OPPORTUNITIES FOR PASSENGER CAR JACK MANUFACTURE IN CANADA

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By: Kates, Peat, Marwick & Co.

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PLEASE NOTE

This report has been edited, where necessary, to remove comments and data that are classed as confidential. In the interest of efficiency, this has been done by simply removing small sections of the report. As a consequence, there are some blank spots which, we hope, will not interfere with the readability of the report.

Department of Regional Economic Expansion

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I - SUMMARY

The objective of this business analysis is to determine the scope for and nature of additional facilities for the manufacturer of passenger car jacks in Canada. Special emphasis is placed on the locational preferences of such facilities in any of the designated areas within Canada.

PRESENT MANUFACTURING CAPACITY

For the purposes of this research, the total passenger car jack market is segmented into the automobile original equipment and after-markets. The total annual domestic market for passenger car jacks is approximately 1.2 million units which is equivalent to sales of $2.6 million. This market is dominated by one company which holds approximately 50-60 per cent of the original equipment market. The after-market is supplied by a few producers who are capable of increasing their outputs as market demand increases. In addition to companies which manufacture passenger car jacks at present, there are approximately 90 metal stamping operations which could easily increase their product line to include jacks.

Therefore, we conclude that potential production capacity of passenger car jack manufacturers within Canada is sufficient to supply the domestic markets for both the original equipment and after-markets now and over the immediate future.

NEW ENTRANTS

A new entrant, which is based on a single product line, into the passenger car jack manufacturing field would be impractical at this time. Such an entrepreneur would have to sell the product at a lower price than the competition which require higher manufacturing efficiency. Since jack production is highly mechanized and the labour content is relatively small, production cost efficiencies would have to result from large economies of scale which would require considerable investment. It is recognized within the industry that such production efficiency is obtained through annual volumes in excess of 1 million units. The Canadian market could not support this additional capacity which would quite likely depress product prices in such a fashion that the profitabilities of all producers would be lowered beyond an acceptable equivalent rate of return for new and existing investments in facilities. Since the total original equipment market is dominated by four motor vehicle manufacturers, a one product item new entrant would face a high business risk (the loss of one customer could result in an unprofitable operation).

The practical way to expand the Canadian passenger car jack production capacity is to possibly replace the present importation of approximately 0.7 million units, mainly from the United States, and would be to encourage an existing efficient metal stamper to expand his present product lines to include the supply of jacks to the original equipment market. Machinery and mechanical skills similar to those currently

in use could be utilized. The only additional investment would be in working capital and some specialized equipment.

The requirements for Canadian content in motor vehicles as specified by the North American Automotive Trade Agreement would serve as a basic incentive in entering this market. An expected net profit from the total supply of 0.5 million units would be in the order of $50,000 (i.e. five per cent net profit in sales).

CONCLUSIONS

Our major conclusions are that:

- the original equipment market accounts for 90 per cent of the market which the after-market accounts for 10 per cent of the market
- the total Canadian market is approximately 1.2 million units ($2.6 million) and is increasing at an annual rate of growth of 6-7 per cent
- market conditions do not warrant the entry of a new single product line manufacturer of passenger car jacks for the Canadian market over the forseeable future
- the Canadian imbalance of trade of passenger car jacks (approximately 40 per cent of the domestic consumption) may be best supplied by broadening the product line of existing jack manufacturers or adding another product line to an efficient large scale metal stamping operation
- the preferred location for increased passenger car jack production facilities is in close proximity to the automobile final assembly plants, namely the Montreal-Windsor axis.

II - INTRODUCTION

This report presents the results of a brief analysis of the passenger car jack market in Canada and current manufacturing capacity.

The primary objective is to determine the scope and nature of additional manufacturing capacity of automobile jacks in designated areas within Canada.

APPROACH

Because of the general lack of published information on this subject, all estimates were derived indirectly. These estimates were then cross-checked for consistency and accuracy with senior representatives of the automotive industry.

