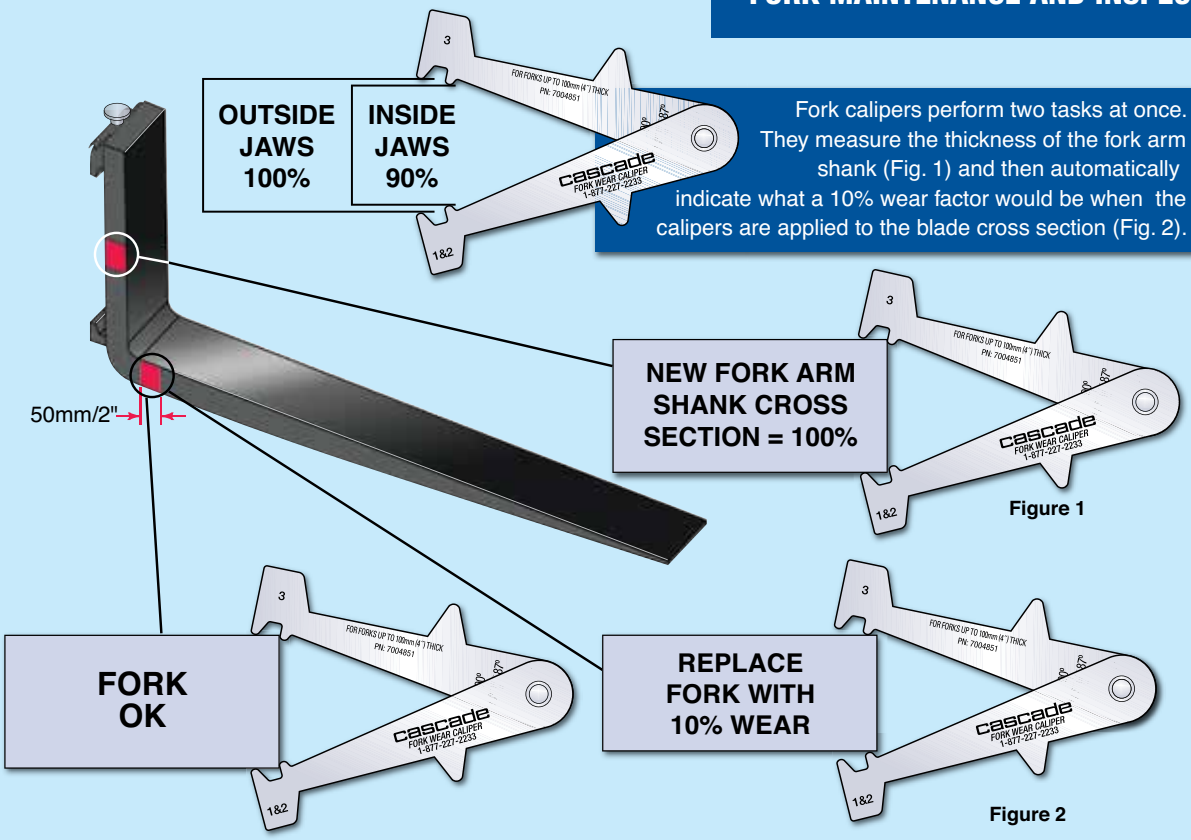

Fork calipers perform two tasks at once. They measure the thickness of the fork arm shank (Fig. 1) and then automatically indicate what a 10% wear factor would be when the calipers are applied to the blade cross section (Fig. 2).

Figure 1

Figure 2

Not for use on full tapered forks.

Lift truck forks: maintenance and inspection.

A 10% reduction in blade thickness results in a 20% reduction of capacity.

Lift truck forks carry larger loads than almost any lifting device yet are often mistreated and forgotten. As insubstantial as they seem, neglecting forks could make them dangerous. There is barely a word about forks mentioned in most operator training manuals or instructed courses. Lift truck technicians may ignore them completely.

You can find thousands of extra parts for lift trucks in some fleet repair shops, but you'll seldom see spare forks. Even when all the trucks on the fleet are the same, fleet maintenance managers rarely order spare forks. Forks last a long time if treated properly, but they can deceive by looking as good from most viewing angles when they are worn as when they are new.

It's true that most forks are customized to the truck by model and capacity: they are big and heavy and thought of as indestructible. But forks can be abused or ruined in the course of daily work.

Here are some examples of ways that forks can be damaged:

- Forks can be overloaded either by picking up a load too far out on the forks, or simply by picking up loads heavier than the truck rating.
- Maintenance shops may bend forks back into shape, weld on them, or drill holes through them. Lift truck users can add attachments to the truck that stress the forks. Drum clamps and portable booms can be supported on the forks—but what is contained in the drum or on the boom hook makes the safety difference.
- Forks are often used to open rail car doors and break loads out or away from other loads. They are also used to pick up capacity loads not seated against the fork shank and to pick up off-balanced loads far from the side of the truck. The fork tips are sometimes inserted under other fork trucks to lift them during maintenance operations.
- Lift trucks may collide with building columns and walls, and though the forks show no discernible bend, they may be damaged beyond safety.
- Any time excessive heat is applied to any part of a fork —during repair, for instance—hidden damage may occur.

The fork itself is a concern but so are the hooks that secure them to the lift carriage.

