

Group Category: **TC TESTING & CONTROL**Subject: **MASTEC Bin lift Cycle Test – 240 & 140 litre bins**Writer: **PHILIP ALLEN**Authorised by: **DARRIN PRITCHARD****TEST 1: 240 LITRE BINS****Introduction**

Waste & Recycling Supplies (WRS) are local manufactures of 240 litre mobile garbage bins (MGB). Currently they produce a 240 litre MGB distributed into the Australian waste industry for mostly domestic waste service. The predominant method of waste collection is by use of a side loading compactor with robotic arm. WRS requested MacDonald Johnston Engineering (MJE) to conduct a bin lift cycle test to determine the bins durability in this service.

Method

A standard 240 litre green MASTEC bin was supplied to MJE to conduct the testing. Serial No: 04585

The test bin was loaded with 75 kg of material to a height of 220 mm below the top of the bin. Material in the bin was a combination of hard wood blocks, cardboard & bubble wrap.

The load was secured with two lengths of 9 mm screwed rod retaining a sheet of pine board. As depicted in fig 1.

Figure 1**Test Cycles**

The test bin was cycled through 500 individual lifts.

This included:

- Open and close of the grab on the bin body
- Placement of the bin on the ground between each lift
- Lift and rotate to horizontal at the hopper opening at full lift height

During the testing the bin was picked up incorrectly positioned in the grab causing the bin lid to contact the hopper. This caused slight distortion to the bin lid and movement of the bin lid hinge pins. This occurred at lift number 302.

Drop Test

The test bin was raised to a height of 1.5 meters above floor level and released from the bin lifter grab. This test was done two times.

Equipment

The test was performed using a MacDonald Johnston Mk IV side loading compactor.
Tests were conducted at MJE South Australia Branch between 26th of December 2003 and 2nd January 2004.

Results & Observations

As depicted in Figures 2 and 3, the bin was intact and in serviceable condition after testing.

Figure 2 Front view**Figure 3 Rear View**

There was no cracking or splitting of the bin in any area, however slight indentations in the bin walls where the grab gripped the bin were apparent.

Conclusion

The test bin indicated that it is more than adequate for operation in conjunction with a lifter, grab and hopper design similar to the MJE Mk IV side loader for a minimum of 500 lift cycles.

TEST 2: 140 LITRE BINS**Introduction**

Waste & Recycling Supplies (WRS) are local manufactures of 140 litre mobile garbage bins (MGB). A 140 litre MGB has been developed for distributed into the Australian waste industry for mostly domestic waste service. The predominant method of waste collection is by use of a side loading compactor with robotic arm. WRS requested MacDonald Johnston Engineering (MJE) conduct a bin lift cycle test to determine the bins durability in this service.

Method

A standard 140 litre green with yellow lid MASTEC bin was supplied to MJE to conduct the testing. Bin ID: Sample bin no ID records

The test bin was loaded with 65 kg of material to the top of the bin. Material in the bin was a combination of hard wood blocks, cardboard & bubble wrap. The load was secured with two lengths of 9 mm screwed rod retaining a steel plate. As depicted in Figure 1.

Figure 1**Test Cycle**

The test bin was cycled through 500 individual lifts.

This included:

- Open and close of the grab on the bin body.
- Placement of the bin on the ground between each lift.
- Lift and rotate to horizontal at the hopper opening at full lift height.

Drop Tests

The test bin was raised to a height of approximately one (1) metre above floor level and released from the bin lifter grab. This occurred due to incorrect clamping of the bin and would closely simulate real working conditions. This test was done a minimum of 20 times.

Equipment

The test was performed using a MacDonald Johnston Mk IV side loading compactor.
Tests were conducted at MJE South Australia Branch progressively over the first three weeks of September 2004.

Results & Observations

As depicted in Figures 2 and 3, the bin was intact and in serviceable condition after testing.

Figure 2 Front View**Figure 3 Side View**

There was no cracking or splitting of the bin in any area, however slight indentations in the bin walls where the grab gripped the bin were apparent. Due to the relatively high weight in the bin the unit slipped through the grab and stopped at the bin stacking stops. This caused slight distortion of the stops. No structural damage to the bin.

Conclusion

The test bin indicated that it is more than adequate for operation in conjunction with a lifter, grab and hopper design similar to the MJE Mk IV side loader for a minimum of 500 lift cycles.

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