



**North American  
2003 End-User,  
Sales Channel, &  
Geographic  
Report  
September 2004**

## In This Report

The first annual end-user, sales channel, & geographic report will segment the 2003 switch market.

Cross segmentation will look at each switch type by end-user consumption and each end-user group by switch type consumed.

An analysis of sales channels and geographic regions completes the report.

Section	Page
Methodology	1
Market Overview	2
Types by End-User	5
End-Users by Type	26
Sales Channels	45
Geographic Analysis	46
Appendix	50

## Methodology

To prepare this report, contributing subscribers to Switch Tracks were surveyed on their CY 2003 sales to end-user segments, usage of various sales channels, and sales to smaller regions within North America. Appendix "B" shows the survey form completed by the contributing subscribers. The companies reporting sales information are APEM, Cherry Electrical Products, Grayhill, Honeywell Sensing and Control, ITT Cannon C&K, Marquardt, NKK, Omron Electronics, Saia-Burgess, and Tyco. The switch types they reported on are component DIP, keylock, push button, rocker, slide, snap action, tact, and toggle switches. Appendix "A" defines which switch families are included by type, subcategory, and contributing subscriber.

To define usage by end-user segment each contributing subscriber was asked to list the percentage of units and dollars sold to each of eleven end-user segments for each switch type they reported sales for in CY 2003. The eleven end-user segments are as follows:

# Data Less Sample

- Appliance
- Commercial Equipment
- Computers, Peripherals, & Office Equipment
- Consumer Electronics
- Industrial Machinery, Automation, & Process Controls
- Medical Equipment
- Non-Automotive Vehicles
- Power Tools & Lawn/Garden Equipment
- Telecomm, Cable, & Broadcast Equipment
- Test & Laboratory Equipment
- Other

Appendix “C” defines each of these end-user segments by the SIC and NAICS codes and descriptions.

Sales channels were defined by asking each contributing manufacturer to breakdown their total CY 2003 sales by percentage of dollars and units sold direct to OEM’s, through distribution, direct sales to contract manufactures, and product private labeled.

Shipments to North America were categorized first by region and then the United States was refined into 10 regions based on the first digit of the ship to zip code. This was accomplished by having each contributing manufacturer indicate the percentage of their CY 2003 sales that shipped to Canada, Latin America and the Caribbean, Mexico and the United States. They were then asked to list the percentage of U.S. shipments to zip codes beginning with 0 through 9. The following lists the states included for each first digit of the U.S. zip code:

First Zip Code Digit	States
0	Connecticut, Maine, Massachusetts, New Jersey, Rhode Island, Vermont, (Puerto Rico and U.S. Virgin Islands)
1	Delaware, New York, Pennsylvania
2	District Of Columbia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
3	Alabama, Florida, Georgia, Mississippi, Tennessee
4	Indiana, Kentucky, Michigan, Ohio
5	Iowa, Minnesota, Montana, North Dakota, South Dakota, Wisconsin
6	Illinois, Kansas, Missouri, Nebraska
7	Arkansas, Louisiana, Oklahoma, Texas
8	Arizona, Colorado, Idaho, Nevada, New Mexico, Utah, Wyoming
9	Alaska, California, Hawaii, Oregon, Washington

Data Less Sample

With the completed survey information for each contributing manufacturer and their previously reported sales information for CY 2003, a model was constructed detailing sales in units and dollars for each switch type and end-user, sales channel, geographic region and zip code zone. The individual contributing subscriber models were then added together to form a model of the total market as reported to Switch Tracks.

The total North American market is estimated in the following report by taking the percentage shares for units and dollars for each switch type and end-user segment and applying it to the estimated total North American market for CY 2003. The same process was used for the sales channels and geographic estimates.

The next section will be a review of the CY 2003 sales information as it appeared in issue 05 of Switch Tracks. It will be followed a cross segmentation analysis that will first look at each switch type’s sales to each end-user segment and then each end-user segment’s consumption of each type of switch. An analysis of sales channels used and shipments to smaller geographic regions within North America will complete the report.

**Market Overview: Total Switch Sales for CY 2003**

Total reported sales for all switch types in North America were \$XXXX M and XXXX M units with an overall average selling price (ASP) of \$XXXX per switch. The companies reporting sales for CY2003 are APEM, Cherry Electrical Products, Grayhill, Honeywell Sensing and Control, ITT Cannon C&K, Marquardt, NKK, Omron Electronics, Saia-Burgess, and Tyco. The switch types they reported on are component DIP, keylock, push button, rocker, slide, snap action, tact, and toggle switches. Appendix “A” defines which switch families are included by type, subcategory, and contributing subscriber.

The total North American DIP, keylock, push button, slide, snap action, tact and toggle switch market is estimated at \$XXXX M and XXXX M units. The reported sales and estimated total market size for each switch type is listed in the table below.

**Total Estimated CY 2003 Market For Switch Types Reported**

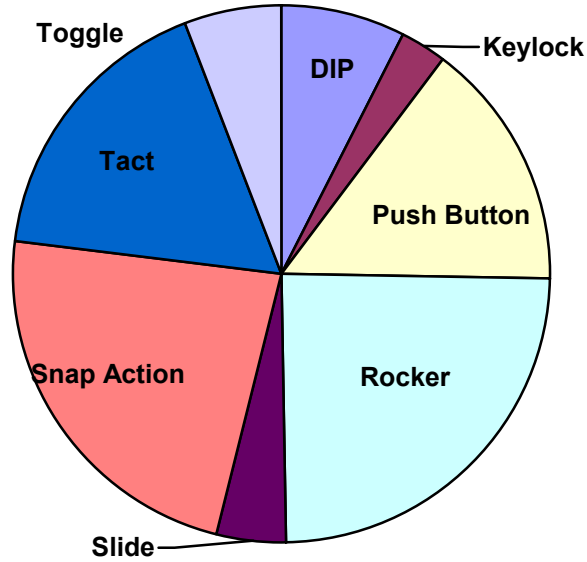
	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle
Estimated Total Market	\$ XXX M	\$ XXX M	\$ XXX M	\$ XXX M	\$ XXX M	\$ XXX M	\$ XXX M	\$ XXX M
Reported Sales	\$ XXX M	\$ XXX M	\$ XXX M	\$ XXX M	\$ XXX M	\$ XXX M	\$ XXX M	\$ XXX M
% of Market Reported	XX %	XX %	XX %	XX %	XX %	XX %	XX %	XX %

Data Less Sample

The rocker switch segment is under reported with XX % of the estimated market being reported and a threshold of XX%. The data submitted for rockers switches will be reported in this issue. Based on input from current contributing subscribers, future reporting on this switch type may be postponed until additional rocker switch manufacturers become subscribers.

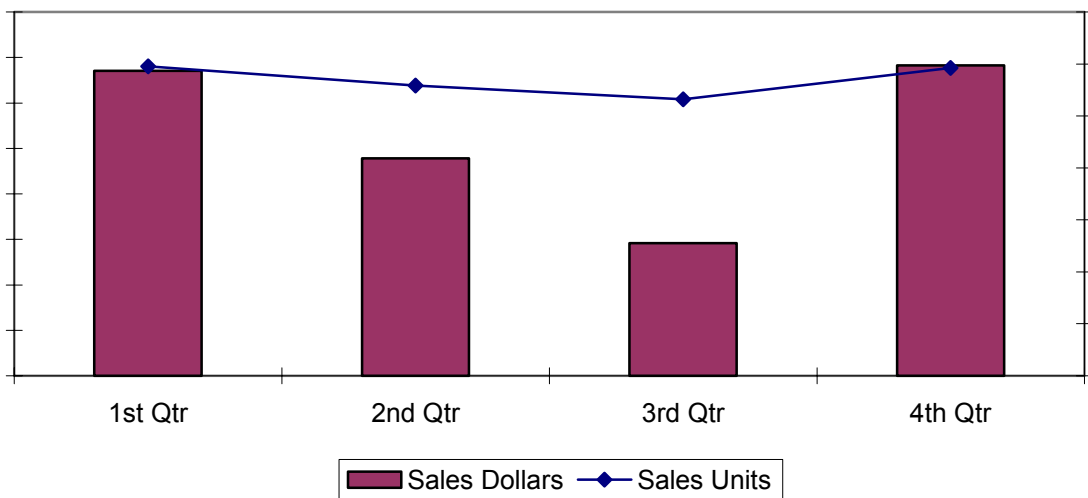
This report focuses on the switch types reported by contributing manufacturers. There are additional switch types, such as, keyswitch, rotary, thumbwheel/pushwheel, and trigger that are not yet included. The graph below shows estimated percent share by type based on the estimates above.

**CY 2003 Estimated Percent Market Share for Reported Types**



The graph below shows total quarterly sales in dollars and units for the reported data. All measures showed decline through the first three quarters and then recovered in the fourth quarter.

**CY 2003 Total DIP, Keylock, Push Button, Rocker, Slide, Snap Action, Tact, & Toggle Reported Switch Sales & Bookings**



The table below shows the breakdown of total reported sales for CY 2003 by switch type.

CY 2003 Total Reported Sales by Type

Category	Dollars	Units	ASP
DIP	\$ XXXX M	XXXX M	\$ XXXX
Keylock	\$ XXXX M	XXXX M	\$ XXXX
Push Button	\$ XXXX M	XXXX M	\$ XXXX
Rocker	\$ XXXX M	XXXX M	\$ XXXX
Slide	\$ XXXX M	XXXX M	\$ XXXX
Snap Action	\$ XXXX M	XXXX M	\$ XXXX
Tact	\$ XXXX M	XXXX M	\$ XXXX
Toggle	\$ XXXX M	XXXX M	\$ XXXX
<b>Total</b>	\$ XXXX M	XXXX M	\$ XXXX

**Switch Types By End-User Segment**

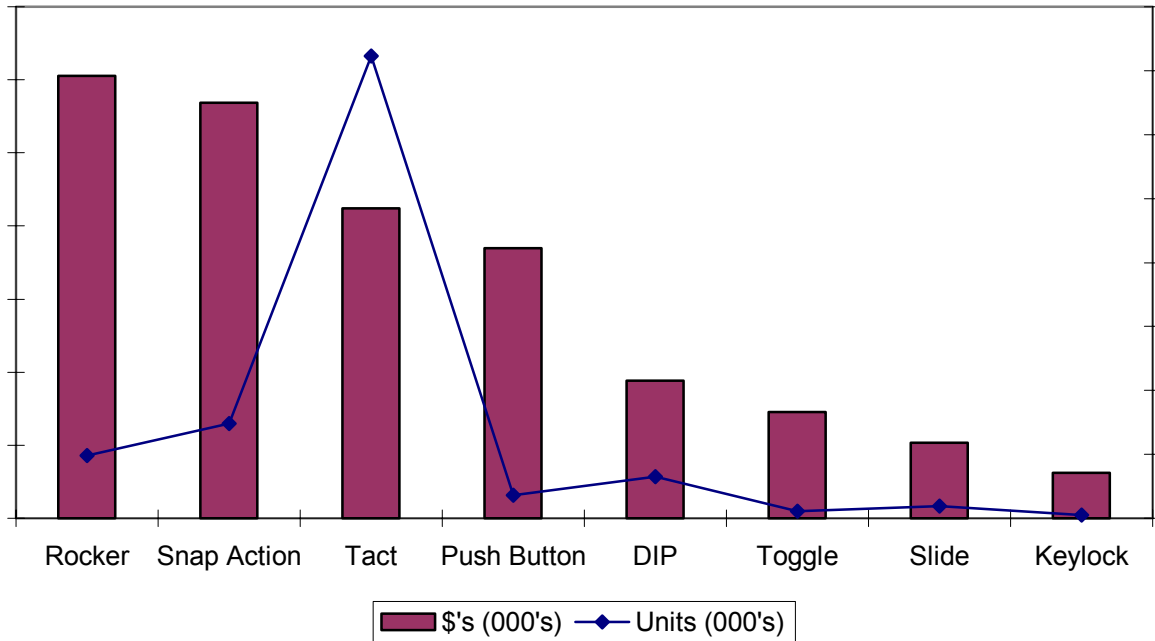
Before looking at individual switch types, some further analysis of the total estimated market is needed. First, the total average selling price for the estimated total market is \$XXXX, which is XX% higher than the \$XXXX for the total reported market. The reason for this is product mix. Rocker switches have a XX% share of value in the total estimated market and only a X% of the reported value. The table below lists total North American sales dollars, units, and ASP by type.

**Total CY 2003 North American Switch Market Sales By Type**

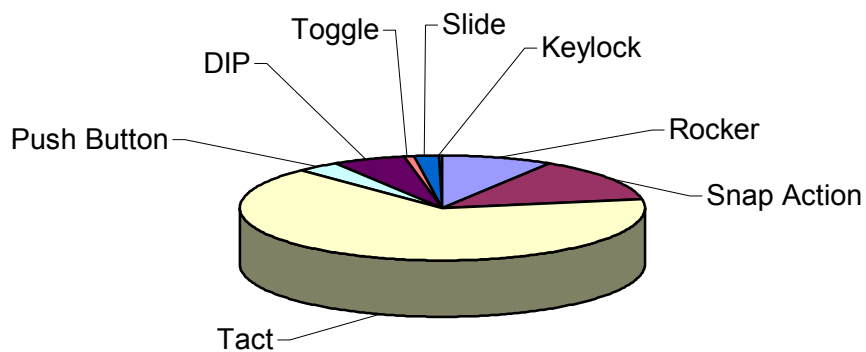
	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
Dollars (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

The top four selling switch types, in terms of dollars, are rocker, snap action, tact and push button. This group totals \$XXXX M or XX% of the total estimated market. The same group accounts for XX% or XXXX M units. The three graphs below illustrate estimated sales dollars, units and average selling prices for each switch type ranked by total estimated sales dollars.

**Total CY 2003 North American Switch Market By Type  
Ranked By Sales Dollar**

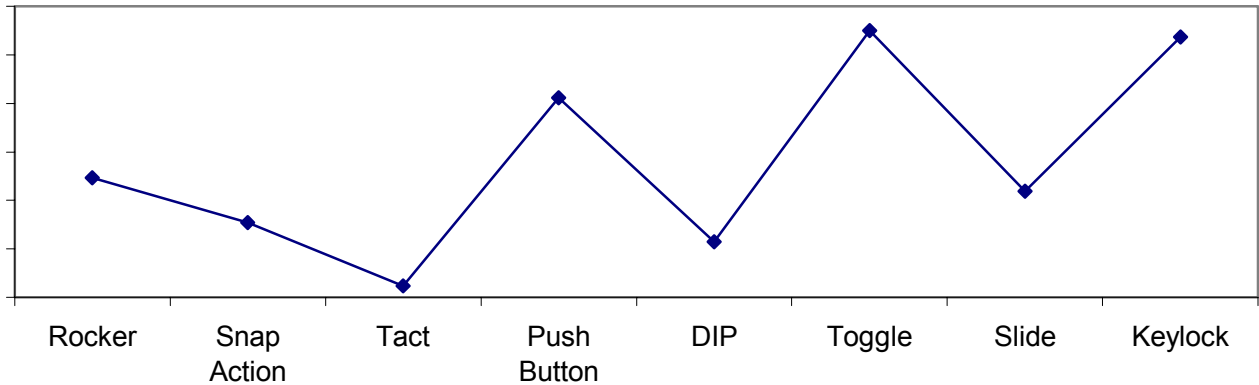


**Total CY 2003 North American Switch Market  
Unit Share By Type**



iple

**Total CY 2003 North American Switch Market ASP's Ranked By Total Sales**



The following sections will look at each switch type and the consumption by each end-user group. The analysis will include detailing sales in dollars, units, and ASP for each segment. Defining the aggregate segments that account for XX% or more of total dollar and unit sales. As well as comparing the ASP's of each segment.

DIP Switches By End-User Segment

Table below lists DIP switch sales dollars, units, and ASP for each end-user segment.

**Total CY 2003 North American DIP Switch Sales By End-User**

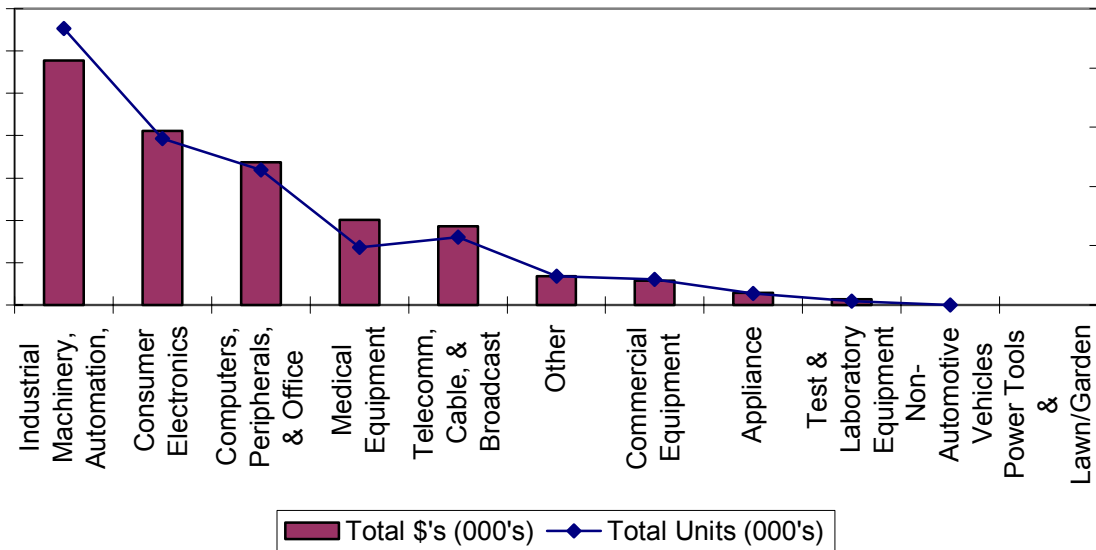
	Total \$'s (000's)	Total Units (000's)	ASP
Appliance	\$XXXX	XXXX	\$XXXX
Commercial Equipment	\$XXXX	XXXX	\$XXXX
Computers, Peripherals, & Office Equipment	\$XXXX	XXXX	\$XXXX
Consumer Electronics	\$XXXX	XXXX	\$XXXX
Industrial Machinery, Automation, & Process Controls	\$XXXX	XXXX	\$XXXX
Medical Equipment	\$XXXX	XXXX	\$XXXX
Non-Automotive Vehicles	\$XXXX	XXXX	\$XXXX
Other	\$XXXX	XXXX	\$XXXX
Power Tools & Lawn/Garden Equipment	\$XXXX	XXXX	\$XXXX
Telecomm, Cable, & Broadcast Equipment	\$XXXX	XXXX	\$XXXX

**Total CY 2003 North American DIP Switch Sales By End-User(Cont'd)**

	Total \$'s (000's)	Total Units (000's)	ASP
Test & Laboratory Equipment	\$XXXX	XXXX	\$XXXX
Total	\$XXXX	XXXX	\$XXXX

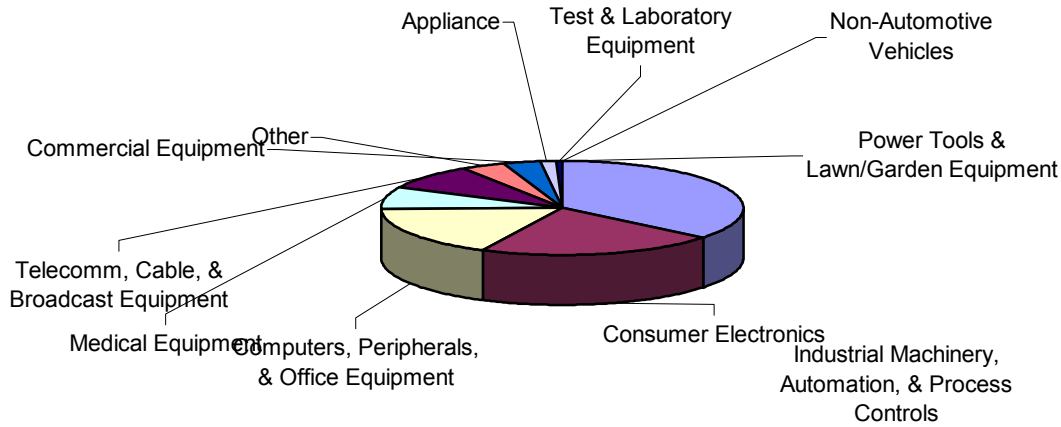
Industrial Machinery & Automation; Consumer Electronics; Computers, Peripherals & Office Equipment; and Medical Equipment are the top four purchasers of DIP switches. They account for XX% or \$XX M in sales. Unit sales for this group sum to XXX M, which is XX% of the DIP switch total.

