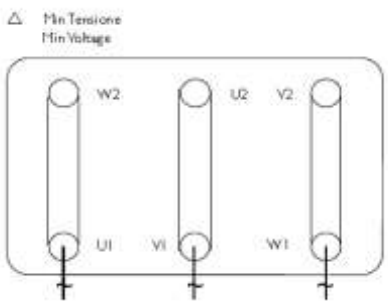
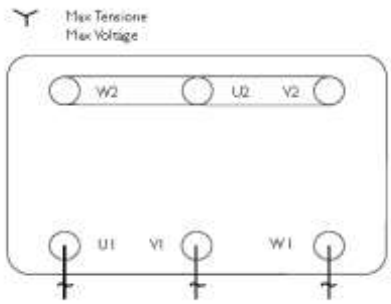
Units are typically driven by a metric frame electric motor with an environmental protection level IP55. If alternative motors are supplied, reference to the motor rating plate is required for all electrical details. The blower is designed to be continuously run at its designated speed, any inverter drive program giving speed control and/ or speed changes must be approved by Almeco.

If a star/ delta starter has not been supplied with the unit, it is not Almeco's responsibility to control the starting of the unit.

I. We recommend that a soft start with thermistor control is used to start the blower, or an inverter with ramp-up and down time set at 5 seconds.
II. If star/delta starting is used and switched by a plc, it is the customer's responsibility to ensure that the switching times are correct. In this case the number of start/stops is limited to 6 per hour.
III. All wiring should be installed to national wiring standards.

Ramp-up and down times should be set at no less than 5 seconds.

Table 1: Motor configuration options:

a. Delta configuration	b. Star configuration	c. Star/ delta starter
		If an inverter is not used, use a suitable starter with overload protection star/ delta starter.

f. Shaft rotation

All units rotate counter clockwise when viewing the blower from the cooling fan of the motor. Alternatively, clockwise when viewing the polley/ shaft end.

NOTE (a): Air will flow out of the blower discharge even when it is run in reverse but at approximately 60% of the normal performance.

NOTE (b):
- Never run the blower unit without the belt and belt guard fitted.
- Never run the blower when disconnected from ducting/ air delivery device.
- Always ensure that the power is isolated and locked off before commencing any maintenance on the unit.
- Before operating the blower ensure that the blower is secured in position.

Incorrect fan rotation is the most common cause of drying system under performance. Double check!

All blower motors are supplied with a thermistor connection. It is important to use these as it protects the motor and may prevent the motor/blower from failure. All Almeco starters provide this safety cut-out feature. As an optional extra the blower head can come equipped with two thermal cut-out probes which provide the blower head bearings with additional protection. These probes will be pre-wired into the motor thermistor circuit and are wired into terminals T1 and T2 as shown in Figure 4.

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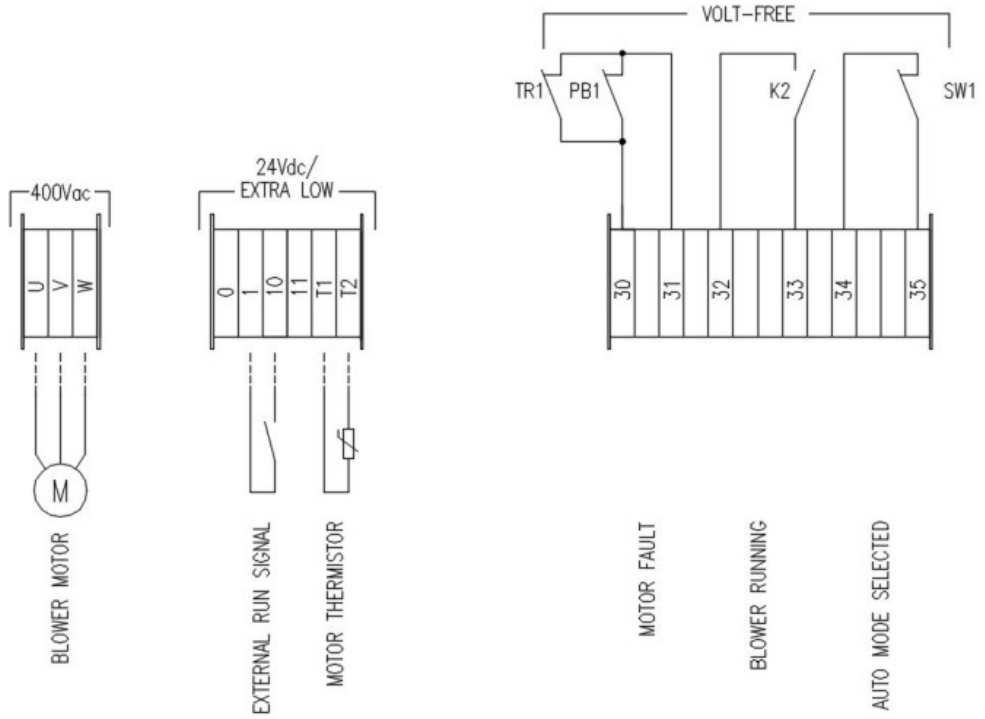
Image: Wiring diagram for Soft Start



