Do Your Mast Hoses Look Like This?

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Many times, the last thing we think of is maintaining the hoses on our material handling equipment. But without maintaining, hoses will surely create machine downtime. More importantly, if the hose fails, it creates a potentially hazardous situation for the employee operating the unit and anyone in close proximity.

Hoses are extremely vulnerable to external damage once the jacket has been compromised. The jacket of a hose has one main job – it must protect the structural member of the system and the braided reinforcement. If it is cracked, it allows the braid to be exposed to the environment, and most notably to chemicals and abrasives that are harmful to its integrity. Also, missing jacket portions drastically increase the probability of rupture.

If a hose ruptures, it could spray hot hydraulic oil in any direction at a high velocity. The operator who is at eye level with the damaged sections shown in these pictures is in the most danger of burns or injury from oil injection. Spilled oil is also responsible for many slip and fall accidents in the work place.

Mast Hose Maintenance

Investing a small amount of time in mast hose maintenance increases the life of your equipment and reduces injuries. With just a few simple steps you can maximize your operation output:

1. Review the hose periodically – Consult your owner’s manual for appropriate intervals based on equipment and usage.

2. Look at the entire length of each hose – If sections of jacket are missing, discard and replace the hose.
3. Look for cracks that are perpendicular to the hose, specifically on the outside bend radius – This could indicate that the hose being used does not have a low enough cold temperature rating. Consult your supplier for a lower temperature product.
4. Look for cuts and gouges on the jacket of the hose – Cuts that are parallel with the hose may indicate the hose is coming into contact with the material being transported. Replace the hose if the reinforcement is exposed or damaged.
5. Many OEMs ship the mast hoses under tension – Check the tension that the hoses are under and adjust per the owner's manual.
6. Check the sides of the hoses that come in contact with the sheaves – If the outside diameter of the hose is too large, the jacket will show excessive wear on the outside diameter of the hose. Consult your hose supplier for a lower profile hose.
7. Search for broken wires when using rubber hoses – To look for broken wires protruding through the jacket, do not use your hand; these can be sharp and cause injury. Instead, run a cloth over the hose, feeling as you go. If wires are broken, the cloth will snag on the wire. If the hose does have a broken wire, you need to replace the entire hose, as the jacket and strength members have both been compromised.

Mast Hose, Factory Equipment

Most material handling OEMs use thermoplastic hose in their masts from the factory which have sheaves sized specifically to fit the hose they install. So when considering replacing the hose, it is important to consider the sheave width if you are using rubber hoses (as they have much larger outside diameters). A larger hose OD will cause additional wear on the hose as it passes through the sheave, resulting in a shortened life expectancy of the hose.

Many forklift OEMs that use thermoplastic hose ship the mast hoses under tension to ensure that they remain on the sheave during operation. Thermoplastic hose is uniquely able to withstand the tension applied with minimal stretching. Thermoplastic hose also has minimal length change under pressure properties so tension does not change during operation as the hose is pressurized.

21st Century Mast Hose

The majority of hoses were once made from rubber, but today, a thermoplastic will outlive conventional rubber products for several reasons:

1. Rubber hose layers cannot withstand the rigors of an over-the-sheave application. These hoses will delaminate, leading to jacket failure and wire fatigue.
2. TP hose has better low temperature properties (-70F) for use in freezers and cold weather, which prevents the jacket from cracking.
3. Fiber reinforcement does not fatigue during constant flexing motion over the sheave.

At the Parflex division of Parker Hannifin Corporation, thermoplastic hose is built with a high level of contact strength between the layers of core, braid, and jacket. For more information, visit www.parker.com/parflex.

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