**Total CY 2003 North American DIP Switch Sales  
Ranked By End-User Consumption**



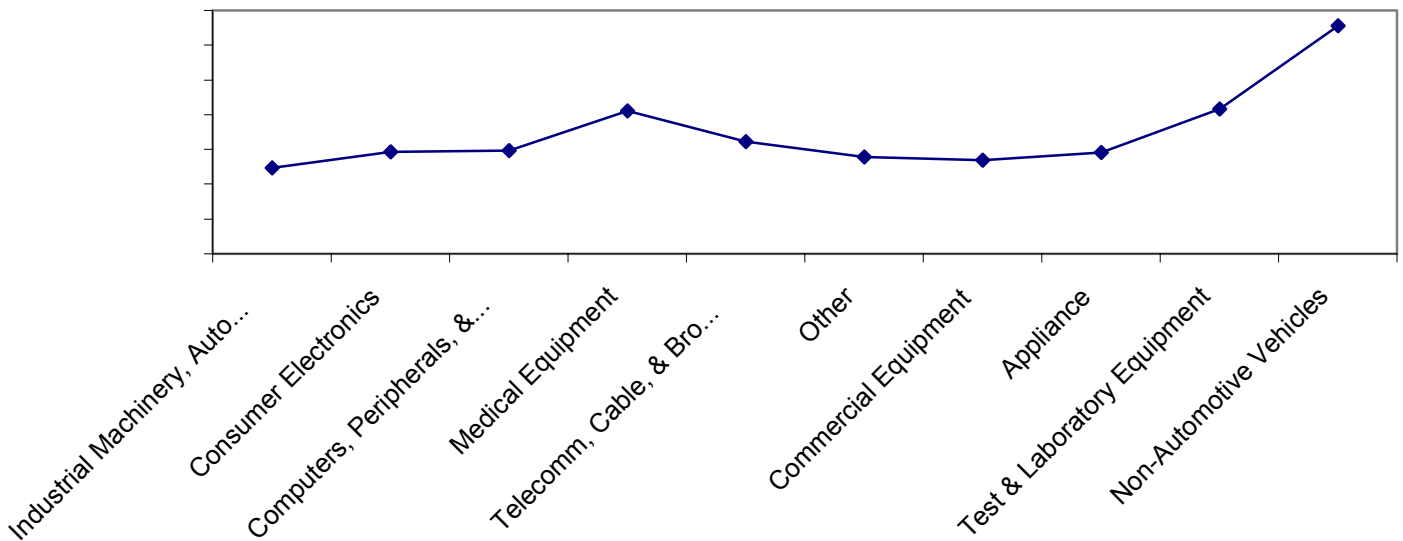
515

**Total CY 2003 North American DIP Switch  
Unit Share By End-User**



Three of the top four user groups had ASP's just above the \$XXXX for the entire product group. Despite lower utilization, Appliance, Commercial Equipment, and Others users enjoyed below average selling prices.

**Total CY 2003 North American DIP Switch ASP  
Ranked By End-User Consumption**



Keylock Switches By End-User Segment

Sales dollars, units and ASP's for keylock switches by consuming segment are listed below.

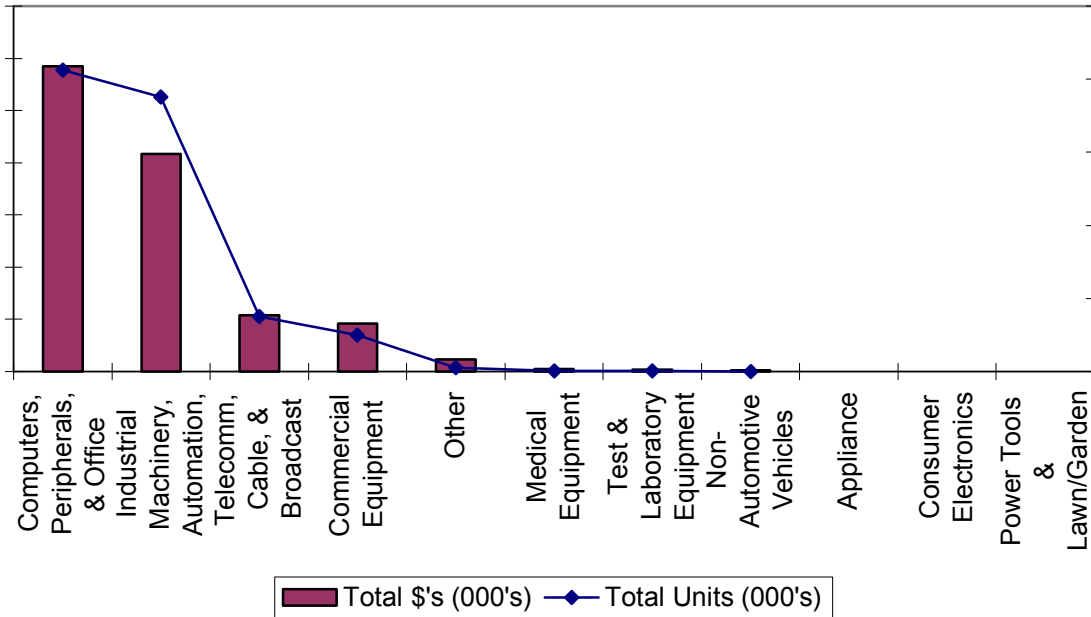
**Total CY 2003 North American Keylock Switch Sales By End-User**

	Total \$'s (000's)	Total Units (000's)	ASP
Appliance	\$XXXX	XXXX	\$XXXX
Commercial Equipment	\$XXXX	XXXX	\$XXXX
Computers, Peripherals, & Office Equipment	\$XXXX	XXXX	\$XXXX
Consumer Electronics	\$XXXX	XXXX	\$XXXX
Industrial Machinery, Automation, & Process Controls	\$XXXX	XXXX	\$XXXX
Medical Equipment	\$XXXX	XXXX	\$XXXX
Non-Automotive Vehicles	\$XXXX	XXXX	\$XXXX
Power Tools & Lawn/Garden Equipment	\$XXXX	XXXX	\$XXXX
Telecomm, Cable, & Broadcast Equipment	\$XXXX	XXXX	\$XXXX
Test & Laboratory Equipment	\$XXXX	XXXX	\$XXXX
Other	\$XXXX	XXXX	\$XXXX
Total	\$XXXX	XXXX	\$XXXX

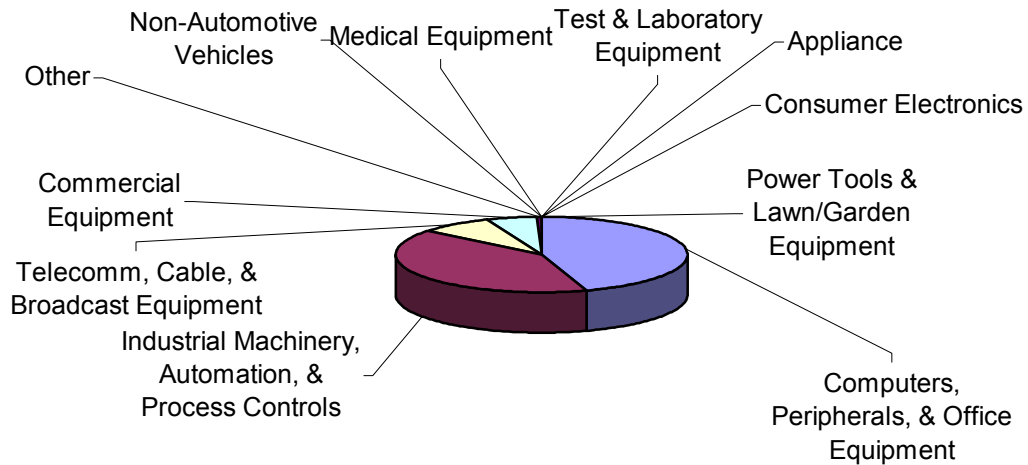
For keylock switches XX% of the sales dollars and XX% of units are sold to only two segments. These are the Computer, Peripherals, & Office Equipment, and Industrial Machinery & Automation with total sales of \$XXX M and XXX M units

Data Less Sample

**Total CY 2003 North American Keylock Sales  
Ranked By End-User Consumption**

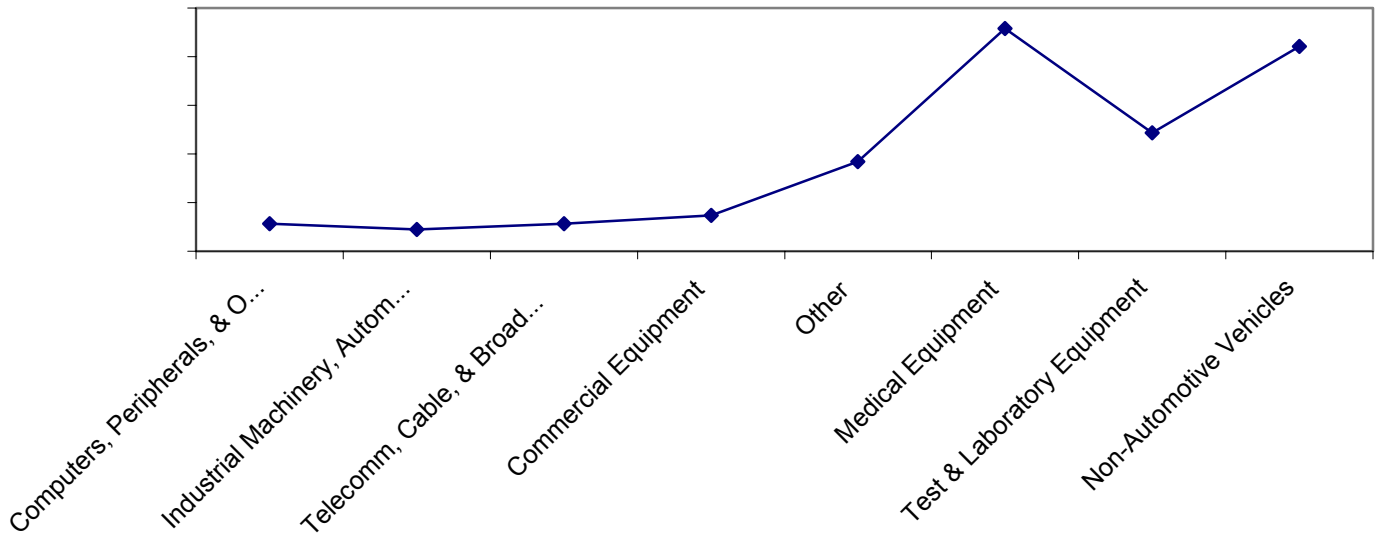


**Total CY 2003 North American Keylock Switch  
Unit Share By End-User**



Of the two largest, or any, consumers of keylock switches the Industrial group was below the overall product line ASP of \$2.686. The more demanding applications had selling prices well above \$10.00 or \$20.00.

**Total CY 2003 North American Keylock Switch ASP  
Ranked By End-User Consumption**



Push Button Switches By End-User Segment

**Data Less Sample**

Each end-user segment's usage of push button switches in terms of dollars, units, and average selling price is listed below.

**Total CY 2003 North American Push Button Switch Sales By End-User**

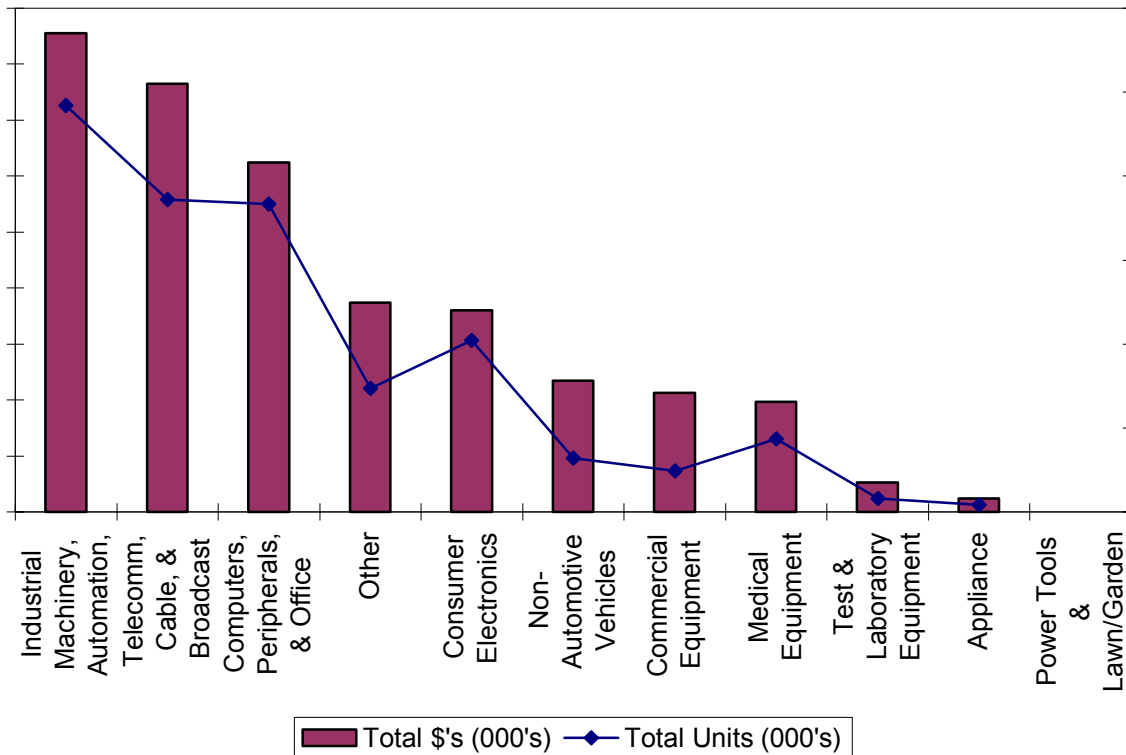
	Total \$'s (000's)	Total Units (000's)	ASP
Appliance	\$XXXX	XXXX	\$XXXX
Commercial Equipment	\$XXXX	XXXX	\$XXXX
Computers, Peripherals, & Office Equipment	\$XXXX	XXXX	\$XXXX
Consumer Electronics	\$XXXX	XXXX	\$XXXX
Industrial Machinery, Automation, & Process Controls	\$XXXX	XXXX	\$XXXX

**Total CY 2003 North American Push Button Switch Sales By End-User (Cont'd)**

	Total \$'s (000's)	Total Units (000's)	ASP
Medical Equipment	\$XXXX	XXXX	\$XXXX
Non-Automotive Vehicles	\$XXXX	XXXX	\$XXXX
Power Tools & Lawn/Garden Equipment	\$XXXX	XXXX	\$XXXX
Telecomm, Cable, & Broadcast Equipment	\$XXXX	XXXX	\$XXXX
Test & Laboratory Equipment	\$XXXX	XXXX	\$XXXX
Other	\$XXXX	XXXX	\$XXXX
Total	\$XXXX	XXXX	\$XXXX

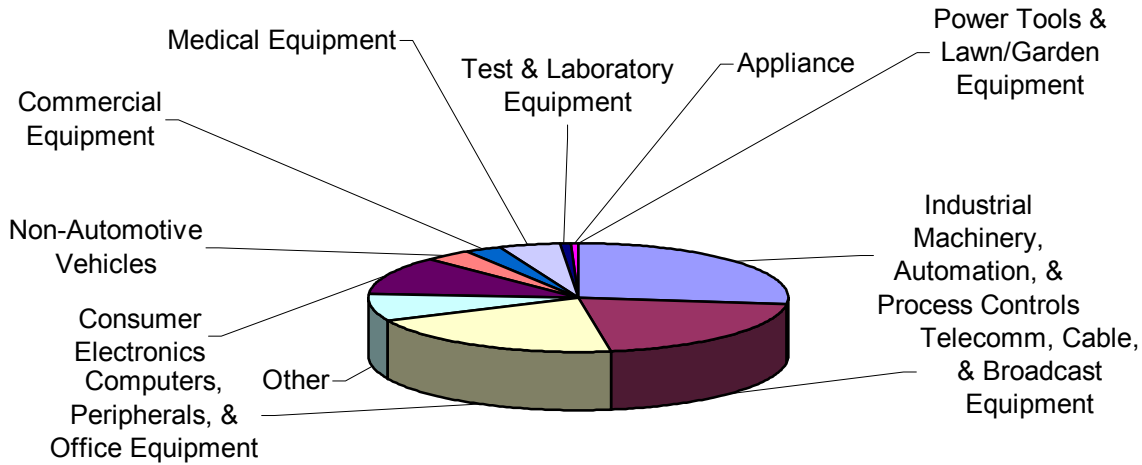
To capture an aggregate sales dollar total of more than XX% the top five end-user segments need to be included, versus the two or three for DIP and Keylock switches. The group includes Industrial Machinery & Automation; Telecomm, Broadcast & Cable Equipment; Computers, Peripherals, & Office Equipment; Other; and Consumer Electronics segments. They total \$XXXX M and XXXX M units, which is equal to XX% of the dollar and XX% of the unit totals for the push button category.

**Total CY 2003 North American Push Button Switch Sales  
Ranked By End-User Consumption**



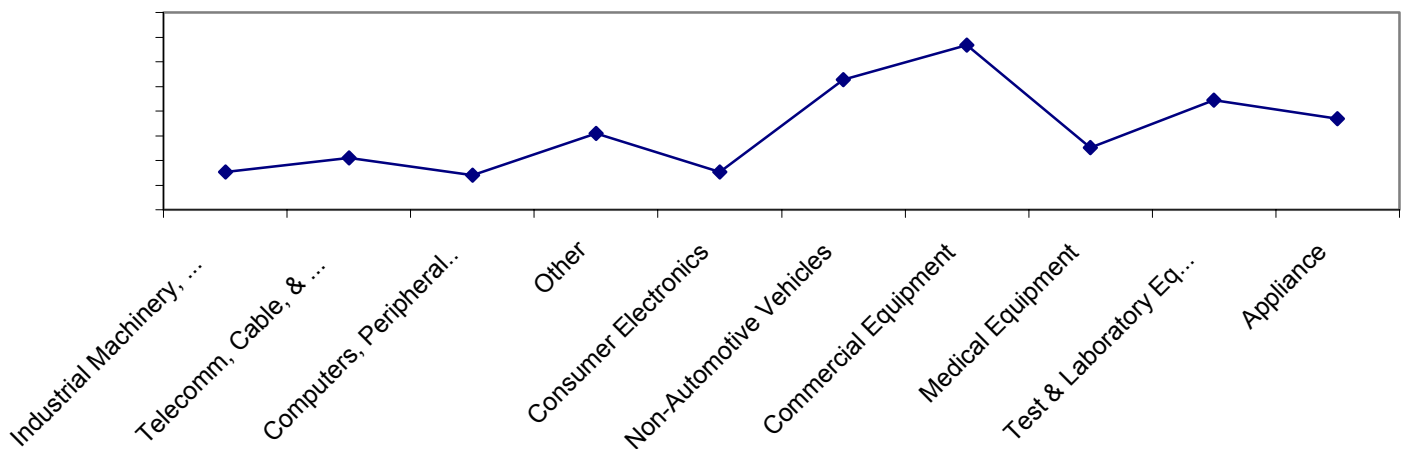
51%

**Total CY 2003 North American Push Button Switch Unit  
Share By End-User**



Four of the top end user categories have selling prices below the \$XXXX average for all push buttons sold to all groups.

**Total CY 2003 North American Push Button Switch ASP  
Ranked By End-User Consumption**



Rocker Switches By End-User Segment

Rocker switch was the largest product category for the North American CY 2003 component switch market. Consumption by end-users is spelled out below.

