



Terex Utilities

Product Advisory

PA 1016-08

DATE: 1/04/08

REVISED: 4/11/17

TO: ALL DISTRIBUTORS, OWNERS AND USERS

SUBJECT: TURNTABLE BEARING BOLT INSPECTION (ALL UNITS)

Issue:

Inspection of turntable to bearing and pedestal to turntable bearing bolt torque. The fasteners connecting the upper rotating structure to the turntable bearing and the turntable bearing to the pedestal are very important fasteners that must be inspected and maintained periodically as specified in the Operators and Maintenance Manuals. If one or more bolts loosen or stretch, the loading is transferred to the adjacent bolts making them support more than their share of the load. Should the unit be allowed to operate in this manner the fasteners will eventually fatigue and failure occur.

Failure to properly inspect and maintain fasteners can result in failure of the fasteners and the booms falling.

Action:

To prevent failure of the turntable bearing fasteners they must be inspected at intervals specified in the Operator's and Maintenance Manuals for the unit. This requires:

- Daily visual inspection for loose or missing fasteners.
- Periodically verify the torque of all turntable bearing bolts.

Daily visual inspection is looking for:

- Missing or broken fasteners.
- Loose washers or gaps under fastener heads.
- Indications of looseness such as shiny areas on washer or mounting surfaces.

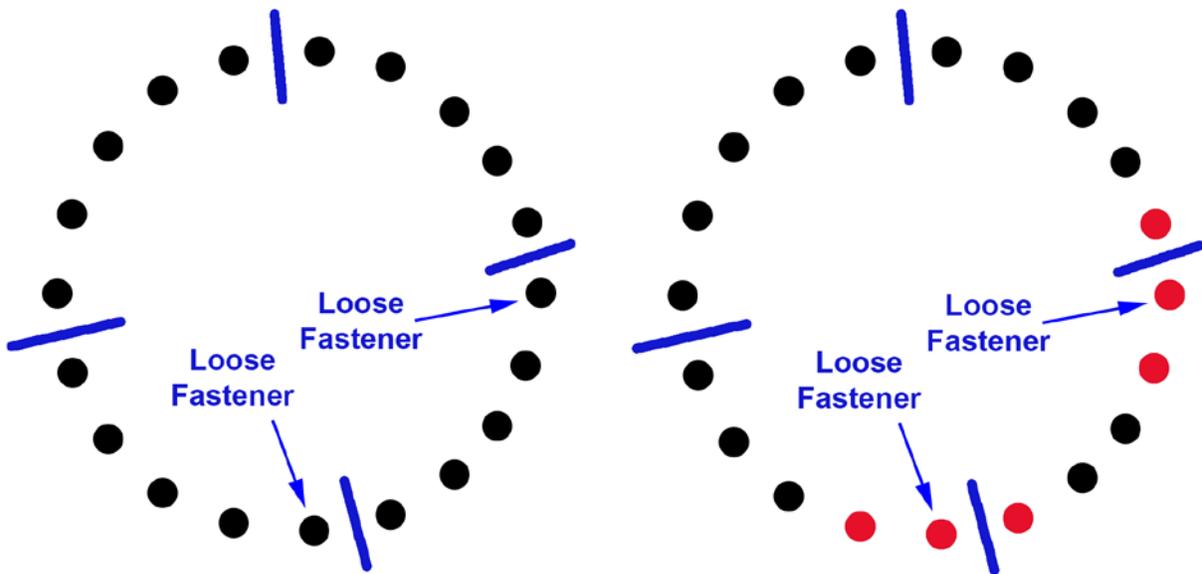
If any of the above are observed do not continue operation. Notify the appropriate people in your company and have the machine repaired, it is not safe to use. Check the torque on all bearing fasteners and correct as required.

The daily and periodic inspection also must include a visual inspection of all pins, retainers and other fasteners in addition to the turntable bearing fasteners.

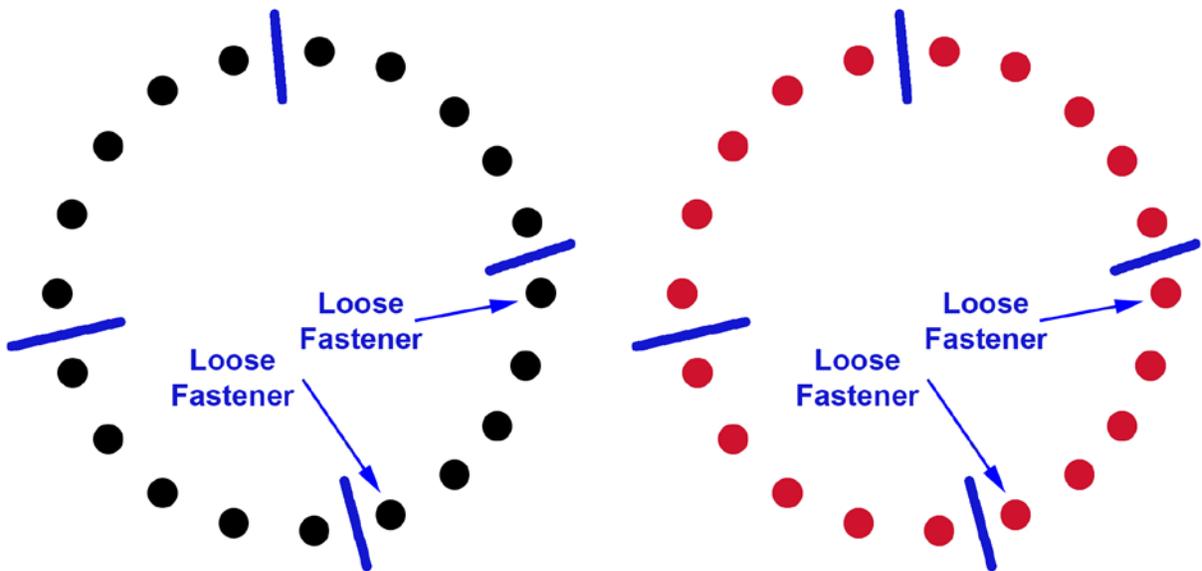
Verify the torque of the turntable bearing fasteners at 180 day intervals, (or by hour of operation for your specific unit), to the torque shown in the Maintenance Manual for the specific unit.

