

# TECHNICAL DATA SHEET DS 097

NON CONTROLLED UNLESS STATED OTHERWISE

QCF 56 Issue 3

PAGE

1 of 5

ISSUE

1

DATE

12 February 2013

APPROVED

P.J.B

TITLE. Installation and In Service Maintenance Instructions : T10 Combined Steel Spring and Rubber Spring Unit Isolators for Marine Equipment.

## General Notes:

This instruction covers the installation of a resilient mounted system for marine equipment.

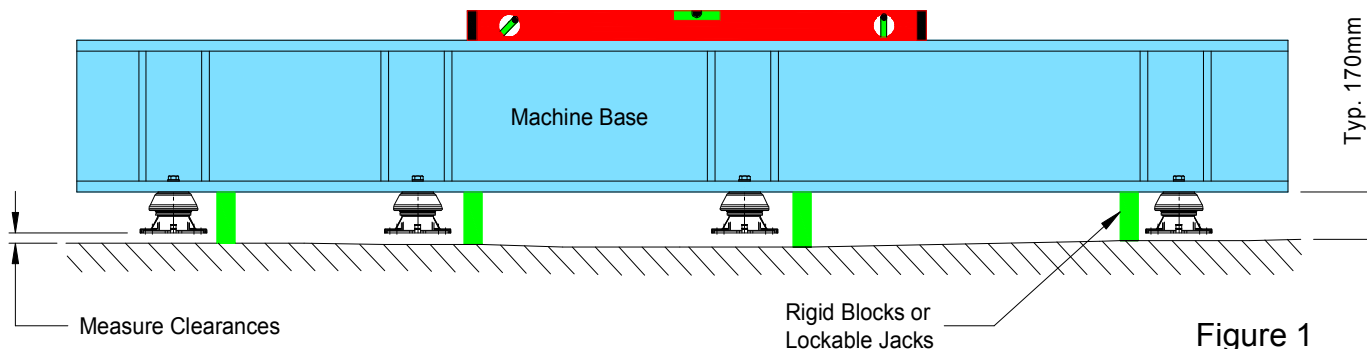
**We recommend that the vessel is afloat during installation of the mounts.**

Read in conjunction with Leaflet PL001, Data Sheets DS094 & DS096 (and the mount installation drawing if issued for this application).

We recommend using metric Grade 8.8 fixing bolts (supplied by others).

## Installation Procedure.

1. The supporting structure beneath the equipment should be constructed to form a rigid and reasonably level seating.
2. Support the equipment on rigid blocks or lockable jacks in a level state at its correct final horizontal position with a clearance of typically 170 mm (T10 mount unloaded height plus a readily measureable clearance) between the supporting structure and the underside of the equipment mounting face. See Figure 1.
3. Fit the mounts to the equipment using the upper M24 fixing bolts but at this stage do not apply the final torque value to these bolts. Note: the orientation of the mounts about the vertical axis is not critical.



4. Measure and record the clearance between the supporting structure and the underside of all T10 mounts (typical clearance of 24 mm). If they vary by more than 1 mm (0.039") then shims will be required. Where the clearances vary by more than 1 mm then those mounts with larger clearances will require shims of the correct thickness and the mount with the smallest clearance requiring none. We recommend shimming to the nearest 0.5 mm variation, shims are to be fitted above the mounts and should be of adequate size to provide a minimum of 80% contact of the mount upper machined surface (machined surface 120 mm diameter).
5. At this stage mark out the lower fixing holes in the supporting structure using the mount base as a template.
6. Remove the T10 mounts from the equipment identifying the mount serial number and position to ensure that they are repositioned correctly later in relation to the equipment datum.

# TECHNICAL DATA SHEET

## DS 097

NON CONTROLLED UNLESS STATED OTHERWISE

QCF 56 Issue 3

PAGE

2 of 5

ISSUE

1

DATE

12 February 2013

APPROVED

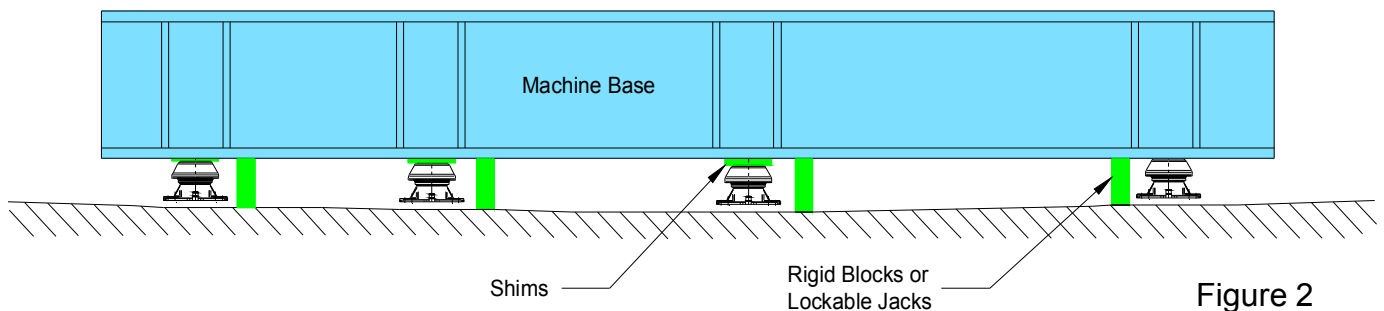
P.J.B

TITLE.

