

INSTALLATION, OPERATING & MAINTENANCE MANUAL



E405 V-PLOUGH

PATENTED

Model Number	:
Purchase Date	:
Purchased From	:
Installation Date	:

Model number and belt width information can be found on the Label found on the scraper. This information will be helpful for any future inquiries or questions about belt scraper replacement parts, specifications or troubleshooting.

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1. Disclaimer

Brelko conveyor products (PTY) Ltd. hereby disclaims any liability for: damage due to contamination of the material; user's failure to inspect, maintain and take reasonable care of the equipment; injuries or damage resulting from use or application of this product contrary to instructions and specifications contained herein. Brelko's liability shall be limited to repair or replacement of equipment shown to be defective.

2. Safety Note

Observe all safety rules given herein along with owner and Government standards and regulations. Know and understand lockout/tag-out procedures as defined by National Standards Institutes, National Standard for Personnel Protection - Lockout/Tag-out of Energy Sources - Minimum Safety Requirements and Occupational Health and Safety.

3. The following symbols may be used in this manual:



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



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



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

Important:

Important: Instructions that must be followed to ensure proper installation/operation of equipment.

Note:

Note: General statements to assist the reader.

4. General Information

Brelko belt scrapers are designed to operate with minimum maintenance. However, to maintain superior performance some service is required. When the scraper is installed a regular maintenance program should be set up. This program will ensure that the scraper operates at optimal efficiency and problems can be identified and fixed before the scraper stops working. All safety procedures for inspection of equipment (stationary or operating) must be observed. Secondary Scrapers operates at the discharge end of the conveyor and is in direct contact with the moving belt. Only visual observations can be made while the belt is running. Service tasks can be done only with the conveyor stopped and by observing the correct lockout/tag-out procedures.



E405 V-PLOUGH

PATENTED

APPLICATIONS

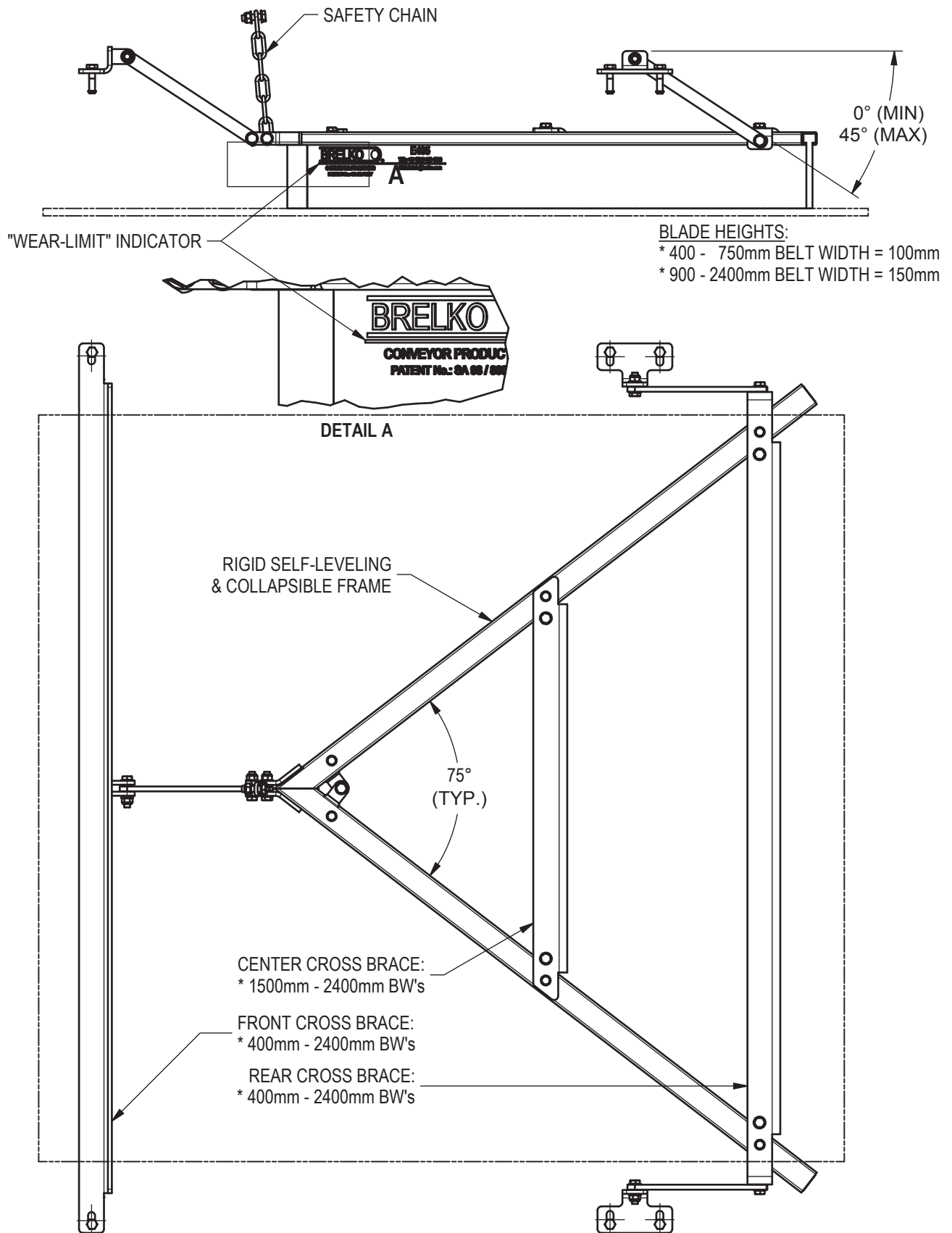
- The E405 V-Plough is designed to be easily installed in a trailing configuration on the inner surface of a conveyor belt return strand just before any nip position, allowing it to remove and thus prevent any material which has spilled onto the inner surface from being carried into the nip.
- Where material can only be discharged on one side of the conveyor belt or the belt is reversible, use the E505 Angle Plough.

