

Installation Instructions: K-Shield Dynamax® Impact Idler

Kinder Australia product:	K-Shield Dynamax® Impact Idler
Product category:	Belt Support
Issue date:	05.08.2022
Revision:	1

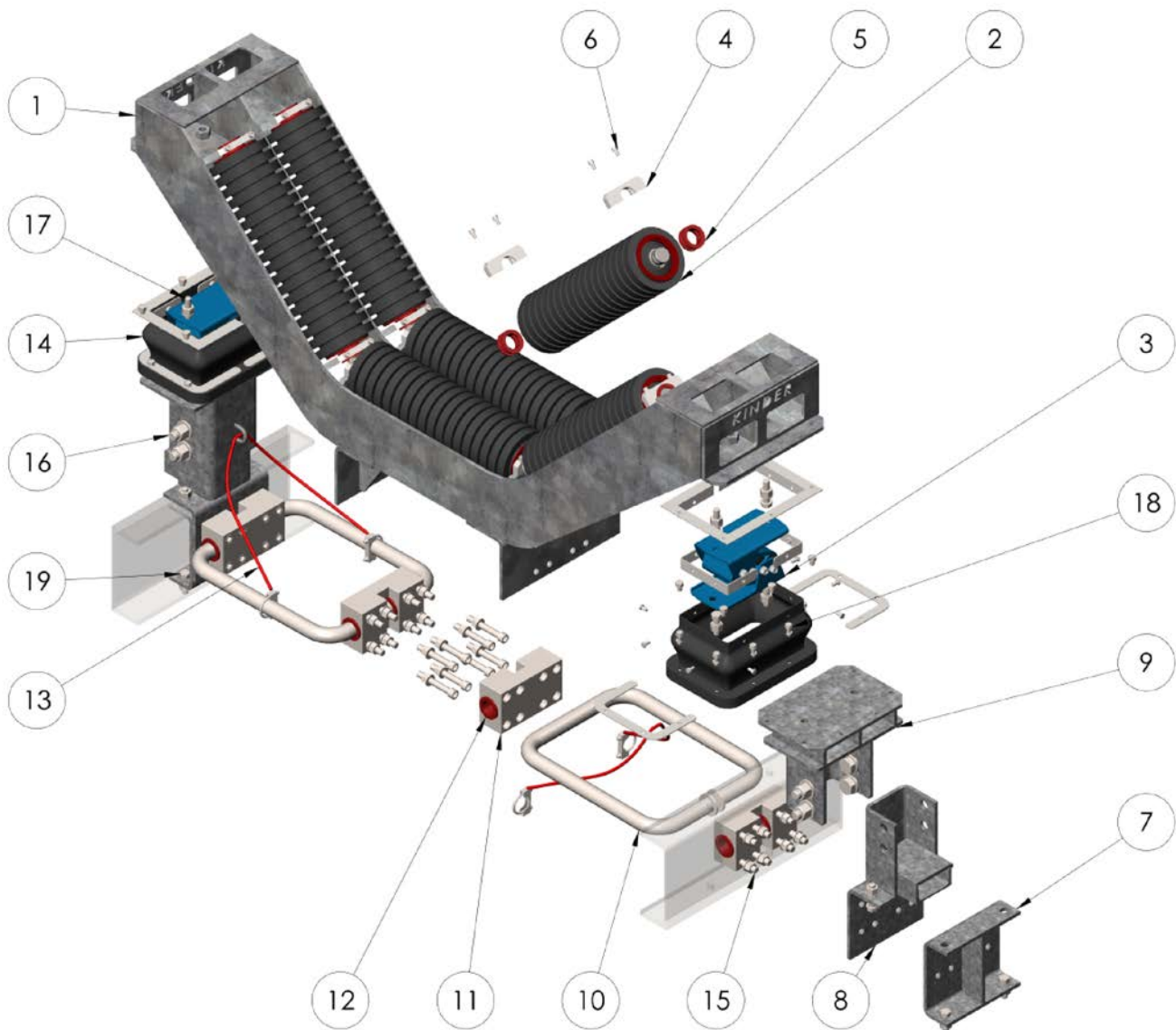
Overview:

The K-Shield Dynamax® Impact Idler is used to provide belt support under a conveyor transfer point and protect the belt and idlers from early failure. It is used for heavy duty applications where high impact loading is expected and works in addition to what a static impact idler system will allow by having the idler frame on springs. See Kinder drawing K7774 for additional reference.



