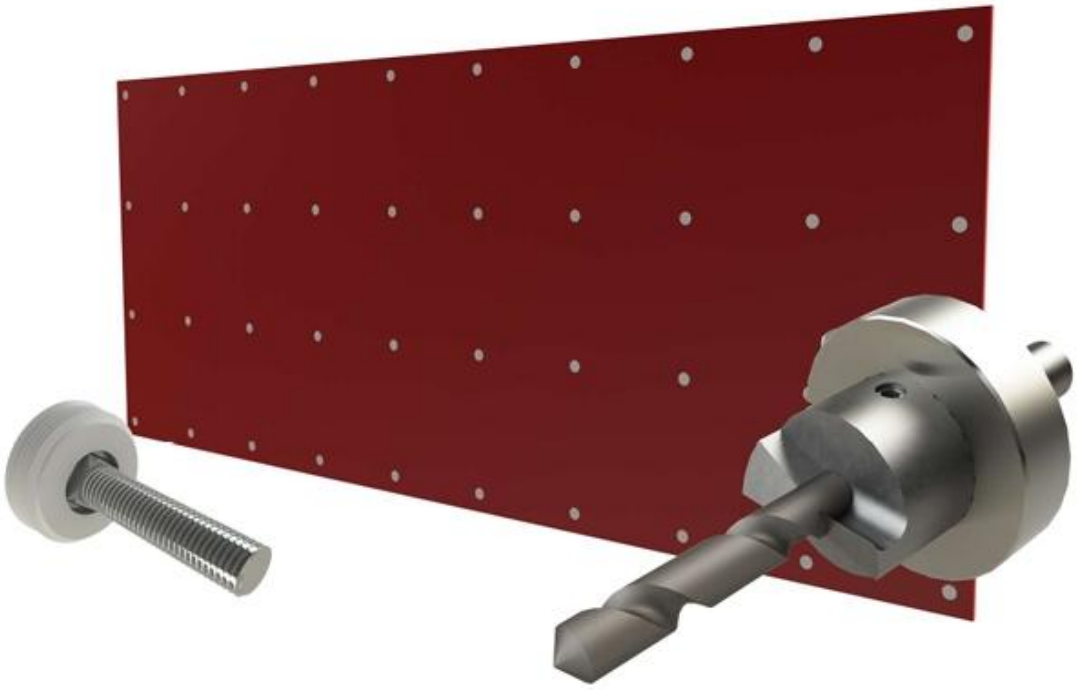
Installation Instructions: K-Slide Low Friction Liner

Kinder Australia Product:	K-Slide Low Friction Lining
Product Category:	Materials Flow
Issue Date:	18/12/20
Revision:	2



⚠ WARNING ⚠

Always obey all applicable safety rules.
Be sure all power to the conveyor has been disconnected and controls are locked out.

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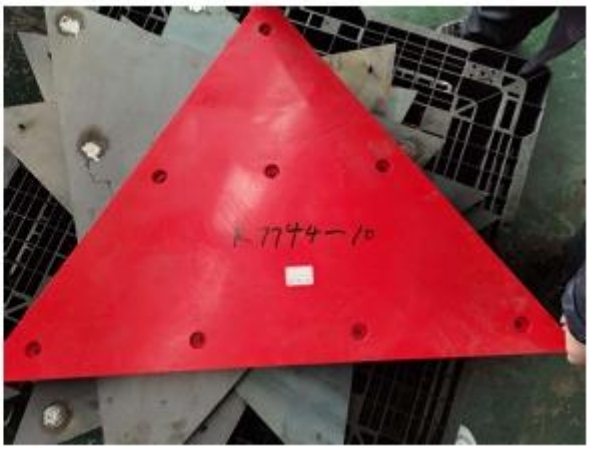
Installing the K-Slide Low Friction Lining

Correct liner installation is essential in ensuring maximum service life and flow efficiency in the application. To ensure that you get the best performance out of your liner make sure to follow all instructions suited to your application and to make sure to acknowledge all notes and warnings.

Cutting

Kinder offers professional CNC cutting services to ensure that K-Slide low friction liner sheets are cleanly cut to shape, including fastener holes, with a high level of precision and accuracy. Kinder can also provide K-Slide with bevelled edges as demonstrated below.



If you have opted to purchase full, uncut K-Slide sheets then you may have to cut the sheet to suit the application. Most conventional machine tools or woodworking machinery, operating at cutting speeds of up to 1500m/min, can cut the K-Slide liner to shape. Using a high feed rate is required to keep heating of the material to a minimum. Very sharp tools are recommended as the UHMWPE material can quickly dull cutting edges; hard tooling pieces, such as tungsten carbide, are also beneficial for this reason.