In order to determine the passenger car jack market and industry structure, discussions were held with the purchasing departments of all automobile manufacturers, major wholesale and retail distributors, and automobile industry associations in both Canada and the United States. Interviews were also conducted with former and present passenger car jack manufacturers. Numerous contacts were made with the provincial and federal governments.

TABLE 1

REPRESENTATIVE RETAIL PRICES OF PASSENGER CAR JACKS (AUTOMOTIVE)

1. HYDRAULIC JACKS

	CAPACITY	PRICE
1.	1½ tons	$12.29
2.	3 tons	16.39
3.	5 tons	19.79
4.	8 tons	22.69
5.	12½ tons	28.38

2. MECHANICAL JACKS

1.	1½ ton double-screw axle jack	$ 8.95
2.	Chain-lift tripod bumper jack	10.89
3.	Chain-lift twin-leg bumper jack	12.65
4.	Ratchet bumper jack	5.29
5.	"Jackall" jack	20.98
6.	3 ton, axle stand	12.95
7.	Standard model scissor jack	7.95

SOURCE: The Canadian Tire Corporation

III - THE MARKET

THE PRODUCT

A jack is a portable device for lifting heavy loads with little effort in application. This mechanical advantage may be secured by screw, levers, or hydraulic action. Jacks have automotive, industrial, and general lifting applications.

Type of Jacks

The most general classification differentiates mechanical and hydraulic jacks. Mechanical jacks usually have a lower load capacity, while hydraulic jacks are used for loads weighing more than one and a half tons.

The automotive jacks are divided further according to their use or type of design. The following names are commonly employed: bumper jack, body jack, axle jack, transmission jack, ratchet jack, and scissors jack. Passenger cars are usually supplied with a ratchet type of bumper jack. Automotive jacks sold in the after-market are more diverse. For example, the Canadian Tire Corporation supplies eight different types of jacks, priced from $5.29 to $28.39, which have universal applications and fit most cars. Table 1, opposite, illustrates the retail pricing structure for a major automobile after-market mass merchandiser.

THE CUSTOMER

There are three different customer classifications for passenger car jacks. The first classification includes the final assembly operation of such companies as American Motors, Chrysler, Ford and General Motors, which collectively represents the original equipment market. The second classification is represented by the retail chains, such as the Canadian Tire Corporation, Simpson-Sears, and specialized automotive parts dealers which forms the distribution channel for the passenger car jack after-market. Finally, there is the customer who purchases the product from a retail outlet.

Each group of customers is directed by different purchase motives.

Passenger Car Manufacturers

Due to the internal requirement for low levels of inventories and the high volumes of production, motor vehicle final assembly operations develop sophisticated methods of procurement. Their pre-purchase activity is extensive and a supplier is subjected to exacting controls, which include its financial position, production operations, and technical and quality control capabilities. When a supplier meets such standards, he is placed on a bid list compiled for each automotive part. From this list, a supplier will be chosen, if he can provide a product of superior quality and lower price than his competitors. Other considerations include the supplier's ability to deliver a component promptly according to specification and the location. The automotive indus-

try is compelled to control its sourcing costs (parts and assembly F.O.B. final assembly plant) at as low a level as possible.

Retail Chains & Wholesalers

The main purchasing considerations of retail chains and wholesalers are low price which allows for reasonable mark-ups and the quality and the past performance of the supplier.

The Ultimate Consumer

The ultimate consumer buys a car supplied with a jack. This type of tool rarely requires replacement due to excessive wear and tear. Jacks are purchased on the after-market mainly by "do-it-yourself" car owners who are looking for a higher performance product. They are prepared to pay more for a jack of superior mechanical design, versatility, and reduced effort of operation. Safety is also a primary factor in selecting a jack.

THE DEMAND

There is no published market data on the demand for automobile jacks. All estimates herein are made on the basis of new car sales, production, exports and imports, and are calculated on the basic assumption that each new car is equipped with a jack. Thus, the original equipment domestic consumption of jacks is equal to the number of cars produced yearly in Canada. The after-market is estimated as a percentage of the total automobiles of the original equipment market which includes both Canadian production for Canadian usage and the net import of new vehicles.