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Exploded View:



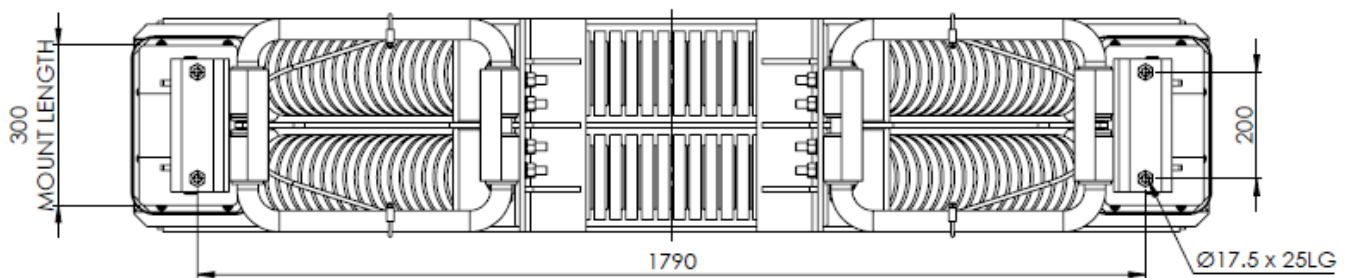
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ITEM NO.	DESCRIPTION	QTY.
1	ROLLER FRAME	1
2	IMPACT ROLLER	6
3	TORSION SPRING ELEMENT	2
4	ROLLER RETAINER CAP	12
5	POLYURETHANE ROLLER SUPPORT BUSH	12
6	M8 x 50 SOCKET HEAD CAP SCREW + FLAT WASHER	24
7	STRINGER BRACE	2
8	LOWER FRAME SUPPORT	2
9	UPPER FRAME SUPPORT	2
10	SWAY BAR	4
11	SWAY BAR BUSH HOUSING	4
12	POLYURETHANE SWAY BAR BUSH	8
13	PVC COATED GALVANISED ROPE W/ THIMBLES + CLAMPS	4
14	TORSION SPRING DUST BOOT ASSEMBLY	2
15	M16 x 110 SOCKET HEAD CAP SCREW + NYLOC NUT + GR8.8 FLAT WASHER	32
16	M24 x 70 HEX HEAD BOLT + NYLOC NUT + GR8.8 FLAT WASHER + NORDLOCK WASHER	8
17	M16 x 65 HEX HEAD BOLT + NYLOC NUT + GR8.8 FLAT WASHER + NORDLOCK WASHER	12
18	M8 x 35 HEX HEAD BOLT + HEX NUT + GR8.8 FLAT WASHER	22
19	M16 x 50 HEX HEAD BOLT + NYLOC NUT + GR8.8 FLAT WASHER + NORDLOCK WASHER	8
20	8mm TORSION SPRING MOUNT SHIM (NOT SHOWN)	12

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Procedure:

1. Shut down and lock out conveyor before doing any maintenance. A belt lifter in place near the impact zone will improve access for installation.
2. Remove the existing impact idlers from the conveyor structure. Inspect the structure for damage or misalignment.
3. The location of the dynamic impact cradle must have clearances at the leading end from structure, frames and consecutive impact cradles as the torsion springs allow movement forward as they compress downward. The amount varies depending on the specification; however, most should allow 10mm between the leading edge of the cradle and other components.
4. Drill holes in the stringers of the conveyor in the locations shown below (4 off per assembly) for the mounting holes. The holes in the frame mounts are slightly elongated along the length of the conveyor for adjustment. The holes should be drilled through both the top and bottom flange.