Use measuring equipment and engineering drawings to determine the size and shape required to fit the K-Slide liner into the application and use a marker to designate the cutting lines. Ensure that the correct PPE is worn while cutting the K-Slide liner. The surface finish of cuts can be cleaned up with the use of a sharp cutting knife. Filing or sanding the material can result in the finish worsening due to the abrasion resistance of the material. Grinding usually results in smearing and the wheel clogging.

If your installation will be using a fastening method that requires counterboring, and you have opted to complete this yourself, then you will need a counterboring tool to match your fastener.

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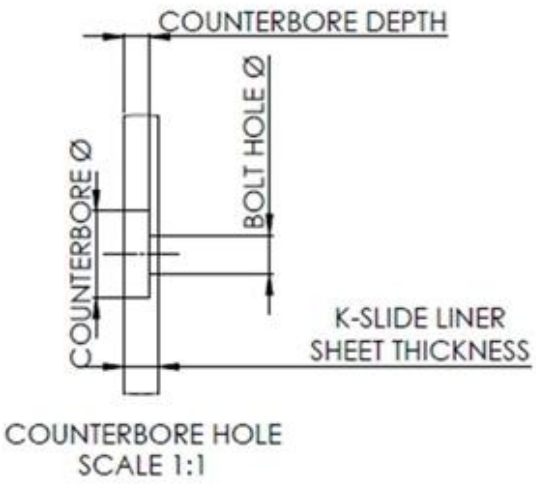

COUNTERBORE HOLE
SCALE 1:1

The profile of a typical coated bolt counterbore should be completed to match the given dimensions. Any overhangs or gaps can become starting points for material hang-up and caking.

Optimal counterboring should result in the coated head of the bolt lying flush with the liner so that any potential hang up points are eliminated. This can be tested before install as the counterbores are drilled. Ensure any burrs are removed prior to operation.

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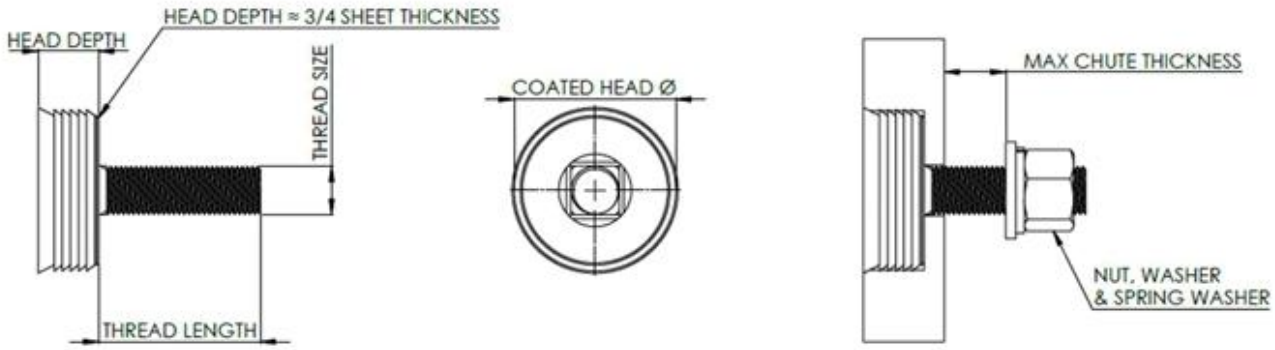

Kinder provided counterbore tools and coated bolts are designed to result in consistent counterboring with optimal head setting. Dimensions for non-standard bolts can be requested from Kinder.

STANDARD BOLT SIZING CHART

THREAD SIZE	THREAD LENGTH (mm)	COATED HEAD Ø (mm)	HEAD DEPTH (mm)	SUITED FOR SHEET THICKNESS (mm)	MAX CHUTE THICKNESS (mm)	PART NUMBER
M6	30	20	4.75	6	25.75	K-FAW-CB-M6x30-20-06
			6	8	25	K-FAW-CB-M6x30-20-08
M8	40	30	6	8	25	K-FAW-CB-M8x40-30-08
			7	10	24	K-FAW-CB-M8x40-30-10
			8	12	23	K-FAW-CB-M8x40-30-12
			12	15	24	K-FAW-CB-M8x40-30-15
			16	20	23	K-FAW-CB-M8x40-30-20
			20	25	22	K-FAW-CB-M8x40-30-25
			25	30	22	K-FAW-CB-M8x40-30-30
M10			12	15	24	K-FAW-CB-M10x40-30-15
			16	20	23	K-FAW-CB-M10x40-30-20
			20	25	22	K-FAW-CB-M10x40-30-25

