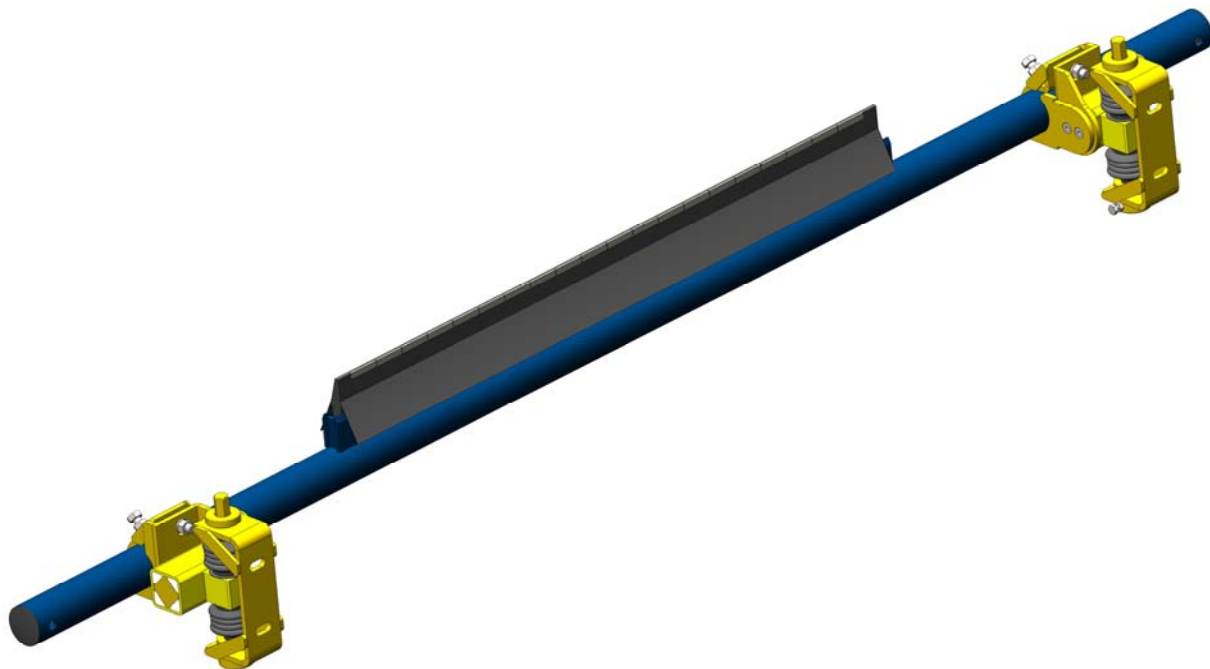


BENETECH **MaxClean™**

BES1-XXX-1T1xZ

**Performance Class Secondary
Belt Cleaner System**

**Owner Operator
&
Manual**



! IMPORTANT !

BENETECH, INC. HEREBY DISCLAIMS ANY LIABILITY FOR, BUT NOT LIMITED TO:

- IMPROPER INSTALLATION OF EQUIPMENT
- IMPROPER SIZING OF EQUIPMENT
- DAMAGE DUE TO CONTAMINATION OF MATERIAL
- USER'S FAILURE TO INSPECT EQUIPMENT
- USER'S FAILURE TO MAINTAIN EQUIPMENT
- USER'S FAILURE TO TAKE REASONABLE CARE OF THE EQUIPMENT
- INJURIES OR DAMAGE RESULTING FROM USE OR APPLICATION OF THIS PRODUCT CONTRARY TO INSTRUCTIONS AND SPECIFICATIONS CONTAINED HEREIN.

BENETECH, INC.'S LIABILITY SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF EQUIPMENT SHOWN TO BE DEFECTIVE.

! SAFETY !

Review and understand all safety rules given herein along with local and Governmental standards and regulations. Know and understand the American National Standards Institute (ANSI) z244.1-1982 lockout/tagout procedures, the American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements and the Occupational Safety and Health Administration (OSHA) Federal Register, Part IV, 29 CFR Part 1910, Control of Hazardous Energy Source (Lockout/Tagout); Final Rule.

Also observe all local and Governmental regulations concerning entry into confined spaces, welding, cutting, grinding, wash-down procedures and all Personal Protective Equipment (PPE) regulations.

The following notations are used throughout in this manual.

! DANGER !

Danger: Denotes immediate hazards that will result in severe personal injury or death.

! WARNING !

Warning: Denotes hazards or unsafe practices that could result in personal injury.

! CAUTION !

Caution: Denotes hazards or unsafe practices that could result in product or property damages.