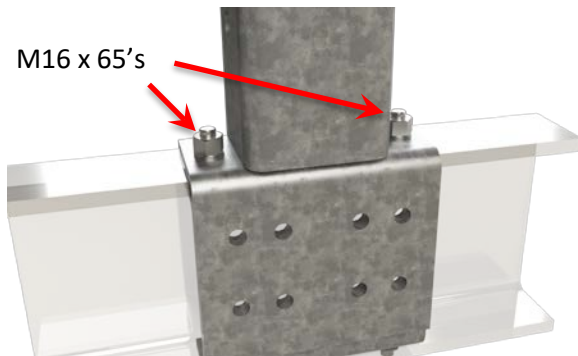


5. Fit the mount supports to the structure. These should be inserted into the channel to line up with the holes. The back face of the mount support with the 8 holes should be orientated to face toward the centre of the assembly. Secure them in place with M16 x 50 galvanised fastener sets in the lower holes only. Leave the bolts finger tight at most.

NOTE: These may be tight to fit in the channel by design, however, some grinding of the top plate may be required to allow fitment.



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6. Fit both impact frame mounts to the structures with the galvanised M16 x 65 fastener sets. The base plate angle should hang towards the inside of the conveyor structure and the holes should line up with those of the mount supports. Leave all bolts loose.



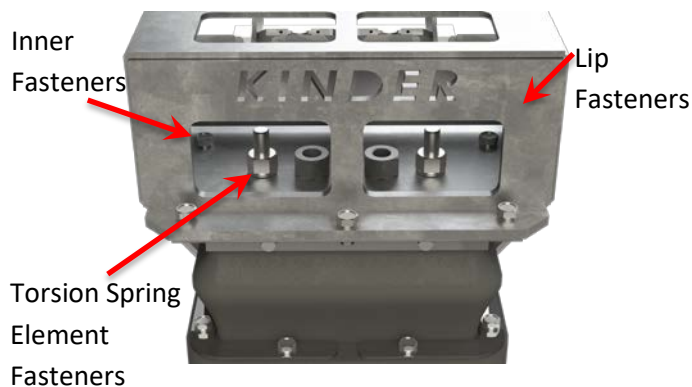
7. Fit both the upper support channels with the M24 x 70 fastener sets. Nordlock washers are to go on the head of the bolt and zinc washers are to go on the inside of the channel, with the Nyloc nut. Run the nut up the bolt to take up most of the slack but do not tighten.



8. Fit the Torsion spring elements to the upper support channels with 2 more M16 x 50 bolt sets. The torsion spring element should point in the shown orientation on both sides with respect to belt travel. The head of the bolt should use the galvanised lock washer and be on the Torsion spring element side. Zinc plated washers to be used on the inside of the frame with Nyloc nuts. Leave the fasteners loose.

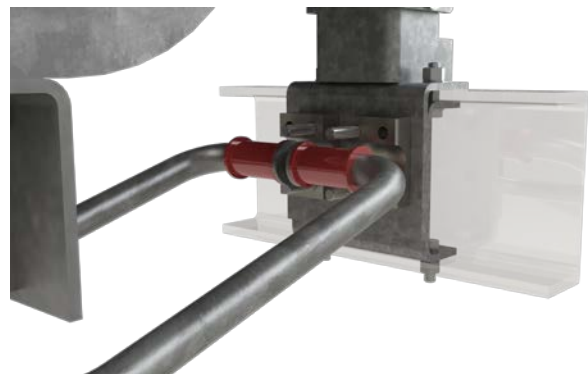
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9. Pass the dust boots over torsion spring elements, align it with the bolt holes then bolt in place with M8 x 35 hex head bolts, washers, and nuts.

