CONVEYOR
ENGINEERING & MANUFACTURING

REVISED 6/29/10

Seal Comparison

As used in screw conveyor applications

= **BEST PERFORMANCE** in category
= **POOR PERFORMANCE** in primary function

	Guardian Seal	Guardian Seal HT	Guardian Seal SPLIT	Plate Lip Seal	Waste with Lip	Flanged Packing Gland	Split Gland	Air Purge	Air Purge, Split
Shaft wear	**Low**	**Low**	**Low**	Low	Low to variable	High	High	Low	Low
Sealing, general	**Excellent**	**Excellent**	**Good**	Poor	Poor	Excellent (Note #1)	Fair (Note #1)	Good (Note #2)	Good (Note #2)
Sealing, low pressure	**Good**	**Good**	**Fair**	Poor	Poor	Excellent (Note #1)	Fair (Note #1)	Good (Note #2)	Good (Note #2)
Split design	**No**	**No**	**Yes**	No	No	No	Yes	No	Yes
Original installation	**Easy** (Note #3)	**Easy** (Note #3)	**Easy**	Easy (Note #3)	Easy (Note #3)	Somewhat difficult	Usually easy	Difficult (See #3)	Difficult
Maintenance	**Very easy**	**Very easy**	**Very easy**	Replace lip	Replace lip	Time consuming	Easy but frequent	Difficult	Difficult
Adjustment	**Not required**	**Not required**	**Not required**	Not required	Not required	Medium to difficult	Medium	Difficult	Difficult
Rebuild kits	**Readily available**	**Readily available**	**Readily available**	New lip seal	New seal and packing	New packing	New packing	Often special order	Special order
Rebuild installation	**Easy** (Note #3)	**Easy** (Note #3)	**Easy**	Press in (Note #3)	Press in (Note #3)	Moderate to difficult (Notes #4 & #5)	Easy (Note #5)	Difficult (Note #3)	Difficult
Price (new)	**Moderate**	**Moderate**	**Moderate**	Low	Low	Moderate	Low to moderate	Moderate to high	High to very high
Max temp (See #6)	**Approx 270° F**	**Approx 400° F**	**Approx 270° F**	Approx 350° F	Approx 350° F	Varies, typically 800°+ F	Varies, typically 800°+ F	Approx 600° F w/ high temp version	Approx 600° F w/ high temp version
Lateral movement acceptance	**Excellent**	**Excellent**	**Excellent**	Good to poor (Note #7)	Good to poor (Note #7)	Fair (Note #8)	Fair (Note #8)	Fair (Note #9)	Fair (Note #9)
Runout tolerated	**Excellent**	**Excellent**	**Excellent**	Poor	Poor	Slight runout OK	Slight runout OK	Excellent	Excellent
Long-term maint. cost	**Very low**	**Very low**	**Very low**	Low to high	Low to high	High (Notes #4 & #5)	Low to moderate	Low to moderate	Low to High
Screw conveyor use	**Very good to excellent**	**Very good to excellent**	**Very good to excellent**	Very limited	Very limited	Good for some applications	Good for some applications	Very good	Very good
Retrofit on standard conveyors	**Excellent**	**Excellent**	**Excellent**	Excellent	Excellent	Requires pedestal end plates, new shafts	Requires pedestal end plates, new shafts	Good to excellent	Good to excellent
Retrofit for spcl. patterns	**Excellent**	**Excellent**	**Excellent**	Excellent	Requires special parts	Usually poor	Usually poor	Fair (Note #11)	Fair (Note #11)
FDA/USDA approved	**Yes** (Note #11)	**No**	**Yes** (Note #11)	No	No	Potentially	Potentially	Potentially	Potentially
Strong points	**Excellent for sealing, best all-around**	**Excellent for sealing, best all-around**	**Replace w/o removing bearings, etc**	Low cost	Low cost	Good pressure, high temp, packing readily available	Can be used inside troughs, packing easy to service	Excellent for problem material and runout	Excellent for problem material and runout
Weak points	**High temperature applications**	**Not food grade**	**Limited sealing**	Poor all-around sealing	Poor all-around sealing	Can be hard to service, ruins shafts, requires pedestal	Only fair sealing, ruins shafts, requires pedestal	Difficult to adjust, special parts required	Difficult to adjust, special parts required

Note 1: Gland seals have variable sealing capability. Packing material has an effect on sealing. May not seal well with shaft runout. To obtain excellent sealing, frequent and accurate adjustment is necessary.

Note 2: Air purge seals vary by material being sealed. May not seal well if initial adjustment is incorrectly performed. Failure of purge air supply will often cause seal failure.

Note 3: Independent of the installation ease shown, it is necessary to install these over the end of the shaft which may require bearing and hub removal.

Note 4: When packing needs pulling, may be difficult to remove. Lantern ring options can be very difficult to remove from housing.

Note 5: Frequent shaft rebuild or replacement may be necessary, adding considerably to maintenance costs and time.

Note 6: Maximum temperature depends on available lip materials, packing, components, purge media and other factors with the various seals.

Note 7: Debris on shaft will rapidly destroy lip seal's ability to handle lateral movement.

Note 8: When shaft becomes grooved by packing, lateral movement is not accommodated well.

Note 9: Frequent lateral movement will cause varying face pressures in the seal which can become problematical in time.

Note 10: Costs and time run high due to not accommodating shaft runout on typical screw installations. Initial costs and rebuild costs are high.

Note 11: If used with food-grade grease.