! IMPORTANT !

Important: Denotes instructions that must be followed for proper installation and/or operation of equipment.

! NOTE !

Note: Denotes general items to assist the reader/ installer/ operator.

***Please pay close attention to all of these items and warnings.
They have been included here for your safety and for ease of installation.***

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Introduction

Typical Belt Cleaning systems include a primary belt cleaner and one or more secondary belt cleaners. The Primary belt cleaner is installed on the face of the drive pulley and is used to removed the majority of the carryback sticking to the conveyor and return the fugitive material back into the product flow.

This “carry-back” is then deposited in piles under the conveyor, sticks to return idlers, sticks gravity take-up pulleys, sticks to bend pulleys and sticks to or covers anything else it comes in contact with.

Problems arising from this carry-back can range from mis-tracking of belts due to uneven build up of material on idlers, to premature belt wear from the belt being dragged through material piles and into conveyor structural members, and belt fires from the belt being dragged through material piles, and even complete catastrophic belt failure from pulleys seizing.

Secondary belt cleaners can be installed anywhere on the return side of the conveyor, but are typically installed immediately after the belt leaves contact with the drive pulley. This keeps the material removed by the secondary belt cleaner in the dribble chute area of the transfer point chute work where it can still be reintroduced back into the main flow of material.

Secondary cleaners should be installed where the conveyor belt is under reasonably high tension, providing a level/taut surface for the secondary belt cleaner to be in contact with.

In some cases the materials used in the construction of the cleaners may not be compatible with the material being handled and contamination can occur if the product is damaged during use of even when it operates as intended. If the material handling process could be contaminated in any way through the use of this product it is the user's responsibility to take the necessary steps to prevent contamination.

Please feel free to consult BENETECH, INC. if you suspect there may be incompatibility problems or questions about product application and use, we can provide specific recommendations for your particular problem.

References

The following documents are referenced in this manual:

- American National Standards Institute (ANSI) z244.1-1982, American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements, American National Standards Institute Inc., 1430 Broadway, New York, NY 10018.
- Federal Register, Volume 54, Number 169, Part IV, 29 CFR Part 1910, Control of Hazardous Energy Source (Lockout/Tagout); Final Rule, Department of Labor, Occupational Safety and Health Administration (OSHA), 32nd Floor, Room 3244, 230 South Dearborn Street, Chicago, IL 60604.

Installations without Chutework

These procedures were written for equipment that is being installed on enclosed head-pulley chutework. If the head-pulley is open (not enclosed) the equipment should be installed so that the critical dimensions are followed for proper installation.

Belt Cleaner Inspection Access

If the belt cleaner is installed on enclosed pulley chutework, an Inspection Door must be installed to allow for inspecting the equipment during operation. If the chutework does not already have access doors that allow for installing, servicing and maintaining the equipment an adequate sized door should be used.

Inspection doors are available from BENETECH, INC. or a representative. Contact BENETECH, INC. for a list of Inspection Doors and part numbers. **Unless specifically ordered, inspection doors are NOT included with belt cleaner.**

Belt Cleaner Safety

All safety rules defined in this document and all owner/employer as well as State and Federal safety rules must be strictly adhered to when working on/with this, or any, belt cleaner.

! DANGER !

Do not touch or go near the conveyor belt or conveyor accessories when the belt is running. Your body or clothing can get caught and you can be pulled into the conveyor, resulting in severe injury or death.



! DANGER !

Before installing, servicing, or adjusting the belt cleaner, turn off AND lock out/tag out all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.

! DANGER !

If this equipment is to be installed in an enclosed area, observe all confined space entry regulations and test the atmosphere for gas levels and dust content levels before using a cutting torch, welding equipment or electric hand tools. Using a torch, welding, grinding or drilling in an area with gas or dust may cause an explosion and/or fire resulting in serious injury or death.

! WARNING !

Before using a cutting torch, welders, or grinding equipment, cover the conveyor belt with a fire retardant/resistant cover. Make sure a water source/fire hose is readily available AND OPERATIONAL. Failure to do so can allow the belt to catch fire.

! WARNING !

Belt cleaners are heavy and require two people to lift. Attempting to lift the belt cleaner without assistance could result in injuries or damage to the equipment.



! WARNING !

Remove all tools, parts, trash, and foreign objects from the installation area and conveyor belt before turning on the conveyor. Failure to do so can result in serious injury to personnel or damage the belt and conveyor.

! NOTE !