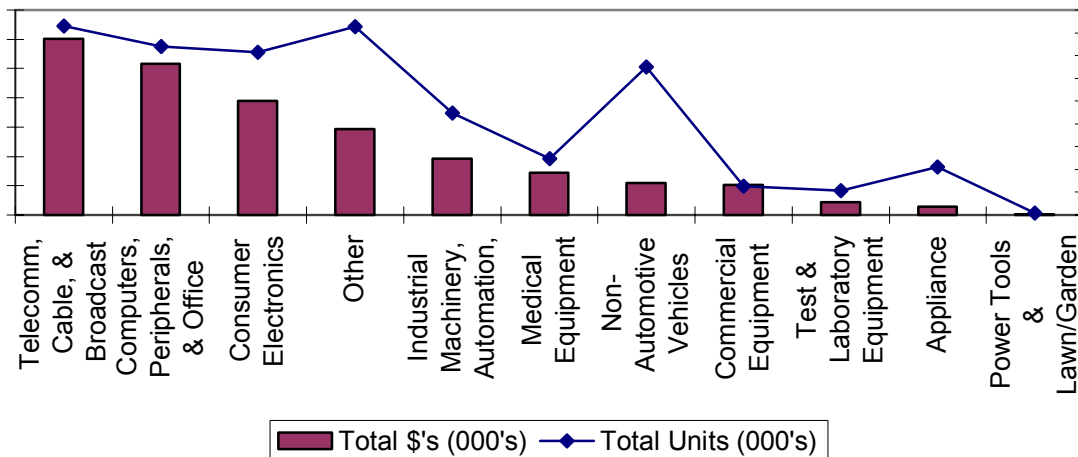
**Total CY 2003 North American Rocker Switch Sales By End-User**

	Total \$'s (000's)	Total Units (000's)	ASP
Appliance	\$XXXX	XXXX	\$XXXX
Commercial Equipment	\$XXXX	XXXX	\$XXXX
Computers, Peripherals, & Office Equipment	\$XXXX	XXXX	\$XXXX
Consumer Electronics	\$XXXX	XXXX	\$XXXX
Industrial Machinery, Automation, & Process Controls	\$XXXX	XXXX	\$XXXX
Medical Equipment	\$XXXX	XXXX	\$XXXX
Non-Automotive Vehicles	\$XXXX	XXXX	\$XXXX
Power Tools & Lawn/Garden Equipment	\$XXXX	XXXX	\$XXXX
Telecomm, Cable, & Broadcast Equipment	\$XXXX	XXXX	\$XXXX
Test & Laboratory Equipment	\$XXXX	XXXX	\$XXXX
Other	\$XXXX	XXXX	\$XXXX
Total	\$XXXX	XXXX	\$XXXX

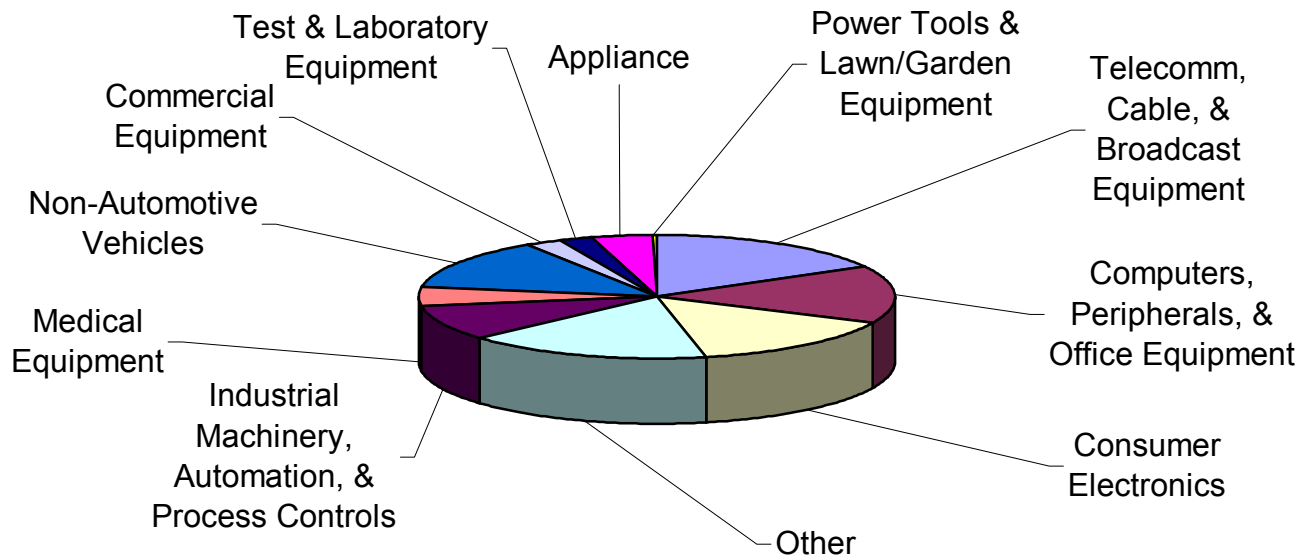
The Telecomm, Cable, & Broadcast Equipment consumed the most rocker switches in terms of both units and dollars. The next three largest customers were Computer, Peripherals, & Office Equipment; Consumer Electronics; and Other manufactures. The top four used XX% or XXXX M of the rocker switch units, which carried XX% or \$XXXX M of the total rocker switch dollar value.

Market Share Summary

**Total CY 2003 North American Rocker Switch Sales  
Ranked By End-User Consumption**



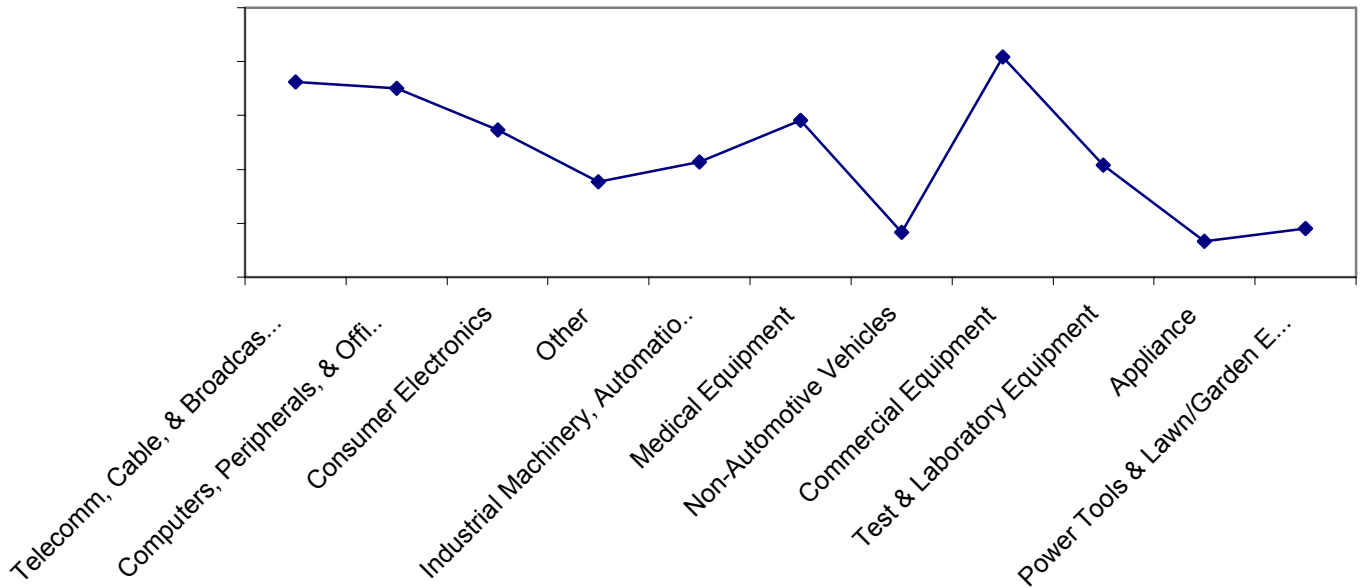
## Total CY 2003 North American Rocker Switch Unit Share By End-User



When placed in ranked in order of dollar consumption rocker switch selling prices display an unusual trend. The largest users are paying higher prices while smaller user groups are at prices one fourth that level. This is most likely attributable to the use of printed circuit board mounted switches by the top three consumers. These board mounted rocker switches are sealed switches to protect them during the soldering process and are sold at premium over unsealed switches.

Another factor maybe that only about 11% of the total rocker switch market is being reported to switch tracks, versus the 50% to 80% for all other categories. The fact that the Non-Automotive Vehicle; Appliance; and Power Tool & Lawn /Garden Equipment manufacturers are paying the best prices does seem reasonable. Since the majority of the volume sold to these segments may reside in the 90% of the market supplied by rocker switch manufacturers not reporting to Switch Tracks. This could result in rocker switch dollars and units sold to these segments to be understated in this survey. In other words, the lower prices for these segments may indeed be accurate and their consumption ranking is too low.

**Total CY 2003 North American Rocker Switch ASP  
Ranked By End-User Consumption**



Slide Switches By End-User Segment

Slide switch sales to end-use markets is described in dollars, units, and ASP in the next table.

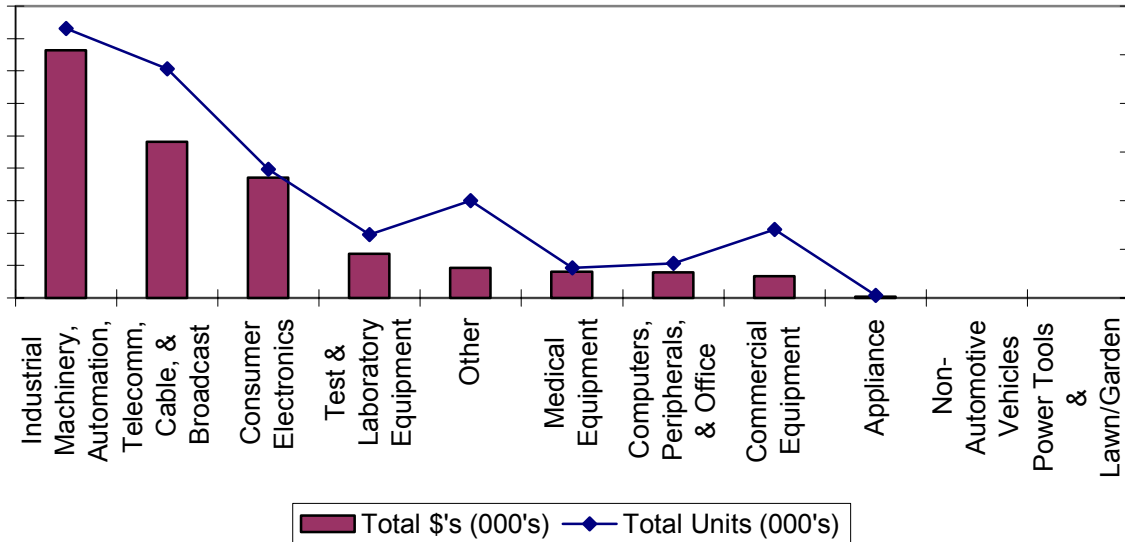
Data Less Sample

**Total CY 2003 North American Slide Switch Sales By End-User**

	Total \$'s (000's)	Total Units (000's)	ASP
Appliance	\$XXXX	XXXX	\$XXXX
Commercial Equipment	\$XXXX	XXXX	\$XXXX
Computers, Peripherals, & Office Equipment	\$XXXX	XXXX	\$XXXX
Consumer Electronics	\$XXXX	XXXX	\$XXXX
Industrial Machinery, Automation, & Process Controls	\$XXXX	XXXX	\$XXXX
Medical Equipment	\$XXXX	XXXX	\$XXXX
Non-Automotive Vehicles	\$XXXX	XXXX	\$XXXX
Power Tools & Lawn/Garden Equipment	\$XXXX	XXXX	\$XXXX
Telecomm, Cable, & Broadcast Equipment	\$XXXX	XXXX	\$XXXX
Test & Laboratory Equipment	\$XXXX	XXXX	\$XXXX
Other	\$XXXX	XXXX	\$XXXX
Total	\$XXXX	XXXX	\$XXXX

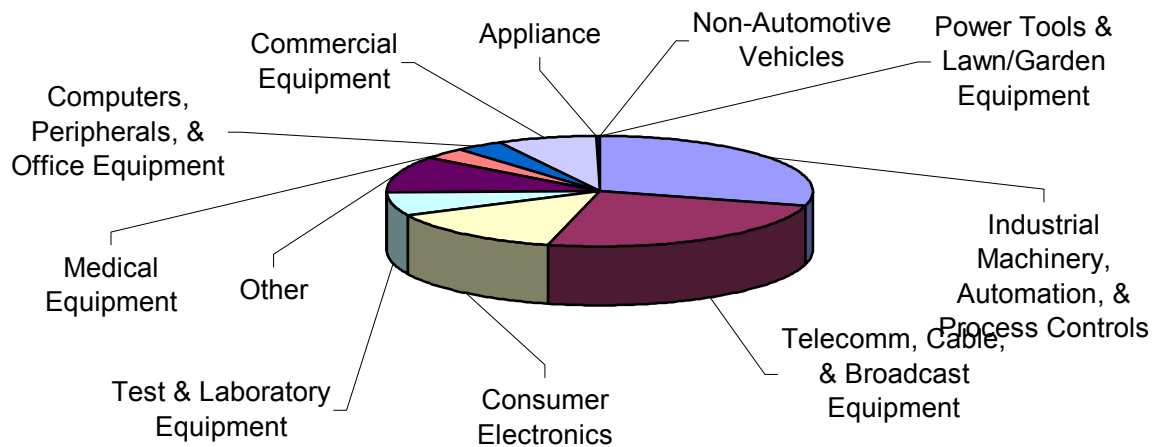
Industrial Machinery & Automation; Telecomm, Cable & Broadcast Equipment, and Consumer Electronics combine to represent XX% or \$XXXX M dollars of the slide switch market. They used XXXX M or XX% of the total units.

**Total CY 2003 North American Slide Switch Sales  
Ranked By End-User Consumption**



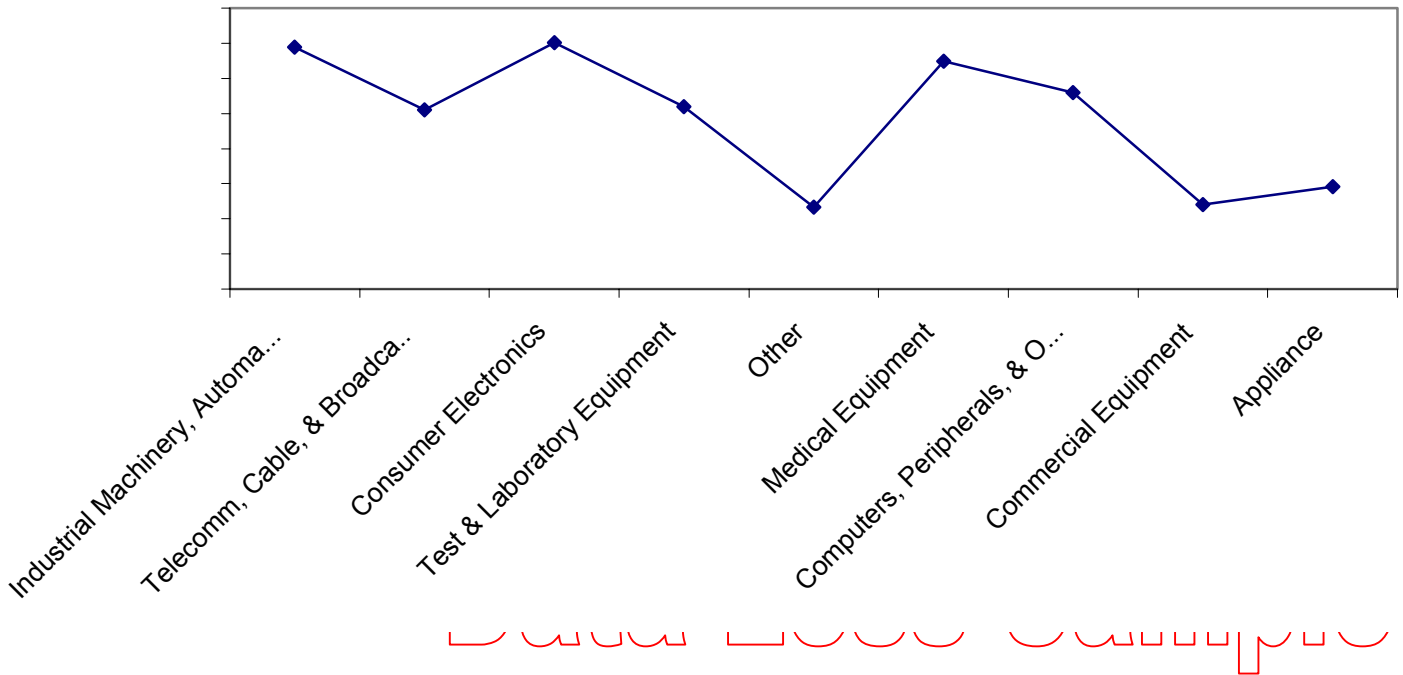
*Do not use as a sample*

**Total CY 2003 North American Slide Switch  
Unit Share By End-User**



The average selling price for the total slide switch category in CY 2003 was \$XXXX. Two of the top three users of slide switches averaged higher than this. As with rocker switches, the larger consumers are probably using sealed slide switches that are mounted on printed circuit boards. While Appliance, Commercial Equipment, and Other segments are purchasing lower priced unsealed products as indicated in the next graph.

**Total CY 2003 North American Slide Switch ASP  
Ranked by End-User Consumption**



Snap Action Switches By End-User Segment

Snap action switches are the second largest product segment in the North American component switch market. Their usage is illustrated below.

**Total CY 2003 North American Snap Action Switch Sales By End-User**

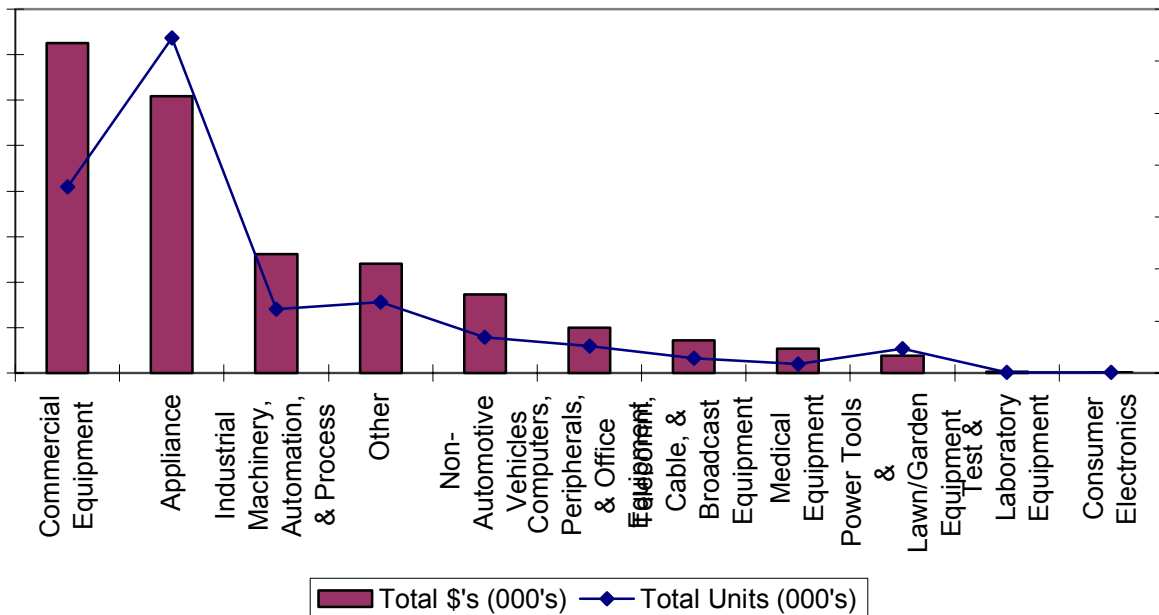
	Total \$'s (000's)	Total Units (000's)	ASP
Appliance	\$XXXX	XXXX	\$XXXX
Commercial Equipment	\$XXXX	XXXX	\$XXXX
Computers, Peripherals, & Office Equipment	\$XXXX	XXXX	\$XXXX
Consumer Electronics	\$XXXX	XXXX	\$XXXX
Industrial Machinery, Automation, & Process Controls	\$XXXX	XXXX	\$XXXX
Medical Equipment	\$XXXX	XXXX	\$XXXX

**Total CY 2003 North American Snap Action Switch Sales By End-User(Cont'd)**

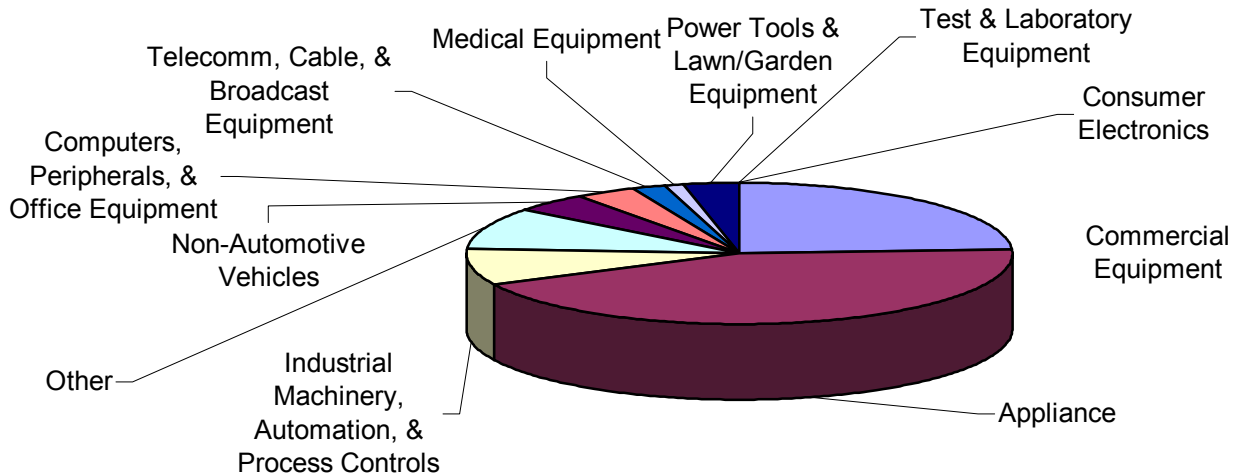
	Total \$'s (000's)	Total Units (000's)	ASP
Non-Automotive Vehicles	\$XXXX	XXXX	\$XXXX
Power Tools & Lawn/Garden Equipment	\$XXXX	XXXX	\$XXXX
Telecomm, Cable, & Broadcast Equipment	\$XXXX	XXXX	\$XXXX
Test & Laboratory Equipment	\$XXXX	XXXX	\$XXXX
Other	\$XXXX	XXXX	\$XXXX
Total	\$XXXX	XXXX	\$XXXX

Four of the eleven end-user categories account for more than three quarters of snap action switch sales. These are Commercial Equipment, Appliance, Industrial Machinery & Automation, and Other consumers. Shipments to these four reached \$ XXXX M or XX% of the value and XX % of units at XXXX M.