5. MAINTENANCE INSTRUCTIONS

a. Filters

Almeco's EP10A/EP10AH blower units are designed to be a minimum maintenance device. However, the execution of a few basic maintenance functions will extend the life of the mechanical components and ensure continued efficiency and longevity.

Removing filter element

Step 1: Remove pre-filter element by releasing the security nut and washer. Use a 17mm AF spanner.

Step 2: Withdraw the filter end-plate and filter assembly over the fixing stud.

Step 3: Remove the pre-filter sock from the main filter element.

Main filter element cleaning/ Replacement procedures

Step 1: Place the pre-filter sock in warm water, preferably with a low foaming detergent.

Step 2: Wash pre-filter sock thoroughly. Rinse through thoroughly in clean water and squeeze as much water out as possible. Leave to dry thoroughly before replacing.

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- Replacement procedure: the main filter element will need replacing every six months. This and other items can be ordered directly from Almeco.

- Cleaning procedure: the main filter element may be washed using the same procedure as the pre-filter sock. It is important to be aware that the cleaning procedure for this part is far more time consuming and because of this, we recommend a spare filter is fitted whilst the cleaning procedure is carried out.

Once the main filter element has been washed and rinsed, we recommend the following:
- Remove as much of the water soaked up by the main filter element.
- It is then suggested that the filter is placed in an oven at 60°C for a minimum of 4 hours. If an oven is not available, dry off in a well ventilated room and leave for 24 hours minimum - longer if the unit is still not dry.

The main filter element must be dried off completely otherwise moisture will be drawn through the blower head which could possibly cause a major and costly failure.

Re-fitting filter elements:

- Once the main filter element and the pre-filter sock are thoroughly dried, they can be re-fitted to each other.
- Refit the filter and its cover and secure in place using the nut and washer.

It is essential that air filters are regularly maintained and replaced.

Drive Belts

- Checking tension using the supplied Krikit Tension Gauge (The Krikit II belt tension gauge, with the brightly coloured pressure pad and indicator arm, is calibrated to measure Micro-V belt tensions).
- Place the gauge in the centre of the belt and align the sides of the gauge to the edges of the belt and midway between any two pulleys (refer to images below). The belt tension accuracy is dependent on this
- procedure.
- Push slowly on the coloured pad to get an accurate reading. When you hear the "click", immediately stop pressing and remove the gauge carefully, so as not to move the indicator arm.
- Turn the gauge sideways to see the exact spot where the top of the indicator arm intersects the scale.
- Mark this spot with thumbnail and turn gauge to read the scale accurately.
- It is recommended that more than one tension reading be taken to assure repeatable measurements.
- Increase or decrease the belt tension until you are within the desired tension range. Almeco belt tension = see label on unit – typically 50Kg or 110lbs.

Drive belts will need to be checked every 500 working hours and replaced every 2 years.