FEATURES

- Unique track mounted scraping blade facilitates very easy and quick blade change.
- Parallel tri-link mounting allows the plough to move freely thus maintaining constant contact with the belt.
- Specially formulated PU blades ensure maximum blade life and minimum belt wear.
- Unique hinged assembly results in compact packaging for easy transport and installation.
- Can be mounted on the top, bottom or inside of the stringers.
- Interlocking blades ensure no blade distortion at leading edge

E405 - V PLOUGH COMPLETE WITH POLYURETHANE BLADES

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STANDARD CONSTRUCTION & FINISHES FOR BELT WIDTHS FROM
400mm - 2400mm

NOTE: FEATURES & OPTIONS SHOWN:
PLEASE REFER TO DETAILED MANUAL FOR INSTALLATION INSTRUCTIONS, MAINTENANCE & SPARE PARTS

DRW. E405-002
No.
REV. 0

5. Handling

5.1. Receiving the goods

Check that the shipment contains all the products specified in the delivery note. If the goods do not match the delivery note, if the goods show any transportation damage, **list it on the freight bill**. Describe the damage and the number of wrong or faulty goods, **and contact your supplier immediately**.

Do not use defective parts under any circumstances. Claims must be made within 8 days from the arrival of goods. The factory does not cover expenses caused by exchange of product when installation was not carried out according to factory instructions.

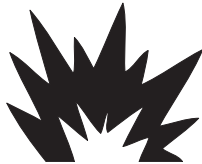
5.2. Work Safety

Always use protective gloves and clothing. Always use a lifeline and soft-sole footwear when work will be carried out on raised platforms. Before you move a scraper or plough, check that it is securely attached to the lifting equipment. Always observe local safety regulations.



Before removing/installing equipment, lock out/tag out energy source to conveyor, and/or conveyor accessories.

Turn off and lock out/tag out energy source according to local standards.



If equipment is to be installed in an enclosed area, test gas level or duct content before using a cutting torch or welding. Using a cutting torch or welding in an area with gas or dust may cause an explosion.

If using a cutting torch or welding machine, test atmosphere for gas level or dust content.

5.3. Handling

When scrapers are unloaded from the transportation vehicle onto customer's platform, place them on boards spaced max 1m apart at a minimum of 5cm from the ground.

5.4. Storage

Scrapers can be stored unpacked or in transportation package. Scrapers must not be stored on top of one another, protect the scrapers by storing them in a cool dry area on a flat surface.

