



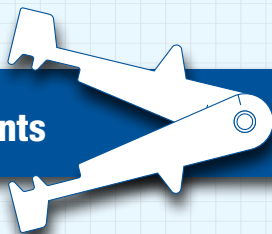
FORK SAFETY GUIDE

A fork inspection kit
designed with your
safety in mind.

ANSI/ITSDF B-56.1



www.cascorp.com



Using Your Caliper

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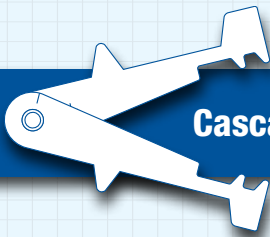
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Cascade's Fork Safety Program

Cascade's Commitment to Workplace Safety:

As the global leader in material handling equipment, Cascade recognizes the importance of workplace safety. As a part of our philosophy to promote safety, we are sending you this Fork Safety Kit consisting of a Fork Safety Guide and Fork Wear Calipers. We encourage frequent, periodic inspection of forks and other critical fork lift components as a part of an active work place safety program. The Fork Safety Guide is patterned after the ANSI/ITSDF B-56.1 Fork Wear Standards.

Please follow the steps outlined in this guide to ensure your components comply with the law and are safe for use. Contact Cascade for those forks that do not comply with the Fork Wear Standards.

Feel free to contact us for additional Fork Safety Kits.

For more information about how to use your Fork Caliper for routine fork safety inspections, visit our Fork Inspection page at cascorp.com or scan the QR code below to watch a helpful video.





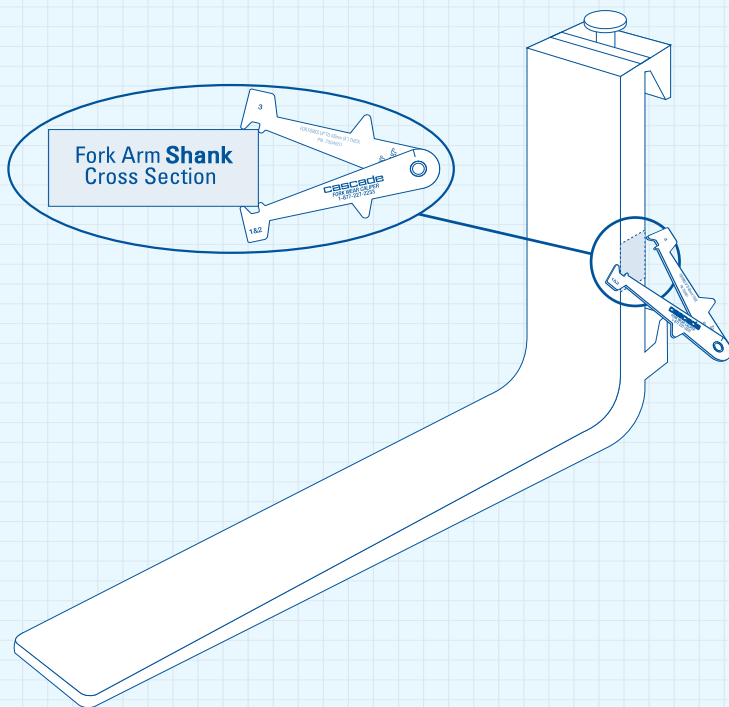
Forks will last a long time if treated properly, but since they can look as good when they are worn as when they are new, it's critical to know how to inspect them to determine if they are safe. You'll find those instructions in this guide.