TABLE 2

CANADIAN PASSENGER CAR PRODUCTION
('000's of units)

Year	Production
1971	1,096*
1970	940
1969	1,025
1968	889
1967	708
1966	684
1965	706
1964	559
1963	532
1962	524

* estimated

SOURCE: Statistics Canada (Cat. No. 42-209)

Original Equipment Market

There are five passenger car final assembly operations in Canada: American Motors, Chrysler, Ford, General Motors, and Volvo. Their 1970 production was as follows:

Passenger Car Production in Canada - 1970

	Units	% of Total
American Motors	43,249	4.0
Chrysler	248,093	23.2
Ford Motor Company	414,398	38.7
General Motors	354,781	33.2
Volvo	7,731	0.7
TOTAL	1,068,251	100.0

The total of 1,068,251 passenger cars produced in Canada represented the domestic passenger car jack market in 1970.

The compounded rate of growth of this market during the period from 1965 to 1970 was 6.6 per cent per year. Illustrated in Table 2, opposite, are the ten year passenger car production rates for Canada.

Based on this trend, the original equipment market for passenger car jacks should grow as follows:

Year	Number of Jacks ('000's)	Unit Price ($)	Total Market ($'000's)
1970	1,068	2.00	2,136
1971	1,138	2.04	2,321
1972	1,213	2.08	2,523
1973	1,293	2.12	2,741
1974	1,378	2.17	2,990
1975	1,469	2.21	3,246

For this projection, the compounded rate of growth of passenger car production during the period 1965 to 1970 was used for a number of units and an increase in the price index for automotive parts of 2.1 per cent per year was applied in the unit price. Naturally, there will be fluctuation in growth rates from year to year and the margin of error could be considerable.

The supply of Canadian manufactured jacks was estimated on the basis of interviews which we conducted with the senior representatives of the automotive industry. It was found that American Motors, Chrysler and General Motors purchase jacks in Canada for almost all of their Canadian passenger car production. Ford buys mainly in the United States and Volvo imports jacks from Sweden. The total passenger car jacks manufactured in Canada for the original equipment market in 1971 was estimated at from 500,000 to 600,000 units.

It was also found that the average manufactured price for the ratchet type of bumper jack, usually supplied by the car manufacturer,

in 1971 was in the order of $2.00. Therefore, the potential original equipment jack market amounted to $2.2 million with the total Canadian production accounting for between $1.0 million and $1.2 million. The difference was imported from the United States.

After-Market

Various passenger car jacks are supplied on the after-market by different manufacturers in Canada, the United States, and overseas. Contrary to the original equipment market which consists of one type of jack (the ratchet bumper jack), the after-market jacks are diverse in order to meet the different needs of the consumer. For example, the leading company in this field, Auto Specialities Manufacturing of St, Joseph, Michigan, produces 22 types of jacks which are as follows:

- seven types of hydraulic jacks
- three types of ratchet bumper jacks
- two types of bipod bumper jacks
- three types of tripod bumper jacks
- five types of scissors jacks
- two types of car stand jacks.

Automotive industry estimates of the after-market size for passenger car jacks as expressed by three different sources ranged from 10-15 per cent of new passenger car sales in Canada. If this assessment is correct, the after-market for passenger car jacks would be from 78,000 to 117,000 units in 1971. Most jacks are priced by manufacturers from $2.30 to $5.50, the average being $3.90. The total after-market,