**Total CY 2003 North American Snap Action Switch Sales  
Ranked By End-User Consumption**

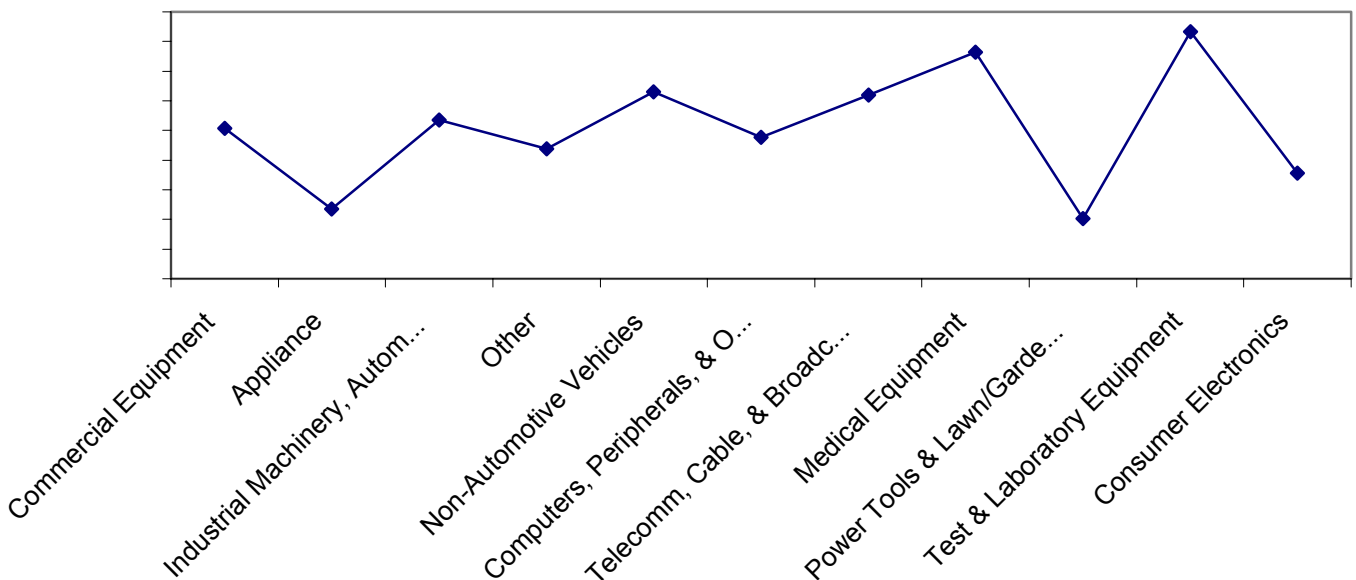


**Total CY 2003 North American Snap Action Switch  
Unit Share By End-User**



The Appliance manufacturers have the highest unit shipments and receive the most competitive pricing. The product line average selling price for snap action switches is \$XXXX. Aside from Appliance, the other top consumers accept prices that are above average.

**Total CY 2003 North American Snap Action Switch ASP  
Ranked By End-User Consumption**



Tact Switches By End-User Segment

Tact switches represent XX% of the units for the CY 2003 North American component switch market. Shipment of tact switches to users is shown below.

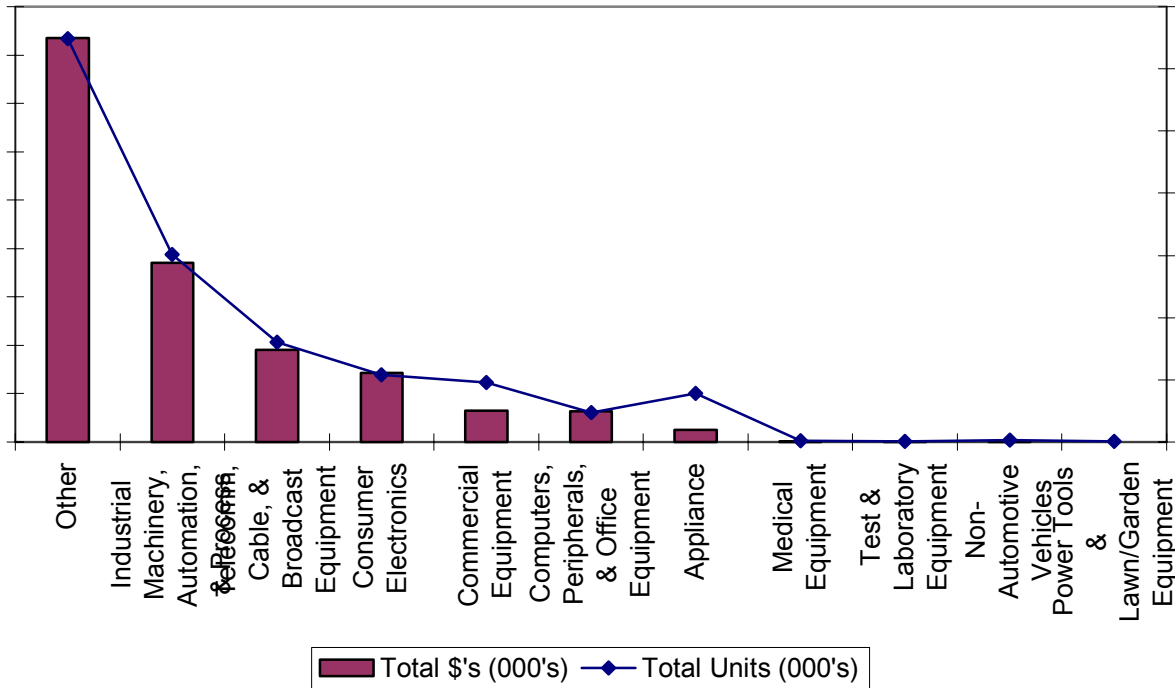
**Total CY 2003 North American Tact Switch Sales By End-User**

	Total \$'s (000's)	Total Units (000's)	ASP
Appliance	\$XXXX	XXXX	\$XXXX
Commercial Equipment	\$XXXX	XXXX	\$XXXX
Computers, Peripherals, & Office Equipment	\$XXXX	XXXX	\$XXXX
Consumer Electronics	\$XXXX	XXXX	\$XXXX
Industrial Machinery, Automation, & Process Controls	\$XXXX	XXXX	\$XXXX
Medical Equipment	\$XXXX	XXXX	\$XXXX
Non-Automotive Vehicles	\$XXXX	XXXX	\$XXXX
Power Tools & Lawn/Garden Equipment	\$XXXX	XXXX	\$XXXX
Telecomm, Cable, & Broadcast Equipment	\$XXXX	XXXX	\$XXXX
Test & Laboratory Equipment	\$XXXX	XXXX	\$XXXX
Other	\$XXXX	XXXX	\$XXXX
Total	\$XXXX	XXXX	\$XXXX

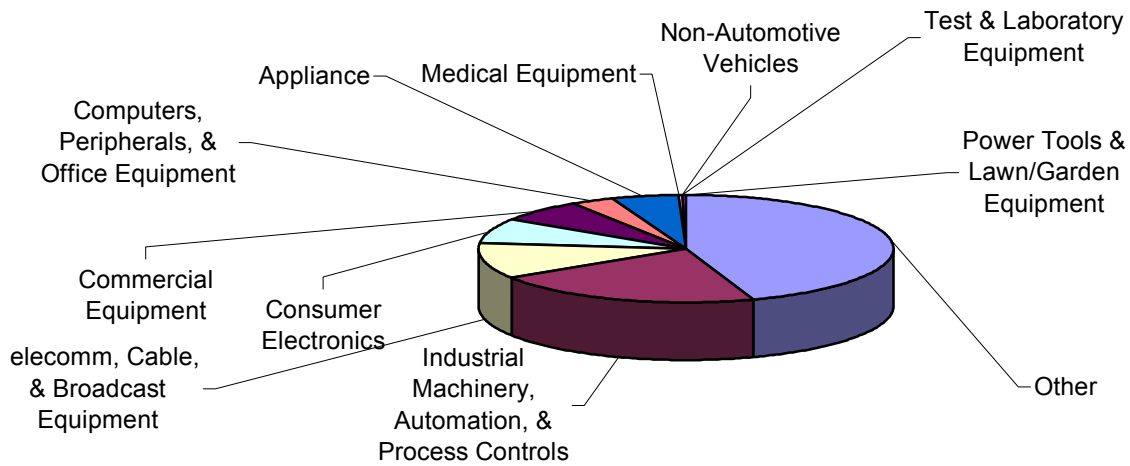
Sales to consumers other than the ten defined for this survey represented just under half the total dollars and units for CY 2003. This combined with Industrial Machinery & Automation and Telecomm, Cable & Broadcast Equipment users accounted for \$ XXX M or XX % of the total dollars with XXXX M or XX% of the units.

Data Less Sample

**Total CY 2003 North American Tact Switch Sales  
Ranked By End-User Consumption**

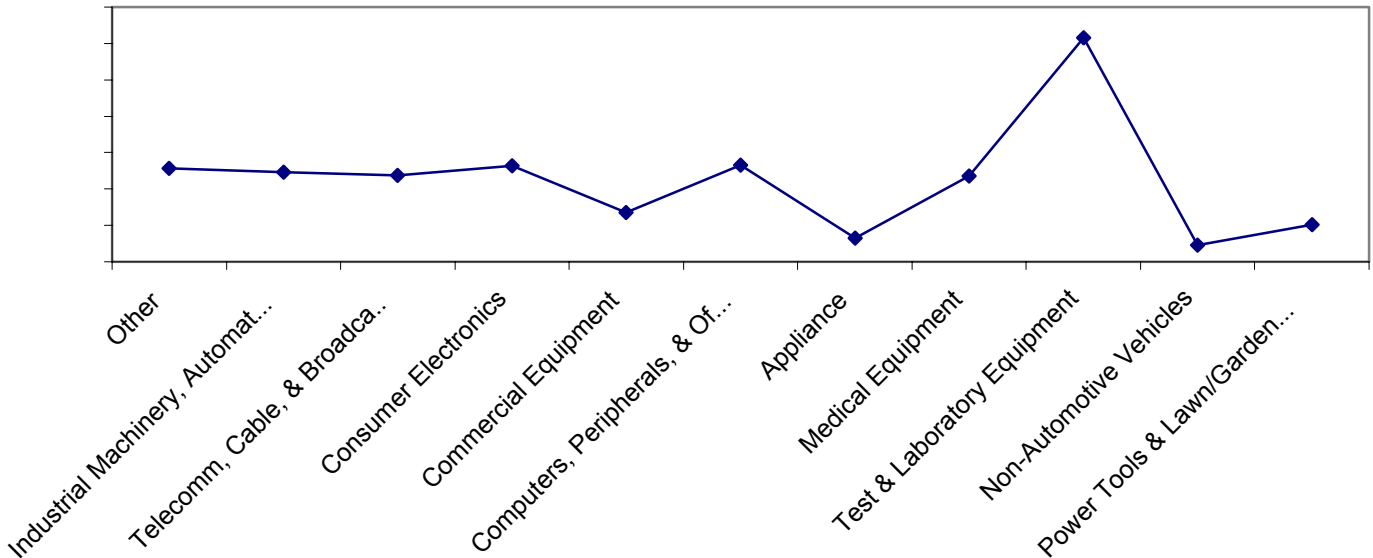


**Total CY 2003 North American Tact Switch  
Unit Share By End-User**



The more significant customers received pricing near the \$XXXX tact switch product line average. The makers of Non-Automotive Vehicles, Appliances, Power Tools & Lawn/Garden Equipment, and Commercial Equipment purchased the most competitively priced tact switches.

**Total CY 2003 North American Tact Switch ASP  
Ranked By End-User Consumption**



Data Less Sample

Toggle Switches By End-User Segment

The final product type to be detailed in terms of shipments to users is toggle switch.

**Total CY 2003 North American Toggle Switch Sales By End-User**

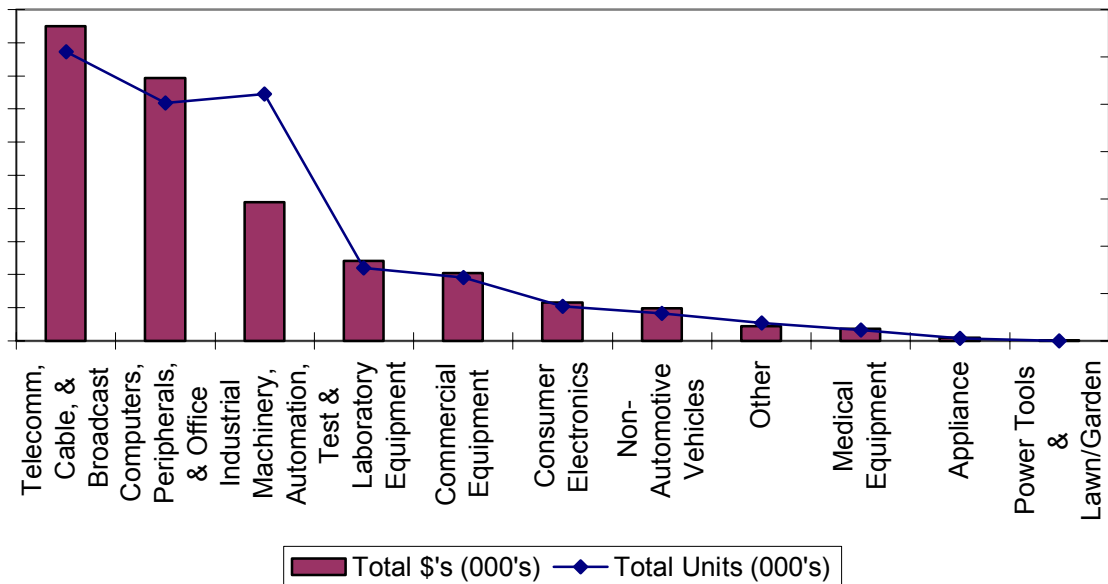
	Total \$'s (000's)	Total Units (000's)	ASP
Appliance	\$XXXX	XXXX	\$XXXX
Commercial Equipment	\$XXXX	XXXX	\$XXXX
Computers, Peripherals, & Office Equipment	\$XXXX	XXXX	\$XXXX
Consumer Electronics	\$XXXX	XXXX	\$XXXX
Industrial Machinery, Automation, & Process Controls	\$XXXX	XXXX	\$XXXX
Medical Equipment	\$XXXX	XXXX	\$XXXX
Non-Automotive Vehicles	\$XXXX	XXXX	\$XXXX
Power Tools & Lawn/Garden Equipment	\$XXXX	XXXX	\$XXXX
Telecomm, Cable, & Broadcast Equipment	\$XXXX	XXXX	\$XXXX

**Total CY 2003 North American Toggle Switch Sales By End-User(cont'd)**

	Total \$'s (000's)	Total Units (000's)	ASP
Test & Laboratory Equipment	\$XXXX	XXXX	\$XXXX
Other	\$XXXX	XXXX	\$XXXX
Total	\$XXXX	XXXX	\$XXXX

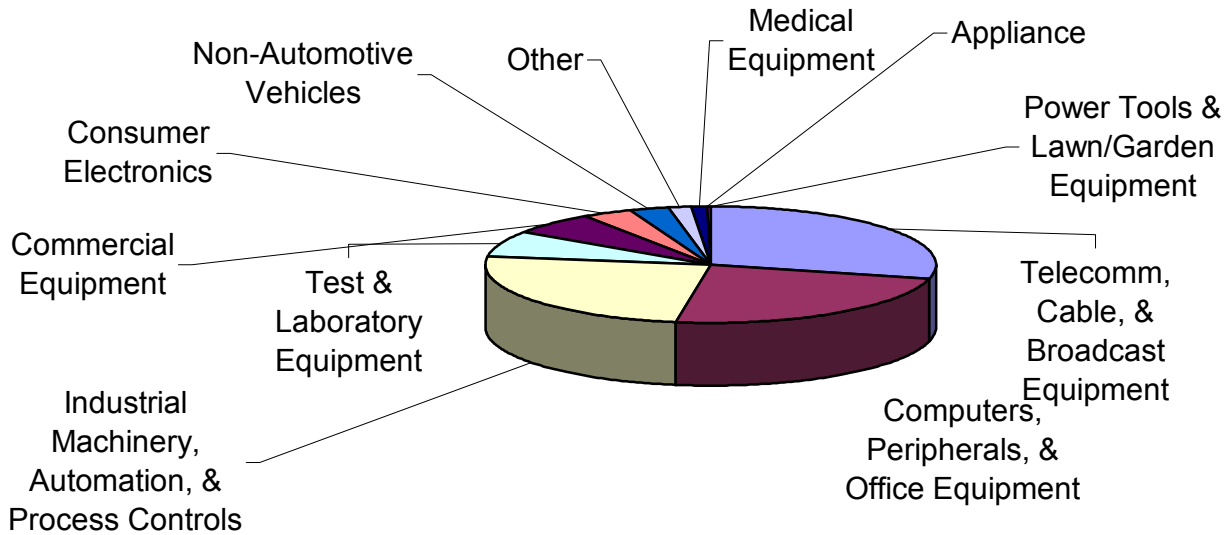
The three best customer groups for toggle switches are Telecomm, Cable & Broadcast Equipment; Computer, Peripherals, & Office Equipment; and Industrial Machinery & Automation makers. This group purchased XX% or \$XXXX M, which equated to XXXX M or XX% of the units.

**Total CY 2003 North American Toggle Switch Sales  
Ranked By End-User Consumption**



512

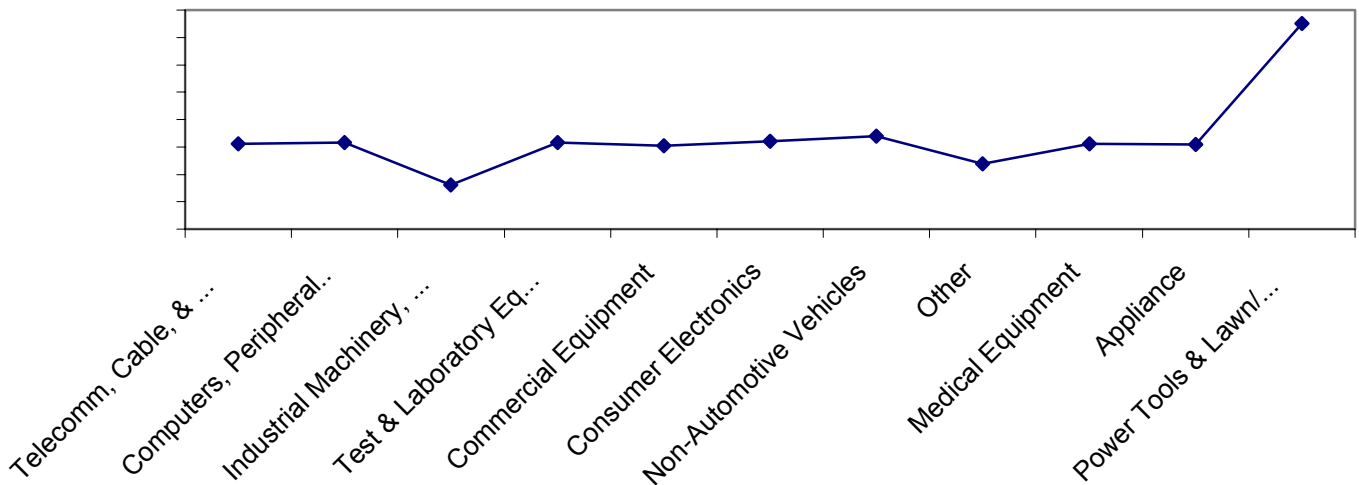
### Total CY 2003 North American Toggle Switch Unit Share By End-User



The lowest cost toggle switches were consumed by Industrial Machinery & Automation manufacturers. Again, the difference in sealed printed circuit board and unsealed panel mount applications is the most probable mechanism driving the price difference among the large users of toggle switches.

*Data Loss Sample*

### Total CY 2003 North American Toggle Switch ASP Ranked By End-User Consumption



**End-User Segment By Switch Types**

In this section of the report each end-user segment will be examined by looking their purchases of the eight switch types previously described. The group of switch types that account for 75% of the dollars spent in each segment will be defined.

The table below lists each end-user group and their total component switch purchase for CY 2003.

