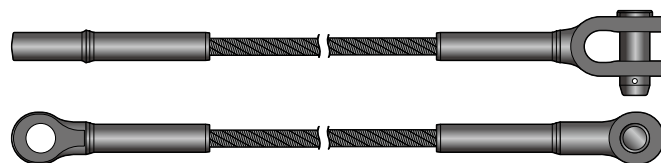


Guy cable, supporting the boom, jib and lifting load, is used on most of hydraulic mobile cranes. Because the cable is holding various weights such as self-weight of attachment and lifting loads, failure of guy cable causes serious accidents in jobsite. Operating the crane having failure of guy cable may lead to falling down the boom and jib attachment on the ground which could result in death or serious injury. To prevent such a horrible phenomenon, maintenance of guy cable is one of the significant factors for safe operation.

1. Guy Cable and Its Functions

The guy cable has a swage socket attached at each end with pins in the same plane and designed to support 2 weights: **1)** self-weight of booms and jibs and **2)** lifting load with more than 3.75 safety factor against its breaking strength as per Japanese Crane Standard. In addition, even if the lifting load is light such as a hook block only, the strong stress is applied on the cables. Therefore, guy cables are designated as one of the

"Important Periodical Replacement" parts. If you do not maintain or replace the guy cable, it will cause a big accident due to cut of guy cables.



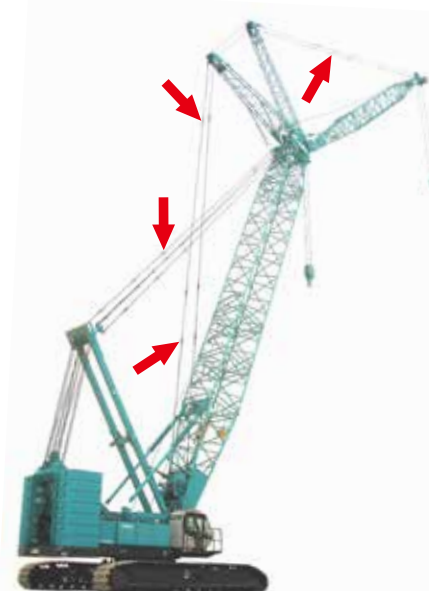
2. What is the cause of these problems?

2-1. Crack and Separation of Watertight Grease

If there is a crack or separation on the Watertight Grease, water and moisture can penetrate into the clamped section of connector. It is invisible, and the clamped portion gradually gets rusty. When the clamped portion is corroded by rust completely, the possibility to get broken is increased.

2-2. Rust on wire rope

If the cable is exposed to rain and wind, the water and moisture causes the rust on the surface of wire rope. The rust of wire rope dramatically decreases the strength of guy cable. If the rust remains on the surface, the element wire will be broken partially, and the partial break will be spreaded to all over the wire rope which results in reduction of strength as well as break of wire rope.



Watertight Grease:

The Watertight Grease is being applied on guy cable clamped section at manufacturing. But oils/fats ingredient in the Watertight Grease would be reduced by age or dust. And the Watertight Grease gets hard like caulking. Then hardened Watertight Grease might crack or separate. Therefore, it is required to doing periodical maintenance.

3. What is going to happen if no maintenance is performed for guy cables?

The problems such as eliminated wire rope grease and rust on wire rope described previously result in breakage of wire rope. The worst case is "internal breakage of wire rope" and "breakage of connector. If rust goes into center core wires, it causes internal breakage as you see the picture on LH side. If the internal breakage of center core wire rope progresses, the strength of wire rope is reduced. In addition, if the rust is transferred to connector, the clamp portion of connector will be broken and causes falling-down of boom. Therefore, if rust is visible on the surface of wire rope, please keep in mind that the rust may penetrate the base metal to result in internal breakage.

- Internally broken center core wire rope
- Broken connector due to internal rust






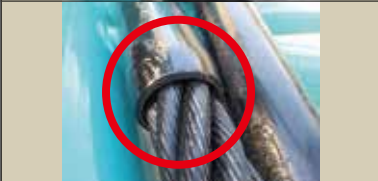


4. How to prevent the fault on guy cable

Recommended service of the guy cable include periodic inspections of the cables, the end sockets, and pins as well as the gantry and boom connection.

These inspections should check for wear, security and signs of fatigue.

4-1. Usage of Genuine Guy Cable

Genuine Guy Cable		Imitation Guy Cable (Example)	
	The connector of genuine guy cable is straight.		The connector of imitation guy cable is not straight.
	The connector of genuine guy cable has a production number and part number stamped on the connector.		The connector of imitation guy cable does not have a production number and part number stamped on the connector.
	The connector of genuine guy cable has a hole with Watertight Grease.		The connector of imitation guy cable does not have a hole.
	The connector of genuine guy cable has Watertight Grease.		The connector of imitation guy cable does not have caulking.

4-2. Adequate Lubrication

For internal breakage of socket

Apply Wire Rope Grease at the end of socket as described in the picture.

For element wire

Lubricate on wire rope as described in the picture.

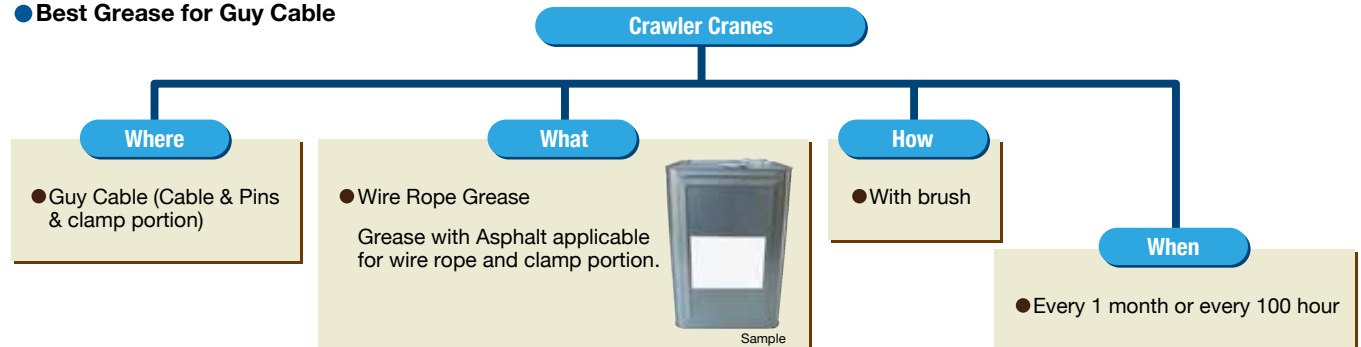
● Lubricate and apply Wire Rope Grease at clamp portions



● Lubricate on wire rope



● Best Grease for Guy Cable



4-3. Replacing of Guy Cable

The recommended interval of wire rope replacement is described in the chart, however, if significant failure of potential damages are observed, replace the guy cables even if the interval is shorter than described.

Contents of Work	Replacement Interval
Normal crane work.	6 years
Both crane and clamshell work.	4 years
Lifting magnet or clamshell work only.	2 years

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