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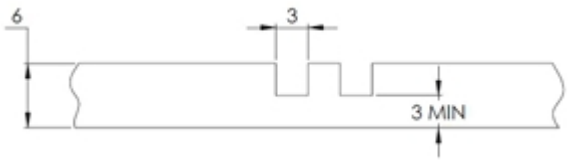
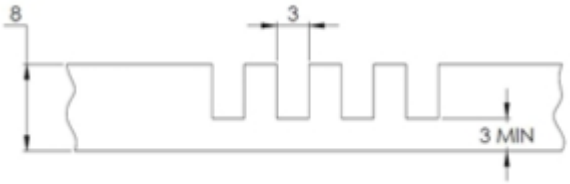
Forming

K-Slide liners can be cold formed to match curves or angles. This is recommended only for 6mm & 8mm sheets as thicker sheets may experience stress cracks. The material can be formed to the bend with the use of a press brake or by rolling and hand forming the sheet. Due to the spring back of the material, you may be required to overbend the liner by as much as 75-100% of the curve angle.

When forming the material to tight corners or bends it is recommended to score the sheet. 6mm sheet usually requires 1 score cut per 45° and 8mm requires 2 score cuts per 45°.

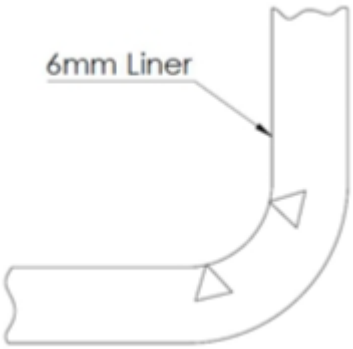
6mm sheet only allows for shallow scores to be made to maintain material integrity.





8mm sheet allows for deeper scores, up to a maximum of 5mm.

Always ensure that sheet is bent so that all scored gaps are closed. Positioning scores closer to the edge of the bend radius results in gaps closing sooner.



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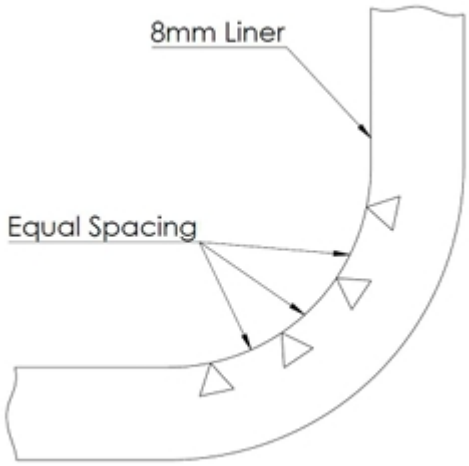

Scores should be spaced equally apart to ensure that all gaps close evenly during the forming process.

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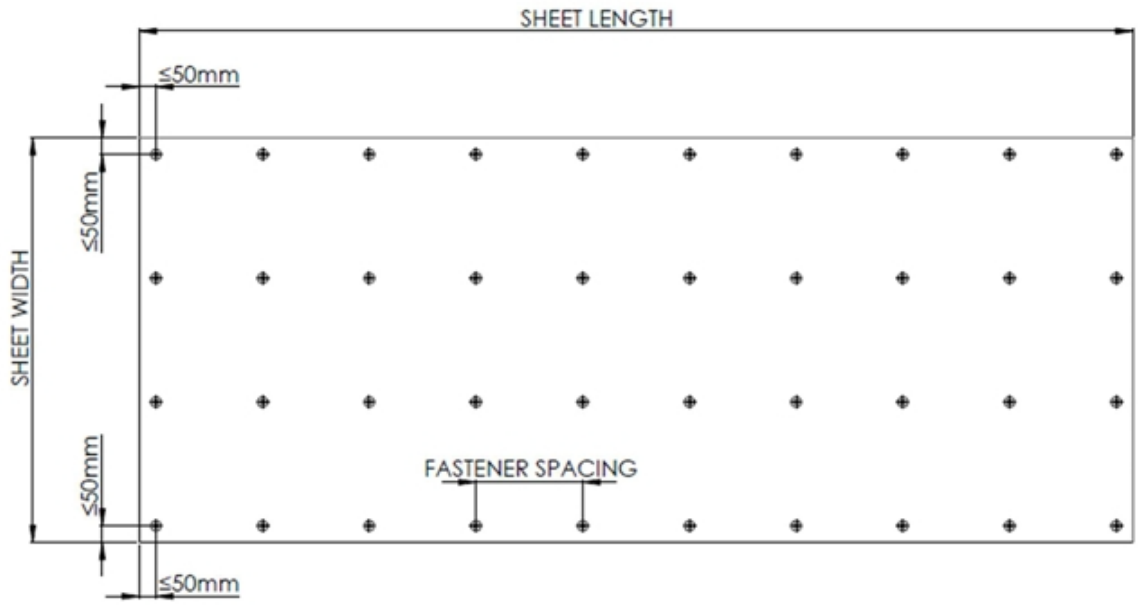
Fastening

Typical fastening methods includes coated bolts with nut and washer combinations, welded studs and welded washers. Kinder recommends the coated bolts due to the ease of installation and maintenance with the extra benefit of the UHWMPE coated cap providing a wear surface to match the liner.

