

Kwik-Lag®



HOLZ

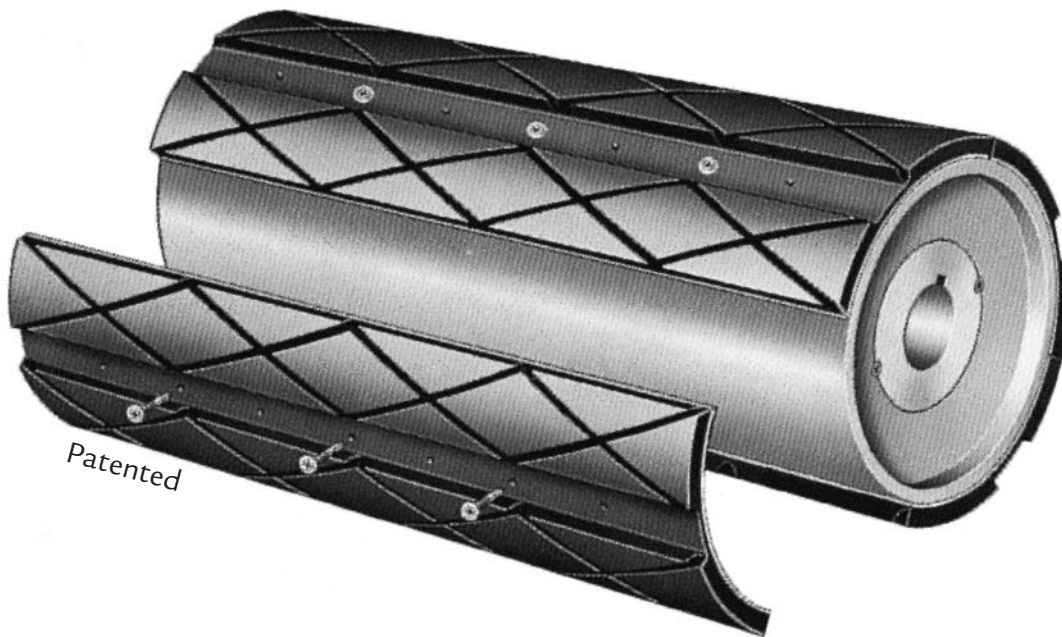
RUBBER COMPANY, INC.

1-800-285-1600 • Quality Since 1935

REPLACEABLE PULLEY LAGGING FOR LIGHT DUTY APPLICATIONS

CUTS DOWNTIME

Can be installed and replaced on the job
without removing belts or pulleys.



- Package Handling
- Lumber and Wood Products
- Food Processing
- Agriculture
- Light Bulk Material Handling
- Light Industrial Applications

Reduced Operating Costs

KWIK-LAG® is a unique new replaceable pulley lagging from HOLZ RUBBER that is especially designed for light-duty conveyor and elevator service on pulleys as small as 4" in diameter.

KWIK-LAG® is ideally suited for package handling, food processing, agriculture, lumber and wood processing and light industrial or bulk material applications where the maximum operating tension is *150 pounds per inch of belt width or less*.*

KWIK-LAG® has been designed to virtually eliminate belt slippage through increased traction under all operating conditions. This special design makes KWIK-LAG® far superior to existing "wrap and bolt" lagging methods.

For cost-savings during installation and replacement, KWIK-LAG® can't be matched. Pads can normally be installed and replaced without removing the pulleys from the system—a tremendous saving in downtime and maintenance costs, particularly when compared to vulcanized lagging.

Figure 1: KL Fastener Attachment

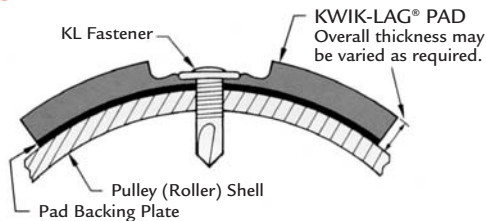


Figure 1A: Blind Rivet Attachment



Figure 1B: Drive Screw Attachment



How KWIK-LAG® Works

KWIK-LAG® replaceable pulley lagging is constructed of quality elastomer pads, hot vulcanized under high pressure to metal backing plates that are factory formed to fit the pulley face. The completed pad is attached to the pulley shell by means of fasteners applied through the center of the pad into the pulley. The fastener head is safely out of the way of belt contact due to the recessed design of the pad center (Figure 1). Pads will essentially cover the pulley surface if the pulley diameter is in "whole inches", i.e., 4", 5" and 8". For fractional diameters, the pads will be spaced slightly, the actual spacing to be determined by the diameter involved (see Installation Instructions—page 6. Figure 8 and Table B).

