

Inspection Procedure

The inspector must carefully examine all areas of the concrete placing boom and outrigger assembly looking for signs of potential problems. These signs would include cracks, cracked paint, rust, bent or distorted metal, failed pin restraints, loose or missing bolts, missing grease zerks, hydraulic oil leaks. The inspector must pay close attention to:

1. Welds
2. Joints where boom sections meet
3. Hydraulic cylinder attachment points
4. Pipe mounting brackets
5. Outrigger stress points
6. Stress concentration points where road shocks may be transmitted to boom structural members

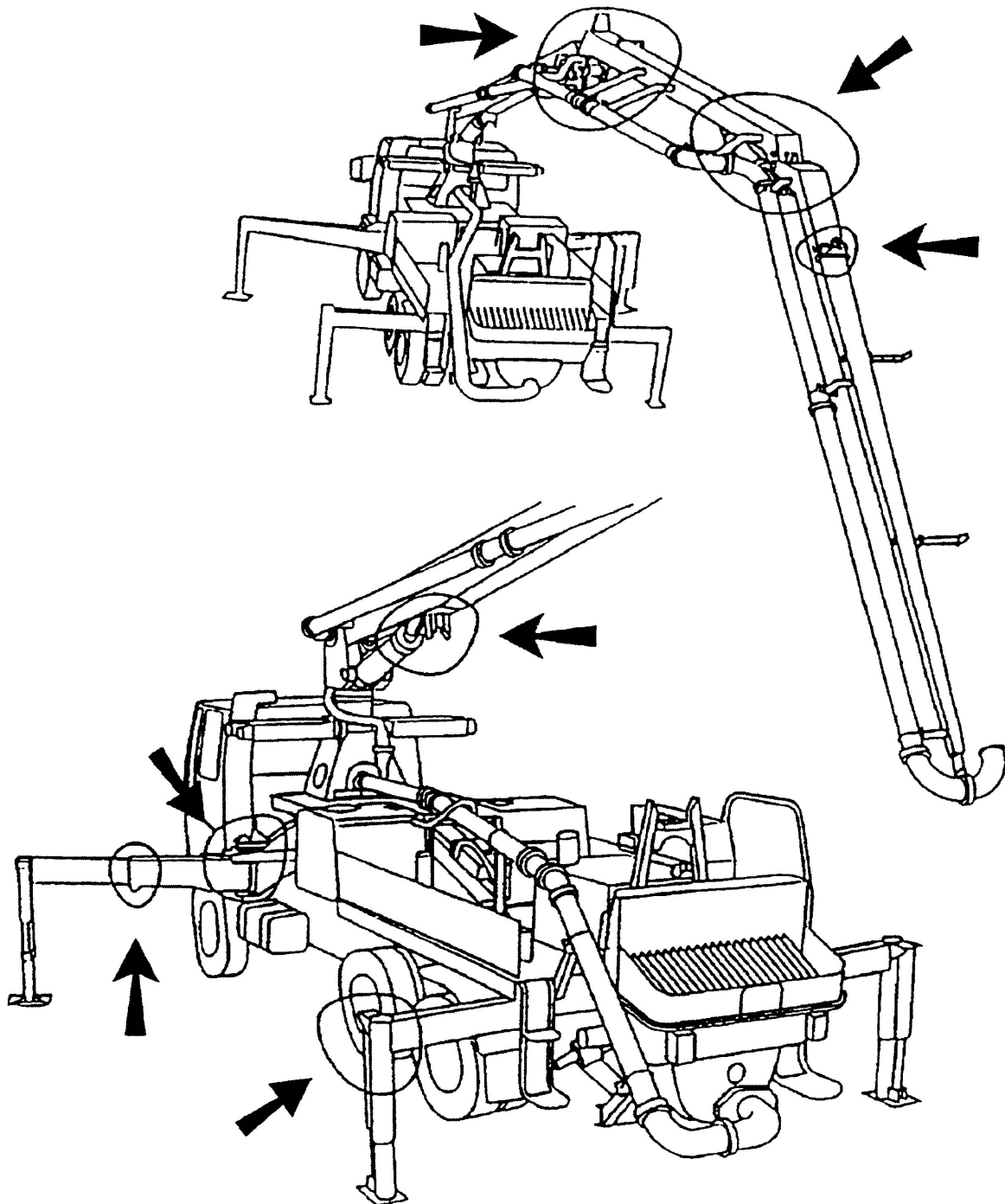
The following page shows a typical concrete placing boom with important areas circled. These areas are only the most common problem areas. Other problem areas may exist.