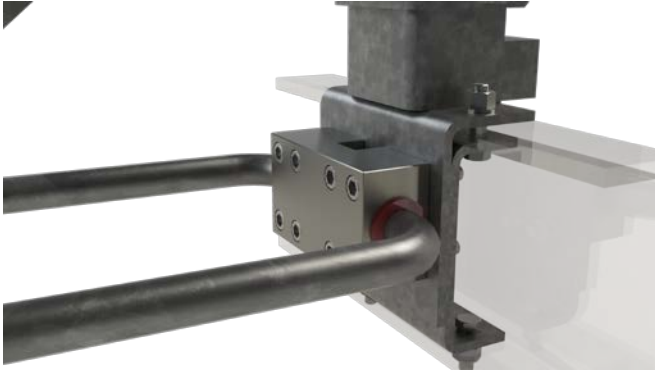


10. Ensure both sides are fitted and ready then lower the roller frame onto torsion spring elements with dust boots compressed to allow space to install and fasten the M16 x 65 torsion spring element fastener sets. Fasten the M16 x 50 bolts on the torsion spring elements as per the table on page 9 then do the same for the dust boot M8 x 35 hex head bolts located both inside the roller frame and on the outer lip.

11. To mount the sway bars, first position a block segment of the sway bar bush housing on the mount supports. If accessible, use some of the M16 socket head bolts in the holes to create temporary studs to hold the block in place. Prepare a set of bushes by inserting them over the end of the sway bar as close to the stoppers as possible.



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- 13.** Fit the centre bush retainer assembly to the other end of the sway bar. The bushes and bush retainer block should be assembled around the sway bar, then brought up to its mount plate to secure it with M16 x 110 socket head bolts.

- 12.** Fit the polyurethane bushes into the blocks, adjusting as necessary, and then install the second block of sway bar bush housing. Bolt the whole segment together with M16 x 110 socket head bolts. If any bolts were used to hold up the first segment, swap them to the correct orientation now. Secure everything with washers and nyloc nuts but do not fully tighten.

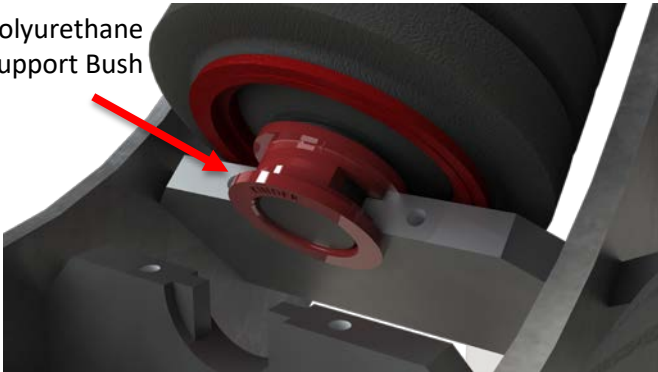


Complete the same procedure from step 11-13 for the sway bar on the opposite side.



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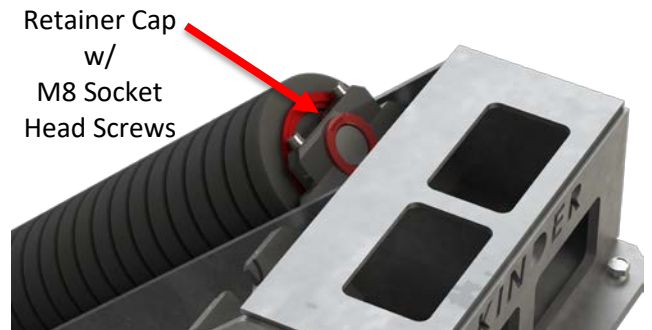
Polyurethane
Support Bush



- 14.** Fit the polyurethane support bushes onto both roller ends. The flats on the bushes should be aligned with the flats on the shaft. Fit the roller into the frame slots.

- 15.** Slot the retainer caps over the shaft ends and secure in place with the pairs of M8 socket head screws.

Retainer Cap
w/
M8 Socket
Head Screws



Repeat this for the remaining rollers.

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- 16.** Check the alignment of the cradle with respect to the belt profile or nearest idler sets. It is critical that the unit is aligned with the conveyor system; any misalignment will cause belt training problems.
- 17.** Tighten all fasteners on the assembly, including mounting hardware. Fully secure the rollers then work from the top torsion spring element fasteners down the system. **The top and side M24 structural bolts are to be torqued prior to the bottom M24 structural bolt.** Tighten the sway bar from the outside in. The stringer mount bolts should be tightened last. Refer to the below table for torque requirements.