TABLE 5

JACKS FOR MOTOR VEHICLES AND PARTS
IMPORTS, FREE, AND DUTIABLE

Country	1970		1969		1968		1967		1966		1965		[illegible]	
	Free	Dutiable	Free	Dutiable	Free	Dutiable	Free	Dutiable	Free	Dutiable	Free	Dutiable	[illegible]	[illegible]
United Kingdom	172	$ 29,600	-	$ 27,486	-	$ 14,983	-	$ 3,524	-	$ 6,384	877	$ 5,295	-	[illegible]
France	-	164	-	-	-	2,792	-	388	-	349	-	400	-	[illegible]
Germany Fed. Rep.	-	2,076	-	1,941	-	2,313	-	2,739	-	933	-	[illegible]	-	[illegible]
Italy	-	165	-	612	-	-	-	-	-	-	-	-	-	[illegible]
Spain	-	1,791	-	1,706	-	-	-	-	-	-	-	-	-	-
Sweden	-	110,041	225	33,124	214	90,698	-	49,310	-	51,206	-	64,024	-	[illegible]
Rep. South Africa	5,210	86,771	-	82,110	-	66,993	-	18,057	-	3,731	-	-	-	-
Japan	-	51,687	-	70,506	-	35,792	-	36,372	-	15,325	-	24,545	-	[illegible]
Australia	-	10,982	-	3,873	-	10,301	-	1,375	-	3,449	-	1,952	-	[illegible]
United States	2,063,778	194,334	1,992,489	262,566	1,452,983	248,331	719,482	235,767	644,642	238,851	256,753	[illegible]	[illegible]	[illegible]
TOTAL	2,069,160	487,589	1,992,714	483,924	1,453,197	472,203	719,482	347,532	644,642	320,228	257,630	[illegible]	[illegible]	[illegible]

SOURCE: Statistics Canada (Cat. No. 42-210)

TABLE 4

IMPORTS OF JACKS FOR MOTOR VEHICLES AND PARTS IN CANADA - 1971

Country	Value ($'000's)	% of Total
United Kingdom	24	0.008
West Germany	2	-
Sweden	144	4.8
South Africa	124	4.1
Japan	83	2.7
Australia	6	0.002
United States	2,606	87.2
TOTAL	2,988	100.0

SOURCE: DBS Catalogue 65-007

TABLE 3

NEW PASSENGER CAR SALES IN CANADA

UNITS

Year	Canadian & U.S. Manufactured	Overseas Manufactured	Total
1971	592,319	188,443	780,762
1970	497,185	143,175	640,360
1969	638,270	122,533	760,803
1968	637,393	104,522	741,915
1967	605,049	74,386	679,435
1966	626,986	67,834	694,820
1965	633,641	75,075	708,716

SOURCE: Statistics Canada (Cat. No. 63-208)

therefore, is estimated to vary between $304,000 and $456,000.

The growth rate of this market is difficult to assess. In all likelihood, the rate is related directly to the rate of new cars sold each year in Canada, which equals 2.4 per cent. Illustrated in Table 3, opposite, are the results for new car sales in Canada from 1965 to 1971.

If this trend continues, the after-market for passenger car jacks will grow as follows:

Year	Units	Price ($)	Value ($)
1971	97,500 (average)	3.90	380,250
1972	99,840	3.98	397,363
1973	102,236	4.06	415,078
1974	104,689	4.14	433,412
1975	107,202	4.23	453,464
1976	109,774	4.31	473,125

Imports & Exports

Table 4, opposite, illustrates the imports of all motor vehicle jacks including passenger car jacks and their parts by country of origin in 1971. Table 5, opposite, shows a breakdown of imports that are free and dutiable during the period from 1964 to 1970. It should be noted that the Statistics Canada classification combines all automotive jacks and their parts together. A further more precise classification is difficult to obtain.

According to industry sources, passenger car jacks make up approximately 60 per cent of total imports, the balance being designated to motor trucks and service stations. In 1970, about 620,000 passenger car jacks, valued at $1.2 million, were imported for the original equipment market, and 74,000 units, valued at $290,000, were imported for the after-market.

The principal imports to Canada were: the United States, Sweden, and South Africa. In terms of value, the United States shipped 87 per cent of total imports in 1971, Sweden 4.8 per cent, and South Africa 4.1 per cent.

Importers in the United States are afforded the privileges of the Automotive Trade Agreement, whereby fabricated components for use as original equipment in the manufacture of motor vehicles are duty free.