All Dimensions in this manual are inches (mm)

Before Installing Belt Cleaner

1. Inspect ALL shipping containers for damage and correct number of items (skids, pallets, cartons, boxes, etc.) being delivered. Report damage and/or shortages to delivery service immediately and fill out delivery service's claim form. Keep ALL damaged goods for examination. Benetech Inc is NOT responsible for damage occurring during transit.
2. All Benetech Inc. belt cleaners are shipped from our facilities fully assembled. Care should be taken while disassembling the units to ensure no parts are lost or damaged as the equipment is moved to its desired location. Dispose of shipping containers in approved manner.
3. If any items are missing, IMMEDIATELY contact BENETECH, INC. or an authorized representative.
4. Gather tools. Minimum tools required for installation are:
 - Tape measure/ String
 - Torch/Hole Saw
 - Level/Straight Edge
 - Angle Finder
 - Welder/Drill
 - Open/Box End Wrenches
 - Socket Set
 - Marker/Soapstone (Welders chalk)
5. Turn off and lock out/tag out energy source according to ANSI standards (see "References") and local plant regulations.

! WARNING !

Before installing equipment, turn off AND lock out/tag out all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.



6. If using a cutting torch or welding, test atmosphere for gas level or dust content. Cover conveyor belt with fire retardant cover. Verify locations of fire extinguishers and operational water hoses prior to begin cutting/welding operations.

! WARNING !

If equipment will be installed in an enclosed area, the atmosphere in the structure/area must be tested for gas levels and dust content levels before using a cutting torch, welding equipment, grinding equipment or electric powered tools. Using a cutting torch, welding, drilling or grinding in an area with gas or dust may cause an explosion.

