

# Industry & Trade Summary

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**Forklift Trucks and  
Related Vehicles**

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**OFFICE OF INDUSTRIES  
U.S. International Trade Commission  
Washington, DC 20436**



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## ABSTRACT

This report addresses trade and industry conditions for trucks equipped with lifting or handling equipment, similar vehicles, and parts thereof for the period 1990-94.

- Producers of these products in the United States had annual shipments averaging approximately \$3.0 billion over this period with employment of over 11,000 persons. Imports of these products comprised approximately one-quarter of U.S. consumption of these products; significant quantities came from major producers in Japan, Canada, and the European Union.

- The U.S. duty level for all MFN products covered in this report is free, but certain forklift trucks from Japan are subject to an antidumping order issued in 1988 as a result of affirmative determinations by the U.S. Department of Commerce and the U.S. International Trade Commission under the antidumping law.

The primary U.S. consumers of these industrial trucks include individual business purchasers and fleet owners such as mass merchandisers, food distributors, and large manufacturers. Consumer demand for these trucks closely parallels the condition of the U.S. economy, in particular, investment in gross fixed capital formation and U.S. producers' purchases of durable equipment. Canada, Mexico, and the United Kingdom represented the top three markets for U.S. exports, with total U.S. exports representing approximately one-fifth of U.S. shipments.



## PREFACE

In 1991 the United States International Trade Commission initiated its current *Industry and Trade Summary* series of informational reports on the thousands of products imported into and exported from the United States. Each summary addresses a different commodity/industry area and contains information on product uses, U.S. and foreign producers, and customs treatment. Also included is an analysis of the basic factors affecting trends in consumption, production, and trade of the commodity, as well as those bearing on the competitiveness of U.S. industries in domestic and foreign markets.<sup>1</sup>

This report on forklift trucks, similar vehicles, and parts thereof covers the period 1990 through 1994 and represents one of approximately 250–300 individual reports to be produced in this series. Listed below are the individual summary reports published to date on the electronic technology and transportation sector.

<i>USITC publication number</i>	<i>Publication date</i>	<i>Title</i>
2430	November 1991 .....	Aircraft, Spacecraft, and Related Equipment
2445	January 1992 .....	Television Receivers and Video Monitors
2505	April 1992 .....	Construction and Mining Equipment
2540	July 1992 .....	Photographic Supplies
2648	July 1993 .....	Measuring, Testing, Controlling, and Analyzing Instruments
2674	September 1993 .....	Medical Goods
2708	December 1993 .....	Semiconductors
2728	February 1994 .....	Capacitors
2746	March 1994 .....	Aircraft and Reaction Engines, Other Gas Turbines, and Parts
2751	March 1994 .....	Certain Motor-Vehicle Parts and Accessories
2820	October 1994 .....	Telecommunications Equipment
2821	October 1994 .....	Computers, Peripherals, and Computer Components
2822	October 1994 .....	Audio and Video Recording and Reproducing Equipment
2849	January 1995 .....	Motorcycles and Certain Other Vehicles
2850	January 1995 .....	Computer Software and Other Recorded Media
2851	February 1995 .....	Optical Fiber, Cable, and Bundles
2879	May 1995 .....	Unrecorded Media
2950	March 1996 .....	Office Machines
2954	April 1996 .....	Forklift trucks and Related Vehicles

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<sup>1</sup> The information and analysis provided in this report are for the purpose of this report only. Nothing in this report should be construed to indicate how the Commission would find in an investigation conducted under statutory authority covering the same or similar subject matter.



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## INTRODUCTION

The products covered by this summary include self-propelled trucks equipped with lifting or handling equipment, trucks used in specific types of commercial activity not fitted with lifting or handling equipment, and parts for such vehicles.<sup>1</sup> These vehicles may be powered by either an internal combustion engine or an electric motor and are used in general material-handling capacities, such as stacking and retrieval, and for lighter duty applications in places such as small warehouses. Other vehicles covered in this summary include (1) trucks used in factories, warehouses, dock areas, or airports for short-distance transport of goods and (2) tractors of the type used on railway station platforms (see diagrams in appendix A).

Forklift trucks are differentiated by motive power, lift capacity, location of the operator, type of tires used, and method of offsetting the weight of the payload. The type of motive power selected by the purchaser depends on the service for which the truck is intended. Trucks with internal combustion engines that utilize gasoline, diesel fuel, propane, or compressed natural gas are normally used in outdoor and/or indoor operations where adequate ventilation is available. Additionally, internal-combustion-engine forklift trucks are used when extended length of time in operation is important or when ramps or other heavy-duty applications are employed. Electrically

<sup>1</sup> The Standard Industrial Classification (SIC) category for products covered in this summary is SIC 3537, Industrial Trucks, Tractors, Trailers, and Stackers (pt).

powered forklift trucks use a battery to supply electricity, which limits their usage. Such forklift trucks are generally not suited for outdoor operations because of: (1) their lower material-handling efficiency; (2) the time required to recharge or replace a battery vs. refuel an internal-combustion-engine forklift truck; and (3) requirements for a separate area for changing and charging the batteries and a washing station to clean up battery acid spills.

The automated guided vehicle is a unique type of industrial truck. This truck is typically guided by a wire set into the floor of the area in which it operates. The truck functions by means of a preprogrammed set of instructions implanted in its onboard computer.

A forklift truck may offset its payload weight with either a counterweight attached to the rear of the truck, or arms that extend forward of the truck. Batteries serve as a significant part of the counterweight system for electrically powered forklift trucks. Counterbalanced trucks are popular in operations requiring great mobility, whereas trucks with forward-facing arms tend to be used in warehouses as orderpickers, or trucks that essentially take goods to and from shelves.

The Industrial Truck Association, the U.S. industry's primary trade association, classifies forklift trucks and related vehicles into seven classes, based primarily on their configuration and motive power (table 1). These classes are further subdivided by

**Table 1**  
**Industrial Truck Association classification system**

Class	Motive power	Description
Class 1	Electric .....	Counterbalanced rider or stand-up Three-wheel sit-down
Class 2	Electric .....	Narrow-aisle: High-lift straddle Orderpicker Reach-type outrigger Side-loaders, turret trucks, swing mast and convertible turret/stock picker
Class 3	Electric .....	Low-lift pallet and platform (rider) Hand trucks: Low-lift platform Low-lift walkie pallet Low-lift walkie/center control Reach-type outrigger High-lift straddle High-lift counterbalanced Low-lift walkie/rider pallet
Class 4	Internal Combustion Engine .....	Fork, counterbalanced, cushion tire
Class 5	Internal Combustion Engine .....	Fork, counterbalanced, pneumatic tire
Class 6	Electric or Internal Combustion Engine .....	Tractor, sit-down rider, draw bar pull over 999 lbs.
Class 7	Electric or Internal Combustion Engine .....	Rough terrain forklift truck

Source: Industrial Truck Association, 1994.

lifting capacity; for example, internal-combustion-engine forklift trucks range from 2,000 to 120,000 pounds in lifting capacity, whereas electrically powered forklift trucks typically range from 2,000 to 12,000 pounds in lifting capacity. The majority of U.S. internal-combustion-engine forklift truck production consists of trucks with a lifting capacity of 2,000-15,000 pounds. Forklift trucks utilize either pneumatic or solid rubber (cushion) tires. According to industry sources, cushion tires are more desirable for indoor use and are found on most electrically powered trucks. Pneumatic tires are more suited to varied terrain, as they offer more traction and resiliency in dirt and on asphalt.

Operator-riding (rider) lift trucks are used to reduce operator fatigue in demanding, heavy-duty, or high-volume applications involving a significant amount of stacking or relatively long travel distances. Basic types of rider trucks include counterbalanced and narrow-aisle, such as side-loaders, orderpickers, and turret trucks. The counterbalanced rider truck is the most widely used model for general industrial duty. Narrow-aisle trucks are used in warehouses that have been designed to use less floor space by stacking product vertically along aisles 5 to 10 feet wide. Side-loaders are four-wheeled vehicles used for transporting and stacking long, bulky, difficult-to-handle items. As the name implies, a side-loader truck loads and carries from the side. Orderpicking trucks are used for assembling small quantities of items for use in plant operations or for shipping orders. This truck is basically a narrow-aisle truck with an operator's platform on the forks. The operator rides up with the forks, regulating speed and elevation with onboard controls. Turret trucks have high-lift capacity and some type of rotating fork that permits stacking at right angles to the forward direction of the truck. The production process of forklift trucks is described in appendix B.

During 1990-91, U.S. investment in gross fixed capital formation and the average annual rate of growth of all U.S. producers' investment in durable equipment both declined.<sup>2</sup> U.S. shipments of forklift trucks, similar vehicles, and parts thereof closely followed this trend.<sup>3</sup> However, during 1991-94, U.S. investment in

<sup>2</sup> In constant 1987 dollars.

<sup>3</sup> *Quarterly National Account* (Paris: OECD, 1994), No. 4, p. 60; "Economic Report of the President" (Washington: Feb. 1995), p. 52; and USITC staff estimates.

gross fixed capital formation increased by 14 percent; U.S. producers' investment in durable equipment increased by 13 percent; and U.S. shipments of forklift trucks, similar vehicles, and parts thereof increased by 13 percent.<sup>4</sup> The close relationship among these three variables suggests that the demand for such vehicles is linked to the increase in capital formation, which is, in turn, related to the rise in gross domestic product.<sup>5</sup>

## U.S. INDUSTRY PROFILE

### Industry Structure

In 1992, 432 firms<sup>6</sup> produced forklift trucks, similar vehicles, and parts throughout the United States. Total employment of production workers in the industrial truck and tractor industry was estimated to be 13,200 workers in 1990, before declining to an estimated 11,500 in 1992.<sup>7</sup> The ratio of production workers to all workers remained stable at about 66.0 percent during this period.<sup>8</sup>

As shown in the tabulation below, shipments per production worker increased by 16 percent during 1990-92, while the average hourly wage earned by workers manufacturing forklift trucks, similar vehicles, and parts increased by 7 percent during the same period.<sup>9</sup>

Some of the workers involved in the manufacture of forklift trucks, similar vehicles, and parts thereof were represented by unions during the period. These groups included the Independent Lift Truck Builders (Danville, IL), the United Auto Workers (Detroit, MI), and the International Association of Machinists & Aerospace Workers (Upper Marlboro, MD).