Since forks carry larger loads than most lifting devices, if mistreated or neglected, they could be dangerous. The following are some examples of mis-use and what to avoid so forks are not damaged in the course of daily work:

- Do not overload forks by picking up a load too far out on the forks or by picking up loads heavier than the truck rating.
- Do not allow maintenance shops to bend forks back into shape, weld on them or drill holes through them.
- Avoid adding attachments to the truck that stress the forks.
- Do not use forks to open rail car doors or to break loads out/away from other loads.
- Though drum clamps and portable booms can be supported on the forks, be aware of what is contained in the drum or on the boom hook.
- Forks should not be used to pick up capacity loads not seated against the fork shank or to pick up off-balanced loads far from the side of the truck.
- Avoid inserting the fork tips under other fork trucks to lift them during maintenance operations.
- If a collision with building columns or walls occurs, even if the forks show no discernible bend, check to ensure they have not been damaged beyond safety.
- Do not apply excessive heat to any part of a fork (during repair, for instance).
- Don't overlook hooks that secure the forks to the lift carriage.

Setting Your Calipers

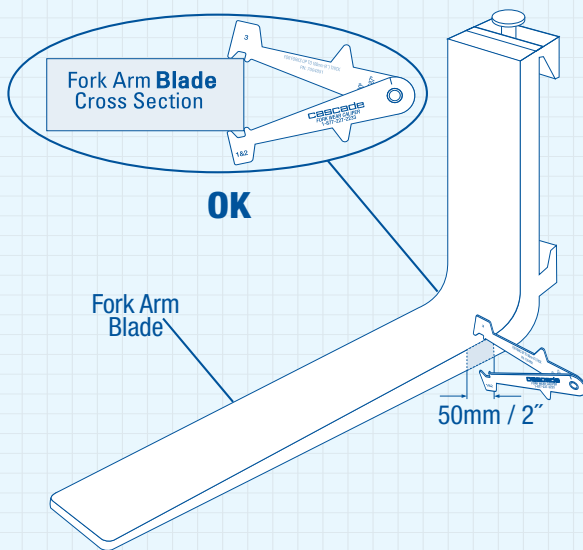
Set the front teeth of the jaws by measuring the thickness of the shank. Ensure that the caliper is held square across the shank for an accurate reading. The caliper is now set to measure the fork arm blade.



Checking Blade Thickness



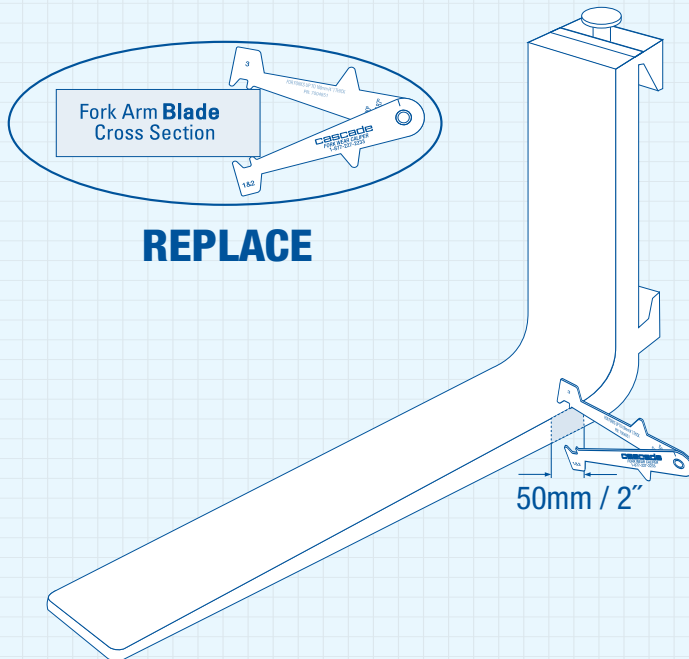
Position the jaws of the caliper over the fork arm blade. Ensure that the measurement is taken at least 2" (50mm) in front of the start of the heel radius. If the inside teeth of the caliper hit the fork, it has less than 10% wear and can remain in service.



Note: Standard Cascade calipers can be used on forks up to and including 4" (100mm) thick. They are **NOT TO BE USED ON FULL OR LUMBER TAPERED FORKS** where the upright thickness is greater than that of the blade. In these cases 10% reduction must be obtained by measurement, you will need to know the original fork blade thickness.