Locating and Installing Belt Cleaner

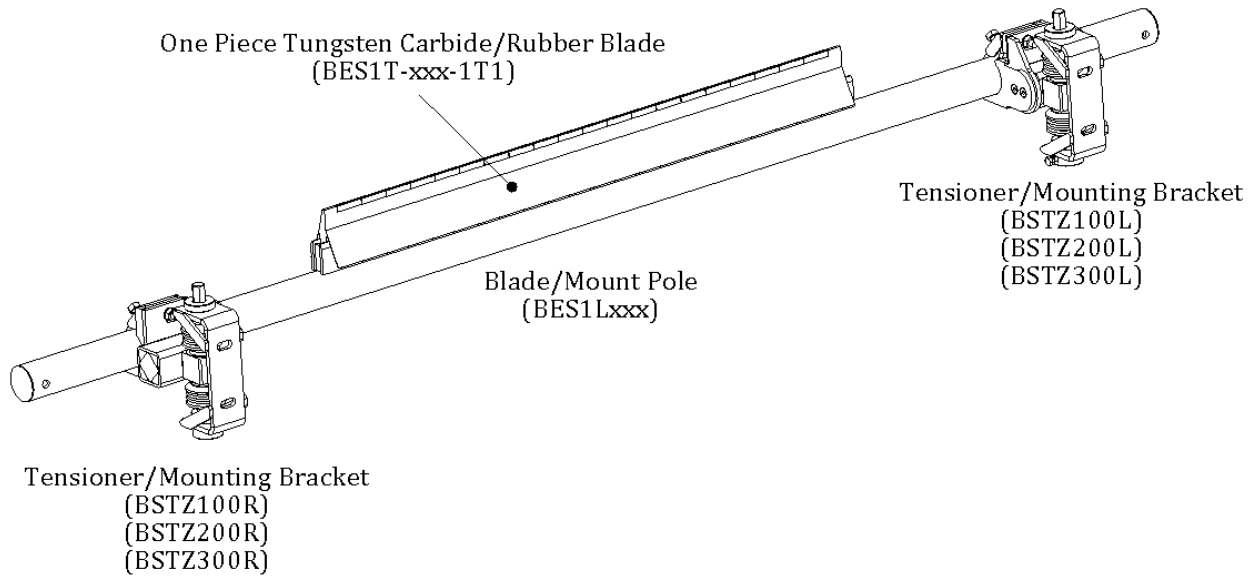


Figure 1

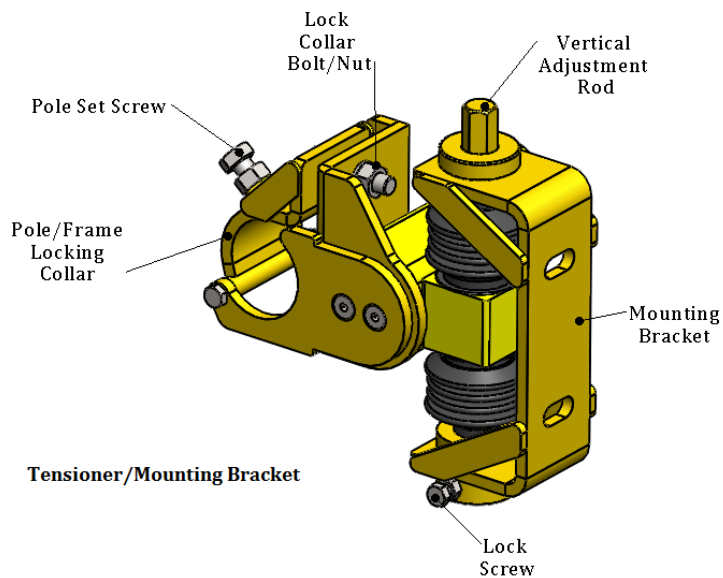


Figure 2

! IMPORTANT !

Read entire section before beginning work.

7

To install the belt cleaner, follow the steps detailed in this section.

1. Locate position of mounting bracket and prepare cutouts for access and inspection. The top edge of the cutouts and mounting brackets should be parallel to the belt line.

the BES1 Cleaner can be installed in two ways.

a) the mounting brackets can be installed on an angle bracket pre-attached to the side of the chute wall (not supplied, 3" x 3" x 10" minimum recommended but it can be larger and longer as needed). This is an easier method if the cleaner might need to be adjusted vertically in the future or if maximum flexibility is desired (the angle bracket can be slotted or use oversized holes to help install and or position the cleaner) or if modification to the chute walls is undesirable or impractical.

b) the mount bracket can be rotated 90 degrees and mounted directly to the chute wall (usually done because space is limited)

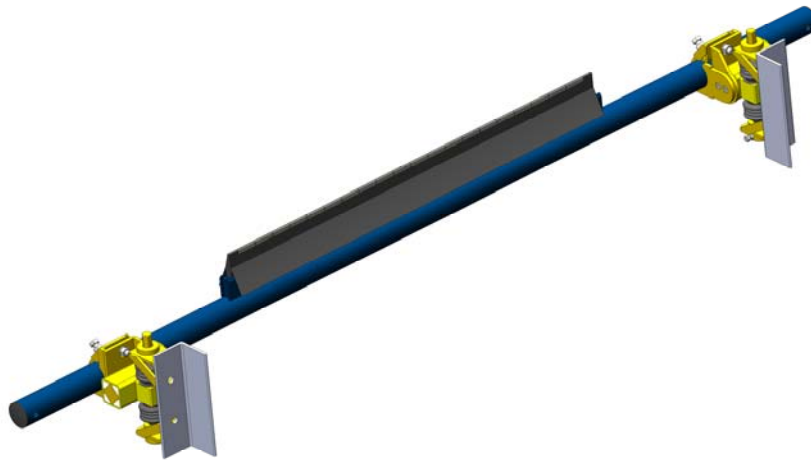


Figure 3A) Mounting Option A (optional angle brackets)

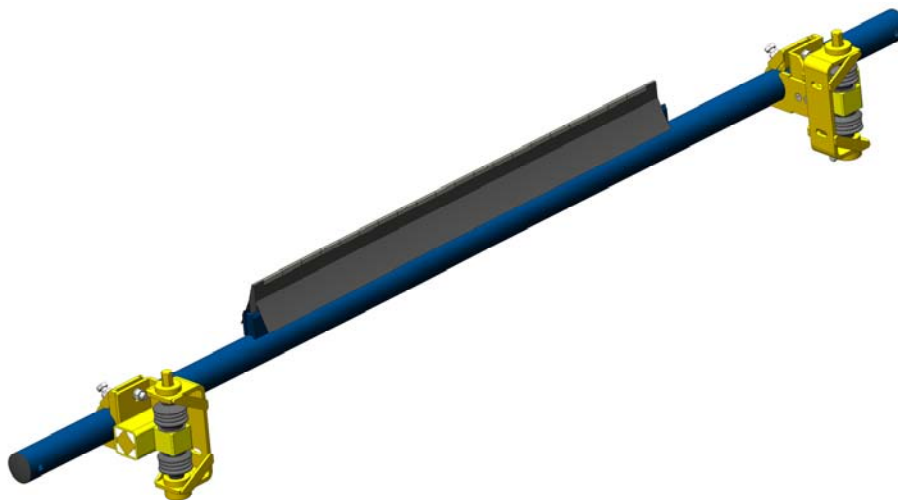


Figure 3B) Mounting Option B (tensioner brackets directly to chutework)

2. the BES1 secondary can be mounted at any location along the return side of the conveyor belt, but it should not be mounted directly on the drive pulley or directly across from any other pulley. The location of the recommended installation position is shown in figure 4, with mounting details in figure 5.

