

Lorain® Linings

Type "A" Lorain® Lining

Type "B" Lorain® Lining

There is only one manufacturer of "Lorain" Rolled Steel Linings in the world - "Johnstown Specialty Castings, Inc."

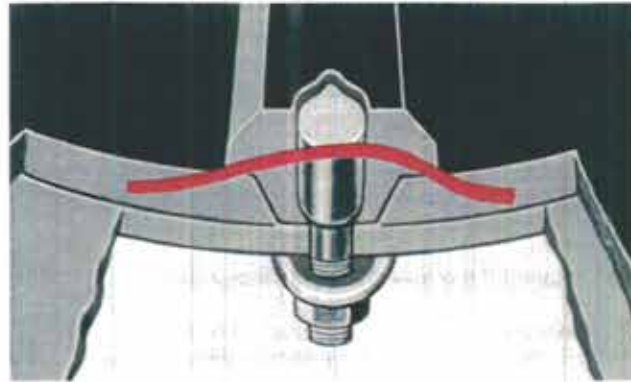
If it is a Lorain® Lining It's:

- Hot rolled to finish shape, 3:1 Reduction
- Vacuum degassed alloy steel
- Rolled Steel offers tighter grain structure and more integrity than castings
- Geometrically designed for the most efficient cascading action
- Two-piece, dissimilar metals allows for uniform wear on bar and plate. This in turn maintains a lift height for the entire lining campaign.
- "Through" hardened by oil quenching and tempering
- Machined to length
- Machined for exact bolt hole positioning
- 100% automated magnaglo inspected

The advantages of Johnstown Specialty Castings, Inc. Rolled Steel Lorain® Linings are:

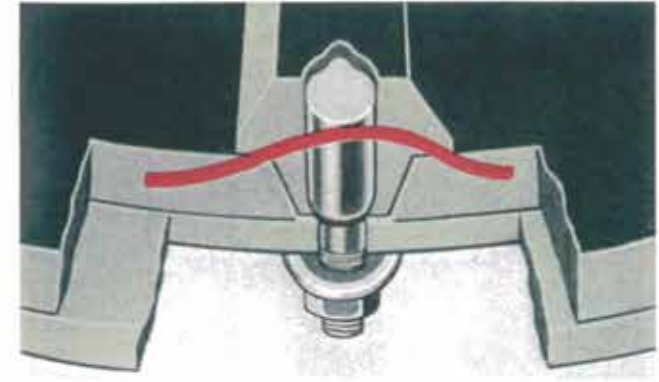
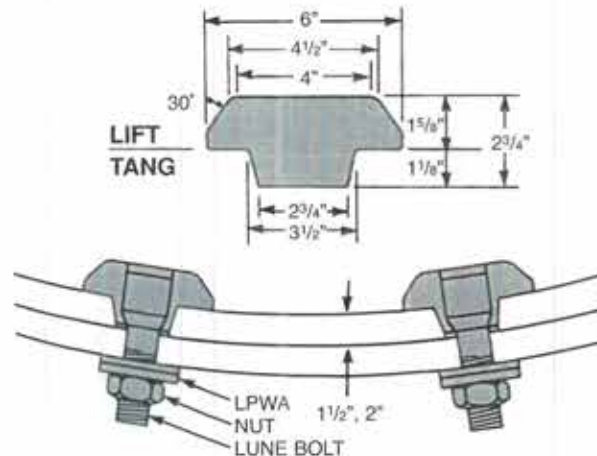
- Lower cost per ton of grind due to extended liner life
- Lower cost per ton of grind due to grinding efficiency
- Lower cost per ton of grind due to reduced liner breakage
- Lower cost per ton of grind due to ease of installation
- Lower cost per ton of grind due to elimination of zinc or rubber backing

The "Lorain" Rolled Steel Lining is a grinding system that has evolved over the past 80 years at Johnstown. It has and continues to be the industry benchmark for grinding performance.



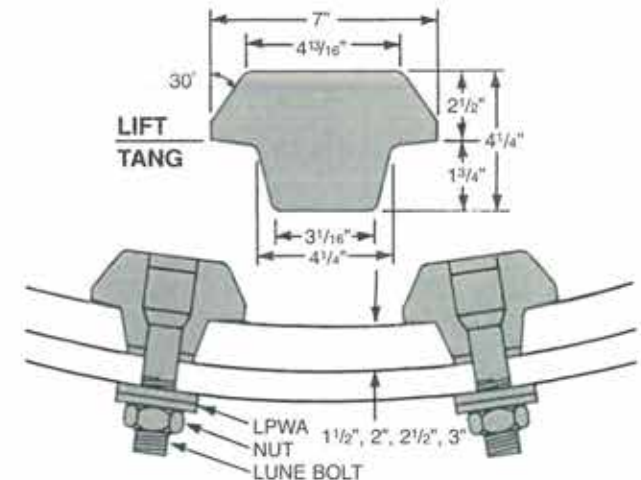
...consists of lift bar section M-3715A used with 1 1/2", or 2" thick liner plates. This type of lining with the lightweight lift bar section (41.9lbs./ft.) is most suitable for cement clinker, coal, and other soft grinding jobs. Maximum lift height is 1 5/8". (Curved line above indicates maximum wear pattern.)

The Type "A" Lining is the lightest manufactured by Johnstown Specialty Castings Inc., and is most suitable for dry-grind ball mills where grinding media is 2" diameter or less. A typical example is the last compartment of multi-compartment mills used to finish-grind cement. (Shown below are dimensions and cross sections.)



...consists of lift bar section M-3714A used with 1 1/2", 2", 2 1/2", or 3" thick liner plates. Maximum lift height is 2 1/2". (Curved line above indicates maximum wear pattern.)