When the inspector encounters cracks in the paint, he must remove the paint to inspect the metal underneath. Using the portable light and magnifying glass, the inspector should closely inspect the area. If there is any doubt as to whether the metal is cracked, the inspector may contact a testing laboratory to further test the area using a mag particle test, ultrasound, or x-ray. The inspector must inspect all pins, bushings, and pin retainers.

After checking each area in a static condition the inspector should check for proper operation and lubrication.

A sample checklist may be found on pages 14-16 for recommended guidelines for this inspection procedure.

Inspection of Common Problem Areas



Inspection of Boom Turntable

1. Before determining the wear on the turntable bearing, you must first secure the vehicle on which you will be working. Make sure that you are on solid ground and there is plenty of clearance around the vehicle.

WARNING!!!

Allow yourself enough room to move the boom without causing danger to yourself or others. Set up the outriggers for support, the same as you would for any job.

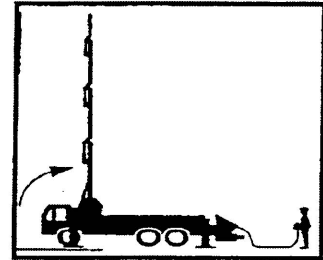


Figure 1

2. Starting with the boom extended over the cab of the truck, raise the boom to an over center vertical position. This will cause the boom to rock backwards on the turntable toward the hopper. (See Figure 1.)
3. Remove the turntable gear shroud and expose the turntable gear.

WARNING!!!

While the turntable shroud is removed from the vehicle, there is potential danger of injury or dismemberment to yourself or others. Use caution at all times and beware of the potential hazards.

4. Once the boom is steady, and is over center with the weight back toward the hopper, locate point "A" on the underside of the turntable. Use a piece of steel back toward the hopper, locate point "A" on the underside of the turntable. Use a piece of steel and clamp it to the turntable shroud support. The location of point "A" must be on the opposite side from the direction the boom will be lowered. This will be the starting point from which you will determine the amount of play in the turntable. Make sure there is no gap between the underside of the turntable gear and the piece of steel clamped onto the shroud support. (See Figure 2).

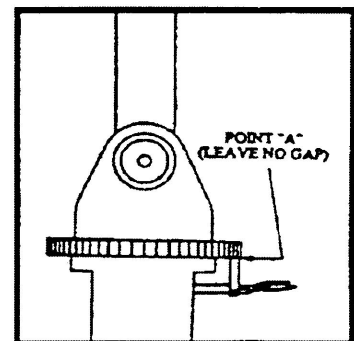


Figure 2

5. After point “A” has been established, lower the boom straight forward into a horizontal position. The weight is now transferred to the front of the turntable gear. (See Figure 3.)

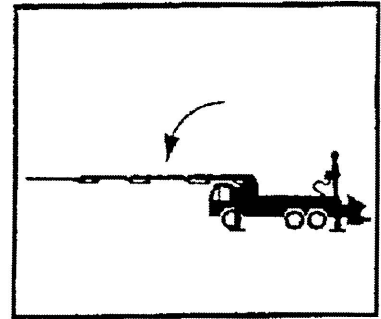


Figure 3

6. Using a feeler gauge, measure the difference between point “A” and the underside of the turntable. If the clearance is less than 1/16” or .060 (1.6mm) then the bearing is within the safety margin, and continue with the next step. However, if the play is greater than 1/16” or .060” (1.6mm) then it is beyond the safety margin and is in need of replacement. (See Figure 4.)