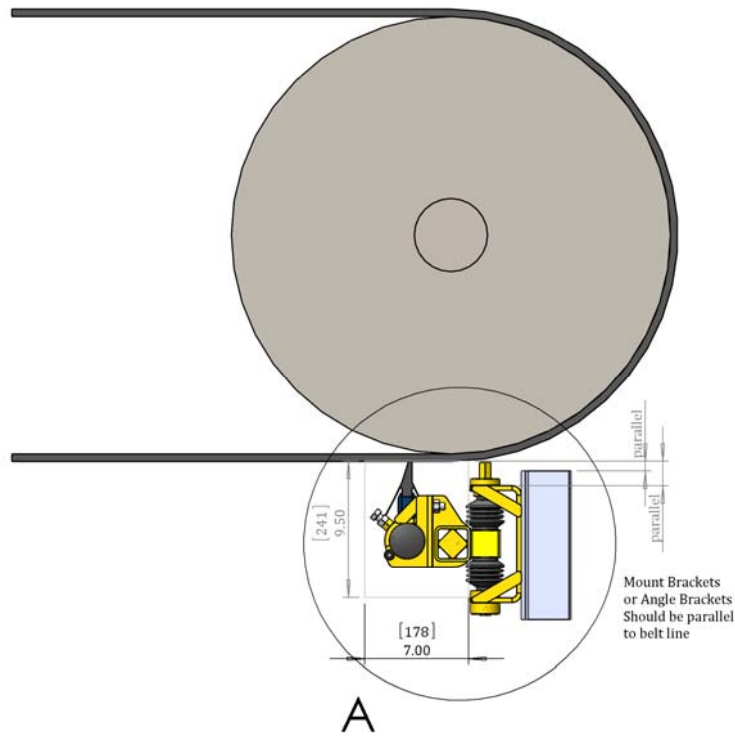


Figure 4

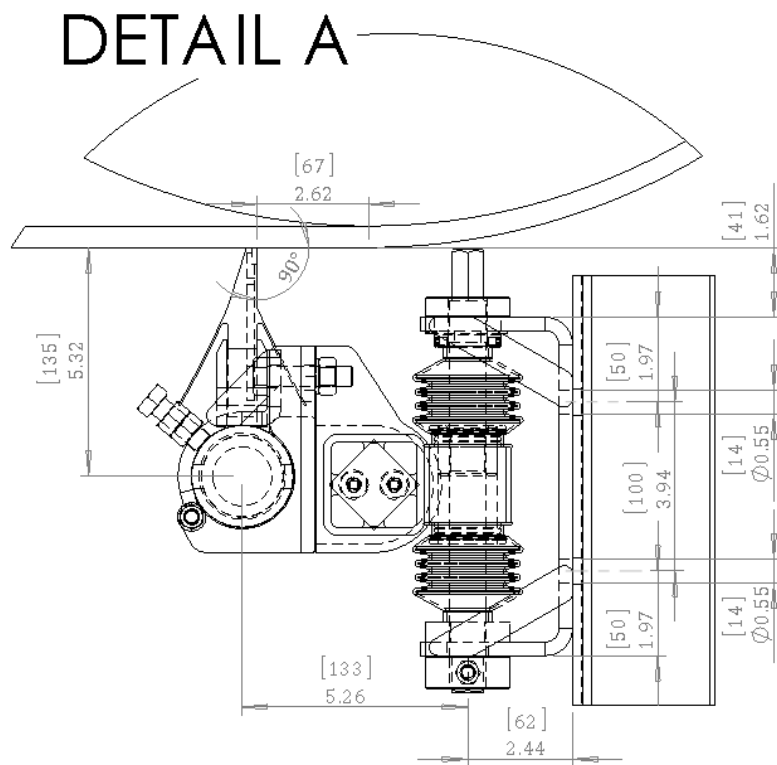


Figure 5

3. Bolt tensioner/mount brackets to near and far side of chute walls or to angle brackets welded to the chute walls.
4. Slide pole/frame and blade assembly into chute wall holes and through the locking collars in each of the tensioner/mounting brackets.

a) make sure blade is centered on the conveyor belt by measuring the distance between the outermost blade and the end of the conveyor on both sides. adjust the position of the blades accordingly so the cleaner is centered on the belt.

! NOTE !

Note: blades can actually be a little bit wider than the belt width in some circumstances, this "overlap" is solid rubber and poses no threat of damage to the conveyor. It can be cut off with a utility knife if desired.