5.5. Preparations for installing Belt Scrapers

Before installation, check all measurements and any of the other geometric design

5.6. Recommended Tools List

BELT SCRAPERS	
QTY	DESCRIPTION
2	EXTENSION CORD (20m MINIMUM)
1	PORT-A-PACK (OXY-ACETYLENE)
1	PRICKER
1	COMBINATION GAUGE (WITH SPIRIT LEVEL)
1	STRAIGHT EDGE (1M MINIMUM)
1	90° SET SQUARE
1	5M TAPE MEASURE
2	ADJUSTABLE SPANNERS
1	PIPE WRENCH (3" MINIMUM)
1	SOCKET RATCHET SET (6mm - 30mm)
2	RINGSET SPANNERS - M13, 15, 16, 17, 18, 19, 24
1	STANLEY KNIFE
2	M46 SET SPANNERS
2	M65 SET SPANNERS
1	HARD FACE HAMMER – 4pd
1	SOFT FACE HAMMER - 1KG
3M	NYLON ROPE
2	"G" CLAMPS - 6" - 8"
1	JIMMY LEVER

6. Maintenance

Brelko belt scrapers are designed to operate with minimum maintenance. However, to maintain superior performance some service is required. When the scraper is installed a regular maintenance program should be set up. This program will ensure that the scraper operates at optimal efficiency and problems can be identified and fixed before the scraper stops working. All safety procedures for inspection of equipment (stationary or operating) must be observed. The E405 Return Plough operates at the discharge end of the conveyor and is in direct contact with the moving belt. Only visual observations can be made while the belt is running. Service tasks can be done only with the conveyor stopped and by observing the correct lockout/tag-out procedures.

7. New Installation

After the new plough has run for a few days a visual inspection should be made to ensure the plough is performing properly. Make adjustments as needed.

7.1. Routine Visual Inspection (every 2~4 weeks)

A visual inspection of the plough and belt can determine:

- If the arms are moving freely to maintain correct pressure for optimal cleaning.
- If the belt looks clean or if there are areas that are dirty.
- If the blade is worn out and needs to be replaced.
- If there is damage to the blade or other plough components.
- If there is cover damage to the belt.
- If there is vibration or bouncing of the plough on the belt.
- If a return pulley is necessary ahead and/or behind the plough to flatten the belt.

If any of the above conditions exist, a determination should be made on when the conveyor can be stopped for plough maintenance.

7.2. Routine Physical Inspection (every 6~8 weeks)

When the conveyor is not in operation and properly locked and tagged out a physical inspection of the plough to perform the following tasks:

- Clean material build-up off the plough blade and pole.
- Closely inspect the blade for wear and any damage. Replace if needed.
- Check both blade pins for proper installation and condition. Replace if needed.
- Ensure full blade to belt contact.
- Inspect the plough frame for damage.
- Inspect all fasteners for tightness and wear. Tighten or replace as needed.
- Replace any worn or damaged components
- Check the pressure of the plough blade to the belt.

When maintenance tasks are completed, test run the conveyor to ensure the scraper is performing properly.