<sup>4</sup> *Ibid.* U.S. shipments by value.

<sup>5</sup> U.S. gross domestic product declined during 1990-91, and rose each year between 1991-94. *Quarterly National Accounts* (Paris: OECD, 1994), No. 4, p. 55.

<sup>6</sup> Of these 432 firms, 159 had more than 20 employees. *1992 Census of Manufactures: Construction, Mining, and Materials Handling Machinery and Equipment* (Washington, DC: U.S. Department of Commerce, Oct. 1994), pub. MC92-I-35B(P), p. 35B-2. Data for number of firms in 1990-91 are unavailable.

<sup>7</sup> *Ibid.*

<sup>8</sup> *Ibid.*

<sup>9</sup> USITC staff estimates based on official statistics of the U.S. Department of Commerce.

Year	All workers	Production workers	Value of shipments per production worker	Production worker's hourly wage	Ratio (percent) of production workers to all workers
1990	20,100	13,200	\$206,667	\$11.00	66.0
1991	17,300	11,400	\$211,052	\$11.73	66.0
1992	17,400	11,500	\$239,739	\$11.75	66.0

Some U.S. industry sources indicate that the cost of product liability proceedings is one of the fastest growing costs of doing business in the industry, and, in some cases, currently exceeds the cost of health care for producers.<sup>10</sup> According to industry sources, foreign-owned U.S. producers have a competitive advantage over their U.S.-owned competitors because they are less exposed to product liability claims. This is largely because the former have typically been in the U.S. market for a shorter time and have fewer units in the field than do the latter.

There are two methods of distributing U.S.-produced forklift and similar trucks. The end user may purchase specified trucks directly from the manufacturer or trucks may be bought through an independent dealer network, which either orders trucks for inventory or to a customer's specification. Factory-direct sales to end users usually take place when a large national or multinational customer is involved; forklift truck dealers typically sell to smaller accounts.

In May 1992, Clark Equipment Co., then the second-largest U.S. producer of forklift trucks, sold its forklift business to U.S.-owned Terex Corp. for \$95 million.<sup>11</sup> On July 1, 1992, Japanese-owned Mitsubishi Heavy Industries and U.S.-owned Caterpillar Industrial formed Mitsubishi-Caterpillar Forklift America, a joint-venture company to market and produce forklift trucks and related vehicles. Caterpillar controls 20 percent of this venture.<sup>12</sup> Companies with the largest production within the United States were U.S.-owned Hyster-Yale (Danville, IL); Japanese-owned Toyota Industrial Equipment/TMS, a division of Toyoda Automatic Loom Works, Ltd. (Torrance, CA); and Mitsubishi-Caterpillar Forklift America, Inc. (Houston, TX).<sup>13</sup>

Research and development for industrial trucks has focused on engine emissions, operator comfort (ergonomics) and safety (restraint systems), and forklift truck masts (see appendix B). The industry has taken part in a U.S.-Government-sponsored research program aimed at identifying an emissions profile for forklift trucks, and proposing ways to reduce these emissions. Compressed-natural-gas-powered internal-combustion-engine forklift trucks are considered by some industry sources as an encouraging alternative to conventionally powered internal-combustion-engine

trucks, because they are less harmful to the environment than gas, diesel, or propane-powered trucks.<sup>14</sup> However, the cost of the equipment necessary to compress natural gas discourages the use of these engines.

Industry sources indicate that there has been an evolutionary improvement in batteries used in electric industrial trucks. These batteries offer a slightly higher capacity in a smaller package compared with batteries used 5 years ago. Recent developments for electrically powered and internal-combustion-engine forklift trucks include the availability of onboard diagnostic systems and automated identification equipment similar to a bar code reader.<sup>15</sup> Onboard diagnostic systems can also monitor how the forklift truck is used by the operator, which can increase the longevity of the forklift truck.

### Consumer Characteristics and Factors Affecting Demand

Primary consumers of industrial trucks range from fleet buyers to individual owners. Fleet buyers include mass merchandisers, food distributors, and large manufacturers. During 1990-94, electrically powered forklift trucks accounted for an increasing share of the U.S. market. According to industry sources, this shift in demand from internal-combustion-engine to electrically powered forklift trucks occurred because of increased concerns about emissions from internal-combustion-engine forklift trucks and the aforementioned improvement in the operating efficiency of electrically powered forklift trucks.<sup>16</sup>

Price and product support are two important considerations in industrial truck purchases. Purchasers expect parts and service to be available for their truck within a minimum amount of time, thereby reducing truck downtime. Training for in-house maintenance personnel and the inclusion of spare parts have been part of high-volume truck purchase contracts. Smaller operators rely either on factory dealers or independent contractors for service. Increased competition has raised the level of "value added" to the sales contract during recent years; benefits previously given to larger accounts are now offered to a wider range of customers.<sup>17</sup>

<sup>14</sup> "Special Report: Lift Trucks and Indoor Air Quality," *Modern Materials Handling* (Newton, MA: Reed Publishing, Inc.), Feb. 1994, pp. 48-51.

<sup>15</sup> *Distribution*, vol. 92, No. 1, Jan. 1993, pp. 79-82.

<sup>16</sup> USITC staff discussion with industry officials, Oct. 2, 1995.

<sup>17</sup> One manufacturer offered to erect shelving for spare parts for its customers, and routinely saw that there were a predetermined minimum number of parts on-hand. Industry official, interview by USITC staff, Nov. 8, 1994.

<sup>10</sup> Industry officials, interviews by USITC staff, Oct.-Nov. 1994.

<sup>11</sup> Thomas L. Moore, "The New Models for '93: Lift Trucks," *Fleet Owner*, vol. 87, No. 7, July 1992pp. 77-78.

<sup>12</sup> *Ibid.*

<sup>13</sup> Dr. Walter Rödiger, "Weltrangliste 1993: Rezession hinterläßt deutliche Spuren," *Fördermittel-Journal*, Dec. 1994, pp. 16-20.

## FOREIGN INDUSTRY PROFILE

Linde AG of Germany is the largest foreign producer, by sales, of forklift trucks and similar vehicles (table 2). Linde has divisions that produce and market its vehicles in the United States (Baker Materials Handling, Summerville, SC), France (Fenwick), Germany (Stihl, Wagner), and the United Kingdom (Lansing-Linde and Blackwood). The company's combined global sales of \$1.6 billion in 1993 exceeded the global sales of the next largest producer, Toyota Automatic Loom Works, Ltd. (Japan), by \$548 million, or by 52 percent. Komatsu was the next-largest foreign producer; it ranked fourth in terms of global sales in 1993 (\$823 million). These three companies and other foreign-owned firms that compete in the U.S. market have either bought existing U.S. capacity or have constructed U.S. production facilities.<sup>18</sup>

Acquisitions during the period include Linde's purchase of 51 percent of FIAT O.M. (Italy), the organization within FIAT responsible for producing forklift trucks, while NORDICO Capital purchased BT Industries (Sweden). Both Linde and Jungheinrich (Germany) began producing forklift trucks in China

<sup>18</sup> Les Gould, "Industrial Truck Companies: The World's Top Twenty," *Modern Materials Handling* (Newton, MA: Reed Publishing, Inc.), Nov. 1992, p. 76.

**Table 2**  
**Top-ten global industrial truck producers, 1993**

Company	Parent company	Class of trucks produced <sup>1</sup>	Estimated global sales <sup>2</sup>
			<i>Million dollars</i>
Linde .....	Linde (Germany)	1-3, 5	\$1,603
Toyota .....	Toyota Automatic Loom Works, Ltd. (Japan)	1-7	1,055
Hyster-Yale .....	North American Coal Corp. (US)	1-7	980
Komatsu .....	Komatsu (Japan)	1, 2, 4, 5	823
Jungheinrich .....	Jungheinrich AG (Germany)	none	704
MCF .....	Mitsubishi-Caterpillar Forklift (Japan)	1-5	602
TCM .....	Toyo Umpanki Co., Ltd. (Japan)	1, 3-5	505
Crown .....	Crown Equipment Corp. (US)	1-3, 6	493
NORDICO .....	KO-Operative-Forbundet (BT, Sweden)	1-3	479
Clark Equipment Co. ....	Terex Corp. (US)	1-7	426

<sup>1</sup> Available for sale in the United States.

<sup>2</sup> Estimated by the staff of the USITC. USD = 1.6533DM in 1993.

Source: Dr. Walter Rödiger, "Weltrangliste 1993: Rezession hinterläßt deutliche Spuren," *Fördermittel-Journal*, Dec. 1994, pp. 16-20, and "Source Selection Chart for Industrial Trucks," *Modern Materials Handling*, mid-Sept. 1994, p. 19.

during the period, while Komatsu closed its German production facility.<sup>19</sup>

Since 1989, many West European producers have been challenged by East European firms based in the Czech Republic, Poland, Hungary, and Slovenia. These firms offer price-competitive products and a work force able to produce to Western standards.<sup>20</sup> While competition from these producers is currently strongest in Germany because of its geographic proximity to Eastern Europe, European industry sources indicate that a structural change likely will occur in the West European industry as a result of access to the skilled low-cost East European workforce.<sup>21</sup>

## U.S. TRADE MEASURES

### Tariff Measures

The provisions of the *Harmonized Tariff Schedule of the United States (HTS)* applicable to forklift trucks and related vehicles and parts are shown at the 8-digit level in table 3. The column 1 rate of duty<sup>22</sup> for all goods in this summary is free.

<sup>19</sup> Dr. Walter Rödiger, "Weltrangliste 1993: ..."

<sup>20</sup> Industrial Truck Association, excerpts from speeches delivered at the ITA International Forum, Sept. 26, 1994, Rancho Mirage, CA.