The impact of the Automotive Trade Agreement on imports of automotive jacks from the United States was as follows:

Year	Dutiable	Free	Total
		($'000's)	
1964	445	1	446
1965	303	256	559
1970	194	2,063	2,257

TABLE 6

NEW PASSENGER CARS

SALES IN UNITS BY PROVINCES

1971

	Canadian and U.S. Manufactured	Overseas Manufactured	Total	% of Total
Newfoundland	11,363	1,742	13,105	1.6
Prince Edward Island	2,322	846	3,168	0.4
Nova Scotia	17,598	7,815	25,413	3.2
New Brunswick	16,881	5,324	22,205	2.8
Quebec	162,019	47,347	209,366	26.8
Ontario	257,383	68,372	325,755	41.7
Manitoba	24,383	5,079	29,492	3.7
Saskatchewan	20,230	3,382	23,612	3.0
Alberta	40,779	15,032	55,811	7.1
British Columbia	39,361	33,504	72,865	9.3
Total	592,319	188,443	780,762	100.0

SOURCE: Statistics Canada (Cat. No. 63-208)

In 1970, approximately 91 per cent of the United States passenger car imports were duty free as they were designated for the original equipment market.

REGIONAL CONSUMPTION

Plants of passenger car manufacturers, with the exception of General Motors in Quebec and Volvo in Nova Scotia, are concentrated in Southern Ontario between Windsor and Oshawa. Original equipment purchasing functions of all Canadian motor vehicle manufacturers, except General Motors, are located in the United States.

The after-market is widespread through the country and is related to a number of car sales by province. Table 6, opposite, illustrates new passenger car sales by provinces in 1971.

DISTRIBUTION AND MARKETING

Locational patterns and the nature of both markets influence the form of the distribution and marketing of passenger car jacks. The original equipment market jack is sold and supplied directly to car manufacturers which are situated in geographical proximity. The after-market covers the whole country, and, therefore, there is a need for the use of a "middleman" in the distribution of this equipment. Two important distribution channels for this product are: mass merchandising, such as the Canadian Tire Corporation, Simpson-Sears, Woolco, and multiple selling intermediaries, such as automotive warehouses, wholesalers,

and dealers. According to the industry estimates, approximately 65 per cent of the jacks are being sold by mass merchandisers and the other 35 per cent by dealers.

Automotive jacks' manufacturers do not maintain elaborate marketing departments. Main marketing functions are the making and maintaining of contacts with prospective buyers to generate inquiries. Subsequently, bids are submitted, sample service is provided, and changes in design are coordinated. Finally, orders are followed-up and expedited to maintain delivery schedules.

IV - MANUFACTURING

THE PROCESS

The main process in passenger car jack manufacturing is the stamping (that is, the shaping of sheets of metal into desired parts by presses). The production is usually automated and efficient, and does not require much labour.

Modern presses for medium-sized parts are capable of stamping 10 to 20 pieces per minute. A press with an average speed of 15 strokes per minute, working at 80 per cent of its capacity, produces 5,760 parts per day, or approximately 1.5 million pieces per year. This figure represents the minimum efficient size of a plant with a multiple press line. This estimate is consistent with automotive industry source assessments, which indicated that efficient operations for the manufacture of automotive jacks maintain volumes above one million units.

INDUSTRY STRUCTURE AND CAPACITY

Industry Profile

Jacks are usually manufactured by automotive parts producers who have stamping facilities. These firms normally have few product lines and tend to specialize in automotive or other items which have common technological requirements, and call for a high degree of efficiency and high volumes.

TABLE 7

CANADIAN AUTOMOTIVE
JACKS MANUFACTURERS

	Mechanical Jacks	Hydraulic Jacks	O.E.M.	After-Market
BRITISH COLUMBIA				
Cyclos Manufacturing	X		n.a.	n.a.
QUEBEC				
Armstrong Beverley Engineering	X	X	X	X
ONTARIO				
Galt Metal Industries of Canada	X	X	X	X
General Mitch of Canada Ltd.	X		X	X
J.C. Hallman Manufacturing Co.	X			X
L & B Tool and Manufacturing Ltd.	X		X	X
Seeburn Metal Products Ltd.	X		X	X
Vickers Division		X	X	X
Vulcan Equipment Company Ltd.				X

The companies which supply products to the original equipment market sell only their production capacity. Typically, they are given the design of parts, and, quite often, the dies and tooling equipment required to make an item. They operate on yearly contracts. Their production is coupled with the production of car manufacturers. Any changes, such as lower demand for automobiles, new product design, alterations in internal policies, or political developments, may substantially affect this market.