Bolt Size	Location	Torque Requirement
M8 G8.8 Socked Head Bolt	Roller Retainers	15.4 N.m (Dry)
M8 G8.8 Zinc Plated Hex Bolt	Dust Boot / Roller Caps	15.4 N.m (Dry)
M16 G8.8 Zinc Plated Hex Bolt	Torsion spring element (c/w Nordlock washer)	132.5 N.m (Dry)
M16 G12.9 Socket Head Bolt	Sway Bar Bush Block	221.3 N.m (Dry)
M16 G8.8 Zinc Plated Hex Bolt	Mount upright to cv structure	132.5 N.m (Dry)
M24 G8.8 Zinc Plated Hex Bolt	Jack Down Connection Point (c/w Nordlock washer)	463 N.m (Dry)

- 18.** Thread the failsafe cables through the C hook mount and secure by locking the pipe clamps around the sway bar on both sides.



- 19.** Place the cable thimble loops on one of the pipe clamp threads and secure it in place using the flanged nut. Tighten all pipe clamp nuts.

Test run conveyor. The system should be inspected after 8 hours of operation for any loose bolts or damage. Regular inspection should be included in the normal inspection schedule.

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Maintenance:

Minimum tools required for service:

- Measuring Tools (Tape measure/Ruler)
- Torsion spring element shim Kit (Item 20)
- Set Square
- 22 off M8 Hex Nuts – Item 18 (Whole fastener assembly may need replacing)
- 58 off M16 Nyloc Nuts – Item 15, 17, and 19 (Whole fastener assembly may need replacing)
- 8 off M24 Nyloc Nuts – Item 16 (Whole fastener assembly may need replacing)
- Spanners/Sockets to remove and replace above fasteners

WARNING: Pre-Start Safety

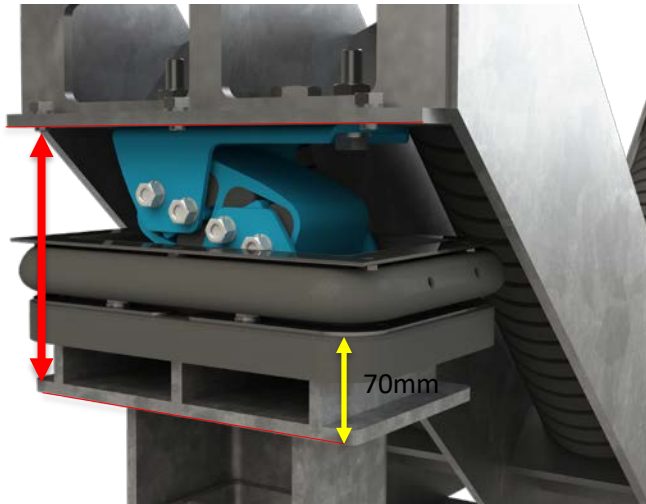
Never operate, adjust, or install equipment on a moving conveyor. Before commencing inspection, ensure the plant is locked-out in accordance with Site Isolation Procedures and appropriate JSEA/SWMS paperwork has been completed.

Ensure appropriate Site Standard PPE is always worn during the inspection. Contact your supervisor with any questions.

When working on uneven ground - be aware of the possible hazards and potential for slips, trips, and falls.

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Section 1: Inspection of Torsion Spring Mount (Items 3, 17, and 19)



Measurements should be taken from the bottom faces of the top flange to the bottom flange, then 70mm must be subtracted from the measurement to get the height of the torsion spring element and any installed shims.

(There may be multiple shims installed already)

Maximum number of half-shim sets must not exceed 3 high.

*Overall Torsion Spring Element and Shim Set height should be equal to 143mm
If less than 137mm – add 8mm shim.*

Do not add shim if equal to or greater than 137mm

*Examples of failure modes that should be reported.
Component must be replaced if this is present.*



Swap M16 x 50 bolts for the spare M16 x 65 bolts accordingly when adding shim sets to prevent bottoming out.

Inspect rubber boot.