<sup>21</sup> Ibid. Structural change will likely occur through rationalization among European producers due to increased pan-European competition.

<sup>22</sup> Refer to appendix C for an explanation of tariff and trade agreement terms.

Table 3  
 Forklift trucks, related vehicles, and parts thereof: Harmonized Tariff Schedule subheading; description; U.S. col. 1 rate of duty as of Jan. 1, 1995; U.S. exports, 1994; and U.S. imports, 1994

HTS & Export subheading	Description	Col. 1 rate of duty As of Jan. 1, 1995		U.S. exports, 1994	U.S. imports, 1994
		General	Special		
		Million dollars			
8427.10.40	Rider-type, counterbalanced fork-lift trucks, powered by an electric motor	Free		38	41
8427.10.80	Other fork-lift trucks; other works trucks fitted with lifting or handling equipment; all the foregoing powered by an electric motor	Free		80	178
8427.20.40	Rider-type, counterbalanced fork-lift trucks, powered by a nonelectric motor	Free		93	255
8427.20.80	Other fork-lift trucks; other works trucks fitted with lifting or handling equipment; all of the foregoing powered by a nonelectric motor	Free		93	35
8427.90.00	Other trucks, not self-propelled, fitted with lifting or handling equipment	Free		68	54
8431.20.00	Parts suitable for use solely or principally with the machinery of heading 8427	Free		215	382
8709.11.00	Electric-powered works trucks, self-propelled, not fitted with lifting or handling equipment, of the type used in factories, warehouses, dock areas or airports for short distance transport of goods; electric-powered tractors of the type used on railway station platforms	Free		21	4
8709.19.00	Other nonelectric-powered works trucks, of a similar description to those found in subheading 8709.11	Free		23	1
8709.90.00	Parts suitable for use solely or principally with the machines of subheadings 8709.11 and 8709.19	Free		60	6

Source: U.S. export and import data, compiled from official statistics of the U.S. Department of Commerce.

## Nontariff Measures

There are no known nontariff barriers to U.S. imports of products covered by this summary.

### U.S. Government Trade-Related Investigations

During 1990-95, no statutory investigations concerning forklift trucks and related vehicles were conducted by the U.S. International Trade Commission (Commission). However, certain forklift trucks<sup>23</sup> from Japan are the subject of an antidumping order issued by the U.S. Department of Commerce (Commerce) in 1988 following affirmative determinations (also in 1988) in investigations conducted by Commerce<sup>24</sup> and the Commission<sup>25</sup> under the antidumping law (19 U.S.C. § 1673 et seq.). The investigations were conducted following the filing of a petition (April 1987) with Commerce and the Commission by the Hyster Co. and several unions,<sup>26</sup> alleging that an industry in the United States was being materially injured or threatened with material injury by reason of less than fair value (LTFV) imports of certain internal-combustion-engine forklift trucks from Japan.<sup>27</sup>

## FOREIGN TRADE MEASURES

### Tariff Measures

The primary foreign markets for U.S.-produced forklift trucks, similar vehicles, and parts thereof are Canada, Mexico, and the United Kingdom. Canada provides duty-free status under the United States-Canada Free Trade Agreement (CFTA) to imports of summary goods in *HTS* subheadings 8427.10 (electrically powered forklift trucks), 8427.20 (internal-combustion-engine forklift trucks), 8427.90 (similar vehicles), and 8431.20 (parts for these trucks); however, in 1995, Canada imposed a 2.7-percent-ad-valorem duty on certain U.S.-origin items imported under *HTS* subheadings 8709.11 (electrically powered work trucks), 8709.19 (internal-combustion-engine work trucks), and 8709.90

<sup>23</sup> Specifically, internal-combustion-engine forklift trucks with lifting capacity of 2,000 to 15,000 pounds.

<sup>24</sup> 53 F.R. 12552.

<sup>25</sup> USITC, *Internal Combustion Engine Forklift Trucks from Japan*, investigation No. 731-TA-377 (Final), USITC publication 2082, May 1988.

<sup>26</sup> Copetitioners included the Independent Lift Truck Builders Union, the International Association of Machinists & Aerospace Workers, the International Union, Allied Industrial Workers of America (AFL-CIO), and the United Shop & Service Employees.

<sup>27</sup> In July 1994, the Department of Commerce announced that it was undertaking an administrative review of the order (see 59 F.R. 36160). As of February 1996, this review had not been completed.

(parts for these work trucks).<sup>28</sup> Canada imposes duty rates of 8.6 to 8.7 percent ad valorem on imports from most favored nations. In January 1995, Mexico imposed duties ranging from 10 to 20 percent ad valorem on most summary goods.<sup>29</sup> Those products currently dutiable will become duty-free between January 1, 1998, and January 1, 2003, under provisions of the North American Free Trade Agreement (NAFTA). In 1995, the United Kingdom levied duties ranging from 3.4 to 5.6 percent ad valorem on forklift trucks, similar vehicles, and parts thereof.<sup>30</sup> Tariff rates in the world's two leading producer countries range from 3.4 percent to 5.6 percent in Germany to duty-free in Japan.

## Nontariff Measures

There are no known foreign nontariff barriers to U.S. exports of forklift trucks, similar vehicles, and parts for these vehicles.

## U.S. MARKET

### Consumption and Shipments

U.S. consumption and shipments of forklift trucks, similar vehicles, and parts thereof declined during 1990-91 and rose annually during 1991-94 (table 4). The rise in consumption was largely driven by the rise in U.S. producers' purchases of durable equipment during the period, which followed the trend in U.S. investment in gross fixed capital formation.<sup>31</sup>

The largest annual increase in the value of shipments of forklift trucks, similar vehicles, and parts thereof was during 1993-94 (23 percent), outpacing the rise in the rate of U.S. producers' investment in durable equipment (18 percent). During 1990-94, U.S. shipments of all types of electric trucks (rider-type and motorized hand trucks) exceeded the shipments of internal-combustion-engine trucks by 17 percent (figure 1), because of the shift in U.S. consumer demand.<sup>32</sup>

<sup>28</sup> Office of the North American Free Trade Agreement, International Trade Administration, U.S. Department of Commerce, fax dated June 27, 1995.

<sup>29</sup> Those goods which entered duty-free on Jan. 1, 1995 were certain internal-combustion-engine forklift trucks with lifting capacities greater than 3,500 kg (*HTS* subheadings 8427.10.02 and 8427.10.04) and other nonelectric trucks (*HTS* subheading 8427.90.99). Office of the North American Free Trade Agreement, International Trade Administration, U.S. Department of Commerce, fax dated June 27, 1995.

<sup>30</sup> USITC staff discussion with U.S. Department of Commerce, U.K. country desk, July 3, 1995.

<sup>31</sup> "Economic Report," p. 52; *Quarterly National Accounts*, p. 60; and USITC staff estimates.

<sup>32</sup> Table of annual shipments from 1967 to 1994 provided by the Industrial Truck Association.

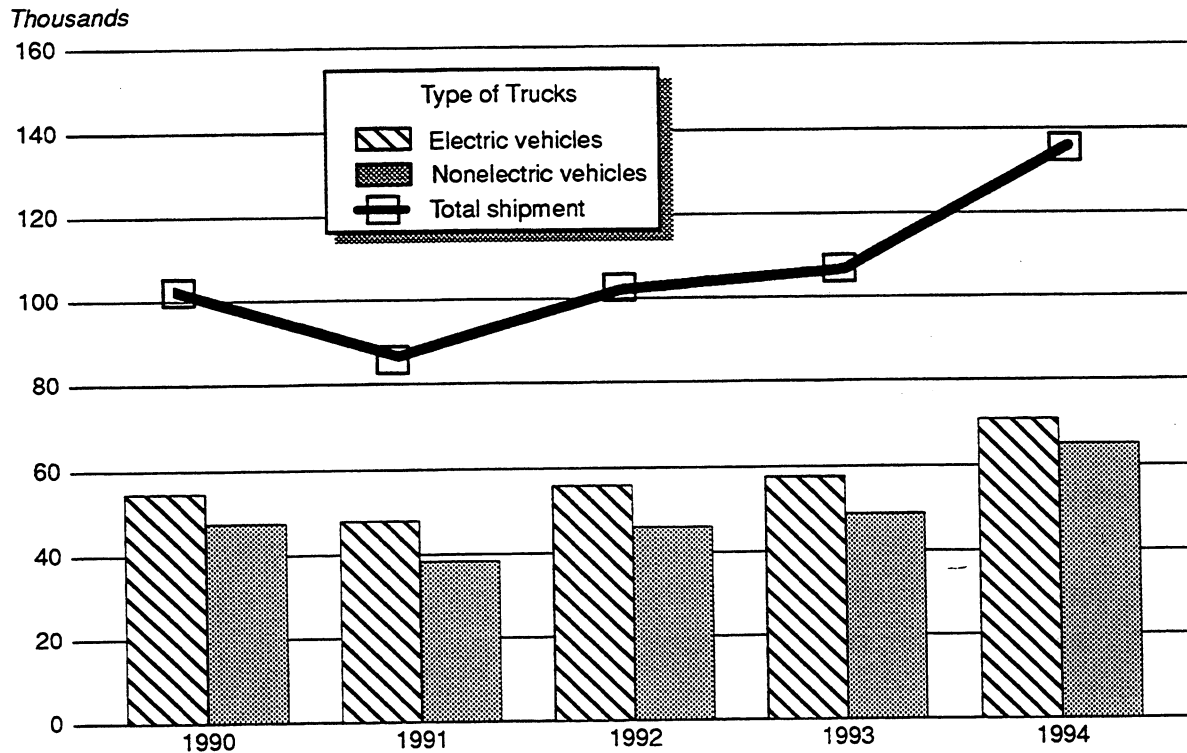
**Table 4**  
**Forklift trucks, related vehicles, and parts thereof: U.S. shipments, exports of domestic merchandise, imports for consumption, and apparent U.S. consumption, 1990-94**

Year	U.S. shipments <sup>1</sup>	U.S. exports	U.S. imports	Apparent U.S. consumption	Ratio of imports to consumption <sup>1</sup>
	<i>Million dollars</i>				<i>Percent</i>
1990 .....	2,728	551	817	2,994	27
1991 .....	2,406	627	614	2,393	26
1992 .....	2,659	570	712	2,801	25
1993 .....	3,194	566	721	3,349	22
1994 .....	3,929	691	955	4,193	23

<sup>1</sup> Estimated by the staff of the U.S. International Trade Commission.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

**Figure 1**  
**Forklift trucks, similar vehicles, and parts thereof: U.S. industry unit shipments, 1990-94**



Source: Compiled from official statistics of the Industrial Truck Association (ITA).