KWIK-LAG® is available in a wide range of elastomers, backing plate metals and fastening methods to fill virtually any lagging need. It may also be ordered with pad thicknesses greater than the standard 1/4" — up to 1/2" maximum overall gauge — and is adaptable to any pulley face width.

Complete Installation instructions are shown on pages 6 and 7 and separately in Bulletin KL120.

Where KWIK-LAG® Is Used

• Package Handling

Transporting boxes, bags, luggage and similar items can generate wide ranges in belt tension within an individual conveyor. KWIK-LAG® assures that pulleys won't slip under these demanding conditions and keeps packages moving smoothly without bottlenecks.

• Food Processing

KWIK-LAG® 500 incorporates features of particular interest to the food processing industry. It features, as standard, a tan Buna-N that meets FDA specifications and is resistant to food oils and acids. Stainless steel backing plates and KL fasteners are also provided to prevent corrosion problems. KWIK-LAG® 500 is ungrooved to facilitate cleanup. While its recessed-center design helps provide positive traction.

• Agriculture

Outdoor service on harvesting and bulk loading and unloading equipment can be tough on pulley lagging. KWIK-LAG® 100 is manufactured from quality elastomers that resist the damaging effects of sunlight, rain and ozone. The double-grooved design gives non-slip action in all types of weather conditions and provides a self-cleaning action to prevent material buildup on the pulley.

• Light Industrial Applications

Whether it is transporting machine parts, transistors, tires or any of the other multitude of products moved by conveyor belt, KWIK-LAG® will out-perform any other type of lagging. KWIK-LAG® can be tailor-made for long life under almost any operating conditions and still provide superior drive pulley traction. (See Page 3.)

• Lumber and Wood Products

The small pulleys and rollers that abound in wood processing operations can all be covered with KWIK-LAG® to provide traction or just simple cushioning protection and noise reduction. Select a special compound and/or pad thickness where necessary to provide just the right lagging to do the job.

• Light Bulk Material Handling

KWIK-LAG® eliminates belt slippage worries when handling fertilizer, grain, sawdust and other light non-abrasive bulk materials. *For use where operating tensions are 150 pounds per inch of belt width or less**, there is no equal when it comes to performance and ease of installation and replacement.

Other applications are also ideal for KWIK-LAG®, such as *idler roll covers, metal belt drive pulleys, and wire mesh belt drive pulleys.*

***NOTE:** Consult factory on applications involving greater operating tensions than indicated.

PADS

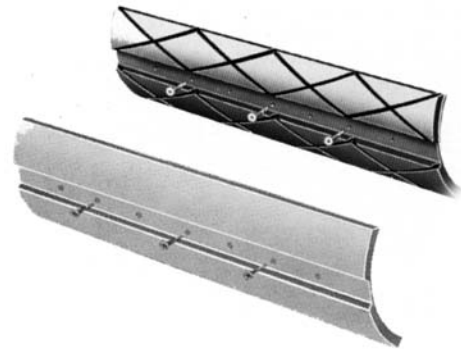
Authorized HOLZ RUBBER stocking distributors carry inventories of standard pads, complete with KL fasteners, for application by system owners using the "butt seam" or "full width" method (see page 4).

• KWIK-LAG® 100 PADS

KWIK-LAG® traction pads, grooved for use on drive pulleys, in 48" lengths, formed to specific pulley diameters; 60 durometer, black. Also available in a full range of special compounds (see below) and standard steel or special-order stainless steel backing plates.

• KWIK-LAG® 500 PADS

KWIK-LAG® 500 traction pads, smooth, especially designed for use in food processing operations, in 48" lengths, formed to specific pulley diameters. Standard in a 55 durometer, tan Buna-N compound that meets FDA specifications and is resistant to food oils and acids, with stainless steel backing plates. The smooth surface design of KWIK-LAG® 500 also makes this product well suited to roll covering applications. Select a compound and backing plate combination suited for the specific operating conditions involved.



