

PRODUCT LINE

ADVANCED MATERIAL TRANSPORT

CONVEYOR BELT CLEANING MATERIAL FOR SPLICING
BELT



Secondary Scraper

BXS5

Commercial Presentation & Installation Guide

Index

Introduction	3
Installations without transfer kick	3
Inspection access to the scraper	3
Scraper safety	4
Before Installing the Scraper	5
Getting to know BXS5 scraper	
Position and installation of the Scraper.....	7
Tensioning the Scraper	9
Maintenance and operation of the Scraper	11
Tensioning the scraper.....	12
Troubleshooting	15
Part Number BENETECH.....	16

INTRODUCTION

The typical belt cleaning system on conveyors includes a primary scraper and one or more secondary scrapers. The primary scraper is installed on the face of the Head Pulley and is used to remove the material adhered to the conveyor and the fugitive material typically carried back on the conveyor belt. The returned material is deposited in piles under the conveyor, adhering to the return rollers, stretching drums, diversion drums and conveyor belts. The problems arising from this return can range from the misalignment of the belt due to the irregular accumulation of material on the Pulley and rollers, to the premature wear of the belt. Additionally the uncleaned materials are dragged by belt into piles of material getting caught on inside the structural elements of the conveyor.

Secondary scrapers can be installed anywhere on the return side of the conveyor, but are usually installed immediately after the belt leaves contact with the head pulley drum. In this position, the cleaner keeps the material removed by the blade in the fines-trough area of the transfer chute, where it can still be reintroduced into the main material stream.

Secondary scrapers should be installed where the conveyor belt is under reasonably high tension, providing a level/stretched surface for the secondary scraper to come into contact with the belt.

In some cases, the materials used in the construction of the scrapers may not be compatible with the material being handled and contamination may occur. This could cause contamination of the material even when it operates as intended. If the material handling process can be contaminated in any way by the use of this product, it is the responsibility of the user to take the necessary measures to avoid contamination.

Please do not hesitate to consult BENETECH. If you suspect that there may be incompatibility issues or questions about the application and use of the product, we can provide specific recommendations for your specific problem.

These procedures have been written for the equipment being installed on the main head pulley of the transfer chute. If the head drum is open (not closed), the equipment must be installed such that that the critical dimensions are followed to allow the correct installation.

INSPECTION ACCESS TO THE SCRAPER

Once the scraper is installed in a closed transfer chute, an Inspection panel should be installed to allow inspection of the equipment during the operation and also when stopped. If the Transfer Chute does not already have an Inspection panel or door which allows the installation, maintenance and inspection of the equipment, a suitable panel should be installed. Inspection doors and panels are available at BENETECH. Contact a BENETECH representative for a list of Benetech Inspection doors and panels and their dimensional data. Unless specifically requested, inspection ports are NOT included with the Scraper.

All Plant safety rules set forth herein and with all owner/employer rules including state and federal safety rules must be strictly adhered to when working on any conveyor and diagonal scraper system.

**DANGER**

Do not touch or approach the conveyor or its accessories while it is running. Your body or clothing may become entangled and you may be pulled into the conveyor, resulting in serious injury or death.

DANGER

Before installing, activating or adjusting the belt scraper, turn off and lockout all conveyor power sources and conveyor accessories according to ANSI standards. Failure to do so can result in serious injury or death.

DANGER

If this equipment is 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 power tools. Using a torch, welding, grinding, or drilling into an area with gas or dust can cause explosions or fires, resulting in serious injury or death.

ATTENTION

Before using a cutting torch, welders or grinding equipment, cover the surface of the conveyor with fire retardant or flame retardant. Make sure a water/hose source is available AND OPERATIONAL. Failure in such a task can allow the belt to catch fire.

ATTENTION

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

ATTENTION

All dimensions in this manual are in millimeters (mm).