Canadian Production

The Canadian automotive jacks' industry consists of nine establishments, and employs approximately 890 people. It should be noted, however, that each of these companies manufacture on an average of from seven to nine lines of products, (see Appendix A) and the number of employees involved in passenger car jack manufacturing is estimated at approximately 100.

Only one company supplies passenger car jacks on the original equipment market. Other companies provide this product to manufacturers of motor trucks, trailers and campers, as well as to the after-market. Seven of the nine establishments are located in Ontario, one in Quebec and one in British Columbia. Table 7, opposite, illustrates the specific location of the nine establishments along with the employment rates and area of plant.

In addition to companies shown in Table 7, the Canadian Automotive Parts Directory, 1972, lists approximately 90 firms involved in stamping operations.

TABLE 8

ESTIMATES OF MAJOR COSTS IN AUTOMOTIVE JACKS PRODUCTION BY DIFFERENT SOURCES

	Range of Estimates
Sales	100%
Material	40
Labour	15-20
Gross Margin	40-45
Administrative Cost	32-35
Gross Profit	8-10
Income Tax	4-5
Net Profit	4-5

The stamping firm is usually a small to medium-sized corporation, extremely dependent upon a few large customers for its sales. Approximately 75 per cent of these companies had annual sales of less than $2.5 million and employees of less than 100 people each. Approximately 55 per cent of them can produce medium-sized stampings and would have no manufacturing problems with the passenger car jack production. The capacity of this industry could readily accommodate additional passenger car jack production.

COSTS

Manufacturing Costs

In general, manufacturing costs for a jack production operation depend mainly upon the size of the operation, capacity utilization, and the degree of manufacturing skill.

The main production costs of an automotive jack, shown in Table 8, opposite, are calculated as a percentage of sales and are made by different industry sources.

The composition of direct costs varies mainly in relation to the degree of automation of the production line. Labour content decreases if presses are equipped with automatic feeding devices. Administrative costs differ with the size and efficiency of operations. Transportation costs are calculated at approximately 4-6¢ per pound. Profit margins are low, usually in the range of 3-7 per cent of sales.

TABLE 9

MAJOR COST COMPONENTS OF AUTOMOTIVE
JACKS IMPORTED FROM THE UNITED STATES
BY CAR MANUFACTURER, MASS MERCHANDISER, AND DEALER

	Car Manufacturer		Mass Merchandiser		Dealer	
	$	%	$	%	$	%
Manufacturer Price	2.0	100	2.30	100	3.45	100
Import Duty	-		.34	15	.52	15
Federal Sales Tax	.24	12	.28	12	.41	12
Sub-Total	2.24	-	2.92	100	4.11	100
Wholesaler Mark-Up	-	-	2.37	81	1.04	25
Wholesale or Mass Merchandiser Price	-	-	5.29	-	5.15	-
Dealer Mark-Up	-	-	-	-	2.20	43
Final Price	2.24	-	5.29	-	7.35	-

TARIFFS
(MACHINERY NOP 427-00-1)

British Preferential	2½%
Most Favoured Nations	15%
General	35%
Original Equipment Automotive Parts Imported from U.S.	Free

Trade Costs

Table 9, opposite, illustrates the major trade cost components of the most popular ratchet bumper jack. It should be noted that each of the three customers pays a different price to a manufacturer for the same product. The major vehicle manufacturer does not pay duty; the only additional cost is federal sales tax. The mass merchandiser buys high volumes and pays low prices, and charges a mark-up of approximately 80 per cent. The dealer retail price is 40 per cent higher than the price of the mass merchandiser for the same product.