PARTS LIST – REF. DRW. No.: E405-003

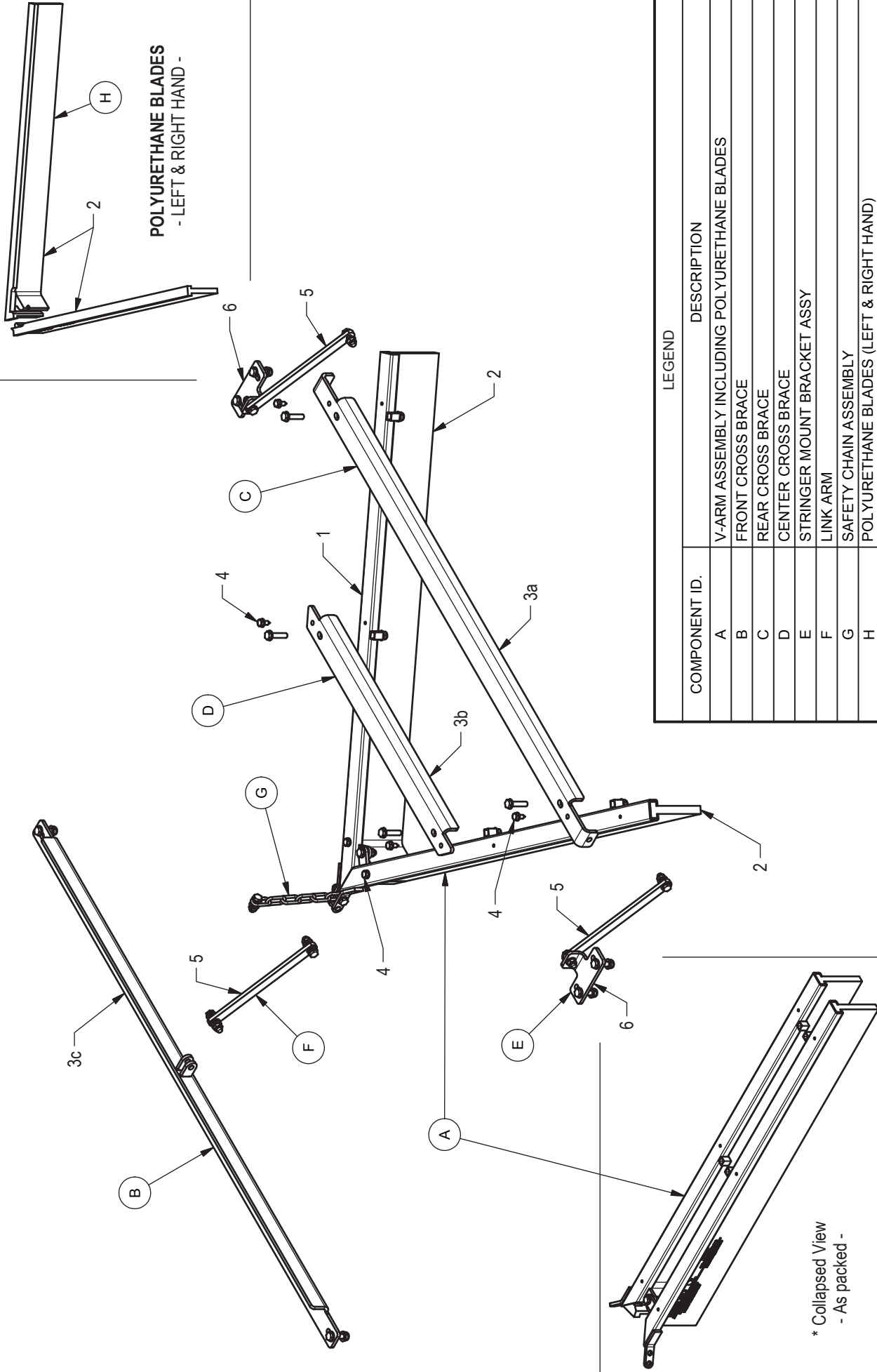
ITEM No.	DESCRIPTION	SIZE	BELT WIDTH (mm)	CODE
A.	"V" Arm Assembly including Polyurethane blades	Size 1	400-0750	051-140-(Please Specify Belt Width)
		Size 2	900-1350	051-140-(Please Specify Belt Width)
		Size 3	1500-2100	051-140-(Please Specify Belt Width)
B.	Front Cross Brace	Size 1	400-0750	(Please Specify Belt Width)
		Size 2	900-1350	(Please Specify Belt Width)
		Size 3	1500-2100	(Please Specify Belt Width)
C.	Rear Cross Brace	Size 1	400-0750	(Please Specify Belt Width)
		Size 2	900-1350	(Please Specify Belt Width)
		Size 3	1500-2100	(Please Specify Belt Width)
D.	Centre Cross Brace	Size 3	1500-2400	(Please Specify Belt Width)
E.	Stringer Mount Bracket	Size 1, 2 & 3	400-2400	004-140-0020
F.	Link Arm	Size 1,2 & 3	400-2400	2/4/6
G.	SAFETY CHAIN ASSEMBLY - 1MTR	Size 1,2 & 3	400-2400	051-135-0001
H.	Side Blades (L & R)	100mm	400-0750	2/4/ (Specify Belt Width)
		150mm	900-2100	2/4/ (Specify Belt Width)

NOTE! Always quote belt width.

ASSEMBLY INSTRUCTIONS

1. All ploughs will be boxed and clearly marked with the model number and belt width.
 - Note: Ploughs will be supplied with all nuts and bolts to complete the assembly and installation.
2. Referring to the parts list, check that the correct parts and quantities have been supplied for the model and belt width of plough ordered.
3. Normally ploughs are supplied with blades (2) assembled on the v-arm assembly (1). If not, assemble as illustrated. If necessary, use a rubber mallet to tap the blades into the slotted v-arms.
 - Note: Ploughs for belt widths larger than 750mm; can be supplied with 100mm high blades for confined space installations.
4. Fit the cross brace (3a) and (3b), (two cross braces required for belt widths 1500mm and above).
5. Lock the blades (2) in position using the screws (4).
 - Note: Do not over-tighten screws (4).
6. Attach the safety chain (7) to the nose of the plough.
7. Fit the three link arms (5), to the support front cross brace (3c) and the stringer mount brackets (6).
8. The complete assembled frame can be rotated to fit on top of the conveyor stringers or underneath the top and bottom flanges of the stringers.
9. These options depend on the position of the return side of the conveyor belt, the use of decking plates and cross braces in the conveyor structure.
 - Note: Ensure that all bolts and nuts are firmly fastened.
 - Note: ensure that the link arms (5) are moving freely, do not over tighten screws.
10. Proceed with the installation as per the installation guide.

