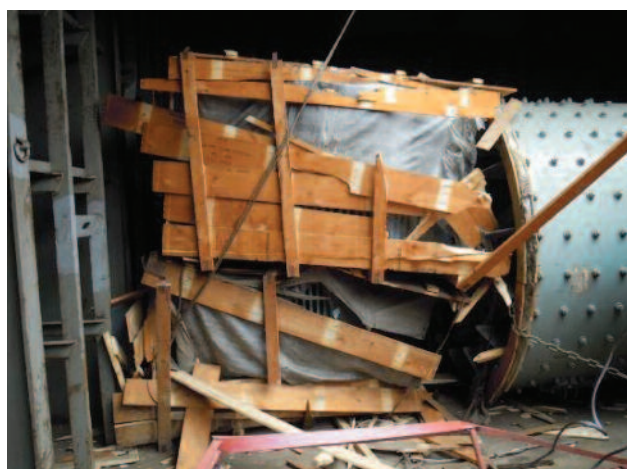


BEST PRACTICE: THE APPLICATION OF BULLDOG GRIPS

Bulldog grips are commonly used on ships in order to form a loop or “eye” in a wire rope. The eye can be formed by using a thimble (hard eye) or by a simple wire loop (soft eye).

They are used on ships on mast stays and crane wires, although swaged connections are now more common. Bulldog grips are not to be used on lifeboat falls (and for any other purpose where life is at risk) but they are often found on bowsing tackles and on winch brake remote release wires.

A more common usage is for the securing of project cargo, both under and below deck. The single most predominant factor associated with the failure of cargo lashings is the incorrect application of bulldog grips.



Damage to project cargoes



Failed lashing

The Club's Risk Assessors often note that bulldog grips are incorrectly applied both by stevedores and shipyards.

The right (and wrong) ways are shown in the diagrams below.

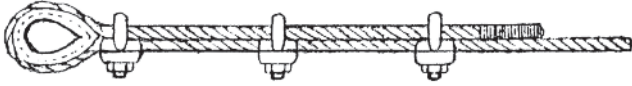


Fig. 1. Right way of applying bulldog grips

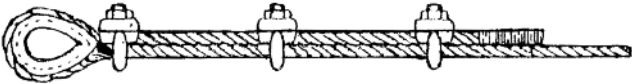


Fig. 2. Wrong way to apply bulldog grips

The saddle part of the bulldog grip should be applied to the "live" load bearing wire, whereas the U bolt goes around the "dead" tail.

A useful way to remember this is by using the mnemonic "*never saddle a dead horse*".

Another good "aide memoire" is **Saddle / Stressed, U / Unstressed**.

The distance between the grips is important and this should be about **six times the rope diameter**; not significantly more or less. The length of the tail is also important and should be greater than **five times the rope diameter**. Also, the tail should be whipped or bound to prevent it unravelling.

The number of grips used depends on the diameter of the wire but at least three should be used for wires up to 19mm, and more for thicker wires as per the table below.

Diameter of wire ropes (mm)	Bulldog grips (Number)
Up to and including 19	3
Over 19: up to and including 32	4
Over 32: up to and including 38	5
Over 38: up to and including 44	6
Over 44: up to and including 56	7

It is important that the tightness of the nuts is checked periodically as the grips have a flattening effect on the wire, resulting in a reduced grip.



Grips reversed



Correct way around but grip is too close to the end of tail, which is becoming unravelling

Bulldog grips applied over a PVC coating will fail at relatively very low slip loads. It is recommended that plastic coating is stripped away clear of any contact with bulldog grips.



Too few bulldog grips reversely applied over a plastic coating and too far apart



Grips staggered



Correct way around but insufficient number of grips, too close together and wire tail too short



Insufficient number of staggered grips, too close together and wire tail too short

Various tests were carried out several years ago (financed by Thomas Miller Ltd., Managers of the UK P&I Club). They showed that a perfectly made up hard eye around a thimble will hold at 90% to 100% of the nominal breaking load (NBL) of the wire before slipping and/or fracturing.

If the grips are reversed, (contrary to the often expressed opinion that "it makes no difference") the wire will fail at around 50% NBL.

By using only two grips (instead of the recommended three), even correctly applied, the wire would slip at around 60% NBL reducing to 50% when reversed or staggered. With one grip, these figures were 25% (correct way around) and 18% (reversed).

The correct method of fitting bulldog grips is hardly "rocket science" but the majority of those seen on board are, in some way, incorrectly fitted.

Proper supervision in the builder's yard should ensure that these are initially fitted correctly. Equally, stevedores / lashing gangs should be supervised and instructed to correct improper lashings.

SOURCE OF INFORMATION

Lashing and Securing of Deck Cargoes by John R Knott (Nautical Institute)

Other related UK P&I Club publications:

Project Cargo Matters and Checklist

www.ukpandi.com/loss-prevention/article/project-cargo-matters-131532/

Good Practise Poster No. 35 – Bulldog Grips

www.ukpandi.com/loss-prevention/posters/good-practice-posters/posters-24-47/