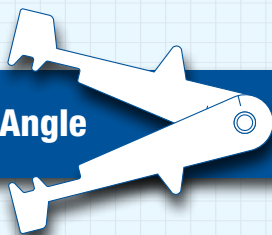
When to Replace Forks

If the caliper does pass over freely, the fork arm must be taken out of service. This represents 10% wear and 20% reduction in capacity.

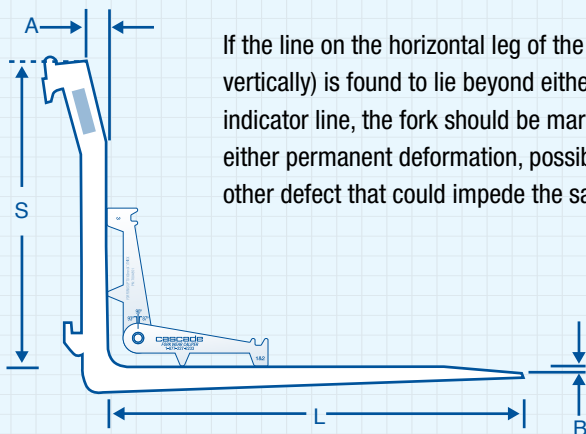


ANSI/ITSDF B-56.1 - 6.2.8.1 (f) Standard practices require that forks be withdrawn from service when the thickness of the blade has worn by 10%.

Checking Fork Heel Angle



- A.** Open the calipers to approximately 90° and place them inside the heel area of the fork (on top of the blade).
- B.** Ensure that both points on the horizontal leg are touching the top of the blade.
- C.** Move the calipers towards the upright. Ensure that the caliper arms are both parallel to the blade and to the upright.
- D.** Open/close the calipers so both points on the vertical leg of the calipers touch the upright/shank of the fork.
- E.** When all four points are in contact with the fork, remove the calipers and look at the indicator line found at the top of the hinge pin.



If the line on the horizontal leg of the caliper (that points vertically) is found to lie beyond either the 93° or 87° indicator line, the fork should be marked to be checked for either permanent deformation, possible stress cracks or any other defect that could impede the safe use of the fork.

Note: Some forks are manufactured purposely to angles greater or less than 90° .

Checking Fork Hooks

Check for wear/straightness of fork hooks.

Use the end of the caliper designed for your fork class (Class 1 & 2 or 3). If the fork caliper slides entirely into the hook pocket (Diagram B) the fork must be removed from service.

Diagram A

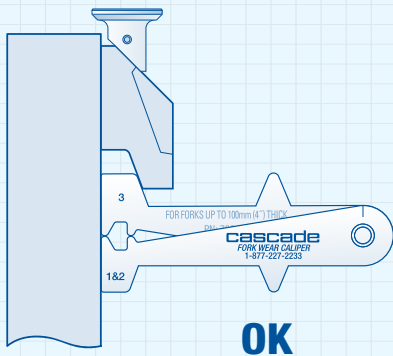
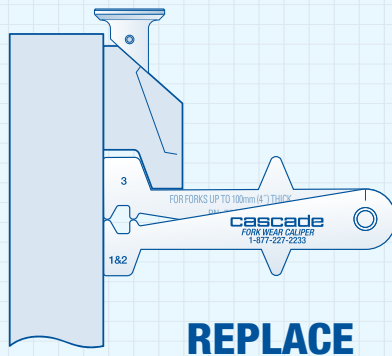
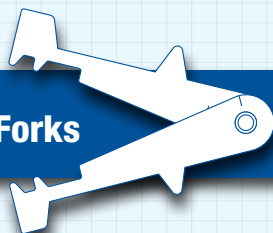


Diagram B





Measuring the bore on shaft/pin type forks.

The wear caliper can also be used as both “outside” and “inside” calipers for general measurements. As an inside caliper they are useful for measuring the bore of the eye or bushing on shaft/pin type fork arms. To convert to an inside caliper just rotate the arms of the caliper until the teeth are on the outside (see Diagram 1).