- Use a calibrated torque wrench. It can be a click or dial type.
- Use extensions, socket, or crowfoot wrenches as required.
- Determine the proper torque from the Maintenance Manual.
- Check ALL bearing fasteners, turntable to bearing and bearing to pedestal. The number of fasteners will vary by model. If items prevent access to the bolt head with a socket it will require using a crow foot wrench or removing the item that interferes. When a crow foot wrench is used the torque setting of the torque wrench must be adjusted to account for the variation in leverage. See the information supplied with your torque wrench to determine adjustment.
- Mark a corner of the fastener to determine movement. Apply the torque to the head of the fastener, slowly increase the torque on the fastener until the torque wrench clicks or shows you have reached the required torque. Do not exceed the torque value in the Maintenance Manual. Do not jerk the wrench. If the fastener does not move continue to next fastener.
 - First torque check at 180 days: Due to variations in torque wrench calibrations at the first 180 day torque interval if the fastener moves less than 1/8" measured at a point of the hex and holds torque mark this fastener and continue to the next fastener.
 - Torque checks after first check: Any torque checks after the first 180 day interval if the movement at a point is less than 1/16" and it holds torque mark the fastener and continue to the next. If the fastener moves at the next torque interval it must be replaced.
- If the fastener does not hold torque or moves more than allowed it must be removed and replaced. Also the fastener on each side of this fastener must be replaced. If the fastener is a bolt using a nut, both bolt and nut must be replaced. We recommend using only Terex Utilities supplied fasteners to ensure the proper grade and reduce the chance of counterfeit fasteners. There are several finishes used on fasteners that cause the tension to vary. Replace fasteners only with the same grade and finish. All fasteners, washers, and nuts on a bolt circle must be the same finish.
- If 2 or more individual fasteners do not hold torque or move more than allowed each must be removed and replaced. Also the fasteners on each side of these fasteners must be replaced. If the 2 loose fasteners are in the same 90 degree quadrant, then all of the fasteners in the ring must be replaced.

For example, if there are 20 fasteners in the upper rotation bearing ring, then the loose fasteners must have at least 4 fasteners between any loose fasteners that hold torque.



Loose fasteners are in different quadrants, replace each fastener and the fastener on both sides.



Both loose fasteners are in the same quadrant. Replace all fasteners in the ring.

- The bolting surfaces, holes and threads must be cleaned thoroughly before installing a new fastener.
- Lubricate fastener with appropriate lube shown in the Maintenance Manual when replacing all fasteners. Use the same lubricant as on the bolt being replaced, if only replacing a single fastener, to ensure applying the same preload as the other bolts in that bolt circle.
- Washers, if used with bearing fasteners, are only hardened flat washers. Do not use lock washers. Replace the washer if damaged.
- Replace all covers and items moved or removed and verify operation before returning to service.
- Document the service performed as required by ANSI A92.2 and A10.31.

Torque intervals:

- The Frequent and Periodic inspection intervals for turntable bearing fasteners is to check the torque at the 180 day intervals.
- This 180 day interval can be increased to annually only if all fasteners do not move on two successive 180 day torque inspections
- If at subsequent annual inspections any fasteners move the interval must be reduced and performed at the 180 day interval until the fasteners do not have movement during two successive torque inspections. Then the interval can be increased to annually.
- When the turntable bearing, weldments, or fasteners are replaced the same criteria would apply as for new machines. The torque must be checked at 180 day intervals. If two successive torque checks at 180 day intervals do not have any fastener movement the interval can be increased to annually.

The information above is related to the turntable bearing fasteners. The daily visual inspections, continuous observation for unusual noise or operation, and following the maintenance Frequent and Periodic Inspection Intervals apply to all fasteners, pins and pin retainers of all units.

It is the position of Terex South Dakota that all Critical fasteners should have the torque checked to 100% of their installation torque during the periodic inspections (typically 6 months). We are aware that some owners have policies of checking torque of critical fasteners to a value less than the recommended installation torque. Equipment owners who have documentation of torque testing at 90% of the installation torque for each individual piece of equipment will be accepted as meeting the current Periodic requirement. Future Periodic testing should be done at 100% of the installation torque.