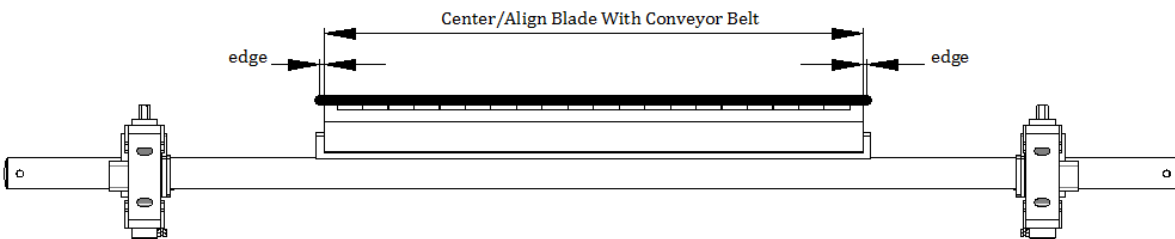


Figure 6

b) Tighten locking collar nuts/bolts with the blades aligned perpendicular to the belt surface (the angle between the face of the blades and the belt should be 90 degrees).

! IMPORTANT !

Important: do not incline blade forward in the direction of the conveyor belt, this can lead to belt damage.

4. Raise the pole/frame /blade of the cleaner up by turning the vertical tensioner rods on each tensioner/mounting bracket. Visually watch the pole/frame locking collar to ensure you are turning the proper direction. Make sure the lock screw on the base of both tensioner/mount brackets is disengaged and the vertical adjustment rod can be turned.

a) Continue to alternately adjust each side by turning the vertical adjustment rod until the tip of the blade contacts the belt.

b) Ensure the blade is contacting the belt correctly by making sure the cleaner is level and the pole is parallel to the belt surface (using a tape measure, measure from the belt to the blade at each end and in the center to ensure the cleaner is level, or use a leveling device attached to the pole/frame).

c) When the outer edges of the blade contact the belt check for gaps between the center of the blade and the surface of the conveyor.

c1) if there are gaps the belt may not be flat (the belt may be cupped). if the belt is cupped the outer edged of the blade may contact the belt while the part of the blade does not.

! NOTE !

Note: The BES1 Secondary Cleaner is designed to conform to cupped belts. To allow for maximum operability the blade should be installed as close to parallel with the belt surface as possible.

c2) check alignment by measure from the surface of the conveyor to the top of the blade at the edges and in the center. ensure the edges of the blade are the same distance away from the conveyor belt surface.

repeat step 4 until the blade is centered and as parallel to the belt as possible.

c3) Turn the vertical adjustment screws on each tensioner until the tip of the blade contacts the belt all the way across the width of the blade. Do not apply more than one full turn on either end without adjusting the other side to avoid incorrect installation and potential belt damage or cleaner malfunction.

! NOTE !

Note: If the belt is severely cupped or uneven please contact Benetech Inc or a representative.

! WARNING !

It is important that the blade touch the belt evenly to avoid high pressure regions and potential damage to the conveyor belt. .

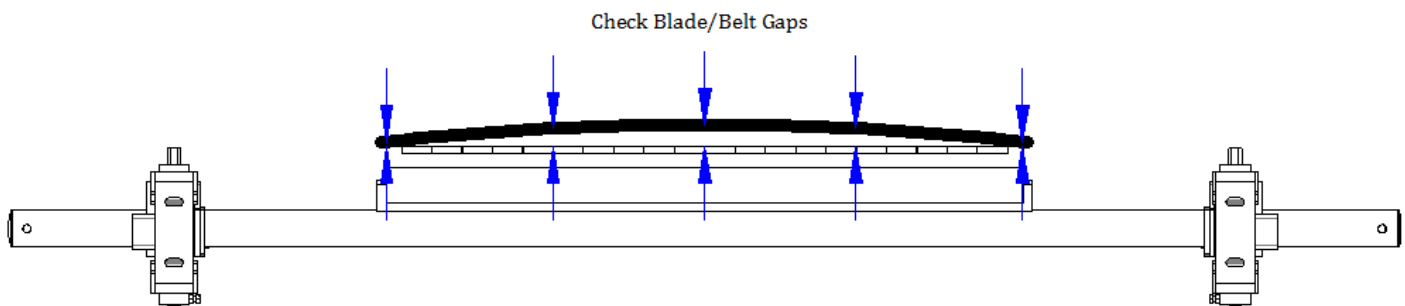


Figure 7

5. Apply one additional turn of the vertical adjustment screw to tension the blade against the belt surface.

6. Lock the vertical adjustment screws in place by tightening the lock screws on the base of each tensioning/mount bracket.

