Original Instructions for the safe use of Petersen Hi-MOD Dee and Bow Shackles With E Type Safety Pin

Version 2010.2

In Accordance with the 2006/42/EC Machine Directive
& The Supply of Machinery (Safety) Regulations 2008 (SI 2008/1597)

The information in this leaflet should be passed to the user of the equipment

Introduction

All Petersen Hi-MOD E Type Safety Shackles have been manufactured and tested in accordance with the instructions and guidance detailed within 2006/42/EC Machine Directive and The Supply of Machinery (Safety) Regulations 2008 (SI 2008/1597).

Hi-MOD Petersen E Pin shackles (D and Bow) are manufactured from ISO 1.4401/4 stainless steel and are proof-tested to twice their Working Load Limit (WLL) using equipment calibrated to BS EN 10002-2 and NAMAS NIS 0424.

Design & Application

Petersen Hi-MOD E Pin shackles should be used in applications where corrosion resistance is of significant importance. Stainless steels are possible solutions to corrosion problems and are ideally suited to natural (water, city and landscape atmospheric) conditions. **Petersen Hi-MOD E Pin shackles should NOT be used in general lifting applications where corrosion resistance is not required**. For such general lifting applications please refer to the Petersen PH range of lifting shackles. Due to the nature of stainless steel and the possibility of work hardening/stress ageing, we strongly recommend that thorough inspection and maintenance is carried out on a regular basis. **The Petersen Hi-MOD E Type Safety Shackles are not to be used for lifting people or used on other equipment to lift people.**

Manufacturer and Place of Manufacture

The Petersen Hi-MOD E Pin shackles are manufactured by Petersen Stainless Rigging Limited at their production facility located at Cowen Road, Blaydon on Tyne, Tyne & Wear, NE21 5TW, United Kingdom.

Product information & Description

Petersen Hi-MOD E Pin shackles (D and Bow) are made from EN10088-3 1995 1.4404 stainless steel, a work hardening Austenitic stainless steel.

Because of the critical dependence of the strength characteristics on the mechanical history of the material the shackles **should not be used if distorted in any way**, it is imperative that no attempt is made to straighten or modify the shape of these shackles for whatever reason.

ALWAYS:

- Store and handle shackles correctly.
- Inspect shackles before use and before placing into storage.
- Select the correct pattern of shackle and pin for the application.
- Allow for the full resultant imposed load.
- Fully tighten the bolt and nut.
- Ensure the load acts through the centre line of the shackle using spacers if necessary to meet this requirement.

NEVER:

- Use shackles with bent pins or deformed bodies.
- Force, hammer or wedge shackles into position.
- Eccentrically load shackles.
- Fit bolts in contact with moving parts which may loosen or unscrew them.
- Shock load shackles.
- Use the shackles to lift a person or people.
- Never load the shackles sideways – please refer to the “How to Load” diagrams.

A Technical file has been produced and is kept by the manufacturer in accordance with the instructions and guidance detailed within 2006/42/EC Machine Directive.

Storing and Handling Shackles

Never return damaged shackles to storage. They should be dry, clean and protected from corrosion. Do not alter, modify or repair shackles and never replace missing pins, bolts etc., but refer such matters to a competent person. Never galvanise or subject to other plating processes without the approval of the manufacturer

Working Load Limit (WLL)

The Working Load Limit refers to static loading - care must be taken to ensure that any shock or dynamic loads do not exceed the WLL.

Spreading of load

The load must not be concentrated over a small area e.g. by knife edges or small diameter steel ropes.

Operating temperature

If the intended environment of the shackle involves elevated or depressed temperatures please refer to Petersen Technical Department for advice.

Technical information - Analysis

Please refer to EN 10088-3 1995 for chemical analysis and typical mechanical properties of 1.4401 and 1.4404 steel, which are also commonly known as grade 316 and 316L

Assembly

The bolt and shackle body will screw together easily and should be firmly fastened. Do not use any threading pastes or other such products which may attract or hold small pieces of dirt or metal.

Do not use the shackle if the bolt does not screw fully into place. Please refer to the “How to Load” diagrams for a demonstration of correct assembly.

Instructions for use

Shackles should be inspected before use to ensure that:

- all markings are legible;
- the threads of the pin and the body are undamaged;
- never use a safety type bolt/pin without using the split cotter pin;
- the body and the pin are not distorted or unduly worn;
- the body and pin are free from nicks, gouges, cracks and corrosion;
- shackles may not be heat treated as this may affect their working load limit;
- never modify, repair or reshape a shackle as this will affect the Working Load Limit.

