



TECHNICAL BULLETIN TB011

From: Tesco Products-Applications

Date: August 19 02

Re: End play/pre-load measurement HS/HC Topdrive

The following procedure is a guide for accurate measurement of endplay that may be present in the HS/HC gearbox assemblies. The required preload for these assemblies is as follows:

Gearbox Quill Bearings

500/650 HS HC Topdrives: New bearings: pre-load from .012" to .015"
Used bearings: pre-load from .000" to .005"

Checking Gearbox and Quill for Endplay

- 1) Ensure that the Topdrive is secured in a stand or pinned to the torque track
- 2) Attach a magnetic dial indicator base to the quill
- 3) Position the dial indicator with the pin on the bearing retainer
- 4) Zero the dial indicator gauge
- 5) Position a block of lumber or a steel plate on the grabber box
- 6) Position a jacking device, recommended maximum 5 ton, on the protected grabber box
- 7) Position protective block or plate below the load sub on top of the jacking device
- 8) Slowly apply upward jacking force

Note: If a jacking device is not available the grabber lift function may be used

- 9) Observe the dial indicator for any movement

Critical: Document any movement for adjustment calculation

- 10) It is strongly advised to repeat steps 8 and 9 at least once to check for accuracy

Calculating Preload Adjustment

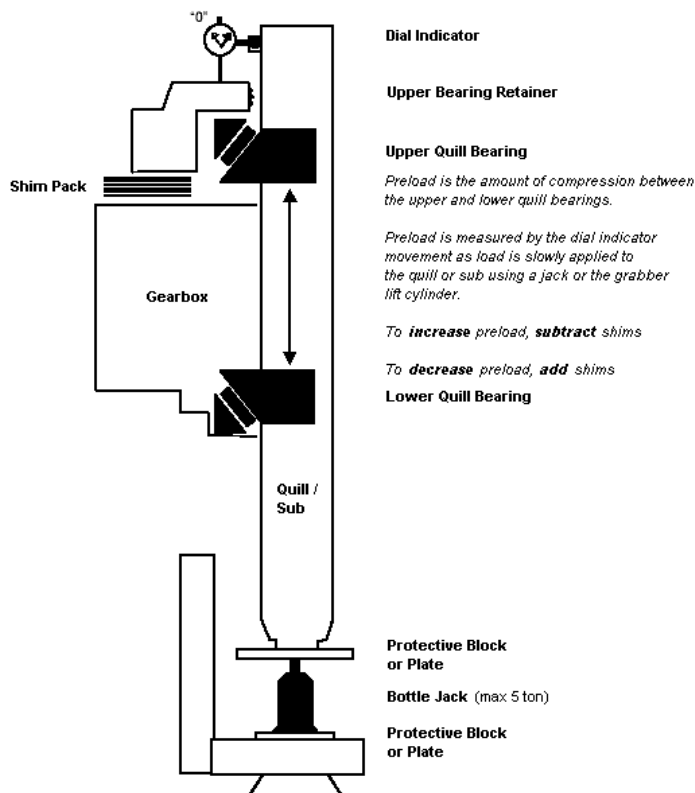
If any amount of quill endplay is noted using the procedure above, the quill preload must be adjusted. In order to decrease endplay on the quill assembly (increase the preload) shims must be removed from the shim pack. Typically the specification that must be met in the field is for used bearings, that specification states a preload of between .000" to .005". It is important to remember that no movement should be present in the quill assembly, this can be achieved with .000" to .001" just as efficiently as with .005".

A typical shim pack in a Tesco Topdrive will have .060" of shims, 5 x .010" and 2 x .005" so there is not much variance in calculation available.

A formula can be supplied to adjust to the maximum used bearing specification:
(noted endplay) + .005" = shim removal required. For example if there is .010" of movement in the quill a .010" shim can be removed to achieve the correct specification. There is limited ability to meet the required shim removal exactly so a supervisor should be contacted for final disposition.

Preload adjustment

- 1) Remove all upper bearing retainer bolts
- 2) Install 2 jacking bolts in the upper retainer
- 3) Thread 2 cut off 1/2" x 3" bolts in opposing holes (alignment pins)
- 4) Gently separate and lift retainer from gearbox lid to allow access to shims
Caution: Lift retainer only enough for shim removal to prevent damage to quill seals
- 5) Remove required shims from shim pack
- 6) Lower retainer back in place
- 7) Remove alignment pins (cutoff bolts)
- 8) Replace all bolts, torque to 100ft lbs
- 9) Re-check quill movement



**If there are any questions related to this Technical Bulletin please contact
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