7. Ensure the scraper blade is perpendicular to the surface of the belt, or rotated backwards slightly. Once the unit has been in operation recheck their orientation to prevent belt damage, see Figure 5.

! WARNING !

Excessive tensioning of the belt cleaner can create premature wear of cleaner blades, damage to belt cover and excessive heat.

! DANGER !

Excessive heat created by excessive friction due to cleaners being improperly tensioned can create situations where fire and or explosions can occur

! WARNING !

Failure to remove tools from installation area and conveyor belt before turning on energy source can cause serious injury to personnel and damage to belt.

! WARNING !

Do not touch or go near conveyor belt or conveyor accessories when conveyor belt is running. Body or clothing can get caught and pull body into conveyor belt, causing severe injury or death.

Belt Cleaner Operation and Maintenance



- 1) Once installation is complete turn on conveyor belt for 1/2 hour, then turn off. Tighten all mounting nuts, bolts, etc. Check for belt condition and proper tensioner settings. Readjust if necessary.

! DANGER !

Before installing, servicing, or adjusting the belt cleaner/tensioner, turn off and lock out/tag out all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.



- 2) Periodic inspection and maintenance **MUST** be performed on a regular basis to ensure the equipment is functioning properly.
 - a. Inspect belt cleaner for proper wear pattern. A small amount of "run-in" wear is normal. This will stop once blades wear to conveyor belt contour. The blade should wear evenly during operation - if it doesn't adjust tension on one or both sides. If this does not correct the problem contact Benetech Inc.
 - b. If excess or uneven wear patterns appear, material builds up badly on blades or frame, or some other problem exists, consult a specialist or contact Benetech Inc for support.
 - c. During inspection remove any material build-up from BES1 belt cleaner.
 - d. Make sure all hardware and fasteners for the mounting equipment and tensioners (if applicable) are tight.
 - e. Check compression/rotation of rosta or spring tensioners. Re-tension if necessary. Note that as the blades wear out the tensioners will need to be adjusted
 - f. Check blades for excessive wear. All Benetech Inc. blades come with a visible wear lines or patterns on the back of the blades indicating when scraper blades should be replaced. Replace blades when necessary.

- g. Remove equipment from service if there is any indication it is not functioning properly. Call BENETECH, INC. or a representative for assistance.

! NOTE !

Maintenance inspection should be performed no less than weekly. Some applications may require more frequent maintenance inspections.

! DANGER !

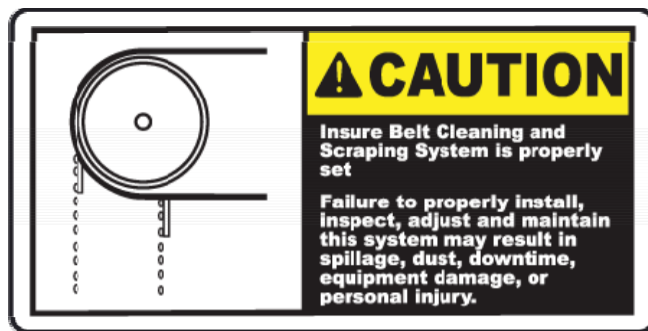
Before installing, servicing, or adjusting the belt cleaner/ tensioner, turn off and lock out/tag out all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.

! WARNING !

Failure to remove tools from installation area and conveyor belt before turning on energy source can cause serious injury to personnel and damage to belt.

! WARNING !

Do not touch or go near conveyor belt or conveyor accessories when conveyor belt is running. Body or clothing can get caught and pull body into conveyor belt, causing severe injury or death.



Troubleshooting

! NOTE !

Conveyor equipment is subject to a wide variety of bulk materials characteristics and performs under extreme operating conditions. It is not possible to predict all circumstances that may require troubleshooting. Contact BENETECH, INC. or a representative if you are experiencing problems other than those listed in the "Troubleshooting" section below. **Do not return the equipment to operation until the problem has been identified and corrected.**

Symptom Corrective Action

Insufficient cleaning and excessive carry back.

Tension of cleaner on belt is set too low. Increase tension to recommended settings or higher if necessary as bulk material conditions may have changed (monitor closely and return to original/recommended settings when possible).

Blade(s) are worn.

Blade(s) are designed to wear during operation. Clear indicator lines or blade pattern indicate when blade(s) are to be removed from service and replaced.

Noise or vibration.