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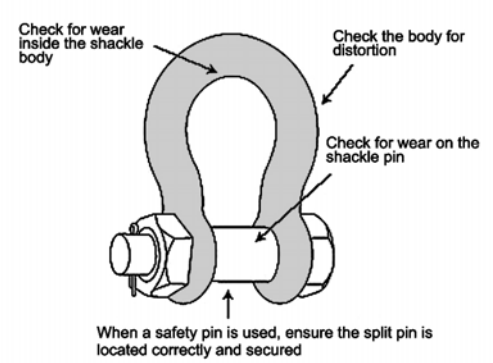
Inspection of shackle.

Before the shackle is first put into use it should be examined for signs of damage.

If it is known, or suspected, that the shackle has been subjected to an excess load or the shackle shows any sign of cracking, splitting or deformation it must be destroyed.

It is required that the shackles are regularly inspected and that the inspection should take place in accordance with the safety standards given in the country of use. This is required because the products in use may be affected by wear, misuse, overloading etc. with a consequence of deformation and alteration of the material structure. Inspection should take place at least every 6 months and even more frequently when the shackles are used in severe operating conditions.

Fig 1.



Product marking

For example WLL 2t 316 A55 CE

WLL 2t	Working Load Limit in tonnes
316	material identification
A55	test batch reference number
CE Conformity code	European mark certifying conformity with 2006/42/EC Machine Directive.

WARNING

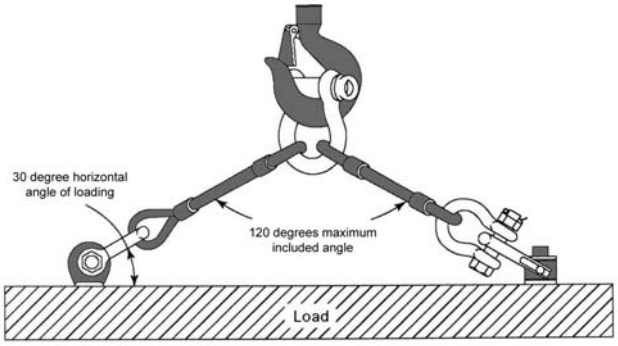
- Shackles should always be used in line with good rigging practice and as per the manufacturer's recommendations.
- Incorrect shackle use could result in a dangerous situation that could cause property damage, serious injury or death.

Good Rigging Practices

- The bolt must be fully engaged, with the head of the bolt in contact with the shackle body.
- If a shackle is designed for a cotter pin, any replacement cotter pins must meet or exceed the original manufacturer's specification.
- Contact with sharp edges which could damage the shackle should be avoided.
- Shock loading should be avoided.
- The load applied to the shackle should be centered in the bow of the shackle to prevent side loading of the shackle.
- Multiple sling legs should not be applied to the shackle bolt.
- If the shackle is to be side loaded, the rated load shall be reduced according to the recommendations of the manufacturer or qualified person (see fig 3).
- The shackle bolt shall not be rigged in a manner that would cause the bolt to unscrew.
- For long term installations, safety pin shackles incorporating a cotter pin should be used. The pin should be secured from rotation or loosening.
- Shackles should not be dragged on an abrasive surface.
- Multiple slings in the body of the shackle shall not exceed 120 degree included angle.

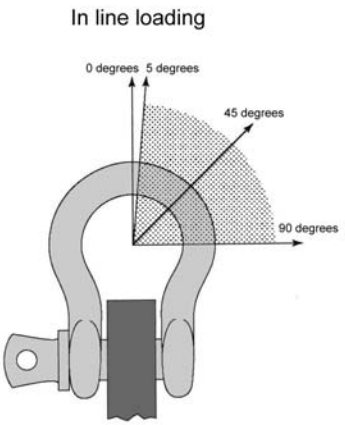
How to Load

Fig 2.



Horizontal Angle, Degrees	Stress Multiplier
90	1.000
60	1.155
45	1.414
30	2.000

Fig 3.



Side Loading Angle, degrees	% Rate Load Reduction
In-line (0) to 5	None
6 to 45	30%
46 to 90	50%
Over 90	Not recommended to load in this condition. Consult manufacturer or qualified person