

Service Information Memo		
SIM No.: 005	Rev.: 03	date: 03.03.2014
Doc. distributed to:	Harding; Principal Engineers, Service Managers, Spare Parts Managers, Service Engineers/Technicians, Service Partners, Management, Technical Department.	
Product Owner:	Harding Safety Netherlands BV, Harding Safety USA Inc, Harding Safety UK Ltd.	
Product:	Fall Wires - Replacement.	
Production Period:	All	

### Advice of Fall Wire Replacement.

Harding Safety takes quality seriously and is continuously improving the awareness, knowledge and training of the Personnel employed within both our Service Stations and our Service Partners.

#### BACKGROUND:

Class Surveyors have requested have requested Harding Safety on several occasions to replace the fall wires, being supplied by Harding safety, with Rotation Free wire.

As a Harding guideline one should strictly adhere to the originally approved wire rope. There is no grandfather clause in SOLAS / LSA Code on this subject hence no changes can be required by Class to deviate from the original approved design.

In practice however are we facing the standpoints and opinions of Class surveyors and they can be difficult. Though one should take care when changing 6x36WS types for rotation resistant ones;

#### Discussion (with LR);

Quote;

*The requirement for rotation resistant ropes is dependent upon the actual definition of 'rotation resistant'. Whilst we have no evidence or documented definition to substantiate our view/opinion, we believe that when the term 'rotation resistant' was introduced by IMO in the 1983 Amendments to the 1974 SOLAS Convention, and LR's Provisional davit Rules, it referred to ropes which were not Lang's lay (ropes in which the direction of the lay of the outer layer of wires in the strands is the same as the direction of the strands in the rope). Lang's lay ropes have a tendency to unwind when a load is suspended from a loose end. For davits which have a double fall, i.e. where the wire rope would often loop through a lower block sheave (the block providing the suspension point) and then back up to the davit to continue the reeving system, rotation is not usually a problem because the rope entering the sheave is in the opposite rotational direction as the rope exiting, and one will counteract the other.*

*The use of multistrand ropes (i.e. non-rotation or anti-rotation ropes) would normally be seen on single fall davits.*

*The one aspect upon which I do disagree with Mr Klaverstijn is his claim that non-rotation ropes are much stiffer. My opinion is that multistrand ropes are generally more flexible and do not open up under bending or reveal the internals to the same extent as a rope which is not rotation resistant. Our general rule of thumb is that the fewer strands a rope has the less flexible it becomes, e.g. one*

*reason a 4 strand rope is not acceptable for lifting applications is because of its inflexibility over sheaves which exposes the inner core.*

*In summary, our suggestion is that for all davit systems, irrespective of type, neither lang's lay rope nor any type of 4 strand constructed rope should be used. For single fall davits, a non-rotation or anti rotation rope such as a multistrand rope should be used. For all other applications, regular lay GSWR, greater than 6 strand should be considered acceptable subject to agreement by the National Administration.*

*Unquote;*

(GSWR = Galvanised Steel Wire Rope.)

Bottom line is that Class (in this case LR) accepts our reasoning on why not to use Rotation Resistant Wire Ropes.

Please note the 3<sup>rd</sup> paragraph that states that they disagree on the issue of flexibility. We do not agree with this. In general rotation resistant wire ropes are pre-formed and therefore loose flexibility. Only very special construction type rotation resistant wires are equally flexible. Technically we should compensate for losing flexibility as we have experienced already serious issues with rotation resistant wire ropes where the sheave / wire ratio is too small; standard 12-13. This may cause issues with opening up of the wire or fatigue problems if an LSA installation is operated frequently.

With regard to the comment on Lang Lay wires. Lang Lay will only be an problem where fatigue is an issue when a LSA is frequently operated. (min. few times a day).

#### Reference to internal Documents;

Please refer also to Harding Safety AS documents;

- PAN 2455
- Harding Doc 3457

### **GUIDANCE FOR REPLACEMENT**

#### **Minimum breaking Load (MBL)**

The MBL as specified and required by the Original Equipment Manufacturer of the equipment in question shall be used.

The LSA Code require a Factor of Safety (FOS) of 6 in relation to wire falls, suspension chains, links and blocks. The Safe Working Load (SWL) of a steel wire rope is consequently 1/6 of the MBL.

#### **Steel wire rope construction**

The wire rope construction as specified and required by the Original Equipment Manufacturer of the equipment in question shall be used.

*In general the minimum tensile strength for steel wire rope shall be 1 770N/mm<sup>2</sup> and the maximum tensile strength shall be 1 960 N/mm<sup>2</sup>. Wire ropes shall be rotation resistant construction preferably 35x7 with steel core or 6x36WS IWRC single round strand rope.*

*Note there is a significant difference between rotation resistant and rotation free wire rope.*

*Rotation free may not be used at all in conventional 2 part / 2 point suspension systems unless the design allows their use. This type of wire would get damaged due to the frequent change of direction of a typical davit/shave arrangement; whilst the wire runs through the sheaves, it tends to open up. This may cause serious internal friction and – corrosion that goes unnoticed*

In case, due to Class requirements, 6x36WS IWRC or ISC is to be replaced for a rotation resistant type following should be noted;

- Rotation free wire ropes should be built up of at least 150 strands. Less is a problem (stiffness) and cannot be used in LSA with the given ratio of 12 (wire dia – sheave dia).
- Rotation free / resistant wire ropes are o.k., for single point and single part reeving systems.
- Rotation resistant wire ropes should have max tensile strength of 1960 N/mm<sup>2</sup>
- Carefull monthly inspections of replacement wires is recommended.

Maintenance of the wire ropes as per above mentioned PAN and Doc.

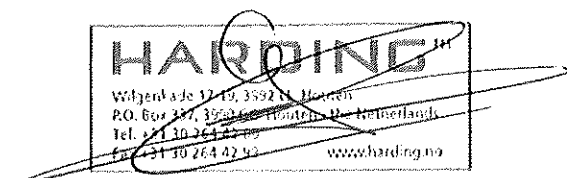
Summarizing;

**do not deviate from the original used and approved type of fall wire on Schat-Harding Davit Systems without Approval from the Product Owner (OEM).**

Another frequent question is what testing is required on the system when fall wires are replaced? We can advise that that the Schat-Harding policy is to lower the empty lifeboat and retrieve it back to the stowed position.

For the necessary procedures in replacing fall wires, please see the attached instructions.

**For Harding Safety Netherlands BV,**



.....  
**Harry Klaverstijn**  
Technical Manager/Principal Engineer

Attached documents;

HWR-02  
IMW-02  
ISW-03  
PAN 2455  
Harding Doc 3457