SETS

Assembled, ready-to-install sets for a specific pulley are readily available from HOLZ RUBBER distributors, complete with KL fasteners. Normally designed for "full width" application method (see page 4).

• KWIK-LAG® 150 SETS

KWIK-LAG® pulley traction pads, in complete sets, cut to length and formed to a specific pulley diameter, ready to install. For special-service conditions ask for one of the many special elastomers that are available, with or without stainless steel backing plates.

• KWIK-LAG® 550 SETS

KWIK-LAG® in food service configuration, in complete sets, cut to length and formed to a specific pulley diameter, ready to install. Tan Buna-N compound that meets FDA requirements and stainless steel backing plates are standard. This configuration may also be produced with any other elastomer using either stainless steel or regular steel backing plates.

Longer Lagging Life from elastomers tailored to the application.

HOLZ RUBBER MANUFACTURES KWIK-LAG® 100 and KWIK-LAG® 500 pulley lagging from a wide variety of elastomers, each produced in our own plant, to our own formulations and exacting standards. Select from any of these compounds to assemble a KWIK-LAG® product specifically designed for a specific application.



• Static Conductive/Oil Resistant/Flame-Stop (SOF)

Static Conductive, Oil Resistant and Flame Stop properties are combined into an exclusive compound that reduces the risk of explosion, fire and oil-related lagging failure. Static electricity that may accumulate on the belt is allowed to drain off through the lagging to ground (in a properly grounded system), helping to reduce the danger of dust explosion. Oil resistance of this compound allows use in moderately oily applications involving the presence of certain hydrocarbons, fats, oils, greases, hydraulic fluids, solvents and moderate chemicals. The outstanding self-extinguishing characteristic of the SOF compound makes it ideal for use in grain and fertilizer handling applications and has received MSHA approval for use in underground mining applications. SOF meets the following:

- RMA¹ test 808.1 for static conductivity
- RMA¹ test 809.1 for flame resistance
- ASTM² D991 for static conductivity
- MSHA³ approved compound for underground use

NOTE: Where MSHA approved compound is required, specify ID #IC-97/2 when ordering.

• **Flame-Stop (FS)** Flame-Stop should be used where self-extinguishing characteristics are of major benefit, such as underground coal mining and grain and fertilizer handling operations. Flame-Stop compound meets the test requirements established for conveyor belting under RMA¹ test 809.1 for flame resistance and has received MSHA¹ approval for use in the underground mining. Where MSHA approved compound is required specify: ID #IC-97/1 for 65 durometer KWIK-LAG® Flame-Stop, black.

• Buna-N (BN)

Buna-N compound is especially suitable for applications involving the presence of certain hydrocarbons, fats, oils, greases, hydraulic fluids and chemicals where Neoprene is not recommended. A 62 durometer, black, is standard.

NOTES:

1. Rubber Manufacturers Association
2. American Society for Testing and Materials
3. Mine Safety and Health Administration

• EPDM (EP)

• **KWIK-LAG®** with EPDM compound should be selected for pulley lagging applications involving continuous operating temperatures in the range of 250°F to 310°F or intermittent temperatures to 350°F. EPDM also offers advantages in the presence of certain unusual materials such as animal and vegetable oils and strong or oxidizing chemicals. 70 durometer black, is standard.

• Hypalon (HY)

Conveying or elevating applications involving some chemicals, alkaline solutions, freon, alcohols, hydrogen and aliphatic hydrocarbons are all potential candidates for the use of KWIK-LAG® with Hypalon compound. Hypalon is standard in 55 durometer, black.

• Chlorobutyl (CB)

Select KWIK-LAG® with Chlorobutyl compound for service where an extremely high co-efficient of friction is desired and where there is no abrasion present. Pulleys driving Teflon-coated belts are prime candidates for the use of Chlorobutyl. It is also well suited to operating temperatures to 250° F, while retaining its excellent co-efficient of friction. Standard in 45 durometer, black.

• Roll Covering (GN)

For abrasive roll covering service with no heat, oil or chemicals present, KWIK-LAG® with a 40 durometer, green compound should be specified for longest service and best self-cleaning action. Any compound, however, may be selected, as conditions warrant.