**Total CY 2003 North American Switch Sales By End-User**

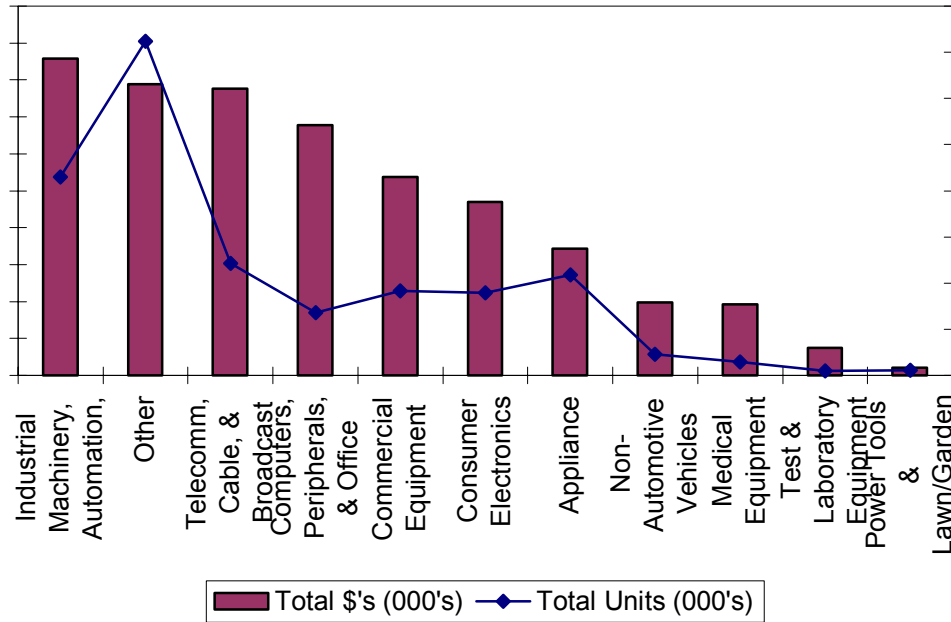
	Total \$'s (000's)	Total Units (000's)	ASP
Appliance	\$XXXX	XXXX	\$XXXX
Commercial Equipment	\$XXXX	XXXX	\$XXXX
Computers, Peripherals, & Office Equipment	\$XXXX	XXXX	\$XXXX
Consumer Electronics	\$XXXX	XXXX	\$XXXX
Industrial Machinery, Automation, & Process Controls	\$XXXX	XXXX	\$XXXX
Medical Equipment	\$XXXX	XXXX	\$XXXX
Non-Automotive Vehicles	\$XXXX	XXXX	\$XXXX
Power Tools & Lawn/Garden Equipment	\$XXXX	XXXX	\$XXXX
Telecomm, Cable, & Broadcast Equipment	\$XXXX	XXXX	\$XXXX
Test & Laboratory Equipment	\$XXXX	XXXX	\$XXXX
Other	\$XXXX	XXXX	\$XXXX
Total	\$XXXX	XXXX	\$XXXX

Data Loss Sample

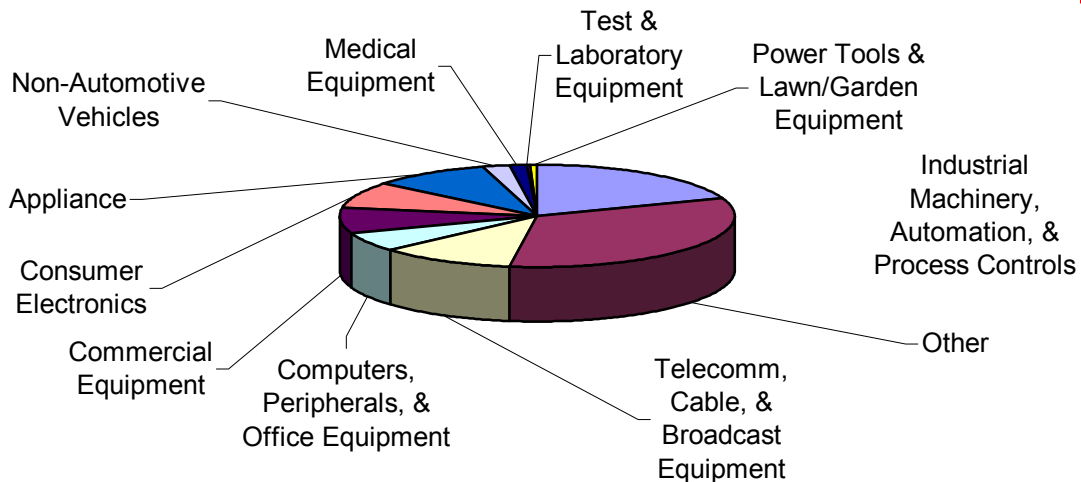
No single group dominates in this group of eleven. The top six consumer groups, Industrial Machinery & Automation; Other; Telecomm, Cable & Broadcast; Computer, Peripherals, & Office Equipment; Commercial Equipment; and Consumer Electronics, are needed to reach an aggregate XX% or \$XXXX M. The units consumed by this group totaled XXXX M or XX% of the total.

The average selling price for each group is driven by the product mix purchased, which makes meaningful comparisons between the groups questionable.

**Total CY 2003 North American Switch Sales Ranked By End-User End-User Consumption**



**Total CY 2003 North American Switch Sales Share of Units By End-User Segment**



ple

Appliance Segment By Switch Type

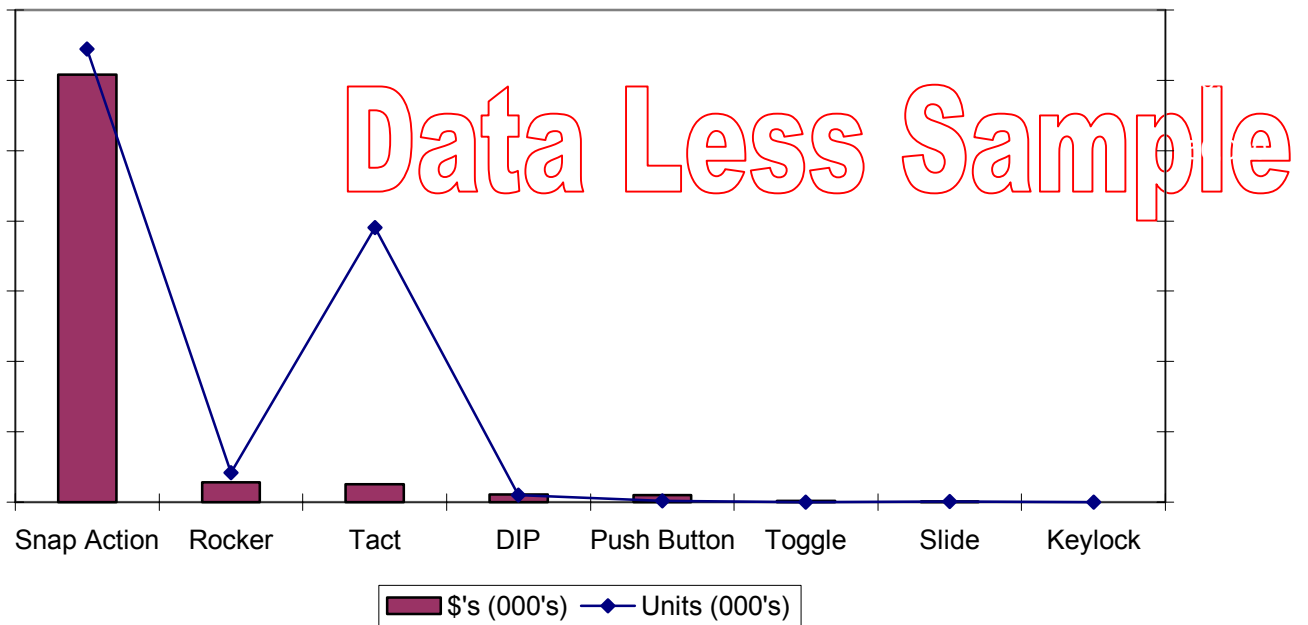
Appliance manufacturers tallied seventh in total sales in the North American market. This position may have been improved if rotary switches had been within the scope of this survey. The following table outlines the usage of the eight switch types covered.

**Total CY 2003 North American Appliance Segment Sales By Switch Type**

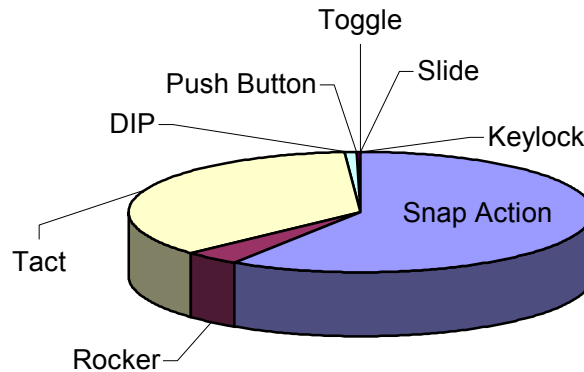
	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

Snap action switches led the usage in the in the appliance industry with XX% or \$XXXX M of the total dollars and XX% or XXXX M units. Tact switches accounted for another XX% of the units and only an additional XX% of the total value spent on switches.

**Total CY 2003 North American Appliance Segment  
Ranked Type Sales**



**Total CY 2003 North American Appliance Segment  
Unit Share By Type**



Commercial Equipment Segment By Switch Type

Fourth in shipment dollars the Commercial Equipment users total component is defined below.

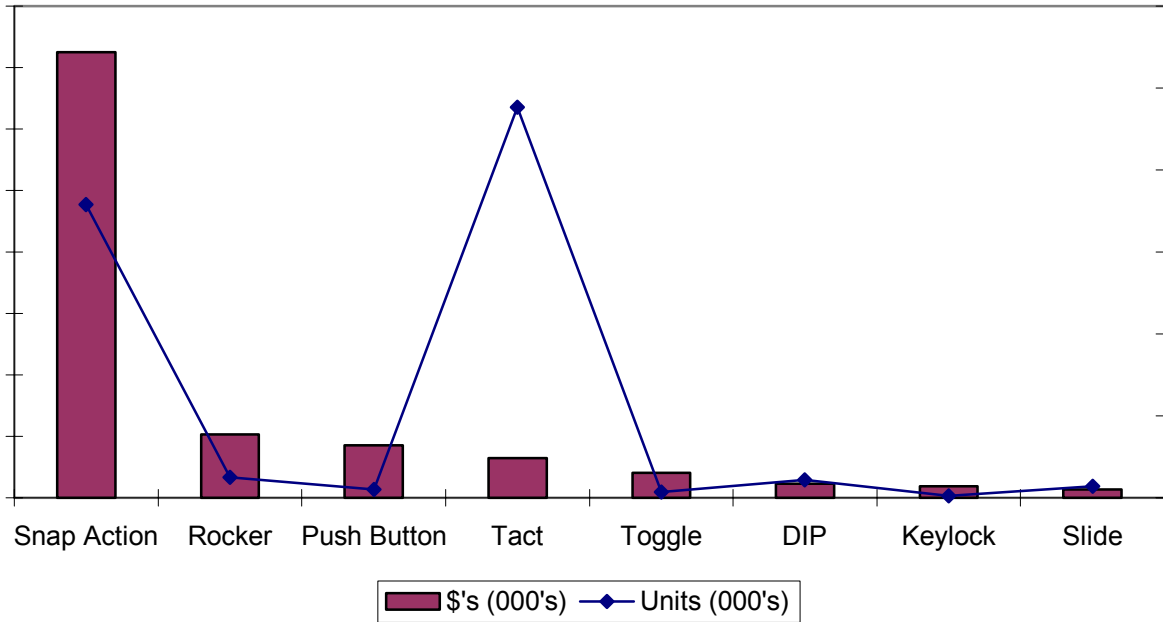
**Total CY 2003 North American Commercial Equipment Segment Sales By Switch Type**

	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

As in the Appliance group, snap action switches had sales significantly higher than any other type. Snap action shipments tallied to \$ XXXX M, which is XX % of the segment total. Purchases of rockers and push buttons added another XX%, bringing the total for these three to XX % of the total \$ XXXX M.

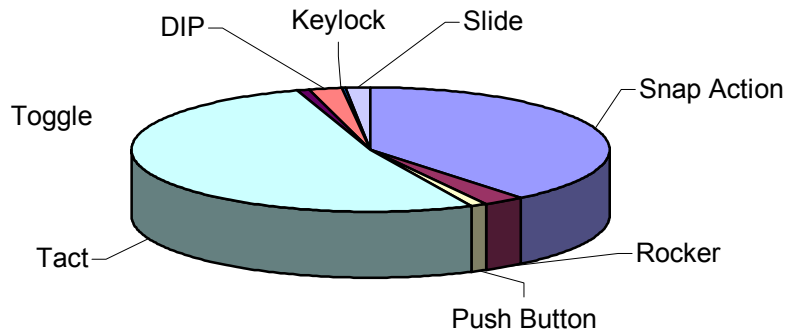
Tact switches led unit usage and snap action switches the second largest total. Together these two types represented XX% of the unit consumption of Commercial Equipment makers.

**Total CY 2003 North American Commercial Equipment Segment  
Ranked By Type Sales**



**Total CY 2003 North American Commercial  
Equipment Segment Unit Share By Type**

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Computers, Peripherals, & Office Equipment Segment By Switch Type

Number four among the eleven end-users was the Computer, Peripherals, & Office Equipment producers.

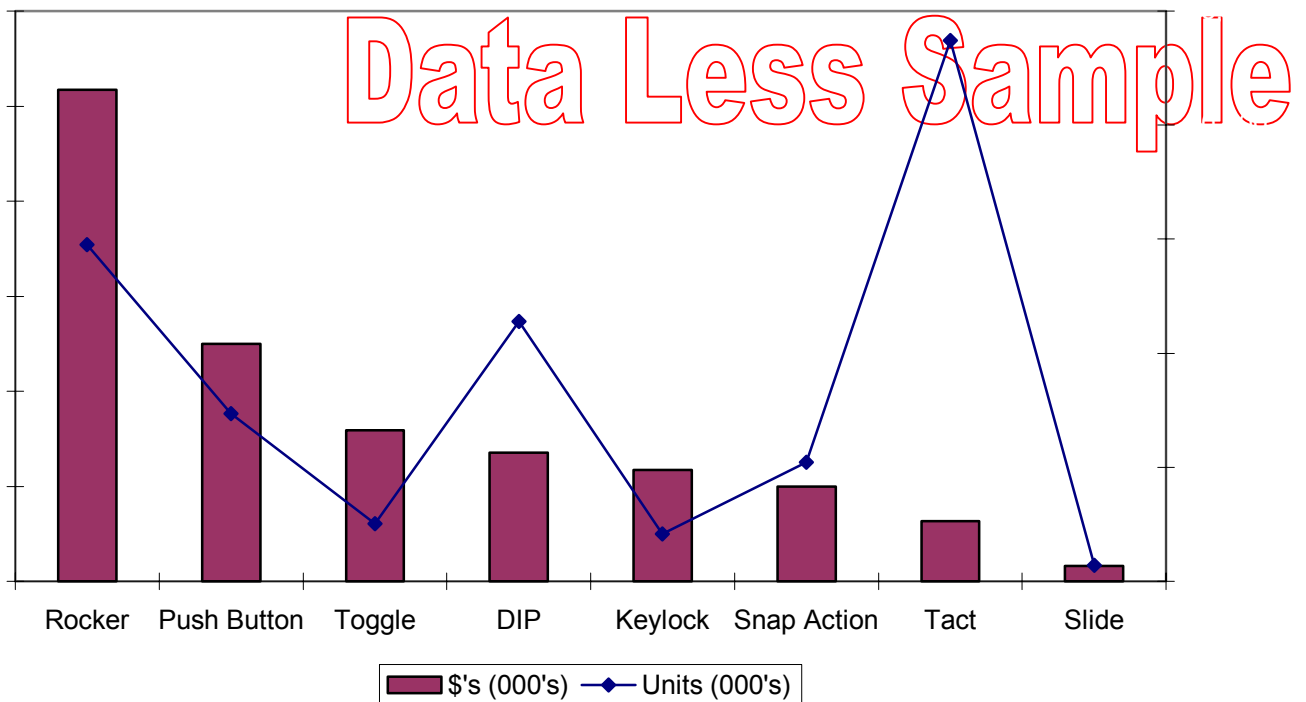
**Total CY 2003 North American Computers, Peripherals, & Office Equipment Segment Sales By Switch Type**

	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

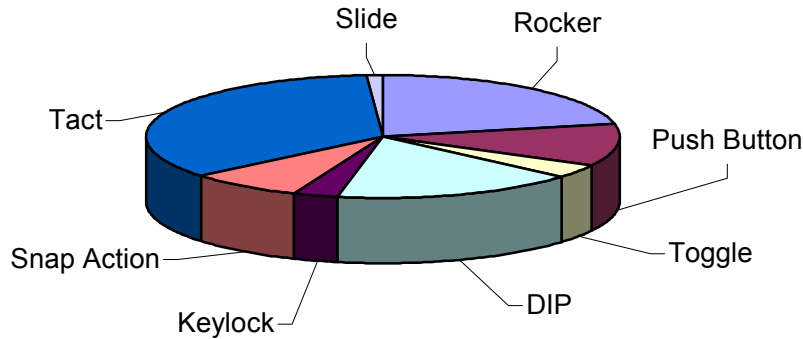
Rocker , push button, toggle and DIP switches had combined purchases of \$XXXX M or XX% of the total segment. Which is a more diverse usage than the Appliance or Commercial Equipment suppliers.

To obtain the group of top unit shipments, toggle switch would be replaced by tact. Together with rocker, push button, and DIP this group covered XX% of the units consumed in this segment.

**Total CY 2003 North American Computers, Peripherals, & Office Equipment Segment Ranked By Type Sales**



**Total CY 2003 North American Computers, Peripherals, & Office Equipment Segment Unit Share By Type**



Consumer Electronics Segment By Switch Type

Consumer Electronics continues to have some presence in North America and ranked sixth in shipment value of component switches.

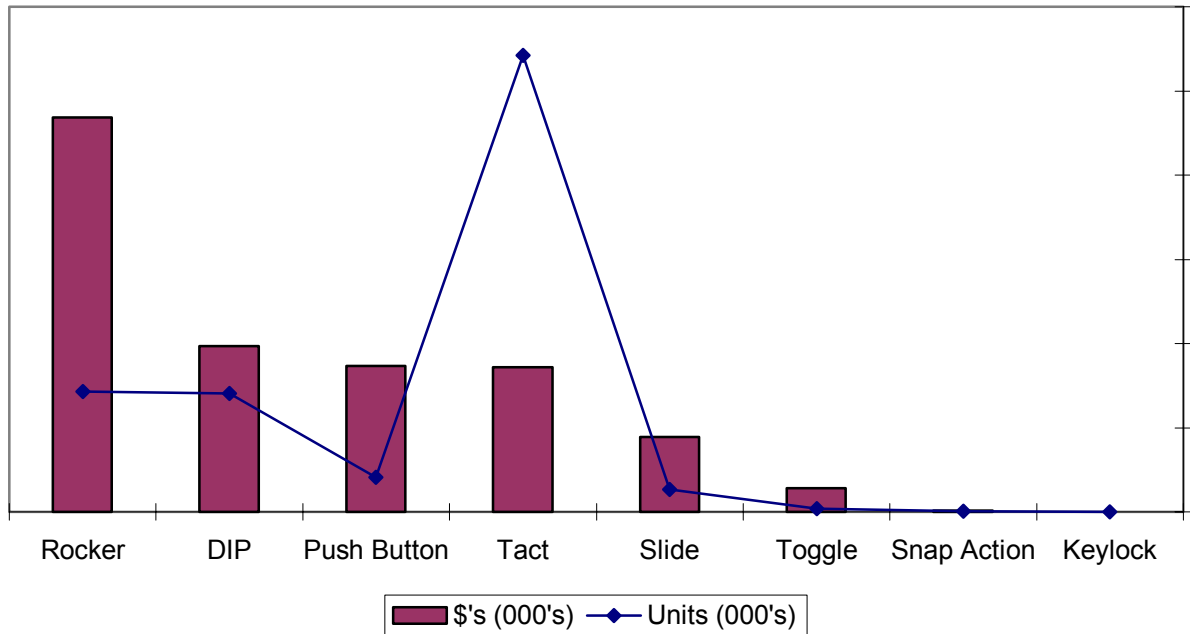
**Total CY 2003 North American Consumer Electronics Segment Sales By Switch Type**

	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

Three types, rockers, push button and DIP, led sales into this segment and equated to XX% of the billing value.

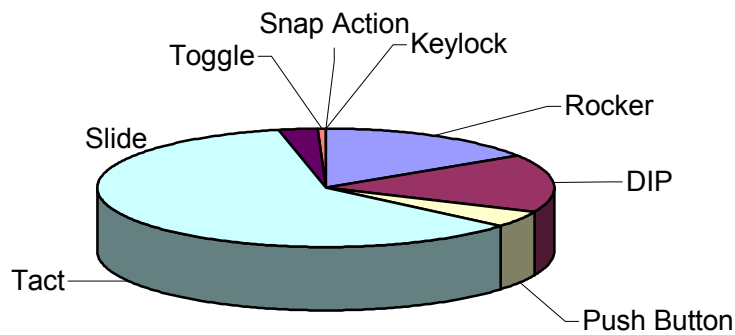
Tact switches again led the units and combined with DIP and rockers totaled XXXX M, which is XX % of the entire end-user group.

**Total CY 2003 North American Consumer Electronics Segment  
Ranked By Type Sales**



**Total CY 2003 North American Consumer Electronics  
Segment Unit Share By Type**

iple



Industrial Machinery, Automation, & Process Controls Segment By Switch Type

This end-user segment led all others in the value of purchases and the diversity of types consumed.