Insert the reversed caliper inside the eye of the tube (see Diagram 1), opening the teeth until both sides of the teeth come in contact with the inside wall of the tube. Pull the caliper out and measure the distance from tip to tip (see Diagram 2).

Diagram 1

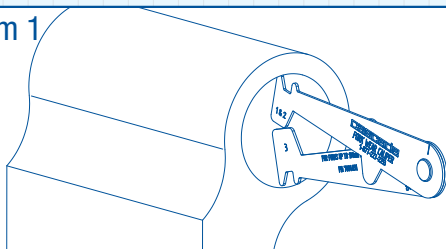
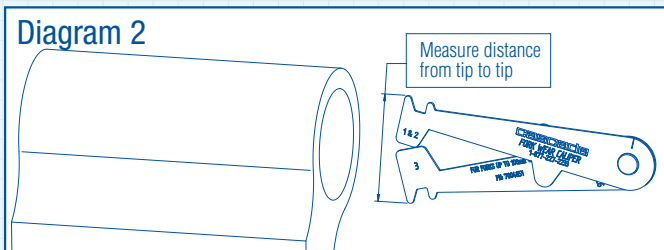
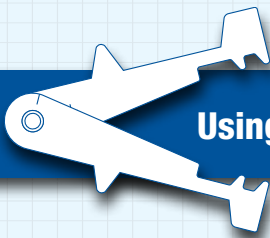


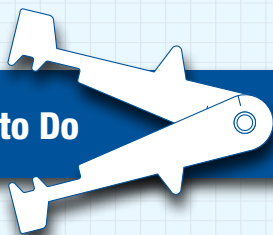
Diagram 2





Using Your Forks Correctly

1. Inspect forks regularly.
2. Make sure the fork capacity meets or exceeds truck capacity rating and load weight center.
3. Obtain written approval from fork manufacturer prior to making any fork modifications/repairs.
4. Determine fork wear cycle and replacement schedule for your operation. Use of larger forks in demanding applications will extend fork life.
5. All positioning locks must be in place at all times. Forks must be properly seated on the carriage and the positioning locks fully located in the slot before use.



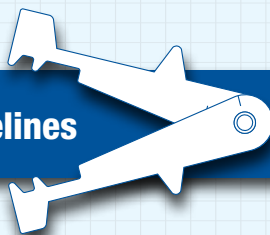
- 1.** Do not overload the fork beyond its rated capacity.
- 2.** Do not change fork from one lift truck to another without knowing capacities of each truck and fork.
- 3.** Do not use a fork in an application for which it is not designed.
- 4.** Do not add a fork extension longer than 150% of the supporting fork's length.
- 5.** Do not try to repair or modify forks in the field, especially by welding. Improper welding destroys heat treat properties and makes the forks brittle.
- 6.** Do not carry full or partial loads on one fork.
- 7.** Do not apply sideways pressure to forks, commonly called "side loading", as they are designed for vertical loading only.

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6.2.8 Inspection and Repair of Forks in Service on Fork Lift Trucks:

(a) Forks in use shall be inspected at intervals of not more than 12 months (for single shift operations) or whenever any defect or permanent deformation is detected. Severe applications will require more frequent inspection.

(b) Individual Load Rating of Forks - When forks are used in pairs (the normal arrangement), the rated capacity of each fork shall be at least half of the manufacturer's rated capacity of the truck, and at the rated load center distance shown on the lift truck nameplate.



6.2.8.1 Inspection

Fork inspection should be carried out carefully by trained personnel with the aim of detecting any damage, failure, deformation, etc., which might impair safe use. Any fork that shows such a defect must be withdrawn from service, and shall not be returned to service unless it has been satisfactorily repaired in accordance with para. 6.2.8.2.