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Image: EP10A Tension Gauge (ref: Krikit Gauge)

To remove a drive belt

- Isolate the power supply.
- Remove the belt guard.
- Disconnect any ducting.
- Loosen the 4 off M10 bolts clamping the motor mounting plate to the blower back plate, using a 17mm spanner or socket.
- Slacken the 2 off M12 nuts on adjustment screw above and below adjustment anchor cast into motor mounting plate, slacken top nut using a 19mm spanner, to allow the blower head/back plate assembly to drop sufficiently to facilitate the removal of the belt.
- After removal ensure the pulleys are clear of any dust or debris. If the belt is to be re-used wipe with a dry cloth before attempting to refit.

To refit a drive belt

- Fit the new belt over the pulleys ensuring that it is correctly aligned with the poly-vee pulleys. Do not force the belt or roll the belt onto the pulleys. Ensure the blower head is low enough to allow the belt to clear before attempting to fit.
- Using the M12 nuts on the adjusting screw, apply sufficient tension to raise the blower head/back plate assembly into its approximate position and lightly tighten the M10 bolts to hold the assembly in place.
- Tension using the M12 nut on the upper side of the adjustment anchor checking the tension with 'Krikit' tension gauge supplied. (Refer to figures 4 & 5). When the correct tension is achieved (50kg or110lbs on the scale), lock adjuster by tightening the M12 nut on the underside of the adjustment anchor and tighten M10 bolts to approx. 20N/M.
- After fitting a new belt, the tension should be re-checked after the unit has been run between 10-20 minutes. This is due to initial stretch of a new belt.
- Only drive belts supplied by Almeco should be used.

Drive belts supplied by Almeco should be used.

Blower heads

The EP10A's head assembly comprises:

a. fan case
b. inlet ring
c. back plate
d. impeller
e. spindle assembly

When replacing this compact blower head, the pulley and hub position must be checked. [Please note - This blower head is a newer design with a different pulley position to older units supplied pre 2002.]

For standard metric frame motors the hub that the pulley mounts on must be 20-21mm from the motor flange face. If it is a NEMA motor this dimension must be 14-15mm.

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- To change the position, remove the three cap-head crews that secure the pulley to the hub and remove the pulley. Mark the position of the hub to ensure this is replaced in the same position.
- Release the hub by undoing the two cap-head screws and the one grub-screw that locks the key in position.
- The hub can now be positioned along the shaft to the new dimension. You may need to tap it with a soft faced mallet.
- Re-tighten the grub-screw and cap-head screws. Re-mount and secure the pulley.
- After fitting the head, the pulley alignment can be checked by using a long straight edge.
- All nuts to be new 'Nyloc' or loctite to be applied.

To remove the blower head

- Isolate the power supply.
- Remove the belt guard.
- Disconnect any ducting.
- Loosen the 4 off M10 bolts clamping the motor mounting plate to the blower back plate, using a 17mm spanner or socket.
- Slacken the 2 off M12 nuts on adjustment screw above and below adjustment anchor cast into motor mounting plate, slacken top nut using a 19mm spanner, to allow the blower head/back plate assembly to drop sufficiently to facilitate the removal of the belt.
- After removal ensure the pulleys are clear of any dust or debris. If the belt is to be re-used wipe with a dry cloth before attempting to refit.
- Once the belt is removed the four M10 clamping bolts can be fully withdrawn from the motor mounting plate. This will allow the head to become detached.
- Remove the M12 belt tensioning stud from the used head with a 19mm spanner.

Refitting a new head

- Fit the belt tensioning stud from the old head to the new head assembly
- Lift the blower head into position onto the motor mounting plate & refit the four M10 clamping bolts through the motor mounting plate.
- Fit the new belt over the pulleys ensuring that it is correctly aligned with the poly-vee pulleys. Do not force the belt or roll the belt onto the pulleys. Ensure the blower head is low enough to allow the belt to clear before attempting to fit.
- Using the M12 nuts on the adjusting screw, apply sufficient tension to raise the blower head/back plate assembly into its approximate position and lightly tighten the M10 bolts to hold the assembly in place.
- Tension using the M12 nut on the upper side of the adjustment anchor checking the tension with 'Krikit' tension gauge supplied. (Refer to figures 4 & 5). When the correct tension is achieved (50kg or110lbs on the scale), lock adjuster by tightening the M12 nut on the underside of the adjustment anchor and tighten M10 bolts to approx. 20N/M.
- Refit the belt guard.
- Reconnect the blower ducting.
- The electrical supply should now be reconnected.
- After fitting a new belt, the tension should be re-checked after the unit has been run between 10-20 minutes.
- This is due to initial stretch of a new belt.
- Only drive belts supplied by Almeco should be used.