The ratio of imports to consumption declined during 1990-93, as the U.S. market absorbed the increased production of new U.S. producers of forklift trucks. In 1994, U.S. producers, despite shipping record numbers of forklift trucks, increased their imports to meet the significant rise in demand for forklift trucks.

### Imports

U.S. imports of forklift trucks, similar vehicles, and parts thereof declined during 1990-91 by 25 percent, from \$817 million to \$614 million, before rising by 56 percent, to \$955 million in 1994 (table 5). Imports also followed the trends in U.S. gross fixed

capital formation and U.S. producers' investment in durable equipment. In 1994, Japan, Canada, and the United Kingdom were the leading sources of total U.S. imports (figure 2), and together accounted for 54-67 percent for the period 1990-94. In 1994, the bulk of Japanese exports to the United States were parts for forklift trucks (\$240 million) and electrically powered forklift trucks (\$58 million). U.S. imports from Canada consisted primarily of electrically powered forklift trucks (\$107 million) in 1994, whereas those from the United Kingdom were primarily internal-combustion-engine forklift trucks (\$77 million).<sup>33</sup>

<sup>33</sup> HTS subheadings 8427.10 and 8427.20. Internal-combustion-engine forklift trucks accounted for 78 percent of total U.S. imports from the United Kingdom in 1994.

Other factors that contributed to the decline in U.S. imports during 1990-91 included (1) the antidumping duty order on certain Japanese internal-combustion-engine forklift trucks (see section on U.S. Government trade-related investigations), which likely decreased the profitability of these imported trucks; (2) the decline in the value of the U.S. dollar, which made imported forklift trucks more expensive in the United States; and (3) the establishment of manufacturing facilities in the United States by foreign-owned producers.<sup>34</sup>

The steady growth in U.S. imports during 1991-94 can be largely attributed to several factors. A rise in

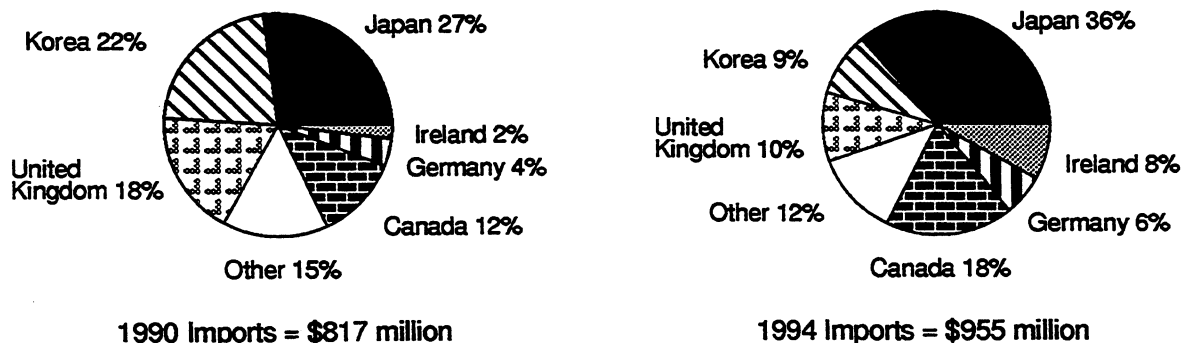
<sup>34</sup> *Purchasing*, vol. 106, No. 1, Jan. 19, 1989, pp. 204-205.

**Table 5**  
Forklift trucks, related vehicles, and parts thereof: U.S. imports for consumption, by principal sources, 1990-94

Source	1990	1991	1992	1993	1994
<i>Value (1,000 dollars)</i>					
Japan .....	219,861	148,703	163,051	257,867	345,294
Canada .....	96,285	80,497	98,432	125,475	171,421
United Kingdom .....	148,230	123,410	125,609	98,455	99,359
Korea .....	182,177	133,016	170,671	109,585	89,519
Ireland .....	13,884	9,667	13,872	13,529	78,985
Germany .....	33,702	29,807	42,698	48,254	57,527
Netherlands .....	7,403	7,459	5,794	8,877	40,135
Sweden .....	11,810	9,600	11,462	9,952	16,521
Mexico .....	68,166	43,435	45,514	9,834	9,209
Italy .....	8,244	5,553	4,621	5,441	8,567
All other .....	26,862	22,797	30,167	33,476	38,683
<b>Total .....</b>	<b>816,623</b>	<b>613,944</b>	<b>711,891</b>	<b>720,744</b>	<b>955,220</b>

Source: Compiled from official statistics of the U.S. Department of Commerce.

**Figure 2**  
Forklift trucks, similar vehicles, and parts thereof: U.S. imports, 1990 and 1994



Source: Compiled from official statistics of the U.S. Department of Commerce.



popularity of foreign-built forklift and similar trucks during the 1980s<sup>35</sup> and the presence of foreign-owned manufacturers producing in the United States increased the need for foreign-built parts. When foreign producers began manufacturing trucks in the United States, they typically sourced parts from their traditional overseas suppliers. This heightened demand for foreign parts led to a 106-percent rise in imports of foreign-built forklift truck parts during 1991-94.<sup>36</sup> In 1994, Japan, Canada, Germany, and the United Kingdom were the major sources of parts for internal-combustion-engine forklift trucks and electrically powered forklift trucks (table 6), representing 83 percent of total U.S. imports of forklift truck parts.<sup>37</sup> The increases in U.S. imports from these countries were the result of U.S. forklift truck producers' changes in sourcing patterns.<sup>38</sup>

During 1991-94, the U.S. market began to shift demand from internal-combustion-engine to electrically powered trucks. This, in conjunction with the antidumping order on certain internal-combustion-engine forklift trucks from Japan, led to an 84-percent increase in imports of electrically

<sup>35</sup> During the 1980s, Japanese imports gained in popularity because of their lower prices (aided partially by the favorable dollar-yen exchange rate), reliability, and customer support services.

<sup>36</sup> U.S. producers of forklift trucks reduced the value added to their domestic shipments by 3 percent during 1990-92. *Current Industrial Report*, 1992, U.S. Department of Commerce, p. 35B-2. This may have been the result of Japanese-owned U.S. manufacturers wishing to maintain their relationships with their traditional sources of parts.

<sup>37</sup> During 1990-94, Japan was the leading supplier of parts and a major source of the aforementioned forklift trucks, accounting for 46-63 percent of total U.S. imports of forklift truck parts.

<sup>38</sup> U.S. producers of forklift trucks are major importers of forklift trucks manufactured in Canada, Germany, and the United Kingdom.

powered forklift trucks during 1991-94 (figure 3). Canada, Japan, and the Netherlands were the primary sources of imports of electrically powered forklift trucks, together representing 89 percent of such total imports.

During the same period, U.S. imports of internal-combustion-engine forklift trucks, traditionally the largest category of imports of summary products, declined by 25 percent. The drop in U.S. imports of these trucks is likely the result of the change in U.S. consumer preference for electrically powered forklift trucks and the increased U.S. production of internal-combustion-engine forklift trucks by foreign-owned U.S. producers during the period.

During 1990-94, Korea and the United Kingdom were the leading sources of imports of internal-combustion-engine forklift trucks. During most of the 1980s, Clark and Caterpillar were the principal U.S. importers of Korean-built forklift trucks. However, in recent years, both decided to allow their production and sales agreements to lapse;<sup>39</sup> as a result, internal-combustion-engine forklift truck imports from Korea fell by 49 percent over 1990-94, to \$73 million. The United Kingdom's chief export to the United States, internal-combustion-engine forklift trucks, fell by 23 percent during the period. A likely reason for this decline was the teaming up of NACCO-Hyster, a U.S. importer of British-built trucks, with Yale, and the subsequent substitution of certain Yale trucks for imported NACCO-Hyster trucks. Overall, U.S. manufacturers remained the major U.S. importers of forklift trucks.