E405 - V PLOUGH COMPLETE WITH POLYURETHANE BLADES



REV. 0

DRW. No. E405-003

PLEASE SPECIFY BELT WIDTH WHEN ORDERING

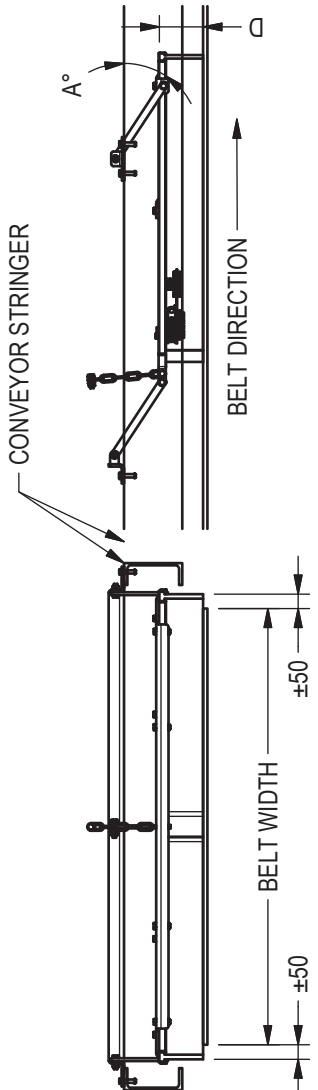
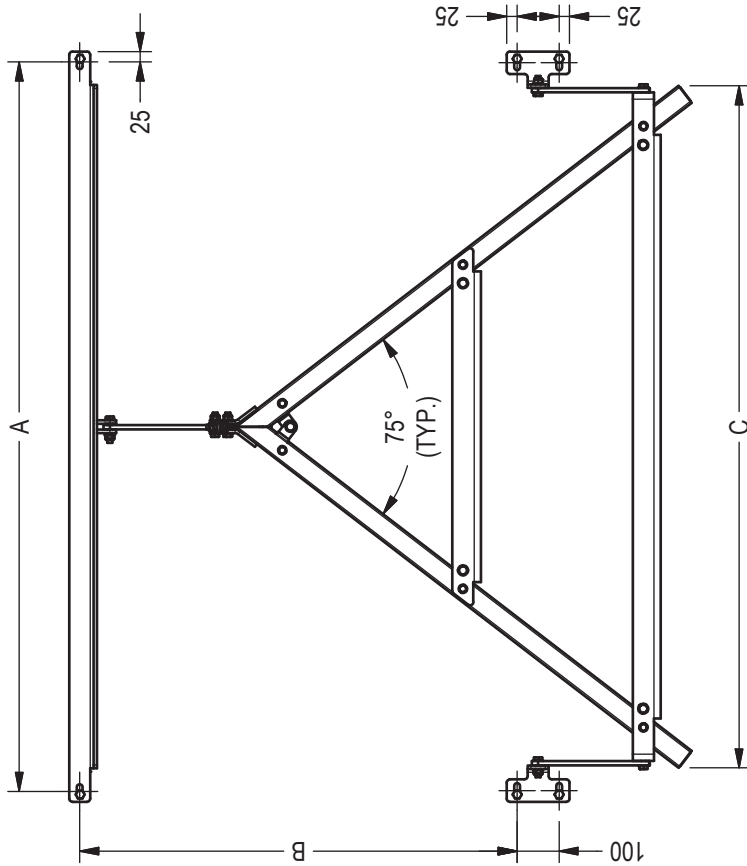
PARTS LIST: FOR STANDARD MOUNTING