BEFORE INSTALLING THE SCRAPER

1. Inspect ALL shipping packaging for damage and correct number of items (skids, pallets, cardboard boxes, boxes etc.) being delivered. Report damage and/or delivery service failures immediately and fill out the delivery service request form. Keep ALL damaged goods for analysis.
2. All Benetech Brasil scrapers are shipped from our fully assembled facilities. Care should be taken when disassembling the units to ensure that no parts are lost or damaged as the equipment is moved to the desired location. Dispose of transport materials appropriately.
3. If any item is missing, please contact BENETECH Brazil or an authorized representative IMMEDIATELY.
4. Gather minimum tool required for the scraper installation :
 - a)Trena
 - b)Torch / Saw-cup
 - c) Bubble Level
 - d)Square / Goniometer
 - e) Welding Machine / Drill
 - f) Fixed Key Set
 - g)Set of sockets / wrench
 - h)Industrial Marker / Industrial Chalk
5. Shut down and lock/identify the power source according to ABNT standards and local plant regulations.
6. If you are using a cutting or welding torch, test the atmosphere for gas level or particulate content. Cover the conveyor belt with a flame-retardant blanket. Check the location of operational fire extinguishers and hydrants before starting cutting/welding operations.

Attention

If equipment is installed in a confined area, the atmosphere in the structure/area should be tested for gas levels and particulate levels before using a blowtorch, welding equipment, grinder, or power tools. Using a blowtorch, welding equipment, drill or grinder in an area with gas or particulate matter can cause an explosion.

GETTING TO Know BXS5 SCRAPER

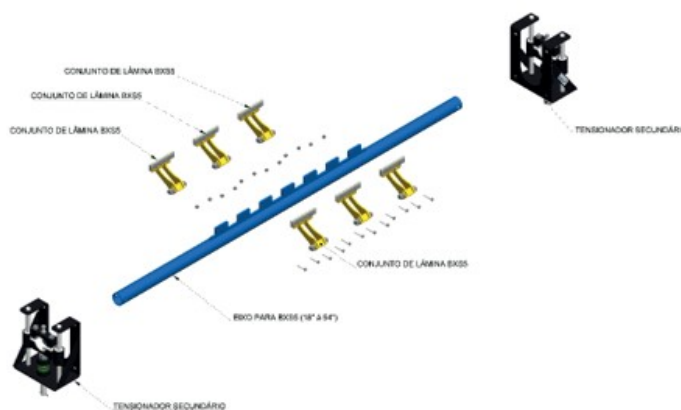


Figura 1 - Raspador BXS5

TABLE 01 - ORDER CODE SECONDARY SCRAPER MODEL BXS5					
SCRAPER MODEL	SERIES	BELT WIDTH	CONSTRUCTION MATERIAL	BLADES	TENSIONER
BXS5	3 = SERV. EXTRA HEAVY	FROM 18° TO 96°	C= CARBON STEEL S= STAINLESS STEEL	00= NO BLADES 01= WITH TUNG CAR. 02= WITH CERAMIC	00= NO TENSIONER 01= TS_STD 02= TS_MOLA 03= S_PNEUM
EXAMPLE: BENETECH MODEL BXS5 SCREED SCRAPER FOR 36" BELT, IN CARBON STEEL, WITH TUNGSTEN CARBIDE WOOL, STANDARD TENSIONER: BXS5-3-36-C-01-01.					
TABLE 02 - AXLE ORDER CODE FOR THE MODEL BXS5 SECONDARY SCRAPER					
AXIS MODEL	BELT WIDTH	CONSTRUCTION MATERIAL			
130350	FROM 18° TO 96°	C= A0 CARBON S= STAINLESS STEEL			
EXAMPLE: BENETECH MODEL BXS5 SECONDARY SCRAPER SHAFT FOR 36° BELT, IN CARBON STEEL.					




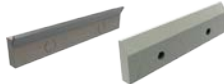
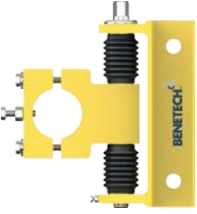


TABLE 03 - BLADE MODEL			
			
BLADE + BASE	BASE	BLADE	BLADE
BL BXS5-3-* -01	IMPACT ABSORBING	TUNGSTEN CARBIDE	CERAMIC TABLET
A= TUNGSTEN CARBENEDE B= CERAMICS			

TABLE 04 - TENSIONER MODELS		
		
TS STD	TS MOLA	TS PNEUM

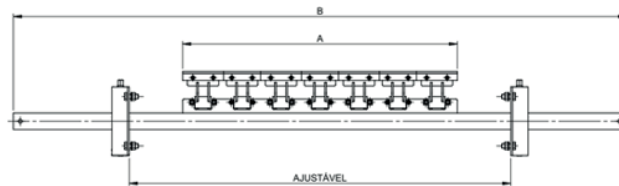


TABLE - 6 WIDTHS OF INSTALLATION REFERENCES			
LARG. CORREIA (pol.)	DIMENSÃO A	DIMENSÃO B	QTD. LÂMINAS
18"	293	1400	2
24"	436	1650	3
30"	579	1800	4
36"	722	1950	5
42"	865	2150	6
48"	1008	2250	7
54"	1151	2450	8
60"	1294	2750	9
72"	1580	2950	11
84"	1866	3400	13
96"	2152	3700	15

SCRAPER POSITIONING AND INSTALLATION

To install the BXS5 Scraper, follow the steps detailed in this section:

1. Locate the position of the Tensioner and prepare cutouts for access and inspection. The cutouts and tensioners must be installed perpendicular to the belt line.

