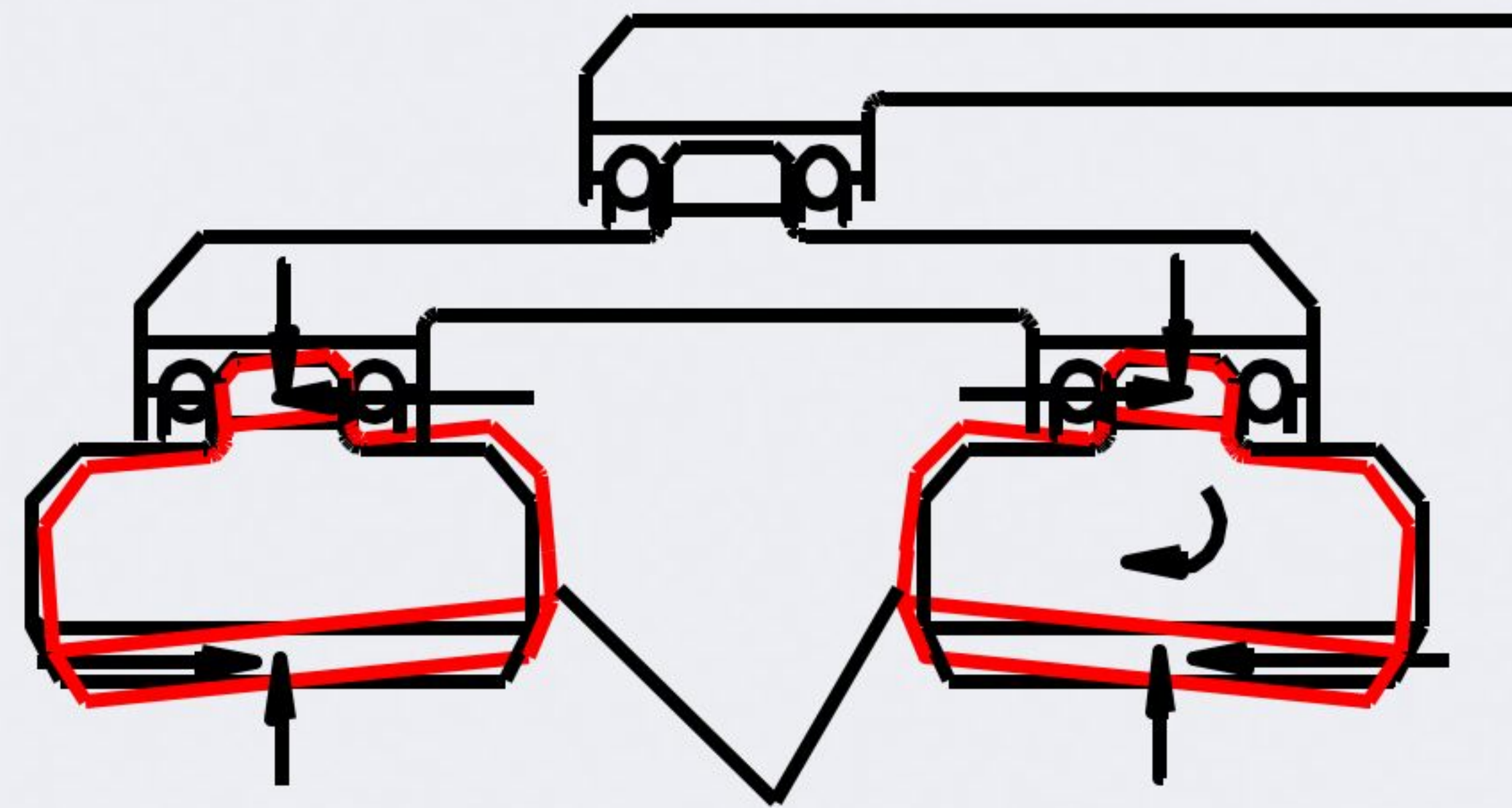


The epicyclic advantage

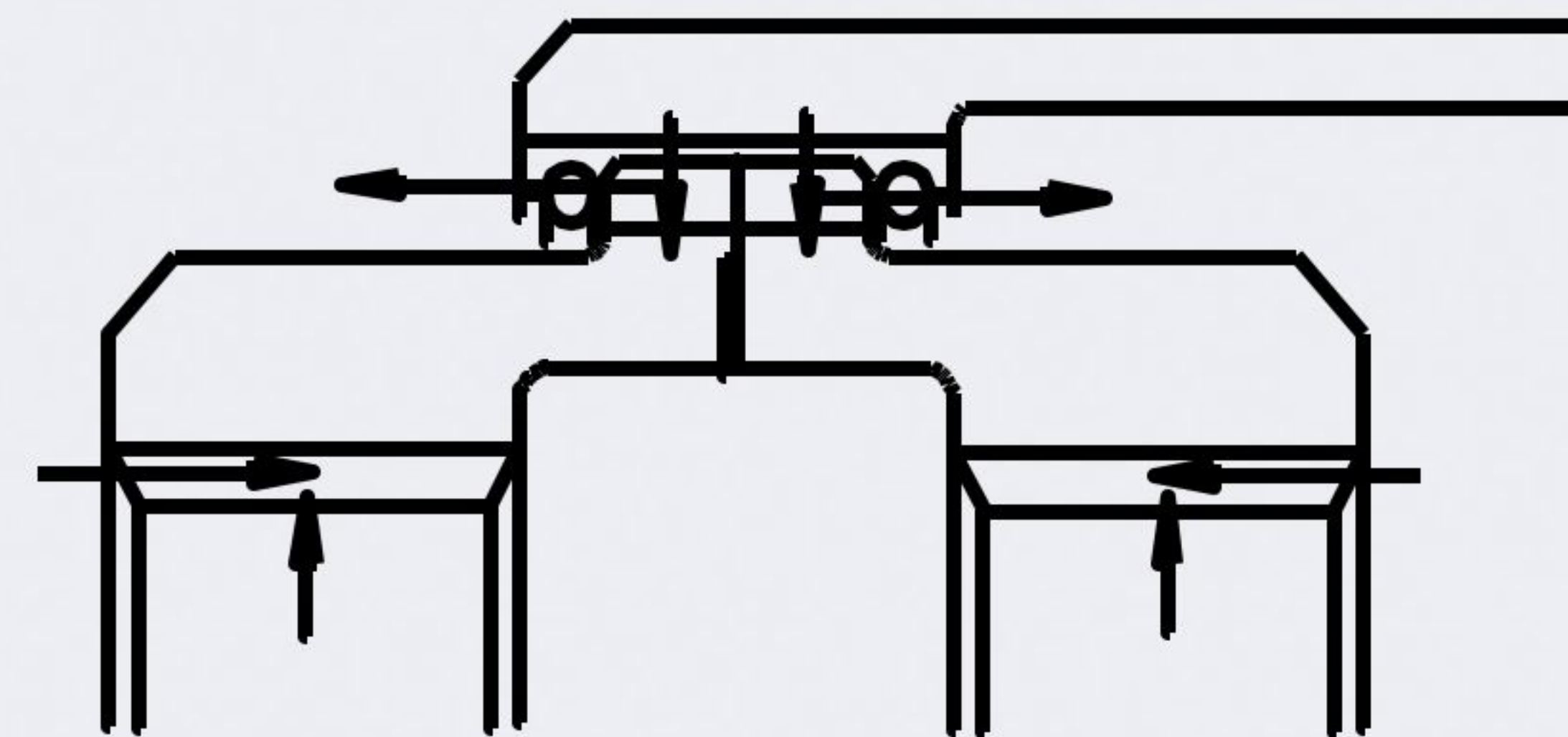
Advanced Epicyclic Gear (AEG) Benefits

STOECKICHT



DISTORTION
CAUSED BY AXIAL
FORCES

ADVANCED EPICYCLIC GEAR (AEG)



DESIGN WITH BALANCED
TOROIDAL COUPLES

- These two diagrams are sections through the annulus rings and couplings.
- On the left is the design which was based on German designs by Stoeckicht. The two annulus rings are connected together by a sleeve with internal helical teeth, called the inner coupling ring. External Spur teeth provide connection to the output.
- The axial forces acting on the annulus rings cause torsional elastic deflection as shown in red. The deformation causes a severe increase in the load and stress at the end of the teeth.
- The diagram on the right shows the new arrangement, called the Allen Advanced Epicyclic Gear or Allen AEG.
- No distortion occurs because the coupling teeth have been moved axially to counterbalance the twisting effect of the axial forces. Spur coupling teeth are used and the axial forces are balanced on the end faces of the annulus rings. The inner coupling is eliminated.