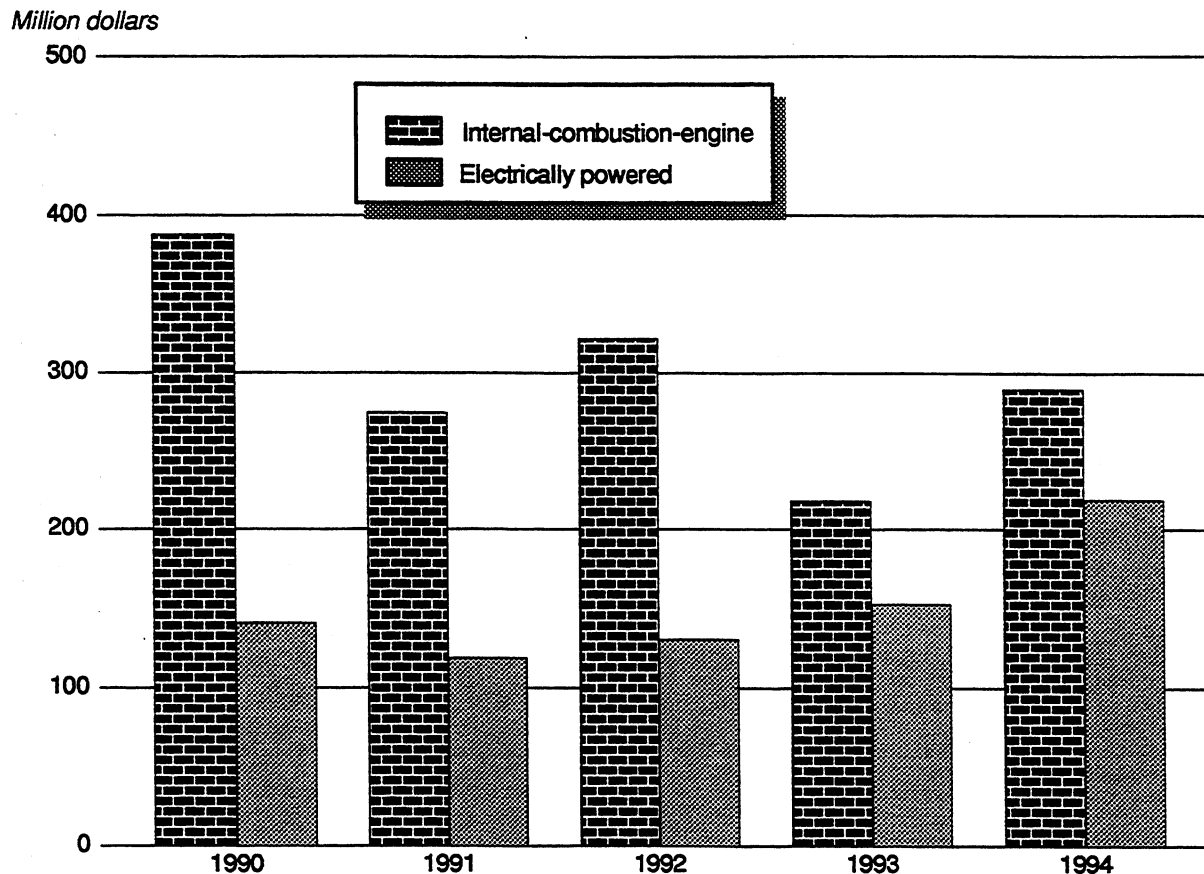
<sup>39</sup> During 1990-94, U.S.-owned Clark and Caterpillar imported Korean-made trucks that were sold under their names. Both companies have since significantly decreased their reliance on Korean imports as part of their continuing business plan. Industry officials, interviews with USITC staff, June-Aug. 1995.

**Table 6**  
**Parts for forklift trucks: U.S. imports of HTS subheading 8431.20, by principal sources, 1990-94**

Source	1990	1991	1992	1993	1994
	<i>Value (1,000 dollars)</i>				
Japan .....	108,792	88,785	101,952	184,448	240,461
Canada .....	21,675	18,840	24,650	31,120	35,339
Germany .....	17,325	15,788	22,051	18,942	22,380
United Kingdom .....	25,864	19,008	17,563	13,912	18,041
Korea .....	17,557	13,133	18,486	19,852	16,256
Mexico .....	11,493	3,524	4,870	5,271	8,369
Ireland .....	3,415	1,755	4,690	3,957	7,552
Sweden .....	2,500	3,167	4,586	5,273	7,435
Netherlands .....	4,789	6,982	5,401	4,494	6,484
France .....	1,087	1,222	2,722	2,793	3,294
All other .....	15,427	13,579	15,35	13,956	16,208
Total .....	229,925	185,783	222,328	304,018	381,821

Source: Compiled from official statistics of the U.S. Department of Commerce.

**Figure 3**  
**Forklift trucks, similar vehicles, and parts thereof: U.S. imports of forklift trucks, by motive power, 1990-94**



Source: Compiled from official statistics of the U.S. Department of Commerce for HTS subheadings 8427.10 and 8427.20.

## FOREIGN MARKETS

### Foreign Market Profile

From 1990-94, Canada, Mexico, and the United Kingdom were the top three markets for U.S. exports of forklift trucks, similar vehicles, and parts thereof (table 7). U.S. exports to these three nations amounted to \$344 million in 1994, or 50 percent of total U.S. exports. European Union (EU) countries combined to form the largest U.S. export market during 1990-92; Canada surpassed the EU during 1993-94. This shift was largely attributable to a 3-percent decline in EU investment in gross fixed capital formation during 1990-92 and a 4-percent increase in Canadian investment in gross fixed capital formation during this period.<sup>40</sup>

In 1993, Germany was the leading global producer of forklift trucks. However, several differences

between U.S.-built trucks and West European-made trucks influence the competitiveness of U.S.-built trucks. In recent years, the rider, or sit-down, forklift truck has been the preferred type of truck in the U.S., West European, and Japanese markets. However, the West European market also demands a narrower truck than those built for the U.S. market because of the narrower size of the pallets and "roll-cages" used in West European countries. This factor precludes the sale of U.S.-made trucks for many West European applications.

West European trucks also have a different geometry than do U.S.-built trucks, partly because of their different width and the fact that the load center<sup>41</sup> is measured at a different point than that of a U.S.-built truck.<sup>42</sup> It is therefore difficult for a truck built to U.S.

<sup>41</sup> The center of gravity of the load carried by the truck.

<sup>42</sup> Industry officials, interviews by USITC staff, Oct.-Nov. 1994.

**Table 7**  
**Forklift trucks, related vehicles, and parts thereof: U.S. exports of domestic merchandise, by principal markets, 1990-94**

Market	1990	1991	1992	1993	1994
	<i>Value (1,000 dollars)</i>				
Canada .....	132,402	117,886	123,566	129,617	191,803
Mexico .....	59,361	76,185	88,617	82,585	85,199
United Kingdom .....	52,827	49,267	50,520	49,719	67,465
Korea .....	34,073	27,277	16,297	14,440	35,960
Australia .....	24,774	13,915	17,842	23,887	31,009
Netherlands .....	22,239	26,536	20,747	18,810	24,180
Argentina .....	1,349	4,537	7,536	11,153	19,125
Germany .....	15,571	27,098	21,033	20,494	18,589
Colombia .....	4,765	835	7,298	10,951	18,206
Belgium .....	23,308	25,345	22,979	16,045	16,101
All other .....	180,217	255,174	193,431	188,304	182,917
<b>Total .....</b>	<b>550,887</b>	<b>627,055</b>	<b>569,867</b>	<b>566,006</b>	<b>690,556</b>

Source: Compiled from official statistics of the U.S. Department of Commerce.

specifications to compete successfully against those built in Western Europe. U.S. producers are increasingly seeking foreign production sites and/or partners for specific foreign markets in order to increase their competitiveness in these markets.

West European-owned manufacturers did not establish independent production facilities in the U.S. market during the period. This may be partly attributable to differences between the West European and U.S. markets. In comparison to the West European market, the U.S. market is larger geographically; therefore, producers must maintain hundreds of distribution points over a wide geographic area.

In an effort to better understand its market, the Japanese Industrial Vehicle Association (JIVA) polled its members' domestic customers in 1993. This survey found that 64 percent of market demand was generated by the need to replace existing trucks, with the remainder being first-time purchasers or buyers who needed an incremental increase in their fleet of trucks.<sup>43</sup> During 1990-93, Japanese production of forklift trucks decreased significantly, from 160,162 to 105,726 units. Japanese exports as a share of total Japanese production also declined, from 38 percent (60,000 units) to 35 percent (37,000 units) of total production.<sup>44</sup> Overseas production operations of Japanese manufacturers may have account for some of this decline. Japanese domestic shipments also declined during 1990-93, from about 100,000 to 69,000 units, or by 32 percent.<sup>45</sup> This decrease was most likely attributed to the overall contraction of the Japanese economy.

<sup>43</sup> Akira Ogawa, president of JIVA, speech given at the ITA International Forum, Rancho Mirage, CA, Sept. 26, 1994.

<sup>44</sup> Ibid.

<sup>45</sup> Ibid.

## U.S. Exports

U.S. exports of forklift trucks, similar vehicles, and parts thereof rose irregularly from \$551 million in 1990 to \$691 million in 1994, or by 25 percent. In 1994, U.S. exports of parts of forklift trucks represented 31 percent of total U.S. exports (\$215 million), whereas exports of internal-combustion-engine forklift trucks represented 27 percent (\$186 million). The value of U.S. exports of parts rose by 12 percent during 1990-94, whereas the value of internal-combustion-engine forklift truck exports remained relatively static during 1990-93, before rising by 43 percent to \$186 million in 1994.<sup>46</sup> U.S. exports of electrically powered forklift trucks remained stable during 1990-92 at about \$102 million and fluctuated downward by 3 percent in 1994, to \$98 million.<sup>47</sup>

Canada, Mexico, and the EU (most importantly, the United Kingdom) were the top three markets for U.S. exports of forklift trucks, similar vehicles, and parts thereof (figure 4). During 1990-94, internal-combustion-engine forklift trucks were the leading U.S. product exported to Canada and Mexico of all articles covered in this summary.<sup>48</sup> Such exports rose by 74 percent to both Canada and Mexico (\$96 million and \$26 million, respectively). Parts for forklift trucks, valued at \$44 million, were the principal product exported to the United Kingdom in 1994.<sup>49</sup>

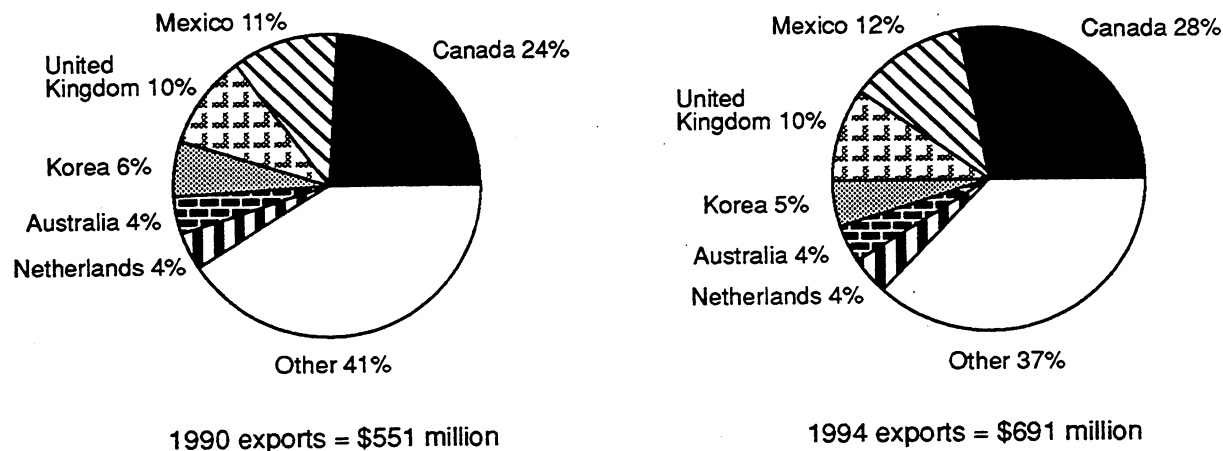
<sup>46</sup> HTS subheadings 8427.20 and 8431.20.