The BXS5 secondary can be mounted anywhere along the return side of the conveyor belt, but should not be mounted directly on the Drive Drum or directly in front of any other Drum. The location of the recommended installation position is shown in Figure 3.

The BXS5 is a Scraper with Individual Torsion System, consisting of segmented blades that fit into a shaft that is then affixed to the mounting tensioner. If the blades are already installed on the shaft, skip this section.

To install the blades on the shaft, position the blades orienting themselves through the hole, being mounted in alternating ways. The amount of the blade versus the width of the belt is shown in Table 5.

Fix the blades with the accompanying screws always observing the alternation during assembly. Make the cutouts and the drilling on both sides of the kick.

Perform the cutout and holes for installation of the tensioner on both sides of the kick wall following the template provided. If the blades have to be installed at an angle in the direction of belt displacement (this scraper is not compatible with reversible conveyors), the cutout must follow the alignment of the belt, see Figure 3 where it shows the direction of assembly as to the flow of the conveyor.

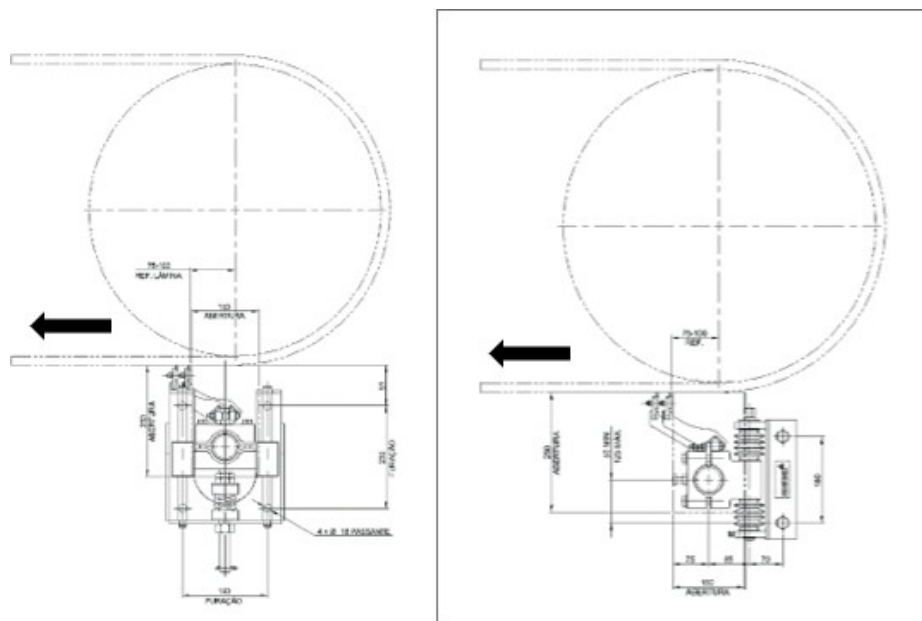


Figura 3 - Croqui de Instalação do Raspador

1. Screw the Tensioners into the walls of the kick.
2. With the shaft fastener open, place the shaft with the blades into the kick (this operation should be done with the blade facing down). Some scrapers require an adapter to secure the shaft (supplied along with the scraper as needed), check if the shaft in question does.
3. Rotate the axis so that the blades are in the working position (see image).
4. Place the shaft fastener and manually tighten the screws always checking the alignment of the blade (the tip of the blade should be 90 degrees in relation to the belt).

1. Make sure the blade and scraper are centered on the belt by measuring the distance between the outermost blade and the end of the belt on both sides. Adjust if necessary.
2. Tighten the tensioner screws tightly to secure the shaft to the tensioner.
3. Tension the scraper by turning the nut over the spring, taking care to tighten on both sides to ensure equal tensioning and avoid locking the scraper. Check the contact of the blades with the belt, in some cases the belt may be bulging and the blade loses contact in the central region, note that this gap cannot be greater than 6mm. If this occurs, it is recommended to remove a blade from each side and reposition the scraper.

