



RE: Lower operating costs through weight  
reduction - Garbage Collectors

Purpose: The following discusses the cost savings advantage gained by using lighter weight, hi-payload garbage compactors.

Introduction: The technical paper "Equipment Productivity Improvement by Weight Reduction" by Nicholas S. Bekessy - Product Development Manager Alcan Canada Products Extrusion Division, discusses the cost affect of weight reduction in municipal transportation equipment.

Mr. Bekessy points out that "The use of energy in transportation equipment is directly related to the weight of the vehicle. In fact research on trucks and trailers illustrate that during the lifetime of a truck, EACH POUND of weight reduction saves about ONE and ONE QUARTER IMPERIAL GALLON of fuel per 100000 miles driven."

"The relationship between fuel economy and the weight of the vehicle can be calculated from data supplied by various agencies, such as the U.S. Environmental Protection Agency. They indicate that the average fuel consumption/weight coefficient for speeds of 55-60 MPH (95-100 km/h) is 1.416/100000 U.S. Gal/#/mile (or 7.64/100000 litre /kg/km). Another way is to express this coefficient in terms of ton miles per gallon, which works out to be 35.3 short ton mile per U.S. gallon = 38.54 long ton mile per Imp. gallon (13.642 tonne km/l). From this and other similar equations one can extrapolate possible savings."

Analysis of  
Savings

Using the above data as a guide there are substantial savings to be gained, by using the lightest equipment available for a given payload. The following tables summarize savings that can be realized by using the Jaeger Phoenix series of rear loading compactors when compared to models by other manufacturers.



PAYLOAD RANGE

12,000# - 15,000#

The following units can pack in this range: †

- Dempster 20 yd<sup>3</sup> DRC - 20 - to 14,000#
- Leach 20 yd<sup>3</sup> Sanicruiser - to 14,000#
- E-Z Pak 20 yd<sup>3</sup> C-200-20 - to 12,000# - 16,000#
- Heil 20 yd<sup>3</sup> Model 4000 - to 14,000#
- Jaeger 2M10 - 14,000# - 15,600#

<u>Manufacturer</u>	<u>Body Weight (lbs)</u>	<u>Difference (lbs)</u>	<u>Estimated Extra Fuel Cost/Year \$ *</u>
Jaeger 2M 10	8,600	-	-
Dempster DRC-20	9,800	1200	\$ 1080
Leach-20-Sanicruiser	11,690	3090	2780
E-Z Pak C-200-20	9,800	1200	1080
Heil 4000	9,900	1300	1170

\* - Per attached calculation and assumptions - Table 1

† - Reference Waste Age - June 1984

PAYLOAD RANGE

16,000<sup>#</sup> - 19,000<sup>#</sup>

The following units can pack in this range: ††

Dempster DRK - 20 yd <sup>3</sup>	- to 20,000 <sup>#</sup>
Leach 2R - 20 yd <sup>3</sup>	- to 20,000 <sup>#</sup>
E-Z Pak C-200-25 yd <sup>3</sup>	- 15,000 - 20,000 <sup>#</sup>
HC-250-20 yd <sup>3</sup>	- 16,000 - 20,000 <sup>#</sup>
Heil 5000 - 20 yd <sup>3</sup>	- 16,000 - 20,000 <sup>#</sup>
Jaeger 2M12	- 17,000 - 19,000 <sup>#</sup>
Jaeger PH15	- 16,000 - 20,000 <sup>#</sup>

<u>Manufacturer</u>	<u>Body Weight (lbs)</u>	<u>Difference (lbs)</u>	<u>Estimated Extra Fuel Cost/Year \$ *</u>
Jaeger 2M12	9,300	-	-
Jaeger PH15	10,500	1200	\$ 1080
Dempster DRK-20 yd <sup>3</sup>	12,500	3200	2880
Leach 2R-20 yd <sup>3</sup>	13,700	4400	3960
Heil 5000 20 yd <sup>3</sup>	12,100	2800	2520
E-Z Pak C-200 25 yd <sup>3</sup>	10,300	1000	900
HC-250-20 yd <sup>3</sup>	12,400	3100	2790

\* - Per attached calculation and assumptions - Table 1

†† - Reference Waste Age - June 1984

PAYLOAD RANGE

20,000<sup>#</sup> - 24,000<sup>#</sup> †

The following units can pack in this range:

Dempster 25 yd <sup>3</sup> DRC-25	- to 25,000 <sup>#</sup>
Leach 25 yd <sup>3</sup> 2R	- to 25,000 <sup>#</sup>
Heil 25 yd <sup>3</sup> 5000	- to 25,000 <sup>#</sup>
E-Z Pak 25 yd <sup>3</sup> HC-250-25	- to 25,000 <sup>#</sup>
Jaeger PH18	- to 24,000 <sup>#</sup>

<u>Manufacturer</u>	<u>Body Weight (lbs)</u>	<u>Difference (lbs)</u>	<u>Estimated Extra Fuel Cost/Year \$*</u>
Jaeger PH18	11,300	-	-
Dempster	13,400	2100	1890
Leach 2R	14,200	2900	2610
E-Z Pak HC-250	13,100	1800	1620
Heil 5000	12,900	1600	1440

\* - Per attached calculation and assumptions - Table 1

† - Reference Waste Age - June 1984

PAYLOAD RANGE

25,000# - 30,000# †

The following units can pack in this range:

Dempster 32 yd <sup>3</sup> DRK-320	- to 32,000#
Leach 31 yd <sup>3</sup> 2R	- to 31,000#
E-Z Pak 32 yd <sup>3</sup> HC-250-32	- to 32,000#
Heil 32 yd <sup>3</sup> 5000	- to 32,000#
Jaeger PH23	- to 30,000#

<u>Manufacturer</u>	<u>Body Weight (lbs)</u>	<u>Difference (lbs)</u>	<u>Estimated Extra fuel Cost/Year \$ *</u>
Jaeger PH23	12,300	-	-
Dempster DRK-320	15,500	3200	2880
Leach 2R	15,750	3450	3105
E-Z Pak HC-250-32	13,750	1450	1305
Heil 5000	14,800	2500	2250

\* - Per attached calculation and assumptions - Table 1

† - Reference Waste Age - June 1984

FUEL SAVINGS CALCULATION - CANADIAN DOLLARS

- Assumptions:
1. Diesel engine driven truck.
  2. Diesel fuel cost \$2.30/Imp. Gal. average cost.
  3. Average truck usage 50,000 km/year (30,000 miles)

- Fuel saved per # of weight reduction =  $1\frac{1}{4}$  Imp. Gal. per 100,000 miles driven.

- Annual savings per 1000<sup>#</sup> of weight reduction per mile.

$$\frac{1.25 \times 1000}{100,000} \times \$2.30/\text{gal.} = 3\text{¢/mile}$$

- For 30,000 miles savings per 1000<sup>#</sup> =  $30,000 \times .03 = \$900.00$  per year