<sup>47</sup> HTS subheading 8427.10.

<sup>48</sup> HTS subheading 8427.20.

<sup>49</sup> HTS subheading 8431.20.

**Figure 4**  
**Forklift trucks, similar vehicles, and parts thereof: U.S. exports, 1990 and 1994**



Source: Compiled from official statistics of the U.S. Department of Commerce.

U.S. producers are extremely optimistic regarding the projected effects of the NAFTA on their sales, according to industry officials.<sup>50</sup> These officials point to the recent increase in merchandise trade between the United States and Mexico<sup>51</sup> as the basis for their optimism.

## U.S. TRADE BALANCE

With the exception of 1991, the United States experienced a trade deficit in forklift trucks, similar vehicles, and parts during 1990-94 (figure 5). The deficit ranged from \$142 million in 1992 to \$266 million in 1990 (table 8). In 1991, the United States ran a \$13 million trade surplus. During 1994, the largest single-country U.S. trade deficit for these goods was with Japan (\$331 million), followed by

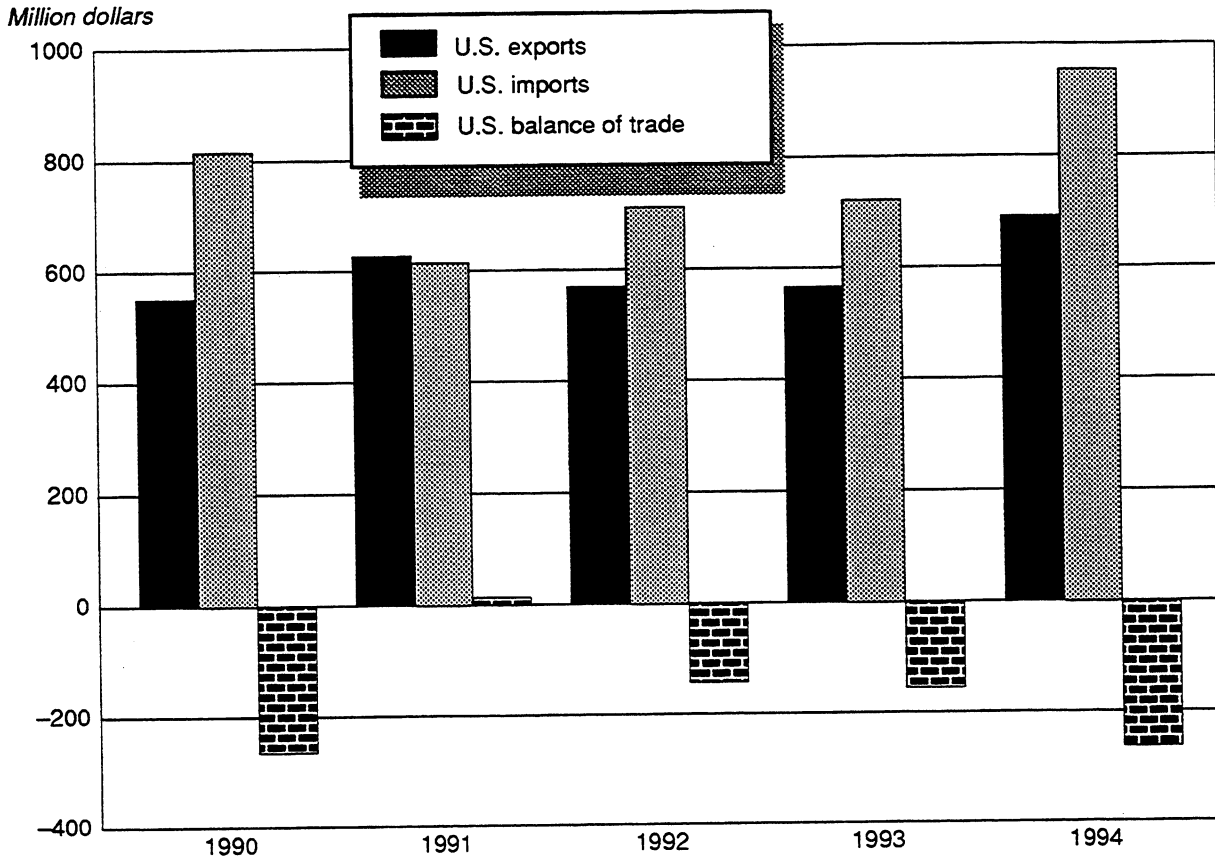
<sup>50</sup> During 1990-94, U.S. exports of summary goods to Canada and Mexico rose by 45 and 44 percent, respectively.

<sup>51</sup> The U.S. balance of trade in all manufactured goods with Mexico fluctuated considerably during the period, rising from \$2.2 billion in 1990 to \$7.2 billion in 1992, before falling to \$2.6 billion in 1994. USITC, "Chart book: Composition of the U.S. Merchandise Trade 1990-94," *International Economic Review*, June 1995, p. 34.

Ireland (\$70 million), and Korea (\$54 million). All of these countries have domestic manufacturers that have supplied their home markets for many years, which has served to inhibit U.S. participation in these markets. Parts for forklift trucks made up two-thirds of the United States' trade deficit with Japan; this may have been the result of the aforementioned Japanese predilection of sourcing parts from their traditional sources. The deficit with Ireland in 1994 was due to record imports of forklift trucks by U.S. manufacturers, partially in response to the rise in U.S. demand for forklift trucks. During 1990-94, Korea's surplus with the United States declined by 64 percent, primarily the result of a shift in sourcing by U.S. importers. In 1994, the United States maintained its largest single-country trade surplus with Mexico (\$76 million).<sup>52</sup> This improvement was due to increased U.S. sourcing of both parts and finished trucks by a major U.S.-owned Mexican producer of forklift trucks starting in 1991. During 1992-94, total U.S. imports from Mexico of forklift trucks, similar vehicles, and parts thereof declined by 80 percent.

<sup>52</sup> During the period, the U.S.-Mexican balance of trade rose from a deficit of \$9 million in 1990 to a surplus of \$76 million in 1994.

**Figure 5**  
**Forklift trucks, similar vehicles, and parts thereof: U.S. balance of trade, 1990-94**



Source: Compiled from official statistics of the U.S. Department of Commerce.

**Table 8**  
**Forklift trucks, related vehicles, and parts thereof: U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected countries and country groups, 1990-94<sup>1</sup>**

(In millions of dollars)

Item	1990	1991	1992	1993	1994
<b>U.S. exports of domestic merchandise:</b>					
Canada .....	132	118	124	130	192
Japan .....	13	18	18	13	14
United Kingdom .....	53	49	51	50	67
Korea .....	34	27	16	14	36
Mexico .....	59	76	89	83	85
Ireland .....	7	13	9	8	9
Germany .....	16	27	21	20	19
Netherlands .....	22	27	21	19	24
Australia .....	25	14	18	24	31
Argentina .....	1	5	8	11	19
All other <sup>2</sup> .....	188	254	196	194	195
<b>Total .....</b>	<b>551</b>	<b>627</b>	<b>570</b>	<b>566</b>	<b>691</b>
EU-12 .....	138	166	142	127	147
OPEC .....	22	99	51	33	26
ASEAN .....	26	11	14	17	17
CBERA .....	20	17	15	21	22
Eastern Europe .....	( <sup>3</sup> )	( <sup>3</sup> )	1	1	1
<b>U.S. imports for consumption:</b>					
Canada .....	96	80	98	125	171
Japan .....	220	149	163	258	345
United Kingdom .....	148	123	126	98	99
Korea .....	182	133	171	110	90
Mexico .....	68	43	46	10	9
Ireland .....	14	10	14	14	79
Germany .....	34	30	43	48	58
Netherlands .....	7	7	6	9	40
Australia .....	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	1	( <sup>3</sup> )
Argentina .....	( <sup>3</sup> )	0	0	0	( <sup>3</sup> )
All other .....	47	38	46	48	64
<b>Total .....</b>	<b>817</b>	<b>614</b>	<b>712</b>	<b>721</b>	<b>955</b>
EU-12 .....	223	183	201	187	298
OPEC .....	1	1	2	3	3
ASEAN .....	1	1	3	3	4
CBERA .....	( <sup>3</sup> )	0	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Eastern Europe .....	( <sup>3</sup> )	1	3	2	3
<b>U.S. merchandise trade balance:</b>					
Canada .....	36	37	25	4	20
Japan .....	-207	-131	-145	-245	-331
United Kingdom .....	-95	-74	-75	-49	-32
Korea .....	-148	-106	-154	-95	-54
Mexico .....	-9	33	43	73	76
Ireland .....	-7	3	-5	-5	-70
Germany .....	-18	-3	-22	-28	-39
Netherlands .....	15	19	15	10	-16
Australia .....	25	13	18	23	31
Argentina .....	1	5	8	11	19
All other .....	142	217	150	146	131
<b>Total .....</b>	<b>-266</b>	<b>13</b>	<b>-142</b>	<b>-155</b>	<b>-265</b>
EU-12 .....	-85	-17	-59	-61	-152
OPEC .....	21	98	49	30	24
ASEAN .....	25	10	11	14	14
CBERA .....	20	17	15	21	22
Eastern Europe .....	( <sup>3</sup> )	( <sup>4</sup> )	-2	-1	-2

<sup>1</sup> Import values are based on customs value; export values are based on f.a.s. value, U.S. port of export. U.S. trade with East Germany is included in "Germany" but not "Eastern Europe."