TENSIONING THE SCRAPER

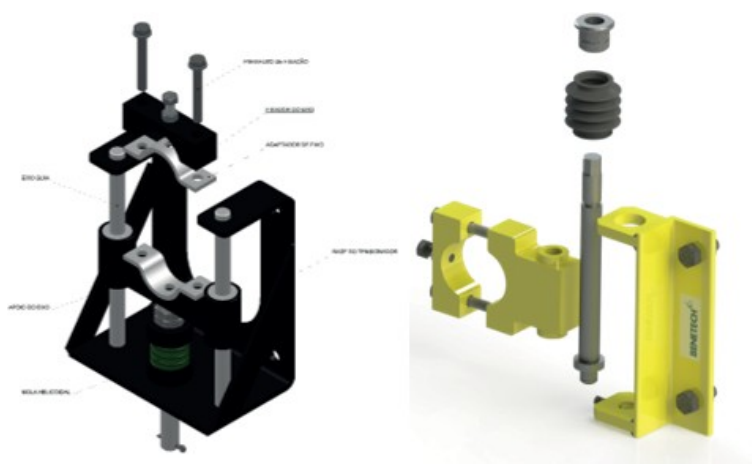


Figura 2 - Tensionadores Secundários Mecânicos

TABLE 5 - TECHNICAL DATA FOR TENSIONING							
BELT WIDTH	QTY. BLADES	WIDTH A (MM)	MOLA	TS MOLA		TS_PNEUM	
				APERTO (MM)	CERAMIC TIP	TUNGSTEN TIP	CERAMIC TIP
					APERTO (MM)	PRESSÃO (BAR)	PRESSÃO (BAR)
18" (457mm)	2	300	GREEN	2	3	0,24	0,4
24" (609mm)	3	450	GREEN	2	4	0,33	0,58
30" (726 mm)	4	600	GREEN	3	6	0,4	0,73
36" (914mm)	5	750	VERDE	4	7	0,5	0,91
42" (1067mm)	6	900	VERDE	4	8	0,58	1,07
48" (1219mm)	7	1050	VERDE	5	10	0,66	1,23
54" (1372mm)	8	1200	VERDE	6	11	0,75	1,4
60" (1524mm)	9	1350	VERDE	6	12	0,84	1,58
72" (1829mm)	10	1500	VERDE	8	15	1,12	1,94
84" (2134mm)	12	1800	VERDE	10	18	1,33	2,32
96" (2438mm)	14	2100	VERDE	13	22	1,72	2,87

Verify that the blades are centered on the belt conveyor. Make sure the blades are evenly touching the belt, check the contact between blade and

90° belt or if it is inclined with respect to the direction of travel of the belt. Make sure that the locking screw and the fixing screw on the two tensioners are tightened.

Rotate the tensor nut clockwise to compress the spring. Adjust one and then the other side to prevent the scraper from getting stuck.

Measure the height of the compacted spring on both sides and keep adjusting until you reach the value of the table (important to check both sides to ensure good operation).

Make sure all screws are tight. Monitor the operation with the belt running.

Check the spring compression and adjustment if necessary (see Table 5).

If your scraper is with the STD Tensioner, the procedure continues to rotate with a key the tensioning shaft, observing the mounting position and direction of rotation (due to the flexibility of installation with TS_STD, the direction of rotation may be different in each installation).

ATTENTION

Excessive tensioning of the scraper can cause premature wear of the scraper blades, damage to the belt cover, and excessive heating o.

DANGER!

Excessive heating created by excessive friction due to inadequate tension of the scrapers can create situations where fire and/or explosions can occur.

ATTENTION

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

ATTENTION

Do not touch or approach the belt or conveyor accessories when the belt conveyor is running. The body or clothing can become trapped and pull the body into the equipment, causing serious injury or death.

SCRAPER MAINTENANCE AND OPERATION

1. When the installation is complete, continue to monitor the scraper. Tighten all mounting nuts, screws, etc. Check the condition of the belt and the proper tensioner settings. Readjust if necessary.
2. Periodic inspection and maintenance should be performed regularly to ensure that the equipment is working properly.