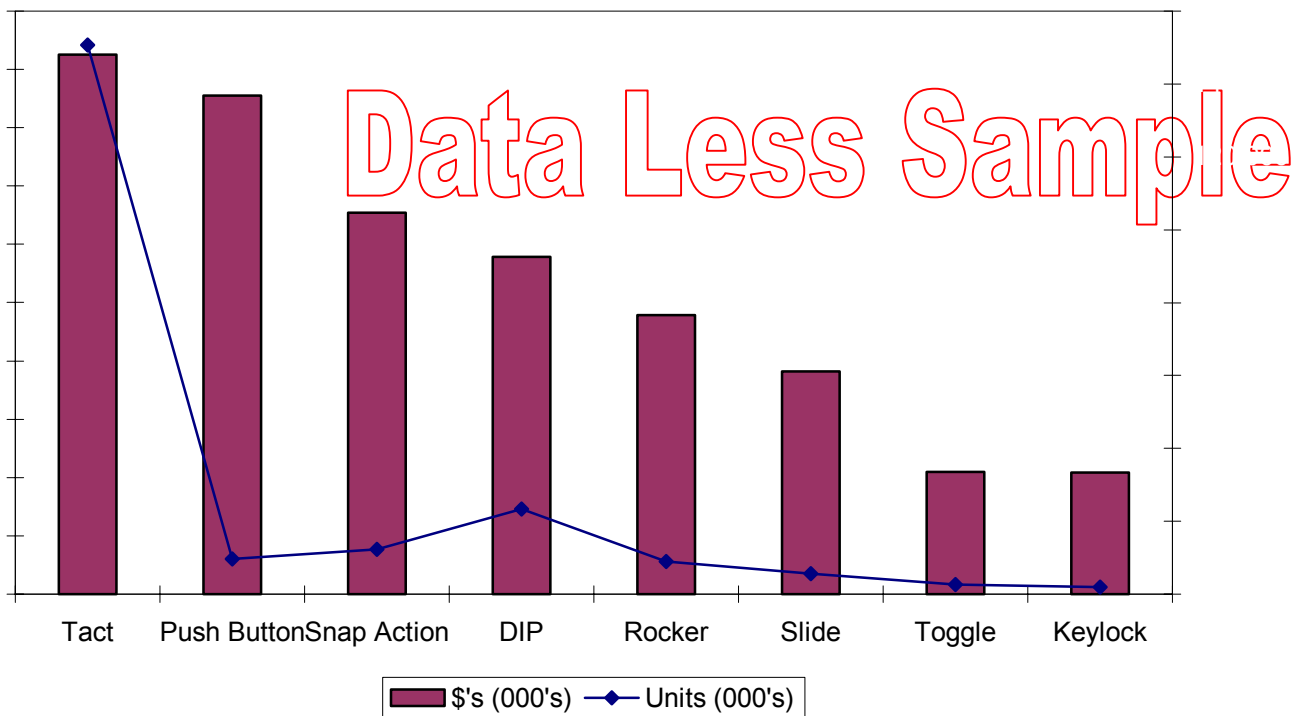
**Total CY 2003 North American Industrial Machinery, Automation, & Process Controls Segment Sales By Switch Type**

	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

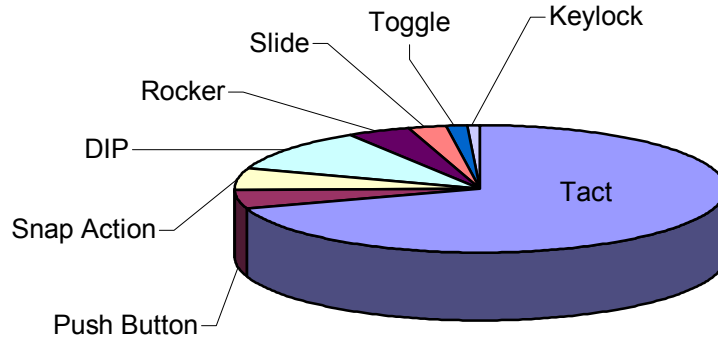
To reach a cumulative total that is XX% of the total group dollars the sales of the top five product types must be included. These are tact, push button, snap action, DIP and rocker switches which combine for \$XXXX M or XX% of the segment value.

Tact switches led the way in dollars and units. Together with DIP units these two types envelop XX% of the pieces shipped here.

**Total CY 2003 North American Industrial Machinery, Automation, & Process Controls Segment Ranked By Type Sales**



**Total CY 2003 North American Industrial Machinery, Automation,  
& Process Controls Segment Unit Share By Type**



Medical Equipment Segment By Switch Type

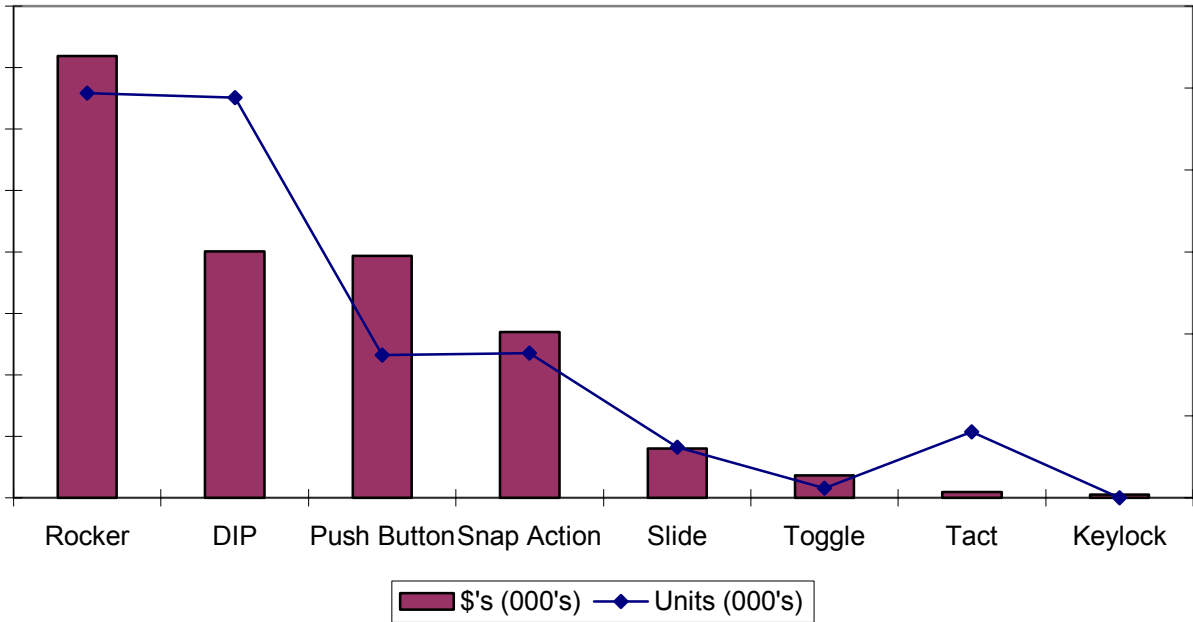
Positioned ninth in value is the Medical Equipment segment that is characterized below.

**Total CY 2003 North American Medical Equipment Segment Sales By Switch Type**

	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

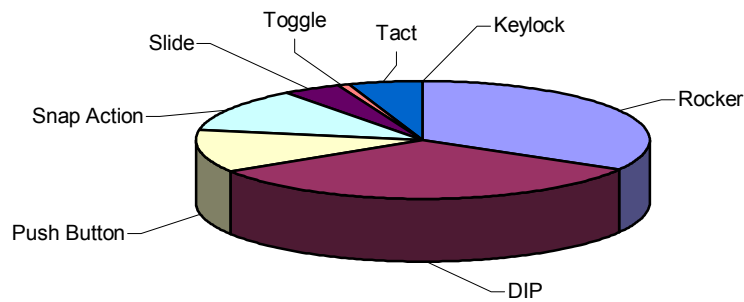
The top three types consumed by Medical Equipment producers were rocker, DIP, and push button switches. Combining for XX% of the total dollars and XX% of the units.

**Total CY 2003 North American Medical Equipment Segment  
Ranked By Type Sales**



**Total CY 2003 North American Medical Equipment  
Segment Unit Share By Type**

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Non-Automotive Vehicles Segment By Switch Type

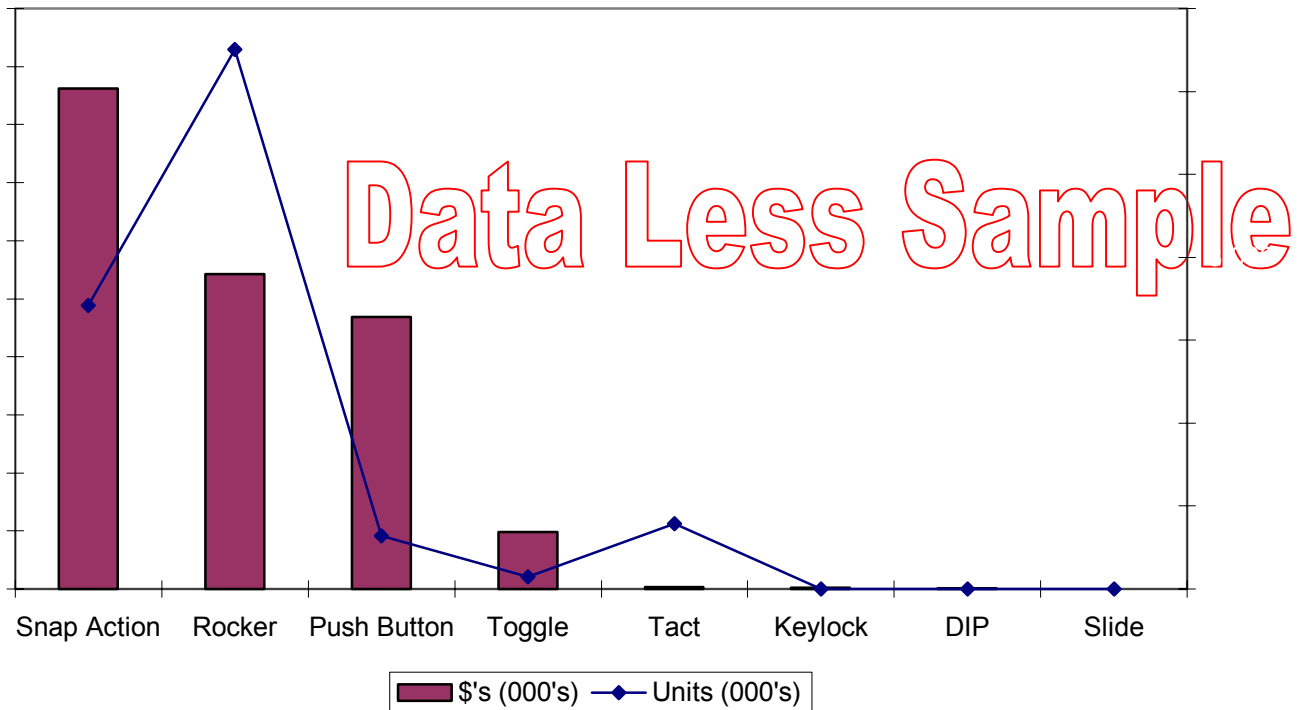
The Non-Automotive Vehicle segment ranked eighth in consumption and is detailed as follows.

**Total CY 2003 North American Non-Automotive Vehicle Segment Sales By Switch Type**

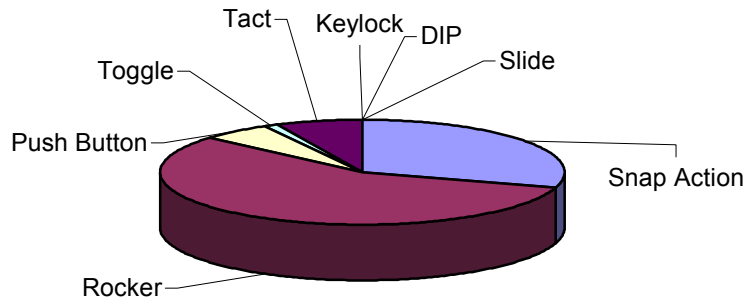
	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

Snap action, rocker and push button switches were the top three selling types. As a group they tallied XX% of this segments dollar shipments and XX% of units.

**Total CY 2003 North American Non-Automotive Vehicle Segment  
Ranked By Type Sales**



**Total CY 2003 North American Non-Automotive Vehicle  
Segment Unit Share By Type**



Power Tools & Lawn/Garden Equipment Segment By Switch Type

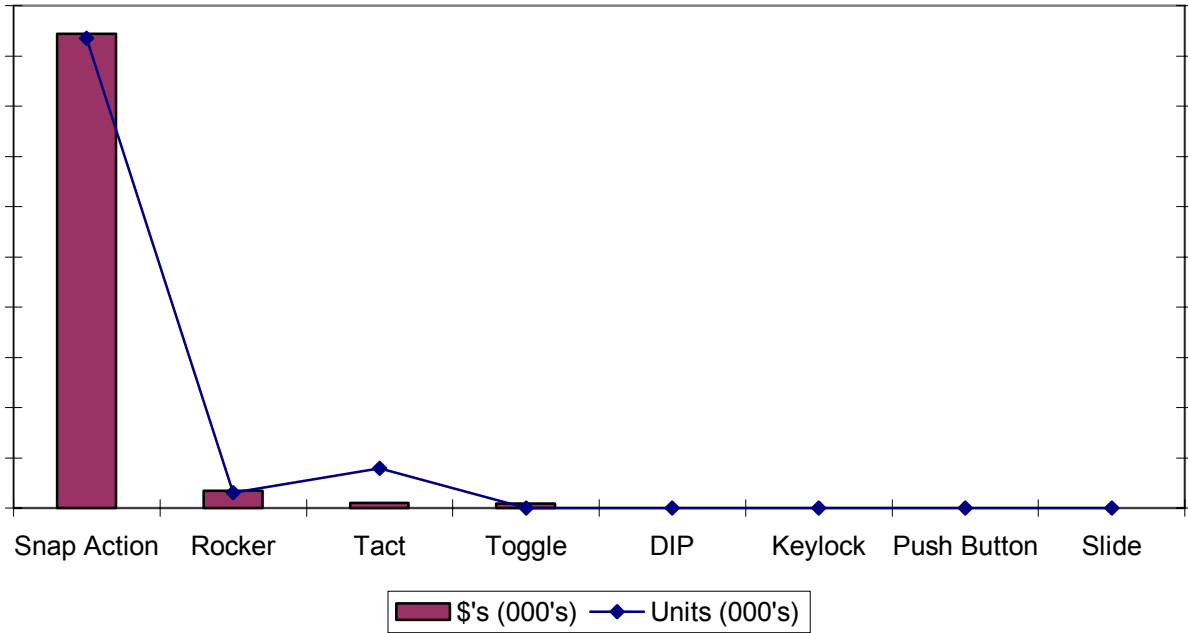
This is the smallest end-user segment reported in this survey. Two factors may explain this. First trigger switches were not included in this survey and they would probably lead all other types in usage. The migration of the manufacturing for these products to China and other Asian countries has weakened North American switch demand for this category.

**Total CY 2003 North American Power Tools & Lawn/Garden Equipment Segment  
Sales By Switch Type**

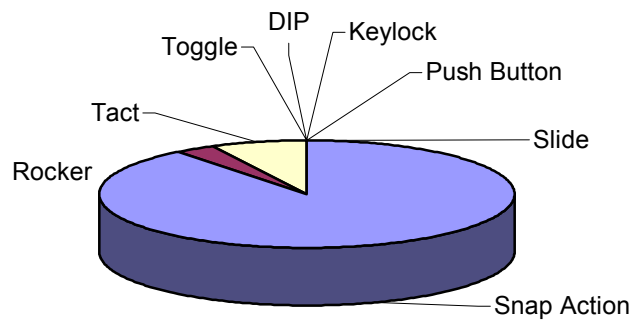
	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

Snap action switches dominated here with XX% of the dollars and XX% of units.

**Total CY 2003 North American Power Tools & Lawn/Garden Equipment Segment Ranked By Type Sales**



**Total CY 2003 North American Power Tools & Lawn/Garden Equipment Segment Unit Share By Type**



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Telecomm, Cable, & Broadcast Equipment Segment By Switch Type

The Telecomm, Cable, & Broadcast Equipment segment ranks third in total purchases and second in diversity of switch types, along with the Computer, Peripheral and Office Equipment manufacturers.

**Total CY 2003 North American Telecomm, Cable, & Broadcast Equipment Segment Sales By Switch Type**

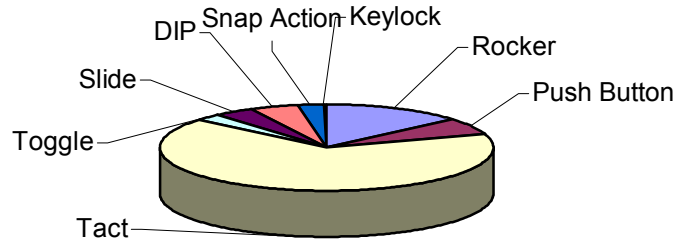
	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

The types used the most here are rocker, push button, tact and toggle with an aggregate sales totaling XX% of the user group. Tact and rocker are the unit leaders representing XX% of all units consumed.

**Total CY 2003 North American Telecomm, Cable, & Broadcast Equipment Segment Ranked By Type Sales**



**Total CY 2003 North American Telecomm, Cable, & Broadcast Equipment Segment Unit Share By Type**



Test & Laboratory Equipment Segment By Switch Type

Test & Laboratory Equipment producers occupy the tenth spot in ranked usage.

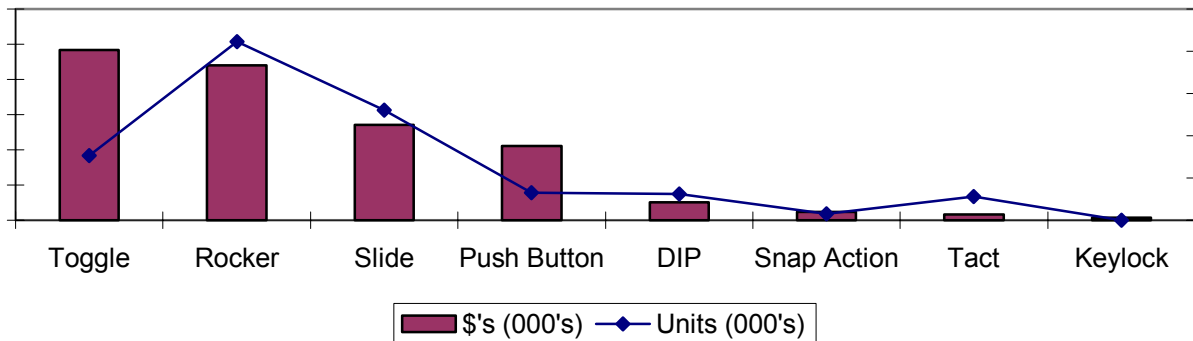
**Total CY 2003 North American Test & Laboratory Equipment Segment Sales By Switch Type**

	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

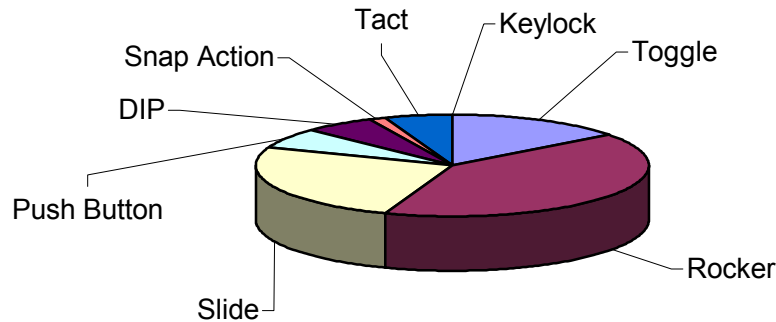
The most heavily used types are toggle, rocker and slide that total XX% of shipment value. The same group accounts for XX% of units.