As with all unusual applications, many variables must be taken into account when selecting an appropriate elastomer to give ultimate service life. The information above is designed to give general guidance for the selection of special-service compounds. For any specific application, contact an authorized HOLZ RUBBER representative for verification of the elastomer selected. Also consult HOLZ RUBBER "Elastomer Specification Tables", Form No. 2002, for additional assistance.

4. Individual compounds SC or OR have been discontinued and replaced by combination compound SOF.

How to order KWIK-LAG®

Pre-Installed On New Pulleys

Light-Duty conveyor and elevator pulleys can be purchased with KWIK-LAG® pre-installed from a pulley manufacturer, conveyor equipment OEM, or an authorized HOLZ RUBBER distributor. Simply specify KWIK-LAG® when ordering. As an option, the new pulley may be purchased separately and KWIK-LAG® installed at the jobsite.

For On-Site Installation On New Or Used Pulleys

Determine which method of application is to be used:
 A.) **Butt seam method**, using 48" pads, wherein maximum use is made of all material; however, pieces shorter than 2" without two full fastener slots will be unusable.

The number of 48" pads required for butt seam application on most common pulley diameters can be obtained from Table A below. *However, KWIK-LAG® can be factory formed to any diameter and installed using published installation procedures.* For diameters not shown, use the formula (Figure 2) for quantity selections and the Installation Instructions on pages 6 and 7. For pulley face widths not shown, use the next larger width or use the formula (Figure 2) to calculate requirements.

B.) **Full width method** with pads cut to exact pulley face width, no butt seams. (See paragraph below †.)

Table A Number of 48" pads required for selected pulley diameters and face widths (butt seam application).

		PULLEY FACE WIDTH (Inches)																						
		6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	
PULLEY DIAMETER (Inches)	4	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	
	4 1/2	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4
	5	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	4	5	5	5	5	5	5	5
	5 1/2	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	4	5	5	5	5	5	5	5
	6	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	6
	6 5/8	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	6
	7	1	2	2	2	3	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	7	7	7
	8	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8	8	8	8
	8 5/8	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8	8	8	8
	9	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	8	8	8	9	9	9	9
	10	2	2	3	3	3	4	4	5	5	5	6	6	7	7	8	8	8	9	9	10	10	10	10
	10 3/4	2	2	3	3	3	4	4	5	5	5	6	6	7	7	8	8	8	9	9	10	10	10	10
	11	2	2	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	11	11	11	11
	12	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	12
	12 3/4	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	12
	13	2	3	3	4	4	5	5	6	6	7	8	8	9	9	10	10	11	11	12	12	13	13	13
14	2	3	3	4	5	5	6	6	7	7	8	9	9	10	10	11	12	12	13	13	14	14	14	
15	2	3	4	4	5	5	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	15	
16	2	3	4	4	5	6	6	7	8	8	9	10	10	11	12	12	13	14	14	15	16	16	16	
ABOVE 16	TO CALCULATE NUMBER OF PADS, USE FORMULA SHOWN BELOW.																							

Figure 2 Formula for selecting the number of 48" pads required for any pulley diameter and face width (butt seam application).

Butt seam method: Instead of using Table A, the number of 48" pads required for any pulley may be calculated using the following simple procedure:

Example 1: 5" diameter x 26" face pulley

Example 2: 6 1/2" diameter x 14" face pulley

<ol style="list-style-type: none"> 1. For "whole inch" diameter pulleys, the number of rows of pads needed is equal to the pulley diameter. For all other sizes use the next smallest whole inch diameter to determine the number of pad rows. 2. Multiply the number of pad rows by the pulley face width. 3. Divide by 48" to determine quantity of 48" pads needed. Round up to the next full length. 	<p>Example 1</p> <ol style="list-style-type: none"> 1. 5" dia. = 5 pad rows 2. 5 x 26" = 130" 3. $\frac{130"}{48"} = 2.7$ or 3 full 48" pads required 	<p>Example 2</p> <ol style="list-style-type: none"> 1. 6 1/2" dia. = 6 pad rows 2. 6 x 14" = 84" 3. $\frac{84"}{48"} = 1.75$ or 2 full 48" pads required
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† Full width method: when no butt seams are desired, the number of 48" pads required would depend entirely on the pulley and the quantity of face-width lengths which can be cut from one 48" pad. In Example 1, five pads would be needed;

in Example 2, two pads would be needed. Pulleys over 48" wide must use butt seams.