- a) Inspect the scraper for the proper wear pattern. A small amount of initial wear and tear is normal. This will stop when the blades wear out on the contour of the conveyor belt. The blade must wear evenly during operation – otherwise contact Benetech.
- b) If excessive or uneven wear patterns appear, the material accumulates badly on the blades or structure, or if there is some other problem, consult a specialist or go into contact Benetech for support.
- c) During the inspection, remove any buildup of material in the scraper.
- d) Make sure that all fasteners are tightly fastened in the Tensioners. Squeeze if necessary.
- e) Check the location of the scraper and readjust if necessary. Make sure all blades are working properly and are not stuck.
- f) Check the blades for excessive wear. Replace the blades when necessary.
- g) Remove the equipment from operation if there is any indication that it is not working properly. Call BENETECH or a representative for assistance.

The inspection of the maintenance team should be carried out on a weekly basis. Some applications may require more frequent inspections.

DANGER!

Before installing, servicing or adjusting the belt scraper/tensioner, turn off and lock/signal all power sources on the conveyor and conveyor accessories, according to ABNT/ANSI standards. Failure to do so may result in serious or minor injuries. too.

ATTENTION

Failure to remove the tools from the installation area and conveyor belt before turning on the power source can cause serious injury to people and damage to the belt. All moving part guards must be reseated before operating the belt conveyor.

ATTENTION

Do not touch or approach the belt or conveyor accessories when the belt conveyor is running. The body or clothing can become trapped and pull the body into the equipment, causing serious injury or death.

PNEUMATIC TENSIONERS

The BXS5 scraper has the option to operate with Pneumatic Tensioners, as a form to bring an automatic and constant tensioning with the option of remotely controlling the actuation. Among the advantages of using the Pneumatic Scraper are:

1. Less wear on components and blades
2. Tension always constant and balanced
3. Maintenance less frequently, as there is no need for adjustments
4. Low air consumption

NOTE

The main requirement for using the pneumatic scraper is to have a compressed air source that provides a Nominal Pressure of 7 BAR (100 PSI).

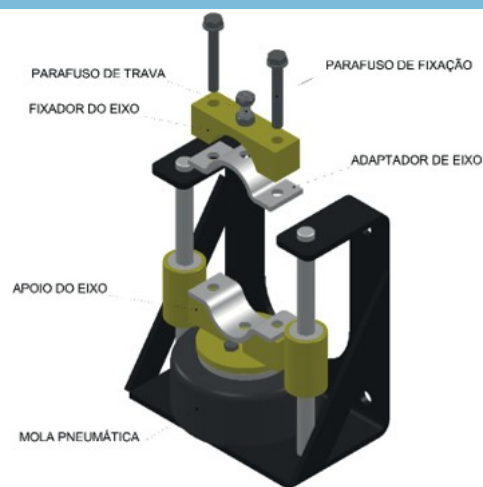


Figura 4 - Tensionador Pneumático

For the installation with these Tensioners, it follows basically the same idea, with the same cutout in the kick, the same alignment process, differentiating only the tensioning process that is automatic, as soon as the compressed air supply is turned on.

IMPORTANT

It is **not** recommended to use the scraper **with** the air spring in its **maximum** stroke, as well as to store the scraper with the axle mounted on the Pneumatic Tensioner.

USING PNEUMATIC TENSIONER

After the scraper installation, the air connection between the scraper and the control panel must be prepared, which is purchased separately. Figure 5 shows the standard way to interconnect the air springs. An 8mm Flexible Tube (OD) should be used, connecting manually with the quick-couplings on the house side.

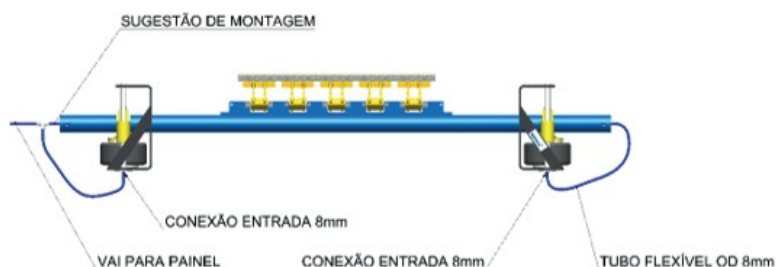


Figura 5 - Ligação de Ar comprimido

The Pneumatic panel controls the air intake and regulates the pressure in each scraper. The recommended pressure varies for each condition, we indicate in table 5 the recommended working pressure for each conveyor width. The adjustment is done by turning the knob on the pressure regulator inside the Panel. In the panel door you can see the pressure in the pressure gauges (Primary and Secondary Input and Output). In Figure 6 you can see this arrangement.

