

Considerations of Field Adjustment for Highly Loaded High Speed Turbogears

The decision to either internally make an adjustment to a bearing or (un)-rack the gearbox is very much dependent on the results of the both static, dynamic checks and additionally "consultation with the customer". For example in the case of a statically well adjusted gear which is in complete compliance with the theoretical specification with a zero soft foot; If the operational check proves that further adjustments are needed then the adjustment can be made either by adjusting an internal bearing or by racking the box (eliminating the "zero" soft foot condition). Either way the adjustment is a satisfactory method. However for gearboxes where the casing is fabricated (inherently stiff steel vs. cast) the truly right fix is to make an adjustment of the bearing. But the next question is if an adjustment is needed how much down time can the customer tolerate? An adjustment to a bearing means longer down time perhaps the client may want to waive by accepting a simple external adjustment to the base by racking (perhaps in a matter of hours vs. a matter of days).

One problem which has been known to take place with fabricated steel boxes is that if externally racked they do tend to take on a permanent set (over extended periods of time). So if several years down the line you are checking for a soft foot which shows "zero" doesn't necessarily mean you have a flat mounting surface. This can be particularly true with fabricated steel boxes which have been in operation for several or more years.

A unique feature of cast case boxes is that they never take a permanent set and they will always return back to their original shape even under severe racked conditions. Additionally the cast boxes generally feature separable bearing caps meaning the casing cover has essentially no influence on the rotor positions hence tooth alignment remains unchanged with the casing cover removed or installed. This applies to the thrust bearings as well. For this reason the tooth contact can always be adjusted externally without possible casing issues down the road.

Current Turbogear manufacturers generally market the fabricated case type boxes for permanent fixed land based installations, however cast boxes exhibit clear advantages for offshore platform duty or environments subjected to installations exposed to possible base foundations movements over time.

Unfortunately even for offshore platforms the OEM's basically make their purchases on price and unless the end user specifically specifies a cast box the OEM will be free to buy on cost, the lesser of course being the fabricated box with integral bearing caps.

Another often overlooked advantage of the cast box is it's inherit ability to better deal with corrosive environments and ease of assembly/disassembly.



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**Tooth Contact Field
Adjustments of
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Speed Turbogears**

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