The general fastener spacing for a rectangular sheet is depicted below. The fasteners should be spaced no further than 50mm from the liner edge and the spacing between fasteners varies with sheet thickness. If your sheet has been cut or you are unsure about fastener spacings please contact Kinder Australia.



STANDARD RECTANGULAR SHEET FASTENER SPACING

SHEET THICKNESS (mm)	TYPICAL FASTENER SPACING (mm)
6/8	150-200
10	200-250
12/15/20	250-300
25+	300-375

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Note:

The pattern and the spacing between fasteners is critical to controlling buckling: which can lead to localised and accelerated wear which reduces the overall system lifetime. Consult Kinder Australia for an optimised fastener pattern.

Spacing

The high coefficient of thermal expansion of UHMWPE must be considered when installing the K Slide liner. Not properly considering the potential expansion can increase the chance of buckling and accelerated wear if the liner is to be subjected to a varied temperature range. It is recommended that installation of the liner occurs when the mean ambient temperature is between 20-24°C.

Most situations allow for the liners to be butted together, however, if a wide temperature range is expected, then a gap between the liners, which can be calculated from the maximum operational temperature, is required. Gaps between joins can be filled with a flexible polyurethane-based sealant. If you are expecting a wide temperature range or cannot install the liner within the recommended range, contact Kinder for assistance in determining the optimal installation layout.

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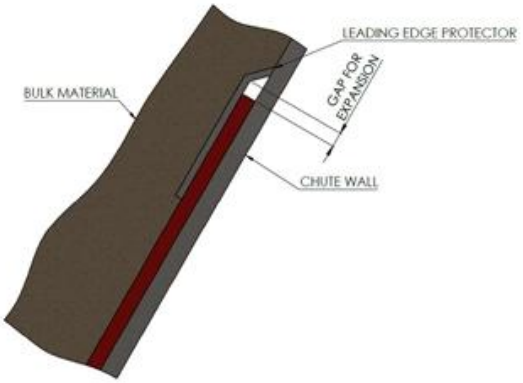
Leading Edge Protection

Leading edge protection is crucial for smooth operation of the K-Slide Liner. Without a protector you run the risk of material creeping behind the liner, causing it to eventually buckle and separate from the installation. Two forms of leading-edge protection are recommended:

Bevel

A bevel is recommended for low risk applications with larger bulk material size where there is little to no risk of the material finding its way behind the liner.

Leading Edge Protector



Leading edge protectors are recommended where finer materials are present that pose a significant risk of the material migrating behind the liner. Protectors can be made by hand with a bent plate.

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Maintenance

Typically, the K-Slide liner is a low maintenance product that should operate normally for much of its lifetime. In the case that the liner is no longer operating as expected then it may be beneficial to inspect it for defects. After inspection use the below guide to find a solution for any discovered issues.

Problem	Possible Cause	Suggested Solution
Material build-up on liner	Fastener cap(s) not flush with liner	Ensure that all fastener caps are flush with the liner surface. Remove any burrs or defects that may lead to hang-ups.
	Cuts or grooves on liner surface	Cuts or grooves caused by harsh impact can be sources of material hang-up. Removing any protrusions can help prevent serious hang-up.
Buckling/Warping of liner	Fasteners are too sporadic	Install additional fasteners at location of buckling to ensure liner cannot lift from wall.
	Insufficient room for heat expansion	If liner sheets are too close, they may expand into each other at higher temperatures and buckle at the point of contact. Liners can be cut or moved to increase the spacing between them.
Liner separating from wall	Material feeding behind liner	Ensure that proper protection is in place for the leading edge. If this occurs between two liners it may be that they are spaced either too far apart causing material to build up between or too close together causing buckling that allows material to enter.
	Liner fasteners too far from edge	If fasteners are located beyond the recommended 50mm max, there is a risk of the liner lifting due to a lack of support. Ensure that fasteners are not too far.
Noise or vibration from liner	Liner not properly secured	If the liner is vibrating or making noise at any location, ensure that the liner is properly fixed and that there is no damage that may cause looseness.
Heavy localised wear of liner	Localised buckling causing raised section	Excessive localised wear can be caused by the positive aspect of buckling due to the increased exposure and interruption of stable flow. Determine the source of buckling and respond accordingly.

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