(a) Surface Cracks

The fork shall be thoroughly examined visually for cracks and if considered necessary, subjected to a non-destructive crack detection process, special attention being paid to the heel and welds attaching the mounting components to the fork blank. This inspection for cracks must also include any special mounting mechanisms of the fork blank to the fork carrier including bolt-type mountings and forged upper mounting arrangements for hook or shaft-type carriages. The forks shall not be returned to service if surface cracks are detected.

(b) Straightness of Blade and Shank

The straightness of the upper face of the blade and the front face of the shank shall be checked. If the deviation from straightness exceeds 0.5% of the length of the blade and/or the height of the shank, respectively, the fork must not be returned to service until it has been repaired in accordance with para. 6.2.8.2.

(c) Fork Angle (upper face of blade to load face of the shank)

Any fork that has a deviation of greater than 3° from the original specification must not be returned to service. The rejected fork shall be reset and tested in accordance with para. 6.2.8.2.

ANSI/ITSDF B-56.1 Inspection Guidelines

(d) Difference in Height of Fork Tips

The difference in height of one set of forks when mounted on the fork carrier shall be checked. If the difference in tip heights exceeds 3% of the length of the blade, the set of forks shall not be returned to service until repaired in accordance with para. 6.2.8.2.

(e) Positioning Lock (when originally provided)

It shall be confirmed that the positioning lock is in good repair and correct working order. If any fault is found, the fork shall be withdrawn from service until satisfactory repairs have been effected.

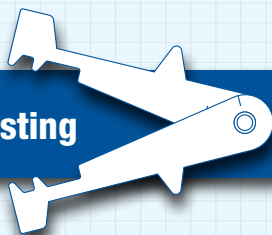
(f) Wear

(1) Fork Blade and Shank - The fork blade and shank shall be thoroughly checked for wear, special attention being paid to the vicinity of the heel. If the thickness is reduced to 90% of its original thickness, the fork shall not be returned to service.

(2) Fork Hooks (where originally provided) - The support face of the top hook and the retaining faces of both hooks shall be checked for wear, crushing and other local deformations. If these are apparent to such an extent that the clearance between the fork and the fork carrier becomes excessive, the fork shall not be returned to service until repaired in accordance with para. 6.2.8.2.

(g) Legibility of Marking (when originally provided)

If the fork marking in accordance with para. 7.27.2 is not clearly legible, it shall be renewed. Marking shall be renewed per instructions from original supplier.



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6.2.8.2 Repair and Testing

(a) Repair

Only the manufacturer of the fork, or an expert of equal competence, shall decide if a fork may be repaired for continued use, and repairs shall only be carried out by such parties. It is not recommended that surface cracks or wear be repaired by welding. When repairs necessitating resetting are required, the fork shall subsequently be subjected to an appropriate heat treatment, as necessary.

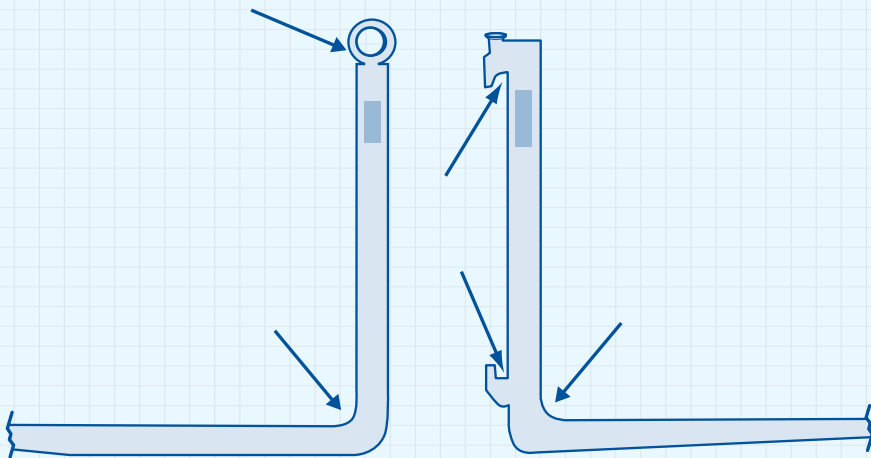
(b) Test Loading

A fork that has undergone repairs, other than repair or replacement of the positioning lock and/or the marking, shall only be returned to service after being submitted to, and passing, the tests described in para 7.27.3, except that the test load shall correspond to 2.5 times the rated capacity marked on the fork.

