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Denso Comments on why front plates fail

Front plate failure or breaking of the pulley limiter can be caused due to different factors. Listed below are those factors:

1. Engine smoothness (Unanimity rotation of the engine). This is normally related to Diesel engines and not common for Gasoline engines. Always advise your customers to diagnose for engine problems, (i.e engine running Lumpy, when on tick over engine bouncing all over the place)

2. Seized or too high slip torque of free run pulley's. Alternators have the so called free run pulleys and when these are seized or the free run slip torque is too high, the limiter will break due to negative force. (Belt movement) German car makers do advise to replace the pulley when compressor is replaced.

3. Too low force of Automatic belt tensioner. This will result in too much belt movement and can cause limiter to break.

4. Liquid lock. Too much refrigerant or Too much compressor oil causing too much liquid in the compressor cylinders. This does not always mean the compressor is stuck, but does have a too high rotation torque caused by too much refrigerant or too much oil.

5. Use of incorrect compressor oil. Mixing of different type of oils still happens a lot. POE or POA oils do NOT mix with the PAG 46 oil used by DENSO and can cause different problems.
 - a. Mixing POA and PAG 46 causes kind of paraffin flakes which increases friction and can even cause cylinder lock (like liquid lock) and blockage of refrigerant cycle / Compressor main control valve.
 - b. Mixing POE and PAG 46 will reduce oil film between cylinder and pistons resulting in higher friction. When systems are flushed using flushing agents containing chloride, kind of clear wax is created resulting in piston lock similar to that of liquid lock.
 - c. Incorrect viscosity PAG 46 --> PAG 100 will reduce oil film between rotating / sliding parts increasing wear and friction.