INSTALLATION GUIDE - REF. DRW. No.: E405-004

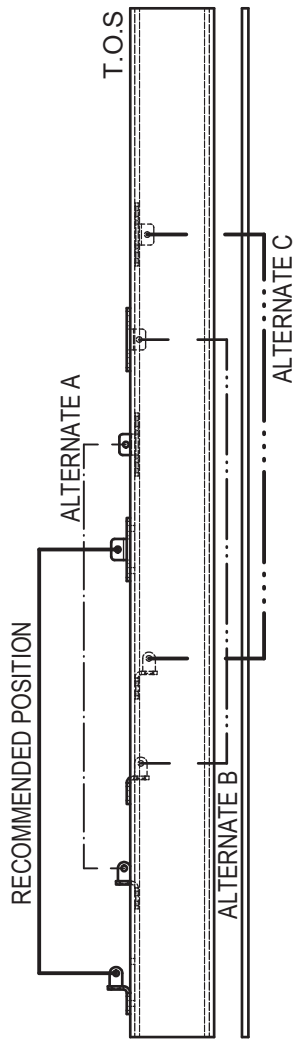
1. The plough is intended for removing loose material on the inside of the return side of the conveyor belt ahead of take-ups, drives and tail pulleys.
2. Refer to the assembly instructions, parts list and DRW. No.: E405-003 to confirm that all the necessary parts have been supplied and that the plough is correctly assembled.
 - Note: The plough mountings can be reversed giving three possible mounting positions on the conveyor stringers, to suit different return belt positions relative to the stringers.
3. If the return belt is not parallel to the stringers the nose or tail of the plough can be lowered by adjusting the front cross brace (3c) and stringer mounting brackets (6). (Up to 10° from parallel can be accommodated).
 - Note: It may be necessary to install flat return idlers.
4. With reference to DRW. No.: E405-004, select the most suitable positions for the plough which should be with the connecting links near horizontal. Mark out and make the mounting holes - (to suit M12 bolts).
5. If mounting on the inside of the stringer is required the use of tapered washers may be required.
6. Fix the front cross brace (3c) and stringer mounting brackets (6) firmly in position.
7. Ensure that the plough is securely linked to its frame and that it is free to move up and down to follow the belt movement.
8. Make an attachment point on the conveyor frame above and ahead of the plough. Attach the chain (7) to the conveyor frame and allow only sufficient slack in the chain to accommodate wear of the plough blades, and to prevent the plough frame from touching the belt.
9. Check that the plough is central on the belt and free to move up and down and that all bolts, nuts, links and shackles are securely fastened.
10. Start the conveyor and check for even contact of the blades with the belt and that the plough is moving freely with the belt.
11. The conveyor belt should be flat at the plough position.
 - Note: If necessary, install flat return rollers ahead and behind the plough.

E405 - V PLOUGH COMPLETE POLYURETHANE BLADES

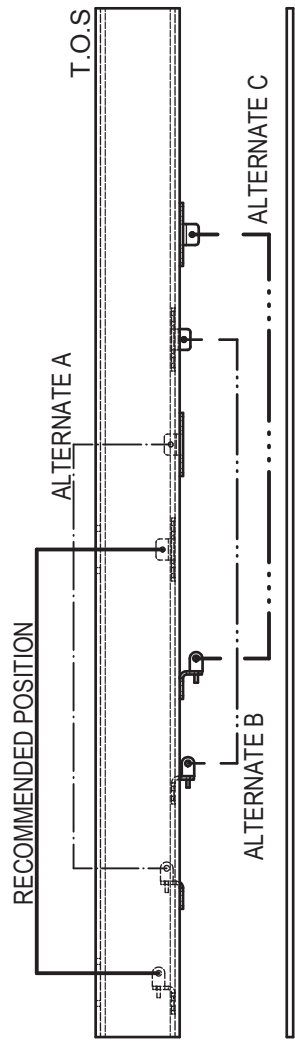
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RECOMMENDED POSITION



ALTERNATE "TOP OF STRINGER" POSITIONS



ALTERNATE "BOTTOM OF STRINGER" POSITIONS

INSTALLATION DETAIL: STANDARD MOUNT.

NOTE:

FOR BELTS NOT PARALLEL TO THE STRINGER PLEASE CONTACT BRELKO HEAD OFFICE FOR FURTHER ADVICE AND INFORMATION!

ALWAYS SPECIFY BELT WIDTH WHEN ORDERING

DRW. E405-004
No.

REV. 0

8. Procedure for Replacing/Repairing Ploughs

Repair/replace Belt Plough components when, general maintenance tasks are performed, plough damage due to accelerated blade wear, clip joints/emergency belt repairs etc.

- 8.1. Request permit to work from an authorised person, who will isolate and lock out the belt.
- 8.2. Loosen nuts on the link arms.
- 8.3. Slide out the plough assembly from the intended exit end.
- 8.4. Service the plough on the platform.
- 8.5. Blade replacement - **Refer to Brelko installation instructions for belt plough model in use.**
 - a. Reposition the plough.
 - b. Tighten all nuts and ensure that belt cleaning or plough performance is acceptable.
 - c. Clear up any loose items which resulted from your work.