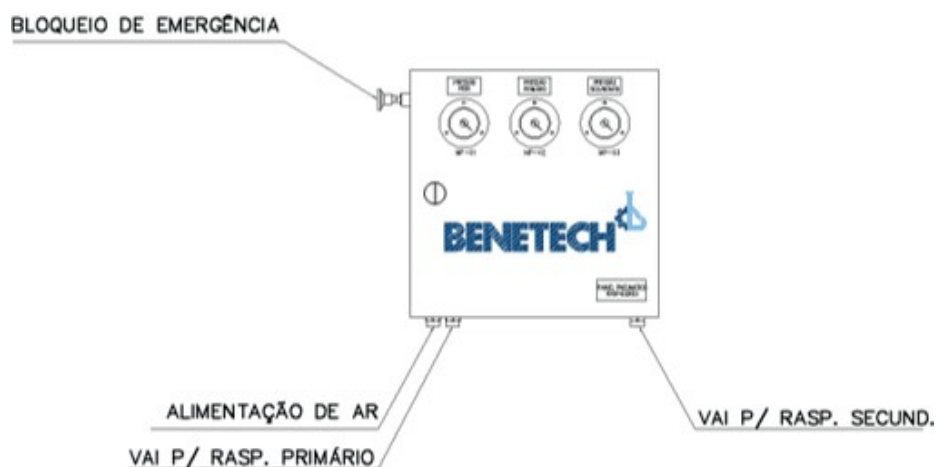


Figura 6 - Vista Frontal do Painel

Once the adjustment is done, it is no longer necessary to regulate, just maintain the air supply for perfect operation. This panel also has the presence of a Solenoid valve that enables automation remotely, if it is of interest.

TROUBLESHOOTING

NOTE

Conveyors are subject to a wide variety of material characteristics handled and operate under extreme operating conditions. It is not possible to predict all the circumstances that may require troubleshooting. Please contact BENETECH or a representative if you experience issues other than those listed in the "Troubleshooting" section below. Do not put the equipment into operation until the problem has been identified and corrected.

SYMPTOMS AND CORRECTIVE ACTIONS

Insufficient cleaning and excessive return

The tension of the scraper on the belt is very low. Increase the voltage to the recommended settings or higher if necessary, as the conditions of the material handled may have changed (monitor closely and return to the original/recommended settings when possible).

Blades are worn out

The blades are designed to be worn during operation. Clear indicator lines or blade pattern indicate when the blades should be removed from service and replaced.

Noise or vibration.

The tension is too high or uneven between the two tensioners. Correct or equalize the tension on the two tensioners as needed by adjusting the vertical position of the wiper frame.

Another possibility is the lack of pre-tension in the belt, and it is recommended to install the secondary scraper near the drum or tensioner roller, in order to avoid this problem. If that doesn't fix the problem, the type of blade may not match the application. The scraper may also have been mounted incorrectly or other damage to the cleaning system may have occurred. Contact Benetech or a representative.

High blade Wear rate, requiring frequent blade changes or changes

The tension of the scraper on the belt is very high. Reduce the tensioner configuration. If the problem persists, please contact Benetech or a representative

Unusual wear or damage to blades

Check the belt seam(s) and repair as needed. Observe the operation of the belt and check for irregularities. If the cleaning system is damaged, replace it. If the blades are worn, replace them. If the blades are not worn, check the location of the main structure.

Blade or system corrosion / chemical degradation

The blade material may not match the application. Contact a BENETECH, INC. representative for additional information.