HOLZ RUBBER authorized distributors can arrange for complete on-site installation of KWIK-LAG® products on request.

Butt Seam Application

Table A, page 4 and Figure 2 describe the quantity selection process for the “butt seam” method of applying KWIK-LAG®.

This method makes full use of all lengths cut from 48" pads, except those shorter than 2" without two full fastener slots. The butt seams in each pad row should be staggered from row to row when possible. The sample installation (Figure 3) visually describes this application method.

Example: 27" Pulley Face Width

- Pad row 1, cut 27" from 48" length.
- Pad row 2, use 21" remnant from above, cut 6" from another 48" length.
- Pad row 3, cut 27" from 42" remnant from above.
- Pad row 4, use 15" remnant from above, cut 12" from another 48" length...and so on, until pulley is completed.

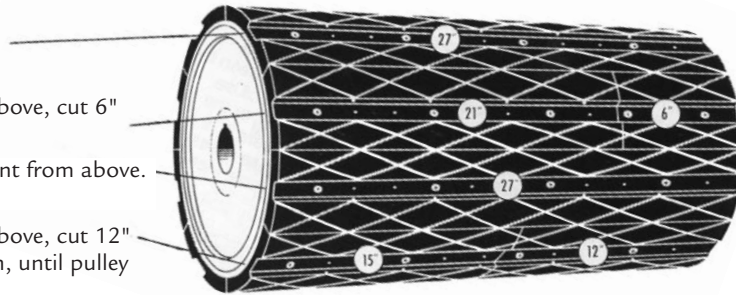


Figure 3: Sample Butt Seam Application

How to apply KWIK-LAG®

KL Fastener

The KL fastener is a #12-24 x 3/4" *self-drilling, self-tapping* screw that has been designed for simple installation and easy replacement. KL fasteners are provided with pads or cut sets at no additional charge. The standard KL fastener has an extra-heavy special plating to retard corrosion.



Figure 4: KL Fastener

Blind Rivets*

Blind rivets are an alternate KWIK-LAG® fastening system. They are designed with low profile heads for the ultimate in non-contact with the belt surface. Blind rivets are easy to install and need only a riveting tool, electric drill and drill bit for installation; however, they are more difficult to remove. Blind rivets are available in carbon or stainless steel. Be sure that the proper grip range rivet is used.



Figure 5: Blind Rivet

Type U Drive Screw*

The Type U drive screw provides a quick and inexpensive method for attaching KWIK-LAG® pads to pulleys. They are strong, vibration-free, and very easy to install. On the other hand, they do not provide the easy replacement that can be obtained with KL fasteners or blind rivets.



Figure 6: Type U Drive Screw

Other Fasteners*

A wide variety of additional fastening methods is available for attachment of KWIK-LAG® pads. These other methods include thread cutting screws, drive rivets and drive studs. Each kind of fastener has its own advantages and disadvantages which must be analyzed prior to selecting a particular type for a given application. Authorized HOLZ RUBBER representatives can provide specific information on fasteners as well as the different types of application tools available.

* All fasteners must have a minimum shear strength of 500 pounds.

KWIK-LAG® Installation Instructions

Before starting—Read these instructions carefully and completely.

Warning:

Use only on pulley diameter indicated. Do not modify. Strict adherence to installation instructions is necessary for product safety.

Check the actual pulley diameter involved. KWIK-LAG® is designed so that for pulley diameters in full one-inch increments, such as 4", 6", 8", etc., the number of rows of pads required will equal the pulley diameter. The pads will then fit together side by side, essentially covering the pulley surface (Figure 7).

For all pulley diameters not in full one-inch increments, such as 4-1/2", 5-7/8", 8-3/4", etc., installation will require that the pads have a space between their edges (Figure 8). The approximate spacing between the pads in these cases will vary according to the pulley diameter. Use Table B to select the proper spacing for the diameters listed, or the formula (Figure 15) to calculate a spacing for other diameters. It is also possible to completely cover the pulley surface in these cases—use a number of rows of pads equal to the next larger "whole inch" diameter and trim the edges of each pad.

• Step 1

Mark a line across the pulley face that is as parallel to the shaft axis as possible. This can usually be done by using a square applied against one end of the pulley (Figure 9).