Tension is set too high or un-even between the two tensioners. Correct or equalize tension on both tensioners/mount brackets as necessary by adjusting the vertical position of the cleaner frame.

If this does not correct the problem, blade type or urethane type may not match application. Cleaner may also be incorrectly mounted or other damage to the cleaning system may have occurred. Contact Benetech, Inc. or a representative.

High blade wear rate requiring frequent blade replacement or changeouts.

Cleaner tension on belt is set too high. Reduce tensioner setting. If problem persists contact Benetech Inc. or a representative.

Unusual wear or damage to blades.

Check belt splice(s) and repair as necessary. Observe belt operation and check for irregularities. If the cleaning system is damaged replace it. If blades are worn out replace them. If blades are not worn, check mainframe location.

Blade or System Corrosion/Chemical Degradation.

Blade urethane may not match application. Contact BENETECH, INC. or a representative.

Other problems.

Contact BENETECH, INC. or a representative.

Part Numbers

This section provides product names and corresponding part numbers for the Benetech BEP1-XXX-1U1B2 Production Class Primary Belt Cleaner System. For a more detailed parts list please contact Benetech Inc.

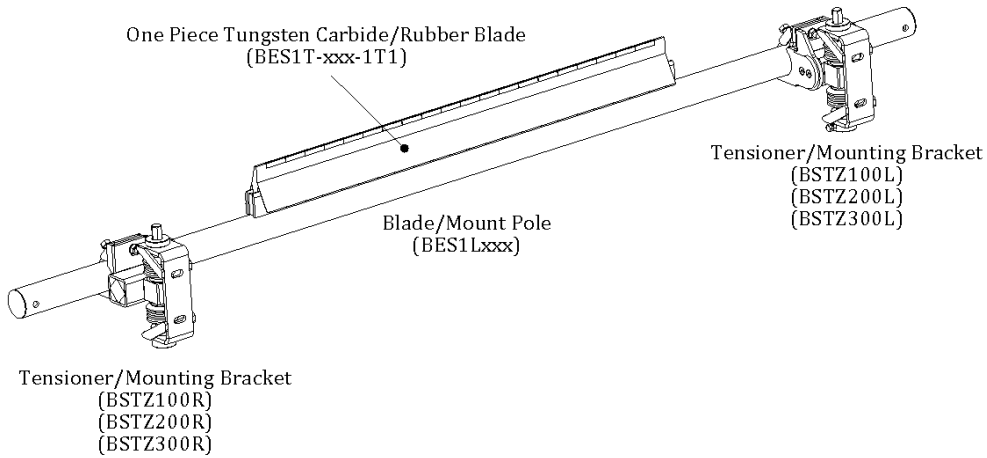


Figure 9

Part Number	Description
BES1T-xxx-1T1xx	Tungsten Carbide/Rubber One Piece Blade (P/N's in table below)
BES1T-xxx-1T11Z	Full Assembly, Belt Widths 18" to 36"
BES1T-xxx-1T12Z	Full Assembly, Belt Widths 42" to 48"
BES1T-xxx-1T13Z	Full Assembly, Belt Widths 54" to 96"
BSTZ100	BES1 Secondary Tensioner/Mount - Pair (belt width 18"-36")
BSTZ100L	BES1 Secondary Tensioner/Mount LHS (belt width 18"-36")
BSTZ100R	BES1 Secondary Tensioner/Mount RHS (belt width 18"-36")
BSTZ200	BES1 Secondary Tensioner/Mount - Pair (belt width 42"-48")
BSTZ200L	BES1 Secondary Tensioner/Mount LHS (belt width 42"-48")
BSTZ200R	BES1 Secondary Tensioner/Mount RHS (belt width 42"-48")
BSTZ300	BES1 Secondary Tensioner/Mount - Pair (belt width 54"-84")
BSTZ300L	BES1 Secondary Tensioner/Mount LHS (belt width 54"-84")
BSTZ300R	BES1 Secondary Tensioner/Mount RHS (belt width 54"-84")
BES1Lxxx	BXS2 Blade Pole/Frame***

*** - belt width in inches, e.g. 48" = 048

Replacment Blades

Belt Width		Tungsten Carbide/Rubber Blade P/N
in	mm	
18	450	BES1T-018-1T1
24	600	BES1T-024-1T1
30	750	BES1T-030-1T1
36	900	BES1T-036-1T1
42	1050	BES1T-042-1T1
48	1200	BES1T-048-1T1
54	1400	BES1T-054-1T1
60	1600	BES1T-060-1T1
72	1800	BES1T-072-1T1
84	2200	BES1T-084-1T1

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