Surface Cracks

Inspect for surface cracks.

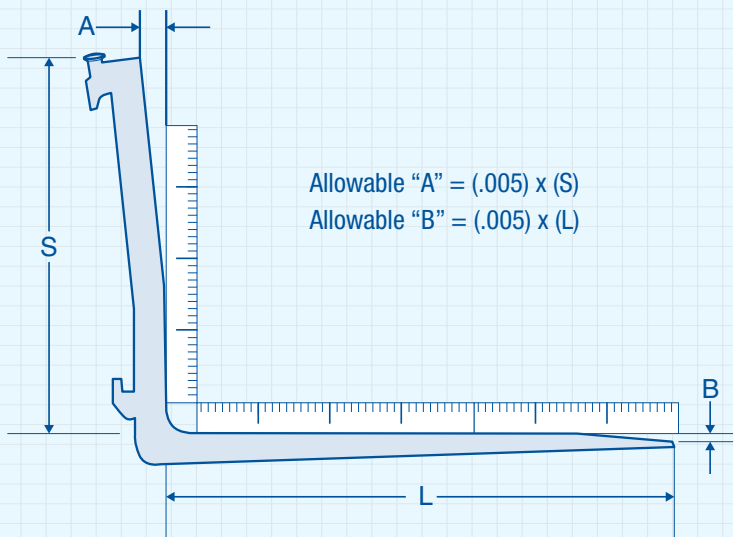
Pay special attention to the heel and welds attaching all mounting components to the fork blank. Forks with surface cracks should not be returned to service.





Check for straightness of blade and shank.

Fork should be withdrawn from service if the deviation from straightness exceeds allowable "A" and "B" values.



Example: 48" or 1,219 mm long blade

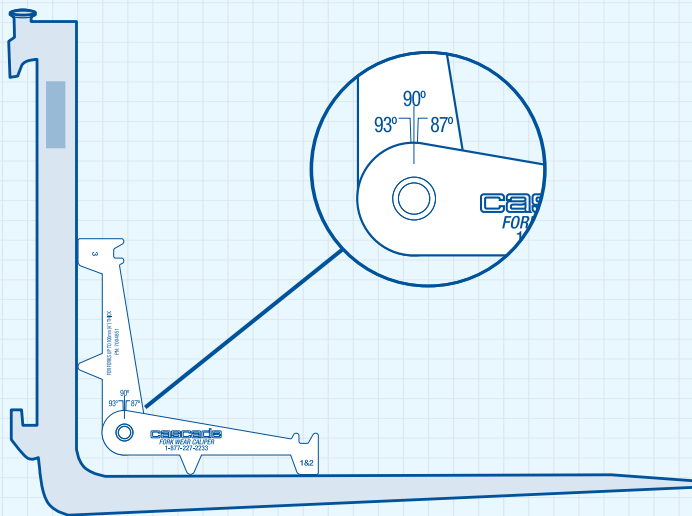
Allowable B = (.005) x (48") = .24"

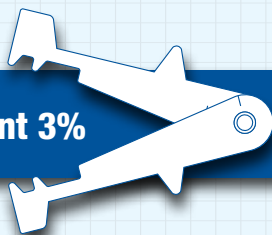
or B = (.005) x (1,219) = 6.10 mm

Fork Angle 3°

Check for excessive fork angle. (Refer to page 6)