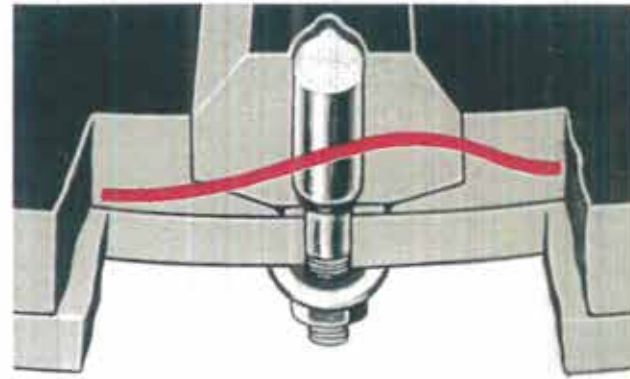
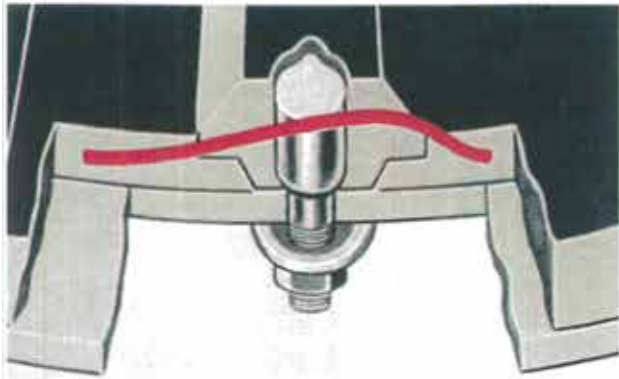
The Type "B" Lining has a heavier lift bar section (73.5 lbs./ft.) than Type "A", which increases service life, and is applicable to mills where increased lining life is desired. Typical uses would be in dry-grind rod and ball mills where the grinding media is 3" in diameter or less. (Shown below are dimensions and cross sections.)



Type "C" Lorain® Lining

Type "D" Lorain® Lining

Mill Liner Fastening System



...differs from Type "A" and Type "B" in that the lift bar sections are recessed into the plate. Recessing in this type of lining offers: (1) increased bar life through protection of its leading edge; (2) relief of strain on bolts by transferring impact from lift bars to liner plates; and (3) reduction of effective lift height when desired or dictated by the speed of the mill. (Solid, curved line above indicates wear pattern.)

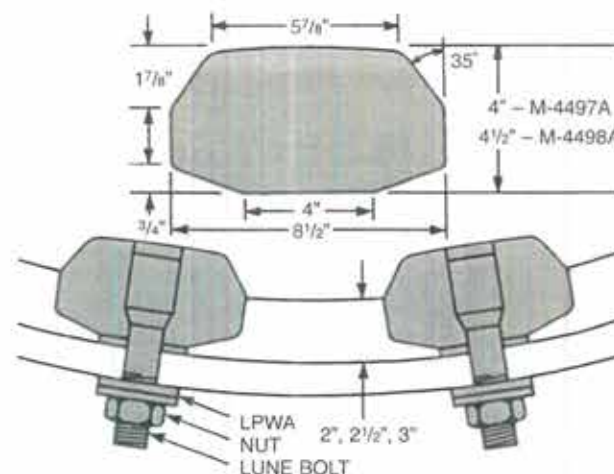
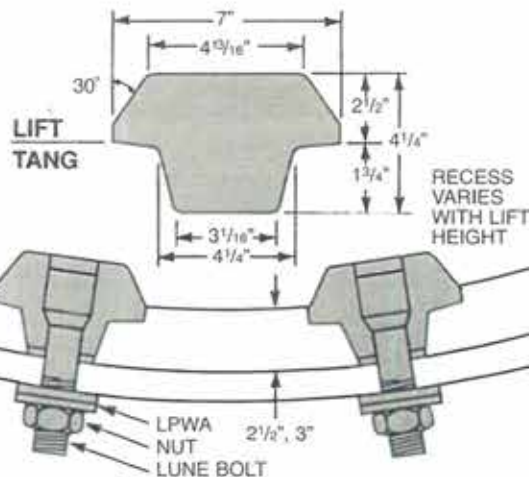
...is a heavy duty lining consisting of lift bar sections M-4497A (100.7 lbs./ft.) or M-4498A (114.6 lbs./ft.), used with 2", 2½", or 3" thick liner plates. Maximum lift height is 2½". Different lift heights can be obtained for a variety of grinding conditions by using different combinations of liner plates and lift bars.

The Type "D" Liner offers marked reductions in grinding costs through increased service life. (Curved line above indicates maximum wear patterns.) This type of lining is recommended for use in rod and bar mills where grinding conditions are unusually severe, or where extra-long lining life is desired. (Shown below are dimensions and cross sections.)

...consists of a threaded Class 2A lune bolt, torque lock nut, retaining ring, rubber washer and flat washer. This fastener system is available in diameters from 1" to 1¾". To accommodate the differences in lift bar or liner plate thicknesses, in current use, lune bolts are available in various head lengths from 1½" to 5¼". They are designed with UNC-2A standard coarse threads for use with Grade B lock-nuts.

The lune bolt fastener system is easy to install, and provides a reliable system to prevent leakage.

This lining is available with lift bar sections M-3715A or M-3714A that fit into recesses ranging from ¾" to ¾", depending upon lift height requirements, with plate thicknesses of 2", 2½", and 3". Maximum lift height is 2½". Typical uses would be in wet-grind rod and ball mills using larger diameter grinding media. (Shown below are dimensions and cross sections.)



Recommended Torque Values

Diameter, in.	Ft.-lb. min.
1	600 FP
1¼	1,250 FP
1½	2,300 FP
1¾	4,100 FP