

SOFT FOOT FIND-AND-FIX



LUDECA



**PARALLEL
SOFT FOOT**

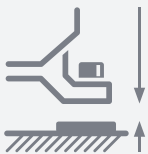
Rocking or Parallel

Feet are not coplanar.

Laser system shows high soft foot readings at opposite corners.

Feeler gauge readings determine which foot (or feet) to shim and how much.

CAUSES



One leg (or two legs) too short.

Baseplate or mounting pads are not coplanar.

Insufficient shims under one foot or both diagonally opposed feet.

CORRECTION(S)



ONE FOOT TOO SHORT

Feeler gauge shows short foot has even air gap and opposite air gap is tapered inward.

Shim the amount of even air gap under short foot.

TWO FEET SHORT

Feeler gauges show tapered air gaps bigger outwards on both feet.

Shim both soft feet about 60% of the feeler gauge values.



2 mils (thou)



**BENT FOOT
OUTSIDE ANGLED
FOOT**

Angled or Bent

Bottom of the foot is not coplanar with the base.

Laser system shows high soft foot readings at three or four feet.

Feeler gauge foot with the highest soft foot reading. It will show a tapered air gap from one corner of the foot to another.

CAUSES



Machinery that has been dropped or roughly handled.

Bent or poorly machined base plates.

Severe vertical angular misalignment.

Welded feet.

Foundation settling.

CORRECTION(S)



Remachine the feet, the base, or both.



Build a step shim, or metal wedge.

Safety note: Trim the excess portion of the step shims that protrude and discard.

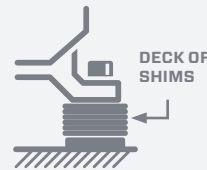


**SQUISHY
SOFT FOOT**

Squishy

Laser system clearly and repeatedly indicates soft foot but feeler gauges show little or no gap.

CAUSES



Dirt, grease, paint, or rust, between foot and base.

Bent shims.

Shims with burrs or "thread bite".

Too many shims.

Tip: Use three shims or fewer per foot.

CORRECTION(S)

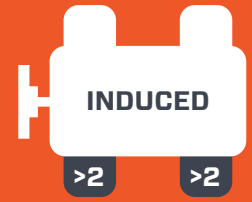


Remove any contamination under, around, and on top of the foot.



Replace bent or damaged shims.

Note: This type of Soft Foot should not be found if proper initial alignment procedure was followed.



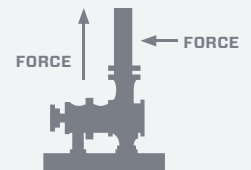
INDUCED

Induced

Laser system shows more than one soft foot, usually on same side or same end of machine.

Feeler gauge finds gap, usually parallel or nearly parallel.

CAUSES



External forces acting on the machine frame:

Coupling or pipe stress.

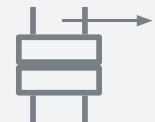
Overhung machines; belts or chain loads on pulleys and gears.

Excessively rigid flex conduit.

Structural bracing attached to the machine.

Jacking bolts inadvertently left tight.

CORRECTION(S)



Eliminate the source of the external force.



Use the laser alignment system for tracking movement during pipe or coupling installation.



Re-measure and aim to have all soft foot readings within 2 mils (0.002") to minimize machine frame distortion.

Re-tighten all bolts to 100% torque.