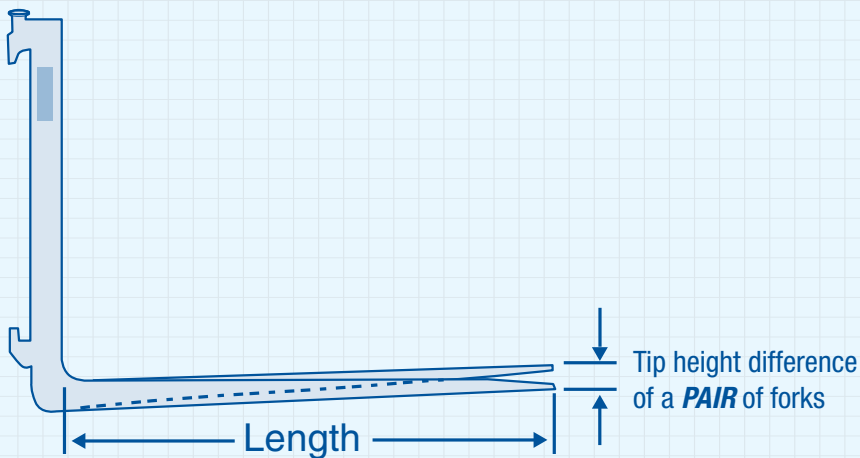
If the deviation from straightness exceeds allowable values (3°), the fork should be withdrawn from service.





Check tip alignment.

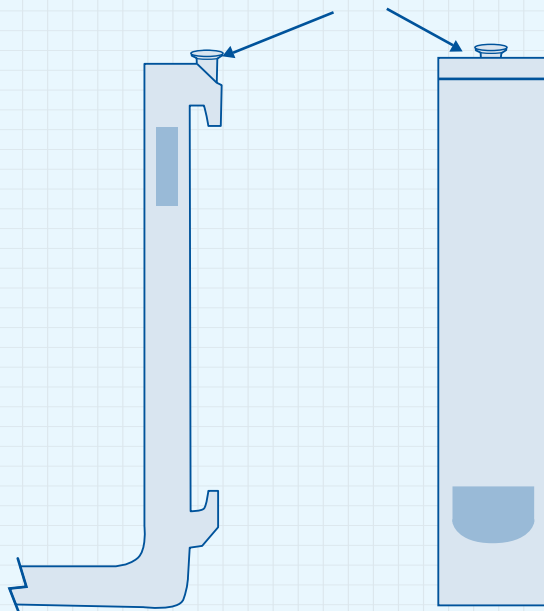
When the difference in height of the **tips** of a pair of forks on the same carriage exceeds 3% of the forks blade **length**, then the forks should be removed from service until repaired in accordance with ANSI/ITSDF B-56.1, 6.2.8.2.

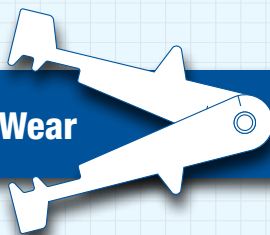


Lock Damage

Check for positioning lock damage.

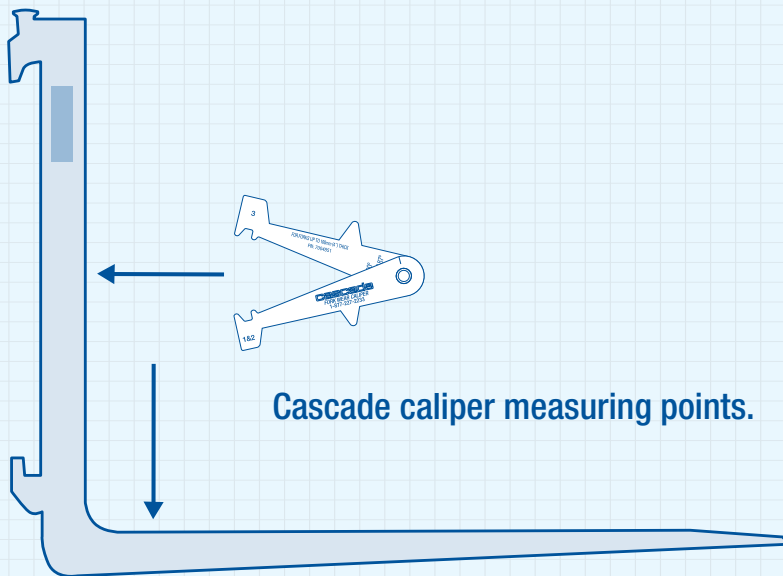
Check the positioning lock and other fork retention devices to ensure they are in place and in working order.