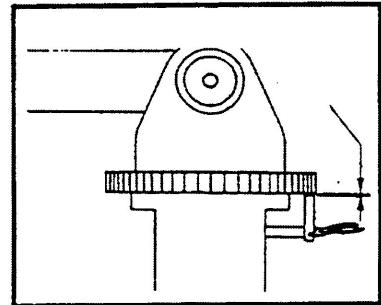


Figure 4

Pin and Bushing Inspection Procedure

With the boom extended, use a pin type feeler gauge to check the clearance on the unloaded side of each pin and bushing, and on each swivel pin and bushing. You may need to move the boom into different positions to gain access to each pin and bushing. For pins that are between two ears where the edge of the bushing is not accessible, you must use a magnetic dial indicator to the boom section so that the indicator can touch the area to be measured. Gently run the cylinder one direction to take all the clearance out of the pin and bushing. Set the indicator to zero and gently run the cylinder the opposite direction. Note the movement on the indicator dial. This is the clearance in the pin and bushing.

Inspecting Gear Lash

1. After you are finished inspecting the turntable play you must inspect the drive gear lash. Return the boom to the vertical position.
2. Once the boom is steady, use a pry bar and rotate the slewing drive gear so that the side of the slewing drive gear tooth is in solid contact with the side of the accompanying turntable. This will leave the total gap on the opposite side of the slewing drive gear tooth.
3. Using a feeler gauge, measure the gap between the gear teeth. This is the gear lash. If the clearance is less than .2 mm (.008 inches), or greater than .8mm (.031 inches), then the gear lash is in need of adjustment. (See Figure 5.)
4. Continue the inspection, checking the tolerance in at least 8 different locations, by rotating the boom in 45° increments and repeating steps 2 through 3. If at any time the gear lash is greater than .8mm (.031 inches) or less than .2mm (.008 inches), adjust the gear lash using the manufacturer's recommended procedures for proper adjustment.
5. Once the inspection is complete, and the gear lash is satisfactory, replace the turntable shroud and slewing drive gear shroud, if applicable.

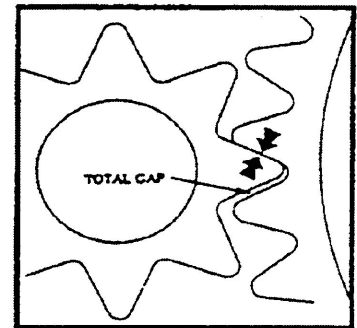


Figure 5

WARNING!!!

To prevent any danger to yourself or others and to protect the gears from damage from any foreign objects or debris, replace the protective shrouding for both the turntable and the slewing drive gear. If the gear lash is in need of adjustment, refer to the manufacturers maintenance manual for the adjustment procedure.

Instructions

Using the sample checklist on pages 14 through 16 proceed to inspect the boom using the procedures found in this booklet as outlined below.

ITEM 1

Use decal list page 17 and location list page 18 to insure all decals are legible and in proper location. Check that all items are present and functional. Note if repair or replacement is required.

ITEMS 2-9

Inspect as described on page 7. Check also for proper operations and lubrication.

ITEMS 2 AND 3

Check for proper operation and ease of extension. Confirm that proper locking devices to restrain outriggers when traveling or pumping are in place and functional. Pay careful attention to area where outriggers meet tower base.

ITEMS 5 AND 6

Inspect as described on page 7. Check condition of turntable or pedestal bushing, on pages 10-12. If pedestal style, clearance on side opposite extended boom should not exceed 1 7/8" (.125"). If clearance is excessive replacement of pedestal bushing is recommended.

On turntable bearing units, check for excessive play in the bearing by following the procedures on pages 10-11 of this booklet.

ITEMS 6 – 9

Inspect boom sections as described on pages 7-8. Check for completeness and for proper operation. Check pins and bushings for excessive clearance and evidence of wear as described on page 11. Clearance should not exceed the table below. If clearances are excessive, pins and/or bushings should be replaced.

1.5% of bore diameter up to 3"
1.25% of bore diameter 3" to 5"
1.0% of bore diameter over 5"

ITEM 10

Check for proper assembly and completeness including clamps, seals, safety cables, pins, U bolts, etc. Check that all nuts and bolts are present and tight. Check for proper safety sling or cable. Remove clamps on all rotating pipeline joints. Check alignment of flanges while the boom is folded and unfolded. Pipeline flanges should line up within 1/8 inch. Adjust as necessary.