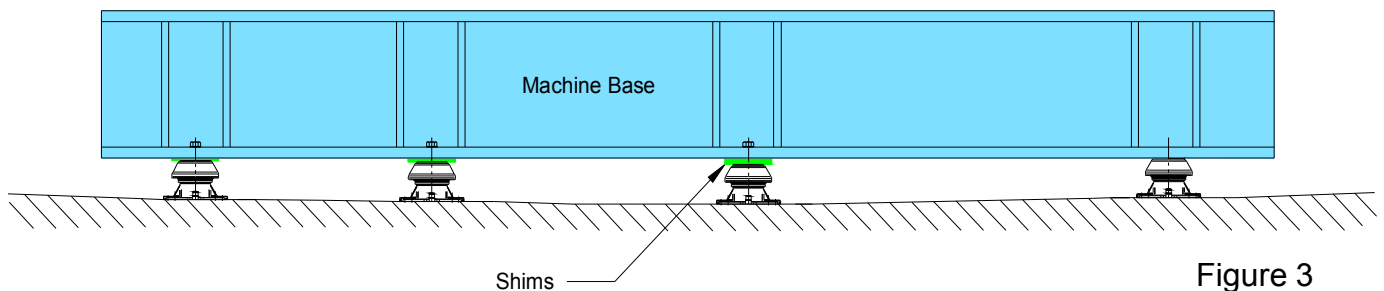
Installation and In Service Maintenance Instructions : T10 Combined Steel Spring and Rubber Spring Unit Isolators for Marine Equipment.

### Installation Procedure (Continued).

7. Machine the lower fixing clearance holes in the supporting structure.
8. Re-fit the mounts to the equipment with shims if required using the M24 upper fixing bolts. These bolts are not to be tightened at this stage. See Figure 2 below.



9. Mount lower fixing bolts not previously installed should now be fitted loosely and must not strain the mount in any direction. The mounts are not designed to accommodate angular misalignment, variations in level, excessive horizontal forces or tensile forces.
10. Gradually transfer the load to the mounts removing all temporary rigid blocks or jacks. See Figure 3 below.



11. Inspect/check that the flexible connections are within the working range and are not straining the unit.
12. It is recommended that mount top fixing bolts be tightened to their correct torque values. Ensure that you have a minimum of 1 bolt diameter of thread engagement in the top of the mount and that the bolt or threads do not bottom out. Lower fixing bolts should be torqued to the appropriate value for the fastener.

# TECHNICAL DATA SHEET DS 097

NON CONTROLLED UNLESS STATED OTHERWISE

QCF 56 Issue 3

PAGE	3 of 5
ISSUE	1
DATE	12 February 2013
APPROVED	P.J.B

TITLE. Installation and In Service Maintenance Instructions : T10 Combined Steel Spring and Rubber Spring Unit Isolators for Marine Equipment.

## Commissioning.

Immediately after the weight has been transferred to the mounts, check the loaded heights. Ideally, the heights of each mount should be measured at two positions, one each side of the mount and the average recorded, on a form similar to our Data Sheet DS 096.

**Upon initial loading, the overall height (H1) of each mount should be greater than 137mm or if measuring from the base to the underside of the top casting (H2) this should be greater than 74.6mm as shown in figure 4 and the table below.**

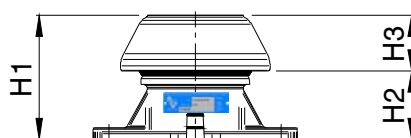


Figure 4

MODEL	COMMISSIONED HEIGHT H1	COMMISSIONED HEIGHT H2	MINIMUM HEIGHT H1	MINIMUM HEIGHT H2	HEIGHT H3 ±0.2mm	TELESCOPIC GAUGE or DTI MEASUREMENT RANGE
TSC T10	Greater than 137mm	<i>From 2012 onwards only</i> Greater than 74.6mm	134.5mm	<i>From 2012 onwards only</i> 72.1mm	62.4mm	54mm to 90mm

## **Note! H1 and H2 measurements do not include shims.**

All mounts should be of equal working height, but a gradual variation along the set of up to 3mm is permissible.

If the mounts 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 mount heights are less than those stated above, or if one or more mounts 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.