Report any wear such as cuts or tears that may lead to dust encroaching on the torsion spring element.

Inspect rubber torsion system.

Report build-up with the rubber torsion system. Clean out accordingly.

Inspect Torsion Spring Element structure for any cracks in structure or other obvious damages.

~~Provide comments~~

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Section 2: Inspection of Sway Bar Assembly (Items 7, 8, 10 - 13 and 15)

Inspect overall condition of Sway-Bar (Item 10) and of Fail-Safe Cable and Clamps (Item 13)

Sway bars should be straight with tight radii at 90-degree bends. Report any signs of excessive tension, stress fractures or obvious damages.

Cables should have some slack to allow movement.

Clamp should be tightly fastened to sway bar (item 13). Should be positioned somewhere in the centre of the sway bar.

Fail-Safe Cable will need to be removed for next part of inspection, by removing the clamps.



~~ Provide Comments ~~

Dis-assemble Bush-Block Assemblies

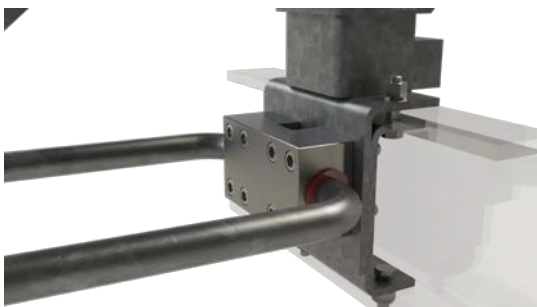
Exposes Polyurethane Bushes and ends of the sway bar for inspection

Inspect Sway bar housings and Polyurethane sway bar bush (Items 11 and 12).

Polyurethane bushes should be replaced annually or if worn/damaged.

Inspect stringer brace, lower frame support and the M16 bolts (Items 7, 8 and 15) for and fatigue cracks or wear.

~~ Provide Comments ~~



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Section 3: Inspection of Idler Profile and Components (Items 1, 2, and 4 - 9)

Note – idler should be in lowered position for this inspection to be completed. Conveyor belt should ideally be removed or in lifted position.

Inspect rollers (Item 2) ensuring that all are turning and operational.

~~ Provide Comments ~~



Remove and inspect all roller retainers (Items 4, 5 and 6).

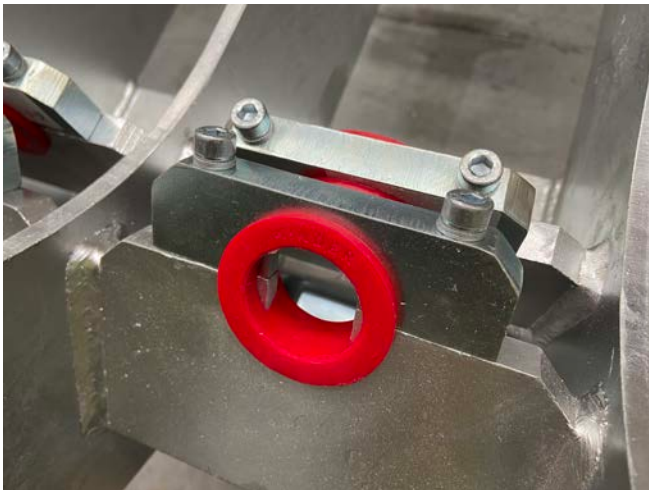
Bushes should maintain their shape and be free from fatigue cracks.

Inspect roller slots and retainer caps and report wear.

Supports should be intact with no obvious wear from shaft vibrations in the slots.

Roller shafts should be as per the OEM manufacture.

~~ Provide Comments ~~



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Inspect Welded Supports holding the rollers in place.

Ensure these are straight and there are no damages to welds or frame structure

Report any stress cracks on welds or abnormal wear marks.

Inspect overall Main Structural Components

(Items 1, 7, 8 and 9)

Report any wear or concerning abnormalities.

~~ Provide Comments ~~

Inspection is now complete.

Refer to Installation Procedure for K-Shield Dynamax® Impact Idler from Page 4 of this document.

Contact Kinder Australia representative with any questions.