Fitting an EP-250/T/SN (or EP-250HT) replacement head assembly on the EP10 in place of a nonthermal cut-out head.

- On receipt of the blower head you will have additional thermal cut-out's as well as a control wire lead set. The thermal cut-out head should be fitted as per the standard head, please see section 3c for full details.
- To electrically fit the thermal cut-out devices it is necessary to break into the motor thermistor circuit inside the motor terminal box. Please follow the diagram shown overleaf.
- If an Almeco Soft Start or Star/Delta Starter is used, upon a trip from either the motor thermistor or the thermal cut-out probes the blower will stop. Only upon turning the starter off and then on again (once the thermal cut-out has cooled) can running of the blower then resume.
- If a non Almeco supplied starter is used it is vital that the blower will not restart automatically after the thermistor or cut-out probe has cooled. In this case this is the customer's responsibility.
- Please note that the motor thermistor must be used in order for Almeco to uphold its warranty.

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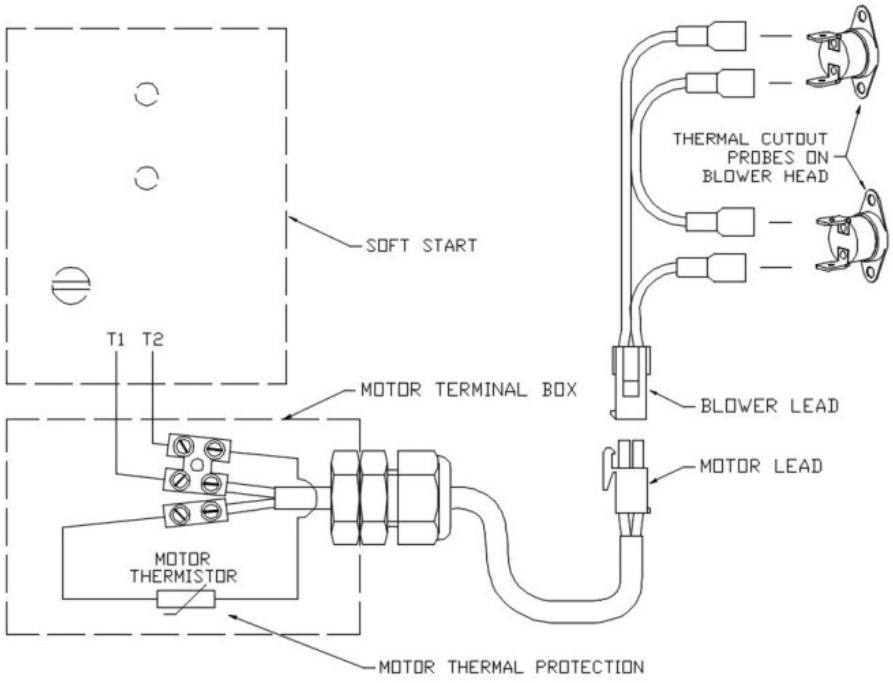
Wiring diagram: Thermal Cut-Outs



6. TROUBLESHOOTING

Malfunction	Possible cause	Remedy
Low flow/ pressure/ vacuum	Incorrect blower rotation	Check and correct lower rotation if required
	Dirty or contaminated filters	Failure to change filters - MUST be changed regularly, dependant on amount of use but a minium of every six months. Refer to Section 5, Filter Maintenance
	Damaged hose lining	Replace damaged hose
	Air leaks in system	Check/ replace damaged hose and clips
	Drive belt slipping/ Worn Pulley	Replace transmission parts
	Incorrect speed from control system	Check inverter/ soft start/ star delta settings
	Unapproved drive belts being fitted	Replace existing drive belt with Almeco approved belt
	Closed or damaged valve	Check valve and replace if damaged
High flow/ pressure	Blower speed too high for application	Reduce blower speed by using inverter or reducing pulley size
	Operating frequency too high - maximum head speed must not exceed 20,000 rpm	Check design frequency and reduce by inverter or change pulley size