• Step 2

Place the first pad along this line so that the edge of the pad is parallel to the line (Figure 10).

• Step 3

Clamp the pad at each end to the pulley shell. Vise-Grips or C-Clamps will normally work well for this purpose (Figure 10). If butt-seams are being used, or the pads are over 24" long, it will probably be necessary to hold the part of the pad not at the end of the pulley with a tool similar to a chain type pipe wrench.

• Step 4

Center punch the pulley shell, through the KWIK-LAG® pad holes, at the locations chosen for fastener insertion (Figure 12). The small dimples in the rubber down the center of the pad are intended as locating guides for the holes in the backing plate underneath. Center punching helps insure that the fasteners are properly located. *Normal KWIK-LAG® installation requires one fastener every 6" of pad length.*

• Step 5

If KL fasteners are being used no pilot hole is required, simply drill one into each of the center-punched locations. For small volume installations, a drive bit similar to that shown in Figure 16 and an electric drill can be used (the drill should be rated at 4 amps minimum and 2500 rpm). Installation of large quantities of KL fasteners should be made with a screw gun (see next page).

For blind rivets, drive screws and other similar fasteners, a properly sized pilot hole must be made in the pulley shell, using a twist drill, prior to inserting the fastener. Table C shows pilot drill sizes for several common fasteners. Center-punching is also a must before drilling (Figure 12).

Exercise great care when tightening any type of threaded fastener without a clutch-equipped screw gun to avoid stripping the hole. *The minimum acceptable pulley shell thickness for all threaded fasteners is 1/8"; for KL fasteners, the maximum acceptable pulley shell thickness is 1/4".*

• Step 6

Place the next pad in position, spacing it the correct distance from the first pad, if spacing is required, and repeat Steps 2 through 5. Continue until all pads are in place.

KWIK-LAG® pads may be readily installed on all types of crowned pulleys, since the pads will flex satisfactorily to conform to the pulley surface. On crowned pulleys the fasteners should be installed from the center outward.

A comprehensive maintenance inspection program will help achieve the longest service life from a KWIK-LAG® installation. During inspection, pay particular attention to the threaded fasteners used to hold the pads in place, insuring that they won't begin to work loose. Consider using one of the many brands of anaerobic adhesives on the fastener threads to prevent loosening by vibration. The adhesives are also very effective in sealing the threads in applications where a good seal is important.

NOTE: Consult factory on applications involving greater operating tensions than indicated.

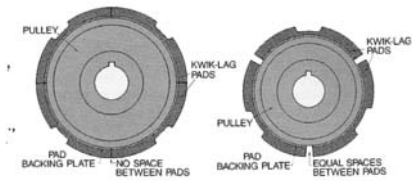


Figure 7 Installation "Whole Inch" Diameter

Figure 8 Installation Fractional Inch Diameter

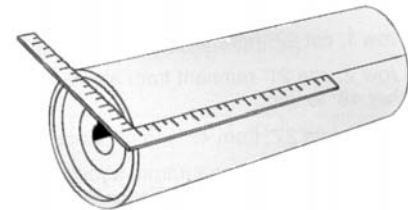


Figure 9: Mark Guide Line

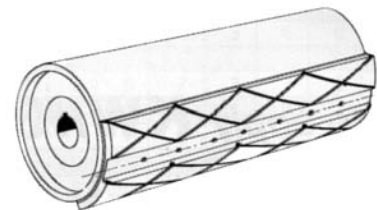


Figure 10: Place First Pad

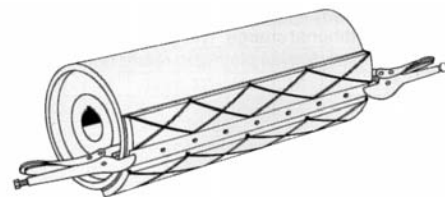


Figure 11: Clamp Pad

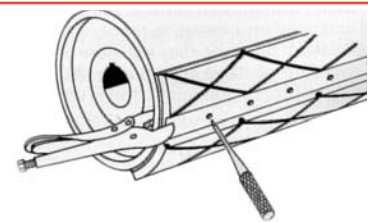


Figure 12: Center-Punch Pulley

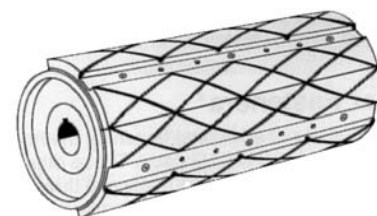


Figure 13: Placing Remaining Pads

General Notes:

1. A minimum of two fasteners are required per individual pad section.
2. Maximum operating belt tension is 150 pounds per inch of belt width for all KWIK-LAG® products.