After 48 hours the mounts will have settled by up to approximately 1 mm due to primary creep of the rubber spring element.

Note these mounts are not designed for tensile or shear loading applications, and should only be installed in accordance with our recommendations.

The efficiency of a mounting system can be seriously impaired if the system is connected rigidly to pipes, electrical conduits, ducts or shafts. It is essential that such external connections be as flexible as possible, not only to prevent transmission of vibration through the connections and allow the system freedom of movement, but also to avoid possible failure of the connections. Please contact our Technical Department at the address below if you have any problems relating to installation.



## Christie & Grey Limited

Morley Road, Tonbridge, Kent TN9 1RA, England

Telephone : +44 (0) 1732 371100 • Fax: +44 (0) 1732 359666

E-mail : sales@christiegrey.com • web site: www.christiegrey.com



# TECHNICAL DATA SHEET DS 097

NON CONTROLLED UNLESS STATED OTHERWISE

QCF 56 Issue 3

PAGE	4 of 5
ISSUE	1
DATE	12 February 2013
APPROVED	P.J.B

TITLE. Installation and In Service Maintenance Instructions : T10 Combined Steel Spring and Rubber Spring Unit Isolators for Marine Equipment.

## In Service Maintenance.

### 1. Creep (Settlement)

After 48 hours from initial loading the mounts 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.

### 2. Visual Inspection

During service, regular six month checks should be made on the general condition of all mounts. 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 mounts are adequately protected, care should be taken to ensure that all mounts are kept clean, dry and free from oil contamination. Special attention should be paid to any evidence of swelling, blistering or cracking of the natural rubber element which is visible beneath the skirt of the mount top casting. At the first signs of any deterioration of the natural rubber element 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 mount height. Any rapid deterioration of the natural rubber element, particularly if accompanied by the rapid settlement of the mount, should be logged and reported immediately.

**AT THIS STAGE IT IS IMPORTANT THAT ALL MOUNTS ARE RENEWED AS A COMPLETE SET AT THE EARLIEST OPPORTUNITY.**

If a mount failure results from anything other than age of service, the source of the failure MUST be identified and corrected prior to reinstallation of new mounts. A common cause of early mount failure in service is excessive oil contamination of the rubber element and/or imprecise loading during installation.

### 3. Mount Height Checks

The mounts should be checked and recorded at least annually. If it is suspected that rapid mount settlement is occurring then heights should be checked and recorded more frequently - perhaps on a monthly basis. A sample blank record sheet is given on our DS096 or DS045 which may be copied and completed if desired to record mount heights.

Identify and record serial number from mount name plate. Typical name plate shown below.

Note mount position in relation to equipment datum.



## Christie & Grey Limited

Morley Road, Tonbridge, Kent TN9 1RA, England

Telephone : +44 (0) 1732 371100 • Fax: +44 (0) 1732 359666

E-mail : sales@christiegrey.com • web site: www.christiegrey.com



# TECHNICAL DATA SHEET DS 097

NON CONTROLLED UNLESS STATED OTHERWISE

QCF 56 Issue 3

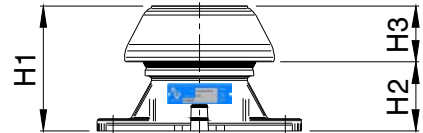
PAGE	5 of 5
ISSUE	1
DATE	12 February 2013
APPROVED	P.J.B

TITLE. Installation and In Service Maintenance Instructions : T10 Combined Steel Spring and Rubber Spring Unit Isolators for Marine Equipment.

### 3. Mount Height Checks (Continued)

**Minimum Isolator Height (H1): 134.5 mm**

**(H2): 72.1 mm**



**ONCE MINIMUM MOUNT HEIGHT IS REACHED, REPLACEMENT MOUNTS SHOULD BE SCHEDULED AT THE EARLIEST OPPORTUNITY.**

If it is found that the settlement of the mounts 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 mount top and the underside of the frame to correct the variation. A record of all additional shims should be kept for each mount. When the thickness of all such shims used for any mount exceeds 5 mm, provision should be made for overhaul of all mounts 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.

### 4. Mount Replacement

**MOUNTS SHOULD BE SCHEDULED FOR RENEWAL AS A COMPLETE SET AT THE EARLIEST OPPORTUNITY.**

**CAUTION :** The mounts are pre-compressed with a load of up to 2 tonnes force. They should not be dismantled.

If you have questions or require assistance you are encouraged to contact Christie & Grey directly through our website at [www.christiegrey.com](http://www.christiegrey.com)



### Christie & Grey Limited

Morley Road, Tonbridge, Kent TN9 1RA, England

Telephone : +44 (0) 1732 371100 • Fax: +44 (0) 1732 359666

E-mail : [sales@christiegrey.com](mailto:sales@christiegrey.com) • web site: [www.christiegrey.com](http://www.christiegrey.com)