Check for wear.

Refer to pages 3, 4 and 5.

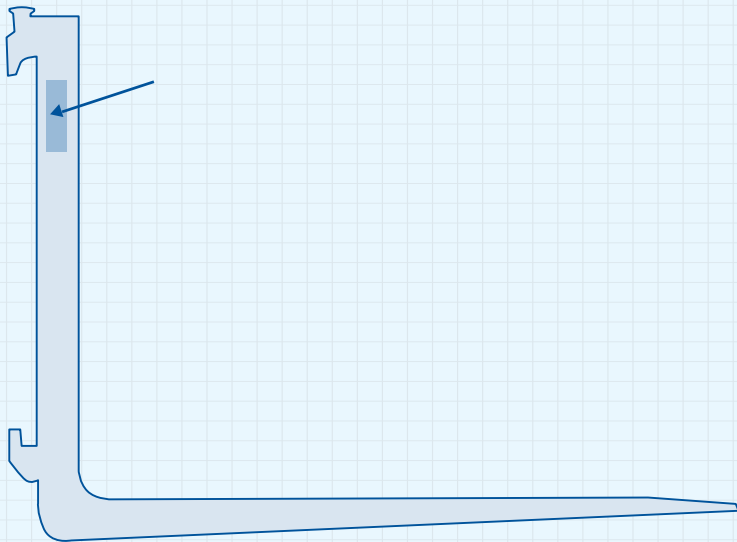


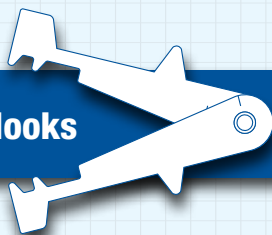
Cascade caliper measuring points.

Markings

Check for marking (stamping).

If the fork identification marking is not clearly readable, it should be renewed.





Check for wear/straightness of fork hooks.

Use the end of the caliper designed for your fork class. With the caliper positioned approximately 3/4" (19 mm) in from the side of the hook, slide the caliper into the hook pocket. If the lip of the hook contacts the back of the caliper (Diagram B) the fork must be removed from service.

Diagram A

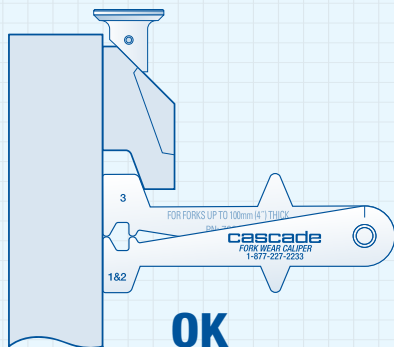
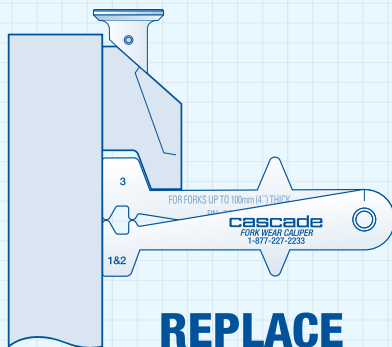
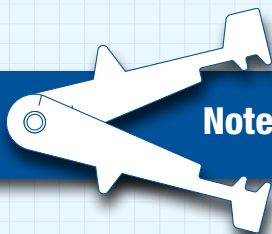


Diagram B







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