<sup>2</sup> "All other" may not agree with other tables, due to rounding.

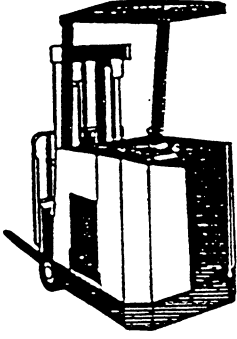
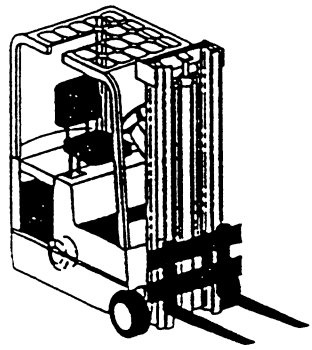
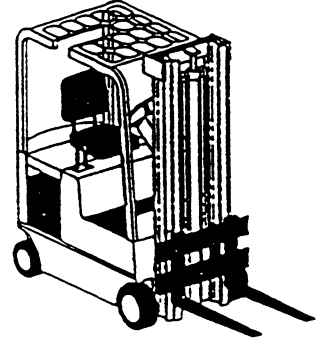
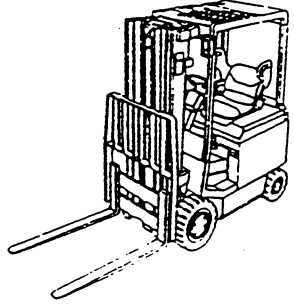
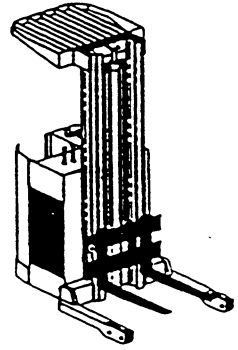
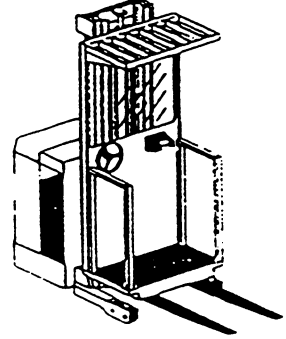
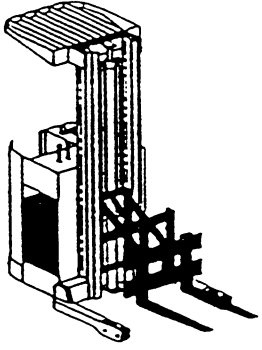
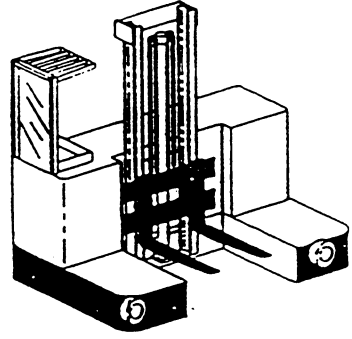
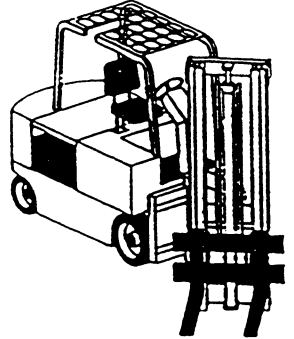
<sup>3</sup> Less than \$500,000.

<sup>4</sup> Greater than -\$500,000.

Source: Compiled from official statistics of the U.S. Department of Commerce.

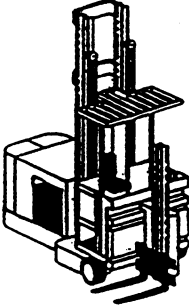
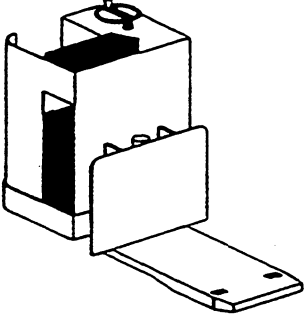
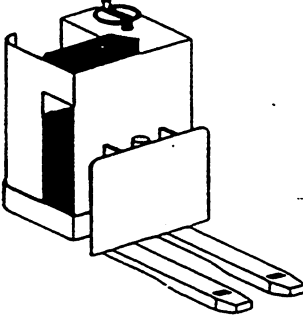
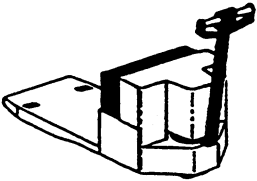
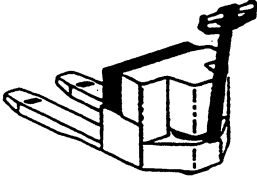
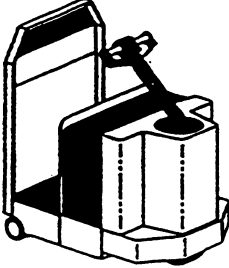
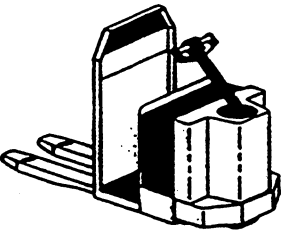
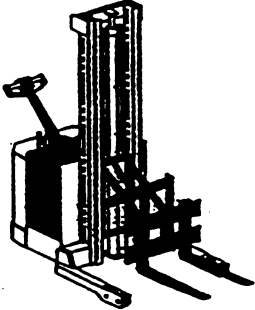
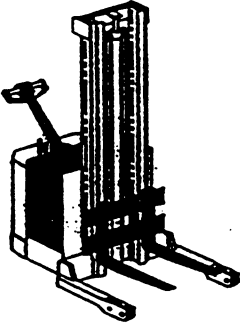
**APPENDIX A**  
**FORKLIFT TRUCKS AND RELATED VEHICLES**

# Pictorial Model Listing

<p><b>Class I</b> - Electric Motor Rider Trucks  <b>Lift Code 1</b> - Counterbalanced Rider Type, Stand-Up</p> 	<p><b>Class I</b> - Electric Motor Rider Trucks  <b>Lift Code 4</b> - Three Wheel Electric Trucks, Sit-Down</p> 	<p><b>Class I</b> - Electric Motor Rider Trucks  <b>Lift Code 5</b> - Counterbalanced Rider, Cushion Tire, Sit-Down</p> 
<p><b>Class I</b> - Electric Motor Rider Trucks  <b>Lift Code 6</b> - Counterbalanced Rider, Pneumatic or Either Type Tire, Sit-Down</p> 	<p><b>Class II</b> - Electric Motor Narrow Aisle Trucks  <b>Lift Code 1</b> - High Lift Straddle</p> 	<p><b>Class II</b> - Electric Motor Narrow Aisle Trucks  <b>Lift Code 2</b> - Order Picker</p> 
<p><b>Class II</b> - Electric Motor Narrow Aisle Trucks  <b>Lift Code 3</b> - Reach Type Outrigger</p> 	<p><b>Class II</b> - Electric Motor Narrow Aisle Trucks  <b>Lift Code 4</b> - Sideloaders: Platform</p> 	<p><b>Class II</b> - Electric Motor Narrow Aisle Trucks  <b>Lift Code 4</b> - Sideloaders, High Lift Pallet</p> 

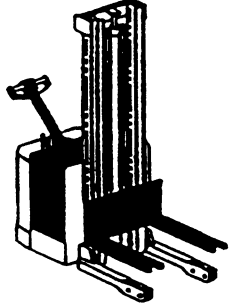
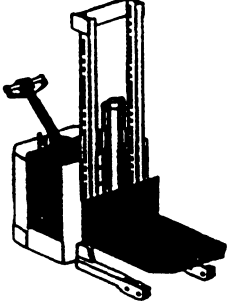
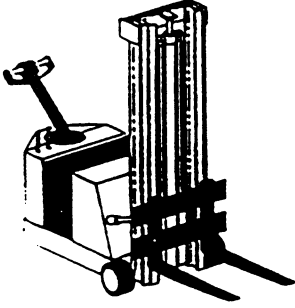
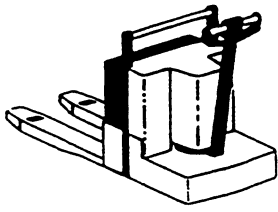
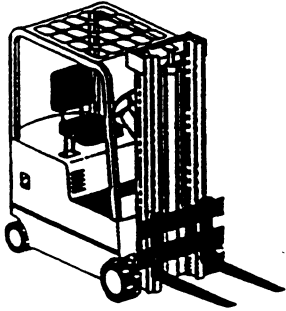
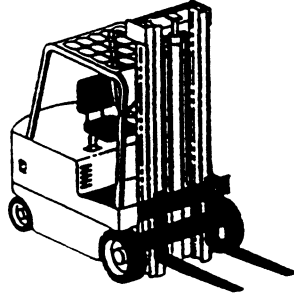
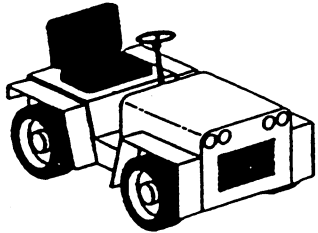
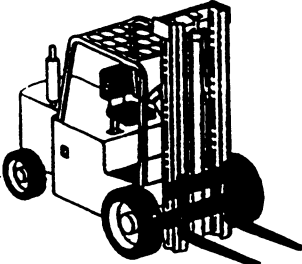
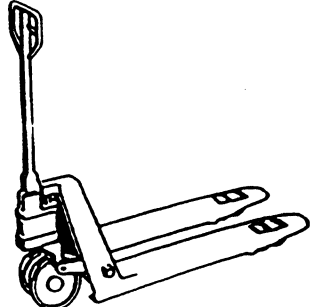


