

# TECHNICAL DATA SHEET DS 012

NON CONTROLLED UNLESS STATED OTHERWISE

QCF 56 Issue 3

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ISSUE	14
DATE	11 July 2017
APPROVED	A.N.M

TITLE. In Service Maintenance and Alignment Checks : Type TSC T1, T2, T10 and T15 Combined Steel Spring and Rubber Spring Unit Isolators for Marine and Industrial Generating Sets and Heavy Machines.

Further information :	Leaflet No.	PL001 & PL056	Isolator details
	Data sheet	DS 010	General installation instructions
	Data Sheet	DS 022	Installation Instructions T1 & T2
	Data Sheet	DS 060	Installation Instructions T10

## 1. COMMISSIONING

Immediately after the weight has been transferred to the isolators, check the loaded heights. Ideally, the heights of each isolator should be measured at two positions, one each side of the isolator and the average recorded, on a form similar to our Data Sheet DS 045. Each height should be greater than:-

Size	Height mm
T1	153
T2	158
T10	137
T15	94

All isolators should be of equal working height, but a gradual variation along the set of up to  $\pm 1.5$  mm is permissible. If the isolators in a group (e.g. those about the alternator position or those about the engine position) show significant variations, then this may indicate that some bending or twisting has occurred in the frame.

If the isolator heights are less than those stated above, or if one or more isolators show significant variations from the rest, the cause of these variations should be investigated as the engine crankshaft deflections may be adversely affected due to distortion of the frame.

## 2. CREEP (Settlement)

After 48 hours the isolators will have settled by up to approximately 1 mm due to primary creep of the rubber spring elements. Thereafter the rate of creep reduces typically resulting in a further 3 mm settlement over a period of about 8 - 10 years.

## 3. VISUAL INSPECTION

During service, regular six monthly checks should be made on the general condition of all isolators. Whilst every effort has been made during design to ensure that the load bearing rubber components of the Type TSC combined steel spring and rubber spring unit isolators are adequately protected, care should be taken to ensure that all isolators are kept clean, dry and free from oil contamination.

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Special attention should be paid to any evidence of swelling, blistering or cracking of either of the two natural rubber elements which are visible beneath the skirt of the isolator top casting.

At the first signs of any deterioration of the natural rubber elements it is only necessary to log the observation such that a careful check and future record of any further deterioration can be made. A check should also be made of the isolator height. Any rapid deterioration of the natural rubber elements, particularly if accompanied by the rapid settlement of the isolator, should be logged and reported immediately. **AT THIS STAGE IT IS IMPORTANT THAT ALL ISOLATORS ARE REPLACED AT THE EARLIEST OPPORTUNITY.** If an isolator failure results from anything other than age of service, the source of the failure **MUST** be identified and corrected prior to reinstallation of new isolators. A common cause of early isolator failure in service is excessive oil contamination of the rubber springs.

#### 4. ALIGNMENT CHECKS

For diesel sets, the alignment should be checked when the crankshaft deflections are checked. In the absence of further advice from the machine builder the heights of all isolators should be checked and recorded at least annually. If it is suspected that rapid isolator settlement is occurring then heights should be checked and recorded more frequently - perhaps on a monthly basis.

Minimum Isolator Height:

Size T1	151.0 mm
Size T2	156.0 mm
Size T10	134.5 mm
Size T15	92.0 mm

**AT THIS STAGE IT IS IMPORTANT THAT ALL ISOLATORS ARE REPLACED AT THE EARLIEST OPPORTUNITY.**

If it is found that the settlement of the isolators causes any flexible connections in services to and from the set to become overstrained or the rate of settlement varies from end to end, then additional shims may be fitted between the isolator top and underside of the frame to correct the variation.

A record of all additional shims should be kept for each isolator. When the thickness of all such shims used for any isolator exceeds 5 mm, provision should be made for replacement of all isolators at the earliest opportunity. This should not normally occur for a period of approximately 8 - 10 years from commissioning unless some failure as described earlier has occurred.

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## 5. ISOLATOR REPLACEMENT

All isolators should be replaced in accordance with our instructions.

**CAUTION :** The isolators are pre-compressed with a load of up to 2 tonnes force. They should not be dismantled unless constrained by a suitable press.



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