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Malfunction	Possible cause	Remedy
Frequent drive belt failure	Incorrect belt tension	Check belt tension and correct if necessary. See section 5b
	Motor pulley out of alignment	Check pulley alignment and correct if necessary
	Pulley grooves worn	Replace transmission parts
	Hostile environment (belts contaminated)	Replace belt, clean pulleys and protect blower from hostile environment
	Incorrect belt fitted	Replace existing belt with Almeco approved belt
	Incorrect belt installation method (Rolling belts onto pulleys)	Read manual (Section 5b) for correct installation and do not roll belts
	Liquid entering blower inlet	Avoid any liquid entering blower
	Incorrect starting ramp	The unit is designed to run CONTINUOUSLY. The start and stop must be progressive; if an inverter is used we recommend a 5 second ramp up time. If a star/ delta timer is used ensure there is no delay between switching from star to delta
	Too many stop/ starts	Avoid high number of stop starts (max of 6 per hour) unless using a frequency inverter or a soft start. Suggested minimum inverter setting = 30Hz
Electrical overloading	Exceeding rated CFM	Reduce "open area" of air delivery devices - i.e. slot width of Airknives
	Blower not piped to system	Only run blower when connected to the operating system. Never run in isolation
	Blower RPM too high	Reduce blower speed via inverter or change pulley size
	Motor has winding or bearing damage	Contact Almeco immediately
	Electrical supply problems	Ensure that supply voltages match with the motor rating plate details
Irregular/ excessive noise	Blockage in air delivery ducting	Check all ducting and air delivery devices for blockages/ damage. Replace as necessary
	Leak in air delivery ducting	Check and replace damaged hose and clips.
	Inlet silencer damaged (internally)	Replace main EP10 filter housing. See Section 5
	Loose drive belt	Check belt tension and correct if necessary. See Section 5b
	Bolts loose on blower/ motor assembly	Regular maintenance and checking/ tightening all bolts
	Motor mounts loose	Regular maintenance and checking/ tightening all mounts
	Blower bearings worn	Contact Almeco immediately
	Motor bearings worn	Contact Almeco immediately
	Blower RPM too high	Reduce blower speed via inverter or change pulley size
	Blower is receiving vibration from other equipment nearby	Isolate the blower using anti-vibration mounts

If you experience a problem and are in any doubt on the cause or possible remedial action required, please contact your local distributor.

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7. WARRANTY & SERVICE EXCHANGE

Almeco warrants all products manufactured by ACI to be free of defects in material and workmanship for eighteen (18) months from the date of shipment. The warranty does not apply to drive belts, filter elements or connecting hose, unless authorised by an officer of ACI. Also, not covered under the warranty is normal wear and tear, neglect or misuse of the equipment, operation in an application not approved by Almeco and ACI, and alterations not performed by Almeco.

All items supplied by Almeco that are manufactured by others shall be warranted under the respective manufacturer's policy. Motors and other items, for which a national service network is in place, should be sent directly to that manufacturer's representative for the most prompt service. Almeco will provide any support required ensuring that warranty service by others is handled in a prompt and professional manner.

The Almeco warranty is limited to the repair or replacement of items shipped by Almeco. At no time will Almeco be liable for any of the costs to the buyer for labour, transportation or down-time resulting from defective equipment furnished by ACI, Almeco or our suppliers.

To comply with the Warranty the complete fan unit must be returned to Almeco. Disassembly of the fan will invalidate the warranty.

Service Address:
Our products are manufactured in compliance with applicable international standards and regulations. If you have any queries regarding the use of our products, or if you are planning a special application, please contact:

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