Data Less Sample

**Total CY 2003 North American Test & Laboratory Equipment Segment Ranked By Type Sales**



**Total CY 2003 North American Test & Laboratory  
Equipment Segment Unit Share By Type**



Other Segment By Switch Type

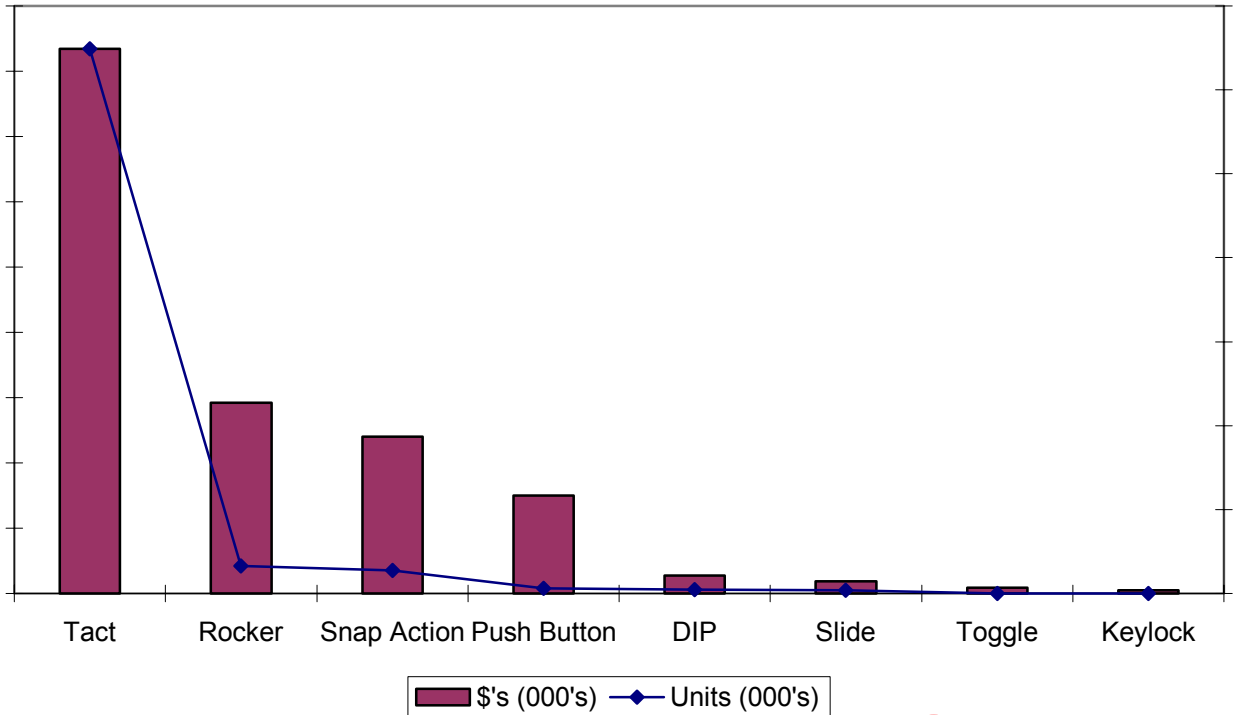
The segment representing other manufacturers is the second largest in this survey. This is largely due to XX% of the total reported tact switch sales going to this segment.

**Total CY 2003 North American Other Segment Sales By Switch Type**

	DIP	Keylock	Push Button	Rocker	Slide	Snap Action	Tact	Toggle	Total
\$'s (000's)	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX
Units (000's)	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ASP	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX	\$XXXX

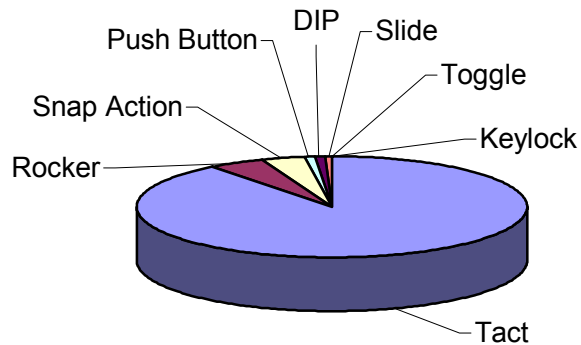
Tact switches represent XX% of the dollar and XX% of the unit totals for this group. Rocker and snap action switch dollars rank second and third highest in dollars behind tact switches. These three types sum to \$ XXXX M or XX% of the dollar total.

**Total CY 2003 North American Other Segment  
Ranked By Type Sales**



*Data Lake Sample*

**Total CY 2003 North American Other Segment  
Unit Share By Type**



**Sales Channels**

This report looked at four sales channels used by component switch manufacturers in North America. They are sales made directly to original equipment manufacturers (OEM's), contract electronic manufacturers, private labeled product or product that sold a distributor. The table below breaks down the dollars and units moving through each channel.

**Total CY 2003 North American Component Switch Sales By Sales Channel**

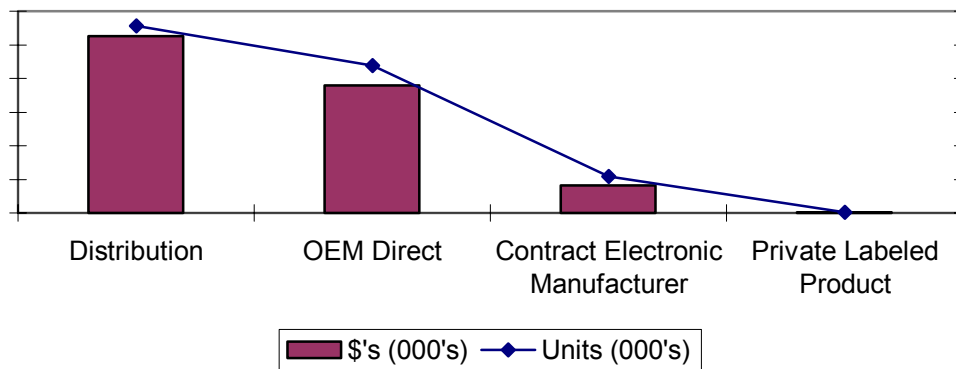
	\$'s (000's)	% of Total \$'s	Units (000's)	% of Total Units	ASP
Distribution	\$XXXXXX	XXX%	XXXXXX	XX%	\$XXXX
OEM Direct	\$XXXXXX	XXX%	XXXXXX	XX%	\$XXXX
Contract Electronic Manufacturer	\$XXXXXX	XXX%	XXXXXX	XX%	\$XXXX
Private Labeled Product	\$XXXXXX	XXX%	XXXXXX	XX%	\$XXXX
Total	\$XXXXXX	XXX%	XXXXXX	XX%	\$XXXX

Half the component switches sold went through a distributor and the other half was sold direct. Of the direct sales, XX% sold to OEM's, XX% to contract electronic manufacturers, and XX% was private labeled product.

Direct sales to contract electronic manufactures equated to XX% of the total market. With the large number of manufacturers in the Telecom, Computer, and Consumer Electronics markets utilizing contract manufactures and the significant switch usage of these segments, an assumption can be made that distributors are the primary source for component switches for contract manufactures. This assumption is also supported by the fact that contract manufacturers require a large variety of switches that can be supported by a distributor and may be difficult to obtain from a handful of manufacturers.

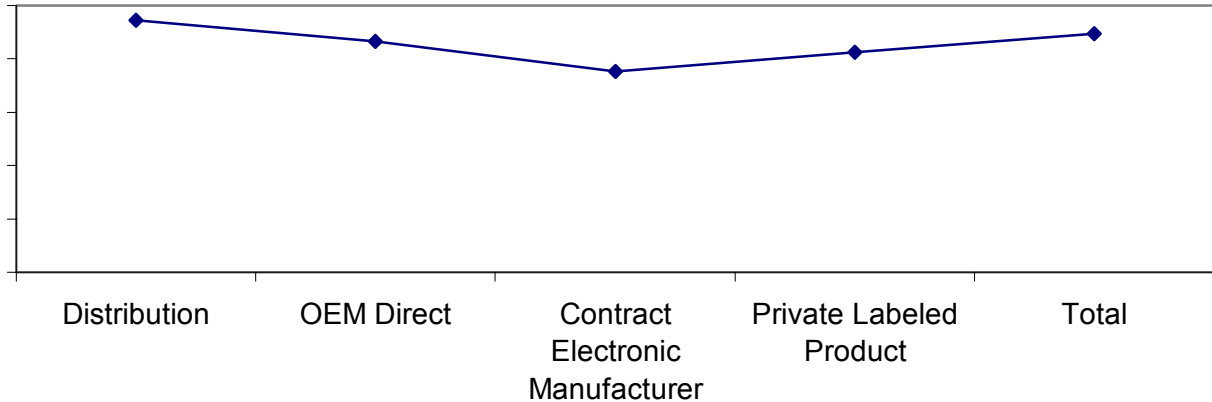
Data Less Sample

**Total CY 2003 North American Component Switch Sales By Sales Channel**



The average selling prices ranged from a high of \$XXXX when sold to distribution and a low of \$XXXX or XX% less for direct sale to contract manufactures. Direct sales to OEM's came in slightly above the midpoint in the range at \$XXXX or XX% below the distribution ASP.

**Total CY 2003 North American Component Switch ASP By Sales Channel**



**Geographic Analysis**

There are two steps to the geographical analysis of the North American component switch market. First, North America was broken down into smaller regions being Canada, Latin America & Caribbean, Mexico, and the United States. The United States is then refined into 10 zones based on the first digit of the shipping zip code.

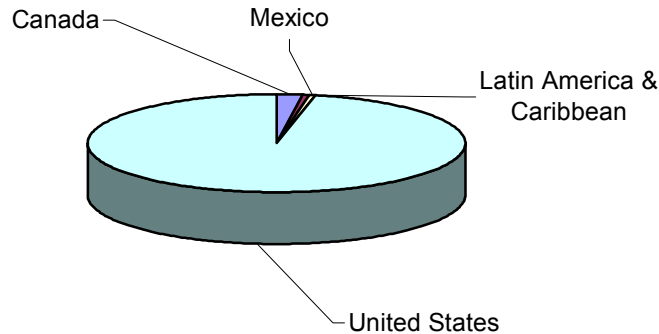
The table below shows the regional breakdown of North America.

**Total CY 2003 North American Component Switch Sales By Geographic Region**

Geographic Region	Total Switch \$'s (000's)	% Switch Dollars
Canada	\$XXXXXX	XXX%
Latin America & Caribbean	\$XXXXXX	XXX%
Mexico	\$XXXXXX	XXX%
United States	\$XXXXXX	XXX%
Total	\$XXXXXX	XXX%

The United States dominates the North American component switch market with an estimated XX% share, followed by Canada with XX% and Mexico combined with Latin America & the Caribbean have XX%.

**% Of CY 2003 Sales Dollars By North American Region**



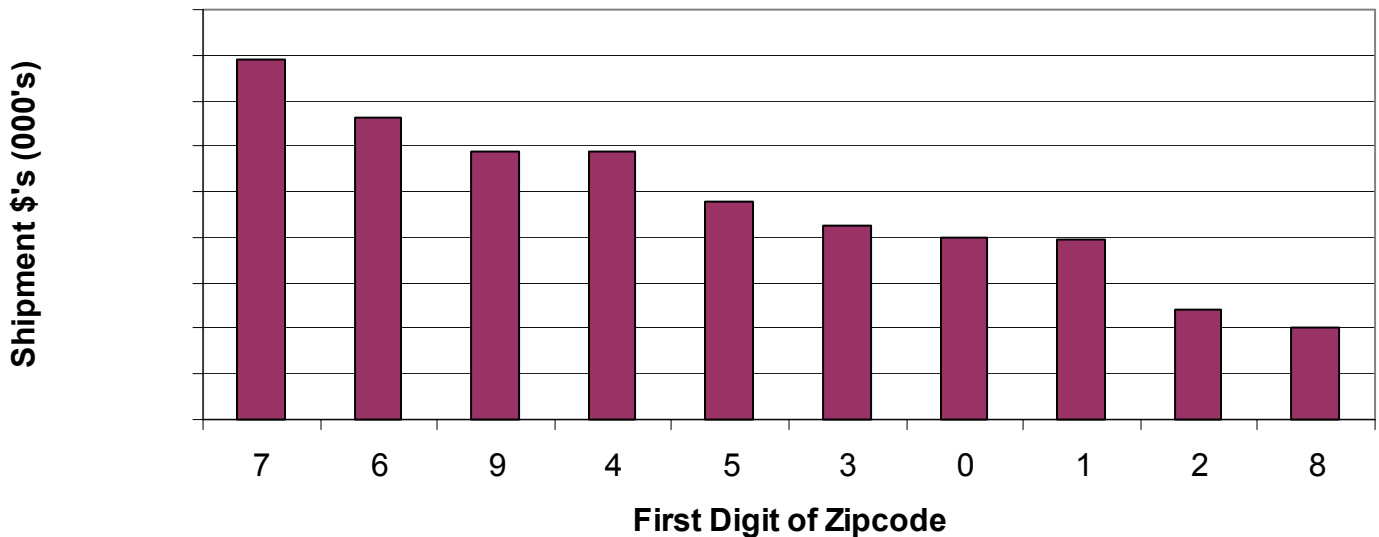
The table below lists the total sales dollars, percentage of total sales, and the states included in each zone defined by the first digit of the shipping zip code.

**CY 2003 United States Shipments by First Digit of Ship-to Zip Code**

First Zip Code Digit	Total Switch \$'s (000's)	% of Switch \$'s	States
0	\$XXXXXX	XXX%	Connecticut, Maine, Massachusetts, New Jersey, Rhode Island, Vermont, (Puerto Rico and U.S. Virgin Islands)
1	\$XXXXXX	XXX%	Delaware, New York, Pennsylvania
2	\$XXXXXX	XXX%	District Of Columbia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
3	\$XXXXXX	XXX%	Alabama, Florida, Georgia, Mississippi, Tennessee
4	\$XXXXXX	XXX%	Indiana, Kentucky, Michigan, Ohio
5	\$XXXXXX	XXX%	Iowa, Minnesota, Montana, North Dakota, South Dakota, Wisconsin
6	\$XXXXXX	XXX%	Illinois, Kansas, Missouri, Nebraska
7	\$XXXXXX	XXX%	Arkansas, Louisiana, Oklahoma, Texas
8	\$XXXXXX	XXX%	Arizona, Colorado, Idaho, Nevada, New Mexico, Utah, Wyoming
9	\$XXXXXX	XXX%	Alaska, California, Hawaii, Oregon, Washington
<b>Total</b>	<b>\$XXXXXX</b>	<b>XXX%</b>	

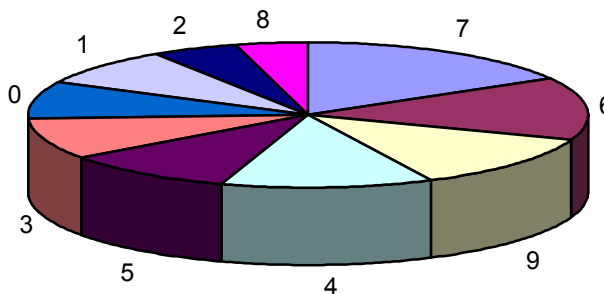
If component switch sales were equally distributed each of the ten zones would have \$ XXXX M in shipments. Zone 5 hit this mark. Four zones came in above this and five zones below it. The graph below shows the sales to each zone in rank order.

### CY 2003 Shipment Dollars By First Digit of Zipcode



Zone 7, Arkansas, Louisiana, Oklahoma, and Texas, led with XX%. Some shipments to Texas are bound for the Mexican maquiladoras that improved zone 7's results and hurt the Mexican region as previously stated. The Midwest, zones 4, 5, and 6, were all at or above average. The west coast came in third with XX% of sales. The eastern seaboard, zones 0, 1, 2, and 3 were all below average. The intermountain states, zone 8, finished in the final spot with XX% of total sales.

### CY 2003 % Of U.S. Dollar Shipments By First Digit of Zipcode



# Data Less Sample

# Data Loss Sample

Appendix "A"

DIP Switches	Contributing Subscriber									
	APEM	Cherry	Grayhill	Honeywell	ITT	Marquardt	NKK	Omron	SAIA-Burgess	Tyco
Rotary	P36, P36S, PT65, P60A, P60AS,	None	94R,94H	None	CD,CRD, RTE	None	ND, ND3, DR	A6A, A6C, A6CV, A6R, A6RV	None	MRD,DRD, DR,RR,RA, RC,DRS
Half-Pitch	DHS	None	97R, 97C	None	TDA	None		A6H	None	GDH, MGDH
Standard	IK, DS, DA, DP, DI, DM, PI, PM, MPG, TDS	None	76HP, 78H, 90HB, 97C, 76SB, 76PSB, 78B, 90B	None	SDA,SD,BD, BPA	None		A6D,A6DR, A6E,A6ER, A6S,A6T	None	7000,7100, 7300,7400, 7410,GD, AD, AR,S,DPU, TRI,

Data Less Sample

Keylock Switches	Contributing Subscriber									
	APEM	Cherry	Grayhill	Honeywell	ITT	Marquardt	NKK	Omron	SAIA-Burgess	Tyco
Sub miniature		None				None	SK			
Miniature	PLR	None		AML 27		None	SK			
Standard/Industrial	PLK	None	03, 58, 71J, 44L, 71L		P	None	CKL, CKM	A16, A22	E1, M1, K2, P2, TH4, TH8, TH25	SKT,SKW, SKW12, SKF, 164, 165, RM2, M62

Push Button Switches	Contributing Subscriber									
	APEM	Cherry	Grayhill	Honeywell	ITT	Marquardt	NKK	Omron	SAIA-Burgess	Tyco
Sub-miniature	TP, ZP, 9000		38B, 38H, 38G, 32, 39, 38F, 49		EP, TP, 8500, KM, GP		AB, BB, FB, G3B, GB, GB2, HB, HB2			AP, TP, TSP
Miniature	9000, 10400, 300, 400, MPB, IP, IB, IS, SP, 18000, 8000, 800, PB, 13000, 1300X778		30, 46, 38C, 38D, 38E, 23, 10, 7	MML11, MML21, MML31	E020, 8020, E010, 8700, PN, PHA		EB, KB, KP, M2B, MB2000, MB2400, SB4011, UB, UB2, YB			MP, MSP
Standard/Industrial, Illuminated	1200, 12000M, 12000MR, 4700, 4800, MD, MD2, 1400N, AV	L4		AML11, AML12, AML21, AML22, AML31, AML32, Series 2, Series 4, PB,	8060, F, NE18	5000, 1840, 1680, 1683, 1660, 1670	JP, LB, SB, SCB, WB,	A16, A22, A30, A3C, A3D	3290, 3292, 3200, TH4, TH5, TH25	RT, RM, QT, QM, M60
Standard/Industrial, Non-Illuminated		L4		AML11, AML12, AML21, AML22, AML31, AML32, Series 2, Series 4, PB,	8060, F, NE18	5000, 1840, 1680, 1683, 1660, 1670	DLB, LB	A16, A22	3290, 3292, 3200, TH4, TH5, TH8, TH25	164, 165, QM, SR, RM, RT, M61

Data Loss Sample

Rocker Switches	Contributing Subscriber									
	APEM	Cherry	Grayhill	Honeywell	ITT	Marquardt	NKK	Omron	SAIA-Burgess	Tyco
Sub-miniature	TR		47C, 47D		7000, E, ET, T, JA, 9000		A, G, GW			TRD, A, AE
Miniature	S, 7000, ST, UL	SR, LR, RR	47A, 47B	MML 24,	D, DM, DF DA	1800,1830, 1855,1858	CWS, CWT, M, M2100, M2T, MLW, CWSB, CWSC	A8L		PRA
Standard/Industrial, Illuminated	2600,AS, R, RH, FM, MR, B, HB, KG, H	CR, TR, WR, GR		AML 24, AML 26, AML 34, AML 36,	C, CA, CG, CL, CM, CN, CR	1900,1930, 1550	JWL, JWM, P, SW, WR		3670,3672, 3673,3680	PRB, PRD
Standard/Industrial, Non-Illuminated	AS, R, RH, FM, MR, HB, KG, H	CR, TR, WR, GR			C, CA, CG, CL, CM, CN, CR	1900,1930, 1550	LLW			PRB, PRD

Data Less Sample

Slide Switches	Contributing Subscriber									
	APEM	Cherry	Grayhill	Honeywell	ITT	Marquardt	NKK	Omron	SAIA-Burgess	Tyco
Sub-miniature	MJS, MSSA, MSSB, MHSS, MS, MMS, TG, NK	None	48B	None	ES, TS, GS		SS, AS	None		S, SE, TSS, MMS, SSJ, STS, SSB, SSA, SL, SLS,
Surface mount	TG, MA, MMPS	None		None	AYZ, PCM		SS	None		ASE/F, MLL, SE
Miniature	MSTS, MHS, SLB, SLC, SLA, SLE, G, 25000N, MPS, MSL, MBT	None	48A	None	OS, 1000, L, LP		MS, CS, FS, MS	None		MSSA, ASE/F, SDS, MSS, MHS, CST
Standard/Industrial,	MSS, M, PM	None		None	S, V	4021		None	3585	

Data Less Sample

Snap Action Switches	Contributing Subscribers							
	APEM	Cherry Electrical Products	Honeywell Sensing & Control	ITT C&K	Marquardt	Omron Electronics	Saia-Burgess	Tyco Alcoswitch
Subminiature	MB	DG, CS, DR, DH, DB, DA3, E61, E62, E63, E64, HM, DE, E72, E73, DC, DK	SM, SX, UM, UX, ZM, ZV, ZW, ZX, SE, XE	LC, MM, ZM, LM	1050, 1055	D2F, D2FWG, D2HW, D2JW, D2SW, SSG, D3M, D3K, D3C, D2MQ, D2S, J, SSN, SSP	X5, F1, F4, F5, F6, XC, V4N, V4NS, X4, V4NC, V4L, V4NCS,	1478600 to 1478602
Miniature	MA	D3, D4, K, E21, E22, E23, E31, E33, E34, E35, E36, E51, E53, DN, DD	V5, V7	TF, TM, LF	1080, 1085, 1005, 1006	D2T, D2VW, VN, VX, D3V, D2MV, D2RV, KN	V4LS, XG, V3S, G3, BVM3, X3	1478603 to 1478620 and 1478667 to 1478672
Panel/Door Mount		E65, E68, F68, E69, F69, E75, E77, F77, E78, F78, E79, F79, F80, F85, FA2, FA3, FB	WW, AC, DM, DP	FL, TL		D2D, D3D	XT, XP, TPS, DS, 1427, 1429, 1430, V3Q, 2V3	
General Purpose		E13, E14, E29, E30, E19, G20, E20, E28, GP	BZ/BA, HT, MT, DT, TB	A, HB		A, Z, X, DZ, TZ	PN4, 4BR, 3BR, KB5, KB5EQ, V9N, V9B	

Data Less Sample

Tact Switches	Contributing Subscriber									
	APEM	Cherry	Grayhill	Honeywell	ITT	Marquardt	NKK	Omron	SAIA-Burgess	Tyco
Through hole	MJTP, MHPS, MTP	None	95C	None	KSB,KSF,KSA, KSL,KSA, KSLMKII,KSI, KSJ,PTS453, PTS635,PTS645, PTS645-TR	None	CB,JB,JF	B3F,B3M, B3W, B3WN	None	FSM
Surface mount	MJTP	None	95C	None	KMS,PTS525, KSR,KSS,KSC, KMR,KSC5,KT, KST	None	CB	B3FS,B3S, B3SN, B3D	None	FSM

Toggle Switches	Contributing Subscriber									
	APEM	Cherry	Grayhill	Honeywell	ITT	Marquardt	NKK	Omron	SAIA-Burgess	Tyco
Sub-miniature	TL,ZL	None	34C,34D, 34E		ET,T,GT		A,B,G, G3T	None	None	TST, TT, ATE
Miniature	21000N, S,SF, 5000, S5000,ST	None	34A,34B		7000,M,E		E,M, M2100, M2T,TL	None	None	A,AE,MTA, MTB,MTE, MTF,MTG, MTL, MTM
Standard/ Industrial,	11000, 12000, 12000X778, 4100,4200, 4600,1500, 6000, 3600NF, 3500,600H, 600NH	None		AML 25, AML 33, AML 35,	9000	1810,1820	P,S,WT	None	None	152, 147

Appendix "B"  
**Data Less Sample**

**North American 2003 End-User,  
Sales Channel, & Geographic Report**



Company: \_\_\_\_\_ Date: \_\_\_\_\_

Please fill in the percentage of your companies total CY 2003 switch sales in units and dollars sold to each of the 11 end-user segments listed below. Each column should total 100% or be not applicable for switch types not offered.