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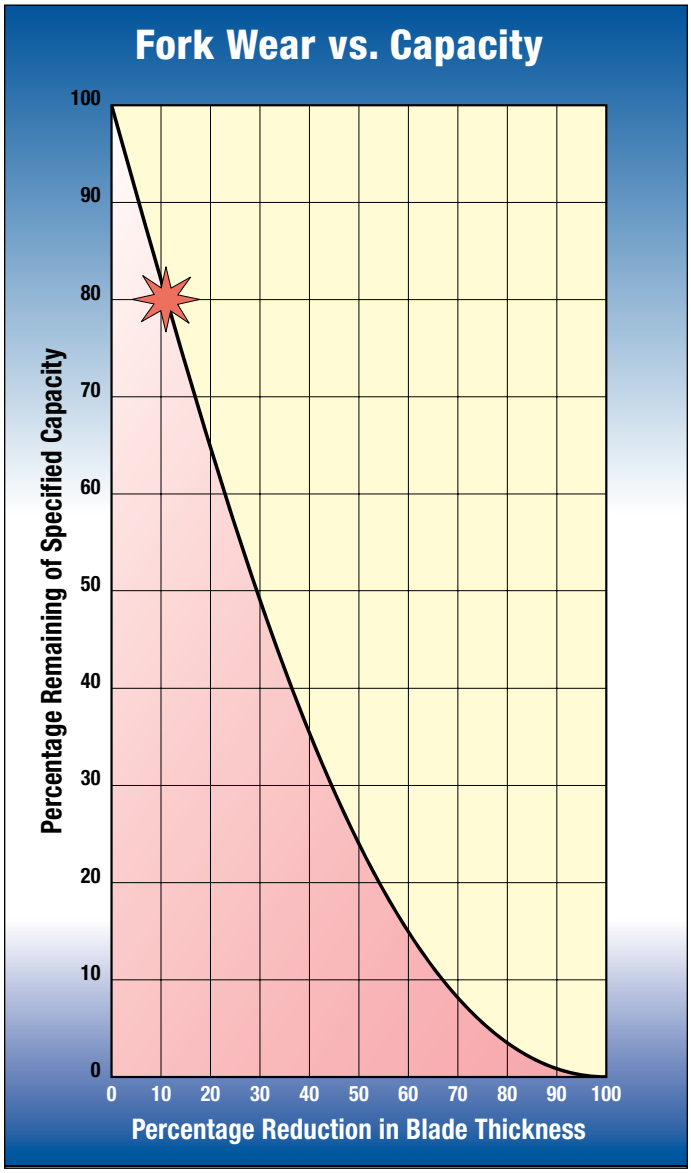
DESIGNED TO TAKE A BEATING

Forks for counterbalanced and straddle lift trucks are not just bent bars of steel. The manufacturing process is careful and precise with many checks and inspections critical to their safety. Some factors essential to fork manufacture include the steel, the bend and thickness of the heel, the welding of the hooks that hold them on the carriage, and the heat treatment of the finished product.



This chart shows how fork wear reduces truck capacity. ANSI standards require that each fork be rated at least half the capacity of the truck at the rated load center distance as shown on the truck nameplate.

FORKS ARE A WEARING PART

Finished forks are usually painted red, yellow or black when the truck is new. The paint is quickly scrapped off once the truck is put into service. The top paint is abraded by the pallet or load and the bottom is worn mostly by contact with the floor.

Lift truck operators are taught to keep their forks low and parallel with the travel surface when traveling empty and tilted back when carrying a load. But some operators go to extremes and travel with the heel of the fork riding on the floor. This practice wears the heel or the bottom surface of the fork and reduces the capacity of the fork.

Once in service, the bottom of forks may wear badly. This wear may not be noticed, but the consequences are. There are ASME/ANSI specifications for User Fork Wear Standards. They are part of the B56 standards by which lift trucks are manufactured and tested. Few operators or fleet managers know of the standards or understand that forks must be inspected.

While the Industrial Truck Association (ITA) recommends that forks be withdrawn from service when fork blade thickness has been reduced by 10%, few users understand that a 10% reduction in blade thickness results in a capacity reduction of 20%. This means that the safety factor for a pair of forks has also been reduced by 20%.

Measuring fork wear is not intuitive. You should make it a part of maintenance or inspection routines.

HERE'S HOW FORKS ARE INSPECTED

Forks should be inspected at least once a year (single-shift operation, and more frequently in severe applications) for wear and distortion. The best method is to use a fork caliper, which is a type of adjustable go/no-go gauge.

Each fork consists of two sections: the shank, which is the vertical part attached to the carriage, and the blade, which is the portion that picks up the load.

The caliper is first set using the shank of the fork on which there is little or no wear. (See the illustration.) Then that dimension is used to check the shank back near the heel of the blade. The four contact points of the special fork caliper automatically measure the wear on the blade.

Wear is checked by first measuring the thickness of the vertical shank portion of the fork because this part wears little. The interior part of the caliper has two additional points that automatically show a 10% reduction of the shank thickness. These points are slid over the fork blade. If the caliper slides down the blade to the heel, the fork is worn beyond safety and usefulness. It should be replaced. The accompanying chart shows the reduction in capacity as the forks wear.

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