LOCATIONAL FACTORS

From our previous research on the major locational factors for suppliers into the automotive original equipment and after-markets we summarize the following degrees of importance of significant locational considerations.

RELATIVE IMPORTANCE OF
PRIMARY LOCATIONAL FACTORS
FOR AUTOMOTIVE INDUSTRY

Locational Factors	Parts and Accessories	
	O.E.M.	After-Market
Product Distribution	High	Medium
Material Source	Low	Low
Labour	High	High
Fuel and Power	Low	Low
Regional Incentives	Medium	Medium

In the case of the automotive jacks' production, freight costs of steel and finished products increase the importance of proximity to the source of supply and to the market.

According to most of the automotive industry spokesmen, the original equipment market parts and accessories supplier will continue to locate somewhere in between Montreal and Windsor, and most likely in Ontario due to the existing heavy concentration of final assembly operations. The after-market, however, could be served from a number of locations with strong preference given to locations central to large markets such as Ontario and Quebec and competent labour forces. The relative importance of the original equipment market in this case strongly indicates locational preference in the provinces of Ontario and Quebec for any new automotive passenger car jack production capacity.

APPENDIX A

CANADIAN AUTOMOTIVE JACKS MANUFACTURERS

CANADIAN AUTOMOTIVE JACKS MANUFACTURERS

COMPANY	PRODUCTS
Armstrong Beverley Engineering Limited 4001 Cote Vertu Rd. Montreal 383, Que. Tel: 514-332-3760	Hydraulic axle jacks 1.5-100 ton Hydraulic garage jacks 1.5-22 ton Hydraulic transmission jacks Air bumper jacks and end lifts Hydraulic-electric-air presses 15-150 ton Mechanical scissor and bumper jacks
Galt Metal Industries of Canada Limited 385 Dundas St. Galt, Ontario Tel: 519-621-3360	Exhaust systems Hydraulic jacks
General Hitch of Canada Ltd. 95 Erie St. S. P.O. Box 1060 Ridgetown, Ontario Tel: 519-674-5413	Trailer hitches Sway eliminators Stacker jacks Mirrors-finder or door Camper jacks Camper tie-downs Propane bottle racks Trailer jacks Safety chain
J.C. Hallman Manufacturing Company Limited 80 Alpine Road Kitchener, Ontario Tel: 519-743-2681	Mechanical lifting jack
L and B Tool and Mfg. Ltd. 3228 Lenworth Drive Mississauga, Ontario	Stampings

Seeburn Metal Products
Limited
York Street
P.O. Box 460
Beaverton, Ontario
Tel: 705-426-7311

Bumper jacks-cars
Scissors jacks-cars
Window regulators
Hood hinges
Trunk hinges
Automotive stampings
Various assemblies for the auto industry

SOURCE: Canadian Automotive Parts Directory, 1972

APPENDIX B

BIBLIOGRAPHY

BIBLIOGRAPHY

- Canadian Automotive Parts Directory, 1972.

- Canadian Tire Corporation Catalog, 1972.

- Davisson Charles: "The Marketing Automotive Parts" Marketing Business Studies 12, Bureau of Business Research, School of Business Administration Ann Arbor Michigan, 1964.

- Edwards, Charles: "Dynamics of the Automobile Industry", 1965.

- Helmers Henrik: "The United States - Canadian Automobile Agreement" Institute for International Commerce, Graduate School of Business Administration The University of Michigan.

- Royal Commission on Automotive Industry.

- SAE Handbook 1969, Society of Automotive Engineers Inc.

- Samuel Arnold: "The Impact of the Automotive Trade Agreement between Canada and the United States", 1969.

- Statistics Canada publications:

  - The Motor Vehicles Manufacturers (42-209)
  - Motor Vehicles Parts and Accessories Manufacturers (42-210)
  - The Motor Vehicles Sales (63-208)
  - Exports by Commodities (65-004)
  - Imports by Commodities (65-007)

- Third Annual report of the President to the Congress on the Operations of the Automotive Products Trade Act of 1965 - U.S. Government Printing Office 1969

- World Automotive Market Survey McGraw-Hill Publication 1967

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