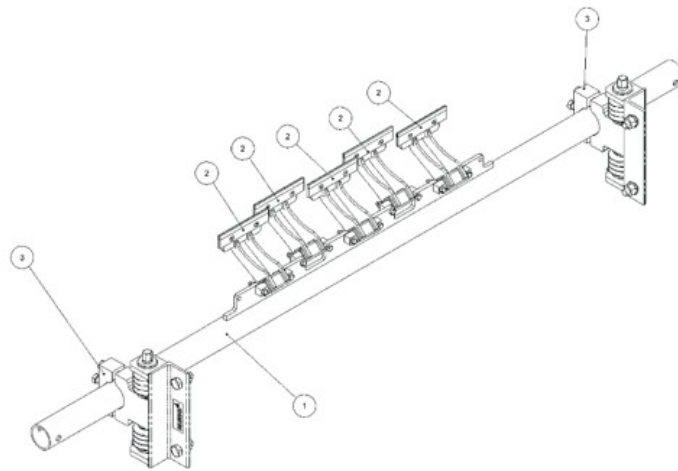


Figura 9 - Raspador BXS5 com Tensionador STD

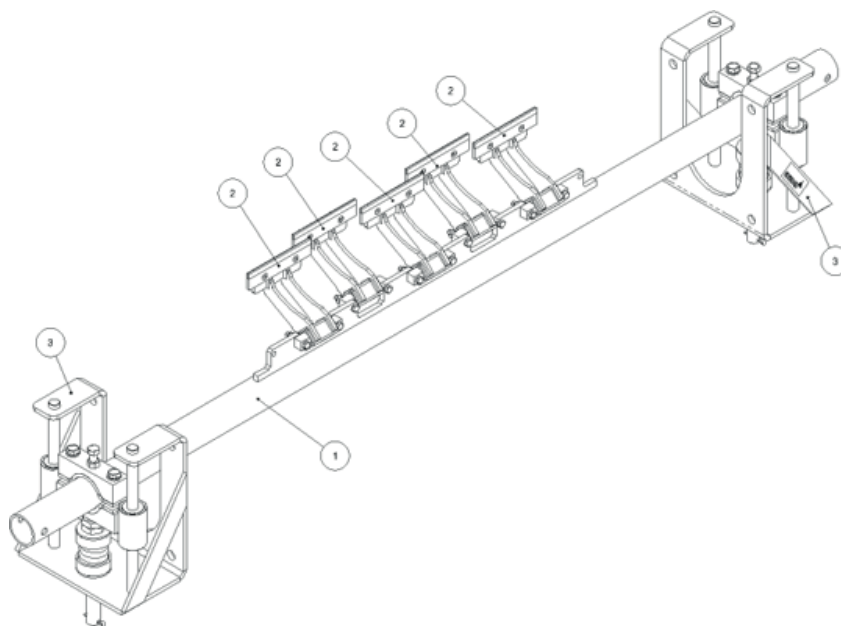


Figura 8 - Raspador BXS5 com Tensionador Mola

ITEM	DESCRIPTION	PART NO.	QTY.
1	STANDARD AXIS BXS5	130350-*** (SEE TAB. 2)	01
2	BXS5 BLADE	BL-BXS5-*-1 (VER TAB. 3)	SEE TABLE 5
3	MOLA TENSIONER	TS MOLA	01 BY

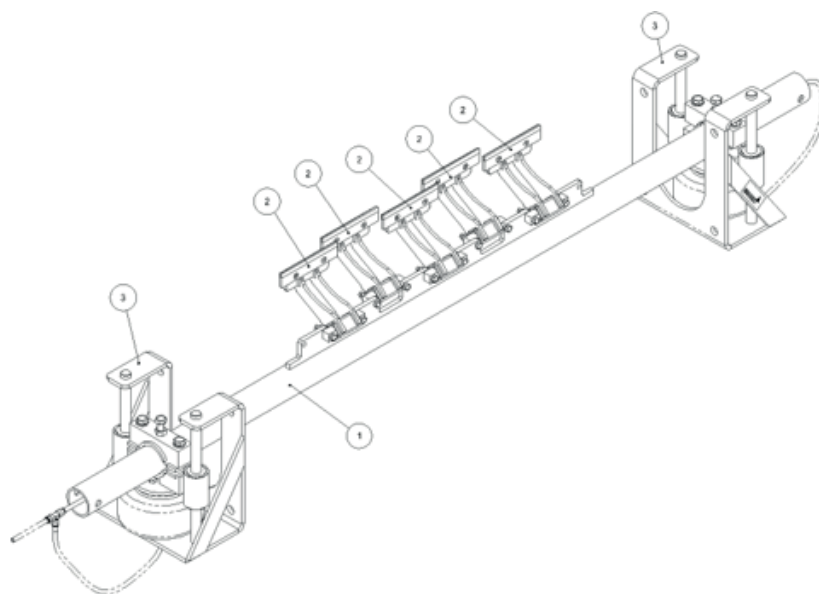


Figura 10 - Raspador BXS5 com Tensionador Pneumático

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