## Pictorial Model Listing

<p><b>Class II - Electric Motor Narrow Aisle Trucks</b>  <b>Lift Code 4 - Turret Trucks</b></p> 	<p><b>Class II - Electric Motor Narrow Aisle Trucks</b>  <b>Lift Code 6 - Low Lift Platform</b></p> 	<p><b>Class II - Electric Motor Narrow Aisle Trucks</b>  <b>Lift Code 6 - Low Lift Pallet</b></p> 
<p><b>Class III - Electric Motor Hand Trucks</b>  <b>Lift Code 1 - Low Lift Platform</b></p> 	<p><b>Class III - Electric Motor Hand Trucks</b>  <b>Lift Code 2 - Low Lift Walkie Pallet</b></p> 	<p><b>Class III - Electric Motor Hand/Rider Trucks</b>  <b>Lift Code 3 - Tractor</b></p> 
<p><b>Class III - Electric Motor Hand Trucks</b>  <b>Lift Code 4 - Low Lift Walkie/Center Control</b></p> 	<p><b>Class III - Electric Motor Hand Trucks</b>  <b>Lift Code 5 - Reach Type Outrigger</b></p> 	<p><b>Class III - Electric Motor Hand Trucks</b>  <b>Lift Code 6 - High Lift Straddle</b></p> 

Source: Industrial Truck Association

## Pictorial Model Listing

<p><b>Class III - Electric Motor Hand Trucks</b> <b>Lift Code 6 - Single Face Pallet</b></p> 	<p><b>Class III - Electric Motor Hand Trucks</b> <b>Lift Code 6 - High Lift Platform</b></p> 	<p><b>Class III - Electric Motor Hand Trucks</b> <b>Lift Code 7 - High Lift Counterbalanced</b></p> 
<p><b>Class III - Electric Motor Hand Trucks</b> <b>Lift Code 8 - Low Lift Walkie/Rider Pallet and End Control</b></p> 	<p><b>Class IV - Internal Combustion Engine Trucks</b> <b>Lift Code 3 - Fork, Counterbalanced, Cushion Tire</b></p> 	<p><b>Class V - Internal Combustion Engine Trucks—Pneumatic Tires Only</b> <b>Lift Code 4 - Fork, Counterbalanced, Pneumatic Tire</b></p> 
<p><b>Class VI - Electric and Internal Combustion Engine Tractors</b> <b>Lift Code 1 - Sit Down Rider</b></p> 	<p><b>Class VII - Rough Terrain Fork Lift Truck</b> <b>Lift Code 1 - All Rough Terrain Fork Lift Trucks</b></p> 	<p><b>Hand Pallet Trucks</b></p> 

Source: Industrial Truck Association

**APPENDIX B**  
**PRODUCTION PROCESS**

## EXPLANATION OF PRODUCTION PROCESS

There are two basic fabrication processes involved in the production of forklift trucks before assembly. A forklift truck frame is produced from steel sheet that is generally three-eighths of an inch in thickness, though at some points on the finished frame this thickness can be either augmented or diminished. The steel sheet is cut to the desired shape, washed, dried, and cleaned further by passing it through a machine which cleans it of any residual slag from the cut. The piece of cut steel is then treated with a rustproofing solution and dried. Individual pieces are then formed to shape by bending. These pieces are then welded to each other to form the frame. Finished frames are again cleaned by passing them through a machine that removes any excess welding bead. A primer coat of paint is then sprayed on.

The production process for the upright, or mast, of a forklift truck is similar to that of the body. Channel steel, as opposed to steel sheet, is cut to

length, washed, dried, and passed through a cleaning machine. Pieces, which have been cut from steel sheet, are welded to this length, two channels are welded with cross-pieces, and the whole assembly is washed, dried, and cleaned. It is then treated with a rustproofing solution, and a primer coat of paint is sprayed on by hand. The finished piece represents the outer rails of the upright. Inner rails are produced by cutting channel steel to length, cleaning, and painting in a separate line. The inner and outer rails are then mated, with the number of inner rails determined by the desired extension range of the upright. There are four kinds of uprights: Standard, free-lift (where the forks can be raised to the height of the upright without extending the upright), three-, and four-stage. Sprockets and chain are added, as are hydraulic cylinders. These components are added to provide lifting capacity for the uprights. The finished upright is taken from the production line and stored until it is needed on the truck assembly line.

**APPENDIX C**  
**EXPLANATION OF TARIFF AND TRADE AGREEMENT TERMS**

In the *Harmonized Tariff Schedule of the United States* (HTS), chapters 1 through 97 cover all goods in trade and incorporate in the tariff nomenclature the internationally adopted Harmonized Commodity Description and Coding System through the 6-digit level of product description. Subordinate 8-digit product subdivisions, either enacted by Congress or proclaimed by the President, allow more narrowly applicable duty rates; 10-digit administrative statistical reporting numbers provide data of national interest. Chapters 98 and 99 contain special U.S. classifications and temporary rate provisions, respectively. The HTS replaced the Tariff Schedules of the United States (TSUS) effective January 1, 1989.

Duty rates in the *general* subcolumn of HTS column 1 are most-favored-nation (MFN) rates, many of which have been eliminated or are being reduced as concessions resulting from the Uruguay Round of Multilateral Trade Negotiations. Column 1-general duty rates apply to all countries except those enumerated in HTS general note 3(b) (Afghanistan, Cuba, Kampuchea, Laos, North Korea, and Vietnam), which are subject to the statutory rates set forth in *column 2*. Specified goods from designated MFN-eligible countries may be eligible for reduced rates of duty or for duty-free entry under one or more preferential tariff programs. Such tariff treatment is set forth in the *special* subcolumn of HTS rate of duty column 1 or in the general notes. If eligibility for special tariff rates is not claimed or established, goods are dutiable at column 1-general rates. The HTS does not enumerate those countries as to which a total or partial embargo has been declared.

Although the *Generalized System of Preferences* (GSP) expired at the close of July 31, 1995, provisions relating thereto continue to appear in the HTS pending possible Congressional renewal. The GSP afforded nonreciprocal tariff preferences to developing countries to aid their economic development and to diversify and expand their production and exports. The U.S. GSP, enacted in title V of the Trade Act of 1974 for 10 years and extended three times thereafter, applied to merchandise imported on or after January 1, 1976 and before the close of July 31, 1995. Indicated by the symbol "A" or "A\*" in the special subcolumn, the GSP provided duty-free entry to eligible articles the product of and imported directly from designated beneficiary developing countries, as set forth in general note 4 to the HTS.

The *Caribbean Basin Economic Recovery Act* (CBERA) affords nonreciprocal tariff preferences to developing countries in the Caribbean Basin area to aid their economic development and to diversify and expand their production and exports. The CBERA, enacted in title II of Public Law 98-67, implemented by Presidential Proclamation 5133 of November 30, 1983, and amended by the Customs and Trade Act of 1990, applies to merchandise entered, or withdrawn from warehouse for consumption, on or after January 1, 1984. Indicated by the symbol "E" or "E\*" in the special subcolumn, the CBERA provides duty-free entry to eligible articles, and reduced-duty treatment to certain other articles, which are the product of and imported directly from designated countries, as set forth in general note 7 to the HTS.

Free rates of duty in the special subcolumn followed by the symbol "IL" are applicable to products of Israel under the *United States-Israel Free Trade Area Implementation Act* of 1985 (IFTA), as provided in general note 8 to the HTS.

Preferential nonreciprocal duty-free or reduced-duty treatment in the special subcolumn followed by the symbol "J" or "J\*" in parentheses is afforded to eligible articles the product of designated beneficiary countries under the *Andean Trade Preference Act* (ATPA), enacted as title II of Public Law 102-182 and implemented by Presidential Proclamation 6455 of July 2, 1992 (effective July 22, 1992), as set forth in general note 11 to the HTS.

Preferential or free rates of duty in the special subcolumn followed by the symbol "CA" are applicable to eligible goods of Canada, and rates followed by the symbol "MX" are applicable to eligible goods of Mexico, under the *North American Free Trade Agreement*, as provided in general note 12 to the HTS and implemented effective January 1, 1994 by Presidential Proclamation 6641 of December 15, 1993. Goods must originate in the NAFTA region under rules set forth in general note 12(t) and meet other requirements of the note and applicable regulations.

Other special tariff treatment applies to particular *products of insular possessions* (general note 3(a)(iv)), goods covered by the *Automotive Products Trade Act* (APTA) (general note 5) and the *Agreement on Trade in Civil Aircraft* (ATCA) (general note 6), *articles imported from freely associated states* (general note 10), *pharmaceutical products* (general note 13), and *intermediate chemicals for dyes* (general note 14).

The *General Agreement on Tariffs and Trade 1994* (GATT 1994), annexed to the Agreement Establishing the World Trade Organization, replaces an earlier agreement (the GATT 1947 [61 Stat. (pt. 5) A58; 8 UST (pt. 2) 1786]) as the primary multilateral system of disciplines and principles governing international trade. Signatories' obligations under both the 1994 and 1947 agreements focus upon most-favored-nation treatment, the maintenance of scheduled concession rates of duty, and national (nondiscriminatory) treatment for imported products; the GATT also provides the legal framework for customs valuation standards, "escape clause" (emergency) actions, antidumping and countervailing duties, dispute settlement, and other measures. The results of the Uruguay Round of multilateral tariff negotiations are set forth by way of separate schedules of concessions for each participating contracting party, with the U.S. schedule designated as Schedule XX.

Pursuant to the *Agreement on Textiles and Clothing* (ATC) of the GATT 1994, member countries are phasing out restrictions on imports under the prior "Arrangement Regarding International Trade in Textiles" (known as the *Multifiber Arrangement* (MFA)). Under the MFA, which was a departure from GATT 1947 provisions, importing and exporting countries negotiated bilateral agreements limiting textile and apparel shipments, and importing countries could take unilateral action in the absence or violation of an agreement. Quantitative limits had been established on imported textiles and apparel of cotton, other vegetable fibers, wool, man-made fibers or silk blends in an effort to prevent or limit market disruption in the importing countries. The ATC establishes notification and safeguard procedures, along with other rules concerning the customs treatment of textile and apparel shipments, and calls for the eventual complete integration of this sector into the GATT 1994 over a ten-year period, or by Jan. 1, 2005.