CONVEYOR BELT & EQUIPMENT CHECK LIST

CUSTOMER DETAILS

Customer Name:		Contact Number:	
Attention:		Date of Inspection	
Inspected By		Brelko Representative	

CONVEYOR DIMENSIONS

Belt Number:		Material Carried:		Belt Speed:		
Belt Length:		Belt Width :		Troughing Angle:		
Top Cover Condition:				Bottom Cover Condition:		
Splice:	Yes	No	Clip Joint:	Yes	No	
Conveyor Running	Yes	No	Inspection Tags:	Yes	No	
Edge Damage:	Yes	No		Cover Strip:	Yes	No
Comments:						

HEAD END / HEAD CHUTE

Chute Condition:		Head Pulley Lagging:	
Snub Pulley Lagging:		Build up:	
Belt Movement:			
Comments:			

IDLER CHECK

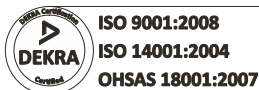
Trough Idler Condition:		Return Idler Condition:	
Troughing Frame Condition:		Return Frame Condition:	
Comments:			

PRIMARY SCRAPER

Position Correct:	Yes	No	Type of Primary Scraper installed:				
(Contact of Scraper Blade must be between 10 to 30 degrees, under the pulley horizontal line.)							
Mounts firmly mounted:	Yes	No	All bolts, nuts tightened:	Yes	No		
Adequate Tensioning:	Yes	No	All Caps, Denso Tape in place:	Yes	No		
Housekeeping:							
Chute Material build up:							
Blade Wear:	Low	Medium	High	Cleaning:	Poor	Fair	Good
Comments:							

SECONDARY SCRAPER #1

Type / Model of Secondary Scraper Installed:							
Positioning Correct:							
(Scraper blade must preferably be a minimum 100mm from pulley tangent.)							
All Caps, Denso Tape in Place:	Yes	No	Mounts firmly mounted:	Yes	No		
All Bolts & Nuts Tightened:	Yes	No	Adequate tension/adjustment:	Yes	No		
Angle Correct Set:	Yes	No	Carrier Frame cut to size	Yes	No		
Angle of scraper must be 90 degrees to the conveyor belt, dependant on conditions.							
Chute / Material build up:	Yes	No	Housekeeping:				
Blade wear:	Low	Medium	High	Cleaning:	Poor	Fair	Good
Comments:							



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SECONDARY SCRAPER #2

Type / Model of Secondary Scraper Installed:																
Positioning Correct:																
Scraper blade must preferably be a minimum 100mm from pulley tangent.																
All Caps, Denso Tape in Place:			Yes		No		Mounts firmly mounted:			Yes		No				
All Bolts & Nuts Tightened:			Yes		No		Adequate tension/adjustment:			Yes		No				
Angle Correct Set:			Yes		No		Carrier Frame cut to size			Yes		No				
Angle of scraper must be 90 degrees to the conveyor belt, dependant on conditions.																
Chute / Material build up:			Yes		No		Housekeeping:									
Blade wear:			Low		Medium		High		Cleaning:		Poor		Fair		Good	
Comments:																

TAKE UP PULLEYS / COUNTERWEIGHT / PLOUGH

Type / Model of Plough Installed:													
Are Flat Return Idlers Installed:		(In front)		Yes		No		(Behind)		Yes		No	
Any excessive belt movement:		Yes		No		Adequate space for material to fall off of conveyor belt				Yes		No	
Is the Plough firmly mounted:		Yes		No		Is the Safety Chain firmly mounted and correctly adjusted:				Yes		No	
Is the Plough Free moving:		Yes		No		Is the entire Blade / Nose Piece in contact with the conveyor belt:				Yes		No	
Housekeeping:													
Comments:													

CONVEYOR BELT TRACKING / ALIGNMENT

Is the Belt Tracking centre:		Yes		No		Are there any Tracking Systems installed:			Troughing		Return		
Is there any visible damage to structure caused by poor belt tracking:						Yes			No				
Conveyor belt length:						Are the tracking systems correctly positioned:			Yes		No		
Are the tracking systems firmly mounted:				Yes		No		Are all bolts & nuts tightened:		Yes		No	
Are all Idlers in contact with the Belt - Adequate Tension on the system:						Yes		No		Housekeeping:			
Comments:													