Butt-Seam Application

KWIK-LAG® pads may be butt-seamed to fill pad rows. Try to keep the spacing of hole centers at 1 1/2" when butting pad ends together (Figure 14); some minor trimming of pad ends may be necessary to accomplish this. Taking this extra step will make pad replacement easier when it is finally required, since the fastener holes will line up all the way across the pulley.

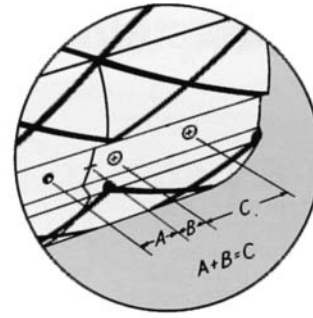


Figure 14: Maintaining Hole Spacing

Table B: Approximate Spacing Between Pads for Specific Pulley Diameters

PULLEY DIAMETER (In.)						
	4 1/2	5 1/2	6 5/8	8 5/8	10 3/4	12 3/4
Approx. Spacing (In.)	.44	.35	.36	.26	.25	.21

Figure 15: Formula to Determine Spacing Between Pads for any Pulley Diameter¹

- A. Actual pulley diameter + .075" = mean pad dia.
- B. Mean pad dia. x 3.1416 = pulley circumference.
- C. Next smallest "whole inch" diameter x 3.148 = pad circumference.
- D.
$$\frac{(\text{Pulley Circumference}) - (\text{Pad Circumference})}{\text{Next smallest "whole inch" diameter}} = \text{Approximate pad spacing}$$

NOTE 1: Formula is valid for metric diameters after conversion of metric units to inches.

FASTENERS AND TOOLS

Several other fasteners besides KL fasteners, blind rivets and Type U drive screws may also be considered, including thread cutting screws, drive rivets and drive studs. Each kind of fastener has its own advantages and disadvantages—all of which must be analyzed before selecting a particular type. Large volume KWIK-LAG® installation will require a screw gun for maximum productivity. Several suitable screw guns and sources are listed in Table D.

Blind rivet application tools are available from many manufacturers and in many styles. Table D lists several types for both low and high volume application and sources for each.

Authorized HOLZ RUBBER representatives can furnish additional details regarding fasteners and tools.



Figure 16: KL Fastener Drive Bit

Table C: Pilot Drill Sizes for Selected Fasteners and Fastener Sources

FASTENER DESCRIPTION ¹	PILOT DRILL SIZE	POSSIBLE FASTENER SOURCES
KL Fastener	None	HOLZ RUBBER
Blind Rivet, 3/16" Diameter Steel	#11	USM, Marson
Type U Drive Screw, #10	#20	NL Fasteners
Drive Rivet, 3/16" Diameter Steel	3/16"	Southco
Drive Stud, #6 Grooved	#31	Groov-Pin
#12-24, Self-Threading Screw	#16	HOLZ RUBBER

NOTE: 1. Exact fastener length used will depend on the pulley shell thickness and fastener availability. Type of fastener head used may vary according to availability.

Table D: Tool Descriptions¹ and Sources

TOOL	DESCRIPTION	POSSIBLE SOURCES ²
KL Drive Bit	1/4" hex shank	HOLZ RUBBER
Screw Gun	1. #2060.09, 4.5 amp, Scrugun, reversible 2. #7524, 5.2 amp, Screwdriver, reversible	Black & Decker Rockwell
Blind Riveter ³ (HAND OPERATED)	1. HP-2 hand riveter 2. PRG-450 hand riveter	Marson USM
Blind Riveter ³ (AIR OPERATED)	1. PHT-4 rivet tool 2. PRG-540 rivet tool	Marson USM

NOTES:

- 1. Subject to change by manufacturer.
- 2. Use local equipment supplier or contact: Hickenbotham Brothers, Ltd., 536 South Aurora St., Stockton, CA 95201, (209) 948-1123
- 3. All tools are capable of handling 3/16" diameter steel rivets.