X92DF-2.0

Countermeasures for dynamic effects

The following table indicates where special attention is to be given to dynamic effects and the countermeasures required to reduce them. Where installations incorporate PTO arrangements further investigation is required and Winterthur Gas & Diesel Ltd should be contacted.

External mass moments

Number of cylinders	2nd order compensator
6	balancing countermeasure is likely needed [1)]
7 - 12	balancing countermeasure is not relevant

Remarks :

1) No engine fitted 2nd order balancer available. If reduction of M2v needed, an external 2nd order compensator has to be applied.

Lateral and longitudinal rocking

Number of cylinders	Lateral stays	Longitudinal stays
6	B [2)] / A [3)]	C
7	B [2)] / A [3)]	C
8	A	C
9	A	C
10	A	C
11	A	C
12	A	C

Remarks :

2) for $n_{cmcr} \leq 76$ rpm

3) for $n_{cmcr} > 76$ rpm

A: The countermeasure indicated is needed

B: The countermeasure indicated may be needed and provision for the corresponding countermeasure is recommended.

C: The countermeasure indicated is usually not needed.

Torsional & Axial vibrations of the shafting

Number of cylinders	Torsional vibrations	Axial vibrations
6 - 12	Detailed calculations have to be carried out for every installation, countermeasures to be selected accordingly (shaft diameters, critical or barred speed range, flywheel, tuning wheel, TV damper).	An integrated axial damper is fitted as standard to reduce the axial vibration in the crankshaft. However, the effect of the coupled axial vibration to the propulsion shafting components should be checked by calculation.