LOADING / TRANSFER CHUTE

Chute Condition:		Poor		Fair		Good		Material loading in centre of conveyor belt:					
Dead Boxes:		Yes		No		Deflector Plates:		Yes		No		Drop Heights:	
Tail Pulley Condition		Good		Fair		Poor							
Comments:													

KEYSKIRTING®

Size of Keyskirt®:		1		2		3		4		Length of Keyskirt® Installed :			
Positioning of Keyskirt® :						Other Product used as Skirting		Yes		No		State	
Mounting Arrangement		Std.		Offset		Other							
All bolts & nuts securely fastened:				Yes		No		Housekeeping:					
Comments:													

FEEDBOOTS

Type of Feedboot installed:	Universal	Combination	Is the system correctly positioned: (System to be positioned centrally to the load area.)				Yes	No
Drop Height:			Is the system securely mounted:				Yes	No
All Bolts & Nuts tightened:	Yes	No	Condition of Idlers:		Poor	Fair	Good	
Lead in and lead out Idlers in place:	Yes	No	Condition of UHMW Liners:		Low	Medium	High	
Housekeeping:								
Comments:								

HI - IMPACT SYSTEM

Type of Hi - Impact system installed :								
Is the system correctly positioned:		Yes	No	Drop heights:				
System to be positioned centrally to the load area.								
Is the system securely mounted:		Yes	No	All bolts & nuts tightened:		Yes	No	
Are all Idlers in contact with the belt:		Yes	No	Idler condition:		Poor	Fair	Good
BTA Condition:		Poor	Fair	Good	Are chains / D shackles in place & securely fastened:		Yes	No
All Hardware in Good Condition:		Yes	No	Housekeeping:				
Comments:								

AIR CANNONS

Size of Air Cannon Installed:	5ltr	Quantity	10ltr	Quantity			
	25ltr	Quantity	50ltr	Quantity			
	100ltr	Quantity	200ltr	Quantity			
Is the Air Cannon securely fastened onto the structure:		Yes	No	Is an Air Lance installed:		Yes	No
Size of the Air Lance:		Are the Air Cannons correctly positioned:			Yes	No	
Power supply:		Air supply:					
Operating system:		Single timer	PLC	Manual push button		Sequential	
All Bolts & Nuts securely tightened:		Yes	No	All components in good order:		Yes	No
Distance between Air Cannon & Solenoid Valve:		Any Air Leaks in the Pipe Work:			No		
Is a Water Trap Installed:		Yes	No	Is a Lubricator installed:		Yes	No
Distance from Air Cannon:		Distance from Air Cannon:					
Are the safety / warning signs in place and visible:		Yes	No	Housekeeping:			
Comments:							

TAIL PULLEY / PLOUGH

Type / Model of Plough Installed:							
Are Flat Return Idlers installed:		(In front)	Yes	No	(Behind)	Yes	No
Any excessive belt movement:		Yes	No	Adequate space for material to fall off of conveyor belt:		Yes	No
Is the Plough firmly mounted:		Yes	No	Is the Safety Chain firmly mounted and correctly adjusted:		Yes	No
Is the Plough free moving:		Yes	No	Is the entire Blade / Nose Piece in contact with the conveyor belt:		Yes	No
Housekeeping:							
Comments:							

11. Trouble Shooting

Problem	Possible Cause	Possible Solution
Poor cleaning performance	Plough link arms not moving freely	Check link arms, remove obstructions
	Plough blade worn or damaged	Replace Plough blade
Rapid Blade Wear	Plough not located correctly	Check Plough location for correct dimensions
	Cupped Conveyor belt	Fit flat return Idlers ahead and behind Plough
	Mechanical splice damaging blade	Repair, skive or replace splice
Centre wear on blade (smile effect)	Belt not flat	Fit flat return Idlers ahead and behind Plough
Unusual wear or damage to blade	Mechanical splice damaging blade	Repair, skive or replace splice
	Belt damaged or ripped	Repair or replace belt
	Plough not correctly located	Verify dimension - refer installation drawing
	Damage to pulley or tail pulley lagging	Repair or replace pulley
Vibration or noise	Plough not located correctly	Fit flat return Idlers ahead and behind Plough
Plough being pushed away from Belt	Sticky material is overburdening Plough	Replace with Brelko heavy duty Plough, contact Brelko for available options.
	Plough not set up correctly	Confirm location dimensions are equal on both sides
	Plough link arms not moving freely	Check link arms, remove obstructions