End-User Segments	DIP		Keylock		Push Button		Rocker		Slide		Snap Action		Tact		Toggle		
	% \$'s	% Units	% \$'s	% Units	% \$'s	% Units	% \$'s	% Units	% \$'s	% Units	% \$'s	% Units	% \$'s	% Units	% \$'s	% Units	
Appliance																	
Commercial Equipment																	
Computers, Peripherals, & Office Equipment																	
Consumer Electronics																	
Industrial Machinery, Automation, & Process Controls	Data Less Sample																
Medical Equipment																	
Non-Automotive Vehicles																	
Power Tools & Lawn/Garden Equipment																	
Telecomm, Cable, & Broadcast Equipment																	
Test & Laboratory Equipment																	
Other																	
Total	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A	100% or N/A

# Data Less Sample

## Sales Channel Survey

Please fill in the percentage of your companies total CY 2003 switch sales in units and dollars sold through the four sales channels listed below. Each column should total 100%.

	Total Switch	
	% of Total Dollars	% of Total Units
OEM Direct		
Distribution		
Contract Electronic Manufacturer		
Private Labeled Product		
Total	100 %	100 %

## Geographic Survey

Please fill the percentage of your companies total CY 2003 switch sales dollars sold into the four regions listed below, the column should total 100%.

Geographic Region	Total Switch Dollars
Canada	
Latin America & Caribbean	
Mexico	
United States (see further detail below)	
Total	100%

Data Less Sample

**Appendix "C"**

Data Less Sample

End-User Segments Defined By SIC and NAICS Codes

Appliance Segment

<b>1987 SIC</b>	<b>1987 U.S. SIC Description</b>	<b>1997 NAICS</b>	<b>1997 NAICS U.S. Description</b>
3631	Household Cooking Equipment	<u>335221</u>	Household Cooking Appliance Manufacturing
3632	Household Refrigerators and Home and Farm Freezers	<u>335222</u>	Household Refrigerator and Home Freezer Manufacturing
3633	Household Laundry Equipment	<u>335224</u>	Household Laundry Equipment Manufacturing
3634	Electric House wares and Fans		
	. Except Wall and Baseboard Heating Units for Permanent Installation, and Electronic Cigarette Lighters	<u>335211</u>	Electric House wares and Household Fan Manufacturing
	. Electronic Cigarette Lighters	<u>339999</u>	All Other Miscellaneous Manufacturing (pt)
	. Wall and Baseboard Heating Units For Permanent Installation	<u>333414</u>	Heating Equipment (except Warm Air Furnaces) Manufacturing (pt)
3635	Household Vacuum Cleaners	<u>335212</u>	Household Vacuum Cleaner Manufacturing (pt)
3639	Household Appliances, NEC		
	. Floor Waxing and Floor Polishing Machines	<u>335212</u>	Household Vacuum Cleaner Manufacturing (pt)
	. Household Sewing Machines	<u>333298</u>	All Other Industrial Machinery Manufacturing (pt)
	. Other Household Appliances	<u>335228</u>	Other Major Household Appliance Manufacturing

Commercial Equipment Segment

1987 SIC	1987 U.S. SIC Description	1997 NAICS	1997 NAICS U.S. Description
3523	Farm Machinery and Equipment		
	. Farm Machinery and Equipment	<u>333111</u>	Farm Machinery and Equipment Manufacturing
	. Farm Conveyors and Farm Elevators, Stackers, and Bale Throwers	<u>333922</u>	Conveyor and Conveying Equipment Manufacturing (pt)
3531	Construction Machinery and Equipment		
	. Railway Track Maintenance Equipment	<u>33651</u>	Railroad Rolling Stock Manufacturing (pt)
	. Winches, Aerial Work Platforms, and Automotive Wrecker Hoists	<u>333923</u>	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing (pt)
	. Other Construction Machinery and Equipment	<u>33312</u>	Construction Machinery Manufacturing
3532	Mining Machinery and Equipment, Except Oil and Gas Field Machinery and Equipment	<u>333131</u>	Mining Machinery and Equipment Manufacturing
3533	Oil and Gas Field Machinery and Equipment	<u>333132</u>	Oil and Gas Field Machinery and Equipment Manufacturing
3534	Elevators and Moving Stairways	<u>333921</u>	Elevator and Moving Stairway Manufacturing
3535	Conveyors and Conveying Equipment	<u>333922</u>	Conveyor and Conveying Equipment Manufacturing (pt)
3536	Overhead Traveling Cranes, Hoists, and Monorail Systems	<u>333923</u>	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing (pt)
3556	Food Products Machinery	<u>333294</u>	Food Product Machinery Manufacturing
3563	Air and Gas Compressors	<u>333912</u>	Air and Gas Compressor Manufacturing
3564	Industrial and Commercial Fans and Blowers and Air Purification Equipment		
	. Air Purification Equipment	<u>333411</u>	Air Purification Equipment Manufacturing
	. Fans and Blowers	<u>333412</u>	Industrial and Commercial Fan and Blower Manufacturing
3565	Packaging Machinery	<u>333993</u>	Packaging Machinery Manufacturing

3566	Speed Changers, Industrial High-Speed Drives, and Gears	<u>333612</u>	Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing
3567	Industrial Process Furnaces and Ovens	<u>333994</u>	Industrial Process Furnace and Oven Manufacturing
3568	Mechanical Power Transmission Equipment, NEC	<u>333613</u>	Mechanical Power Transmission Equipment Manufacturing
3569	General Industrial Machinery and Equipment, NEC		
	. Electric Swimming Pool Heaters	<u>333414</u>	Heating Equipment (except Warm Air Furnaces) Manufacturing (pt)
	. Textile Fire Hose	<u>314999</u>	All Other Miscellaneous Textile Product Mills (pt)
	. Except Electric Swimming Pool Heaters and Textile Fire Hoses	<u>333999</u>	All Other Miscellaneous General Purpose Machinery Manufacturing (pt)
3581	Automatic Vending Machines	<u>333311</u>	Automatic Vending Machine Manufacturing
3582	Commercial Laundry, Dry-cleaning, and Pressing Machines	<u>333312</u>	Commercial Laundry, Dry-cleaning, and Pressing Machine Manufacturing
3585	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment		
	. Motor Vehicle Air-Conditioning	<u>336391</u>	Motor Vehicle Air-Conditioning Manufacturing
	. Except Motor Vehicle Air-Conditioning	<u>333415</u>	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing
3586	Measuring and Dispensing Pumps	<u>333913</u>	Measuring and Dispensing Pump Manufacturing
3589	Service Industry Machinery, NEC	<u>333319</u>	Other Commercial and Service Industry Machinery Manufacturing (pt)
3596	Scales and Balances, Except Laboratory	<u>333997</u>	Scale and Balance (except Laboratory) Manufacturing
3612	Power, Distribution, and Specialty Transformers	<u>335311</u>	Power, Distribution, and Specialty Transformer Manufacturing (pt)
3613	Switchgear and Switchboard Apparatus	<u>335313</u>	Switchgear and Switchboard Apparatus Manufacturing
3621	Motors and Generators	<u>335312</u>	Motor and Generator Manufacturing (pt)
3625	Relays and Industrial Controls	<u>335314</u>	Relay and Industrial Control

Data Loss Sample

			Manufacturing
3629	Electrical Industrial Apparatus, NEC	<u>335999</u>	All Other Miscellaneous Electrical Equipment and Component Manufacturing (pt)
3646	Commercial, Industrial, and Institutional Electric Lighting Fixtures	<u>335122</u>	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing
3648	Lighting Equipment, NEC	<u>335129</u>	Other Lighting Equipment Manufacturing (pt)
3822	Automatic Controls for Regulating Residential and Commercial Environments and Appliances	<u>334512</u>	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use
3861	Photographic Equipment and Supplies		
3873	Watches, Clocks, Clockwork Operated Devices and Parts	<u>334518</u>	Watch, Clock, and Part Manufacturing (pt)

Data Less Sample

**Computers, Peripherals, and Office Equipment**

1987 SIC	1987 U.S. SIC Description	1997 NAICS	1997 NAICS U.S. Description
3571	Electronic Computers	<u>334111</u>	Electronic Computer Manufacturing
3572	Computer Storage Devices	<u>334112</u>	Computer Storage Device Manufacturing
3575	Computer Terminals	<u>334113</u>	Computer Terminal Manufacturing
3577	Computer Peripheral Equipment, NEC		
	. Plotter Controllers	<u>334418</u>	Printed Circuit Assembly (Electronic Assembly) Manufacturing (pt)
	. Magnetic Tape Cleaner	<u>334613</u>	Magnetic and Optical Recording Media Manufacturing (pt)
	. Except Plotter Controllers and Magnetic Tape Cleaners	<u>334119</u>	Other Computer Peripheral Equipment Manufacturing (pt)
3578	Calculating and Accounting Machines, Except Electronic Computers		
	. Point of Sales Terminals and Fund Transfer Devices	<u>334119</u>	Other Computer Peripheral Equipment Manufacturing (pt)
	. Change Making Machines	<u>333311</u>	Automatic Vending Machine Manufacturing (pt)
	. Calculating and Accounting Machines, Except Point of Sales Terminals and Fund Transfer Devices, and Change Making Mac	<u>333313</u>	Office Machinery Manufacturing (pt)
3579	Office Machines, NEC		
	. Pencil Sharpeners, Staplers, and Other Office Equipment	<u>339942</u>	Lead Pencil and Art Good Manufacturing (pt)
	. Time Clocks and Other Time Recording Devices	<u>334518</u>	Watch, Clock, and Part Manufacturing (pt)
	. Other Office Machines	<u>333313</u>	Office Machinery Manufacturing (pt)

Data Less Sample

**Consumer Electronics**

1987 SIC	1987 U.S. SIC Description	1997 NAICS	1997 NAICS U.S. Description
3651	Household Audio and Video Equipment	<u>33431</u>	Audio and Video Equipment Manufacturing

**Industrial Machinery, Automation, and Process Controls**

1987 SIC	1987 U.S. SIC Description	1997 NAICS	1997 NAICS U.S. Description
3541	Machine Tools, Metal Cutting Type	<u>333512</u>	Machine Tool (Metal Cutting Types) Manufacturing
3542	Machine Tools, Metal Forming Type	<u>333513</u>	Machine Tool (Metal Forming Types) Manufacturing
3547	Rolling Mill Machinery and Equipment	<u>333516</u>	Rolling Mill Machinery and Equipment Manufacturing
3548	Electric and Gas Welding and Soldering Equipment		
		<u>333992</u>	Welding and Soldering Equipment Manufacturing
		<u>335311</u>	Power, Distribution, and Specialty Transformer Manufacturing (pt)
3549	Metalworking Machinery, NEC	<u>333518</u>	Other Metalworking Machinery Manufacturing
3552	Textile Machinery	<u>333292</u>	Textile Machinery Manufacturing
3553	Woodworking Machinery	<u>33321</u>	Sawmill and Woodworking Machinery Manufacturing
3554	Paper Industries Machinery	<u>333291</u>	Paper Industry Machinery Manufacturing
3555	Printing Trades Machinery and Equipment	<u>333293</u>	Printing Machinery and Equipment Manufacturing
3559@	Special Industry Machinery, NEC		
	. Rubber and Plastics Manufacturing Machinery	<u>33322</u>	Plastics and Rubber Industry Machinery Manufacturing
	. Nuclear Control Drive Mechanisms	<u>33241</u>	Power Boiler and Heat Exchanger Manufacturing (pt)
	. Automotive Maintenance Equipment	<u>333319</u>	Other Commercial and Service Industry

Data Loss Sample

			Machinery Manufacturing (pt)
	. Semiconductor Machinery Manufacturing	<u>333295</u>	Semiconductor Machinery Manufacturing
	. Except Rubber and Plastics Manufacturing Machinery, Semiconductor Manufacturing Machinery, Automotive Maintenance Eq	<u>333298</u>	All Other Industrial Machinery Manufacturing (pt)
3561	Pumps and Pumping Equipment	<u>333911</u>	Pump and Pumping Equipment Manufacturing (pt)
3599	Industrial and Commercial Machinery and Equipment, NEC		
	. Carnival Amusement Park Equipment	<u>333319</u>	Other Commercial and Service Industry Machinery Manufacturing (pt)
	. Other Industrial and Commercial Machinery and Equipment	<u>333999</u>	All Other Miscellaneous General Purpose Machinery Manufacturing (pt)
3823	Industrial Instruments for Measurement, Display, and Control of Process Variables; and Related Products	<u>334513</u>	Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables
3824	Totalizing Fluid Meters and Counting Devices	<u>334514</u>	Totalizing Fluid Meter and Counting Device Manufacturing (pt)

Data Less Sample

**Medical Equipment**

1987 SIC	1987 U.S. SIC Description	1997 NAICS	1997 NAICS U.S. Description
3841	Surgical and Medical Instruments and Apparatus		
	. Operating Tables	<u>339111</u>	Laboratory Apparatus and Furniture Manufacturing (pt)
3843	Dental Equipment and Supplies	<u>339114</u>	Dental Equipment and Supplies Manufacturing
3844	X-Ray Apparatus and Tubes and Related Irradiation Apparatus	<u>334517</u>	Irradiation Apparatus Manufacturing (pt)
3845	Electro medical and Electrotherapeutic Apparatus		
	. CT and CAT Scanners	<u>334517</u>	Irradiation Apparatus Manufacturing (pt)
	. Other Electro medical and Electrotherapeutic Apparatus	<u>334510</u>	Electro medical and Electrotherapeutic Apparatus Manufacturing (pt)

Data Less Sample

**Non-Automotive Vehicles**

1987 SIC	1987 U.S. SIC Description	1997 NAICS	1997 NAICS U.S. Description
3537	Industrial Trucks, Tractors, Trailers, and Stackers		
	. Industrial Trucks, Tractors, Trailers, and Stackers (Except Metal Pallets and Air Cargo Containers)	<u>333924</u>	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing
3694	Electrical Equipment for Internal Combustion Engines	<u>336322</u>	Other Motor Vehicle Electrical and Electronic Equipment Manufacturing (pt)
3711@			
	. Heavy Duty Trucks	<u>33612</u>	Heavy Duty Truck Manufacturing
3713	Truck and Bus Bodies	<u>336211</u>	Motor Vehicle Body Manufacturing (pt)
3715	Truck Trailers	<u>336212</u>	Truck Trailer Manufacturing
3716	Motor Homes	<u>336213</u>	Motor Home Manufacturing
	. Ship Building and Repairing Except Floating Dry Docks Not Associated With Shipyards	<u>336611</u>	Ship Building and Repairing
3732	Boat Building and Repairing		
	. Boat Repair	<u>81149</u>	Other Personal and Household Goods Repair and Maintenance (pt)
	. Boat Building	<u>336612</u>	Boat Building
3743	Railroad Equipment		
	. Locomotive Fuel Lubricating or Cooling Medium Pumps	<u>333911</u>	Pump and Pumping Equipment Manufacturing (pt)
	. Other Railroad Equipment	<u>33651</u>	Railroad Rolling Stock Manufacturing (pt)
3751	Motorcycles, Bicycles, and Parts	<u>336991</u>	Motorcycle, Bicycle, and Parts Manufacturing (pt)
3792	Travel Trailers and Campers	<u>336214</u>	Travel Trailer and Camper Manufacturing (pt)
3795	Tanks and Tank Components	<u>336992</u>	Military Armored Vehicle, Tank, and Tank Component Manufacturing (pt)
3812	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical Systems and Instruments	<u>334511</u>	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing

Data Less Sample

**Power Tools and Lawn/Garden Equipment**

1987 SIC	1987 U.S. SIC Description	1997 NAICS	1997 NAICS U.S. Description
3524	Lawn and Garden Tractors and Home Lawn and Garden Equipment	<u>333112</u>	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing
3546	Power-Driven Hand tools	<u>333991</u>	Power-Driven Hand tool Manufacturing

**Telecommunications, Cable, and Broadcasting Equipment**

1987 SIC	1987 U.S. SIC Description	1997 NAICS	1997 NAICS U.S. Description
3661	Telephone and Telegraph Apparatus		
	. Telephone and Telegraph Apparatus, Except Consumer External Modems	<u>33421</u>	Telephone Apparatus Manufacturing
	. Consumer External Modems	<u>334418</u>	Printed Circuit Assembly (Electronic Assembly) Manufacturing (pt)
3663	Radio and Television Broadcasting and Communications Equipment	<u>33422</u>	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing (pt)
3669	Communications Equipment, NEC	<u>33429</u>	Other Communications Equipment Manufacturing
3679	Electronic Components, NEC		
	. Antennas	<u>33422</u>	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing (pt)
	. Radio Headphones	<u>33431</u>	Audio and Video Equipment Manufacturing (pt)
	. Printed Circuit/Electronics Assembly	<u>334418</u>	Printed Circuit Assembly (Electronic Assembly) Manufacturing (pt)
	. Other Electronic Components	<u>334419</u>	Other Electronic Component Manufacturing

Data Loss Sample

## Test and Laboratory Equipment

1987 SIC	1987 U.S. SIC Description	1997 NAICS	1997 NAICS U.S. Description
3821	Laboratory Apparatus and Furniture	<u>339111</u>	Laboratory Apparatus and Furniture Manufacturing (pt)
3825	Instruments for Measuring and Testing of Electricity and Electrical Signals		
	. Automotive Ammeters and Voltmeters	<u>334514</u>	Totalizing Fluid Meter and Counting Device Manufacturing (pt)
	. Except Automotive Ammeters and Voltmeters	<u>334515</u>	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals
3826	Laboratory Analytical Instruments	<u>334516</u>	Analytical Laboratory Instrument Manufacturing
3827	Optical Instruments and Lenses	<u>333314</u>	Optical Instrument and Lens Manufacturing
3829	Measuring and Controlling Devices, NEC		
	. Motor Vehicle Gauges	<u>334514</u>	Totalizing Fluid Meter and Counting Device Manufacturing (pt)
	. Medical Thermometers	<u>339112</u>	Surgical and Medical Instrument Manufacturing (pt)
	. Electronic Chronometers	<u>334518</u>	Watch, Clock, and Part Manufacturing
	. Except Medical Thermometers, Electronic Chronometers, and Motor Vehicle Gauges	<u>334519</u>	Other Measuring and Controlling Device Manufacturing

## Other

1987 SIC	1987 U.S. SIC Description	1997 NAICS	1997 NAICS U.S. Description
3645	Residential Electric Lighting Fixtures	<u>335121</u>	Residential Electric Lighting Fixture Manufacturing (pt)
3944	Games, Toys, and Children's Vehicles, Except Dolls and Bicycles		
	. Metal Tricycles	<u>336991</u>	Motorcycle, Bicycle, and Parts Manufacturing (pt)
	. Other Games, Toys, and Children's Vehicles	<u>339932</u>	Game, Toy, and Children's Vehicle Manufacturing

Data Less Sample