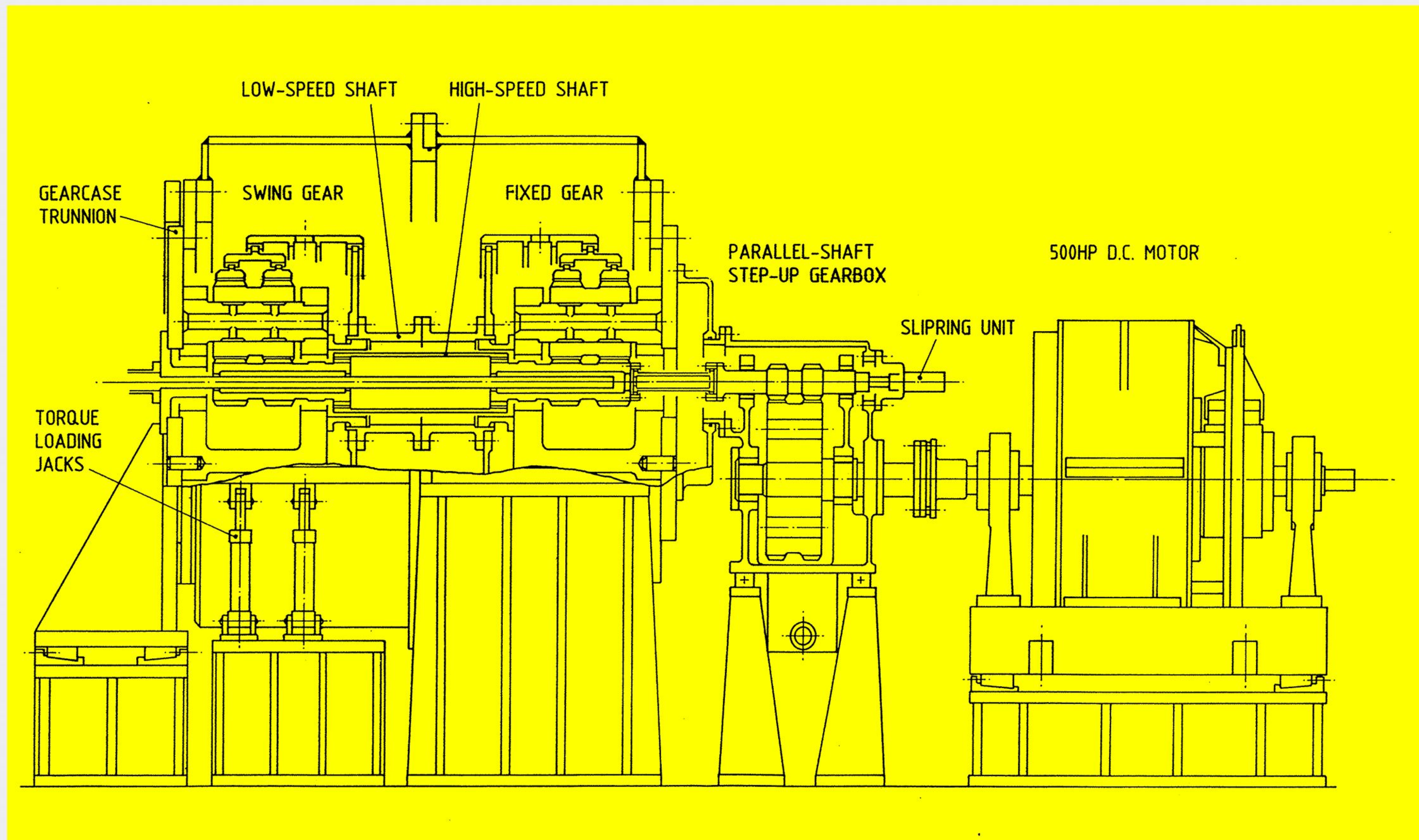
The epicyclic advantage

AEG Benefits

- Annulus distortion eliminated
- Improved load distribution and lower stress
- Inner coupling ring eliminated
- Reduced diameter of gear cluster
- Improved lubrication to coupling teeth
- Improved accuracy and balance of low speed assembly
- Increase in power density

Allen Gears Back to Back Test Rig

Star Gears 17600 HP 5940 to 1407 rpm



Testing played a vital part in the development of the AEG annulus.

This back to back test rig was used to confirm the load distribution and to develop the lubricated abutment between the rings.