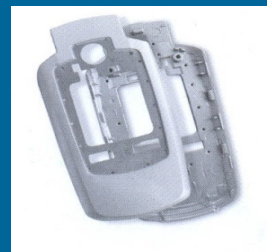
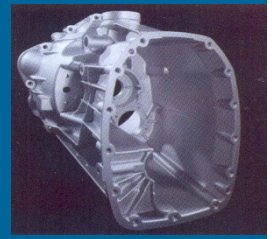


# DIE CASTING MARKETS - GLOBAL & INDIA



**Seminar –cum-Clinic on  
Computer-aided Design &  
Automation in Die Casting**  
7 Nov 2011, IIM-Delhi Chapter

**L Pugazhenty**  
**Executive Director**  
**India Lead Zinc Development Association**  
**&**  
**Past President (2008-09)**  
**The Indian Institute of Metals**





# DIE CASTING

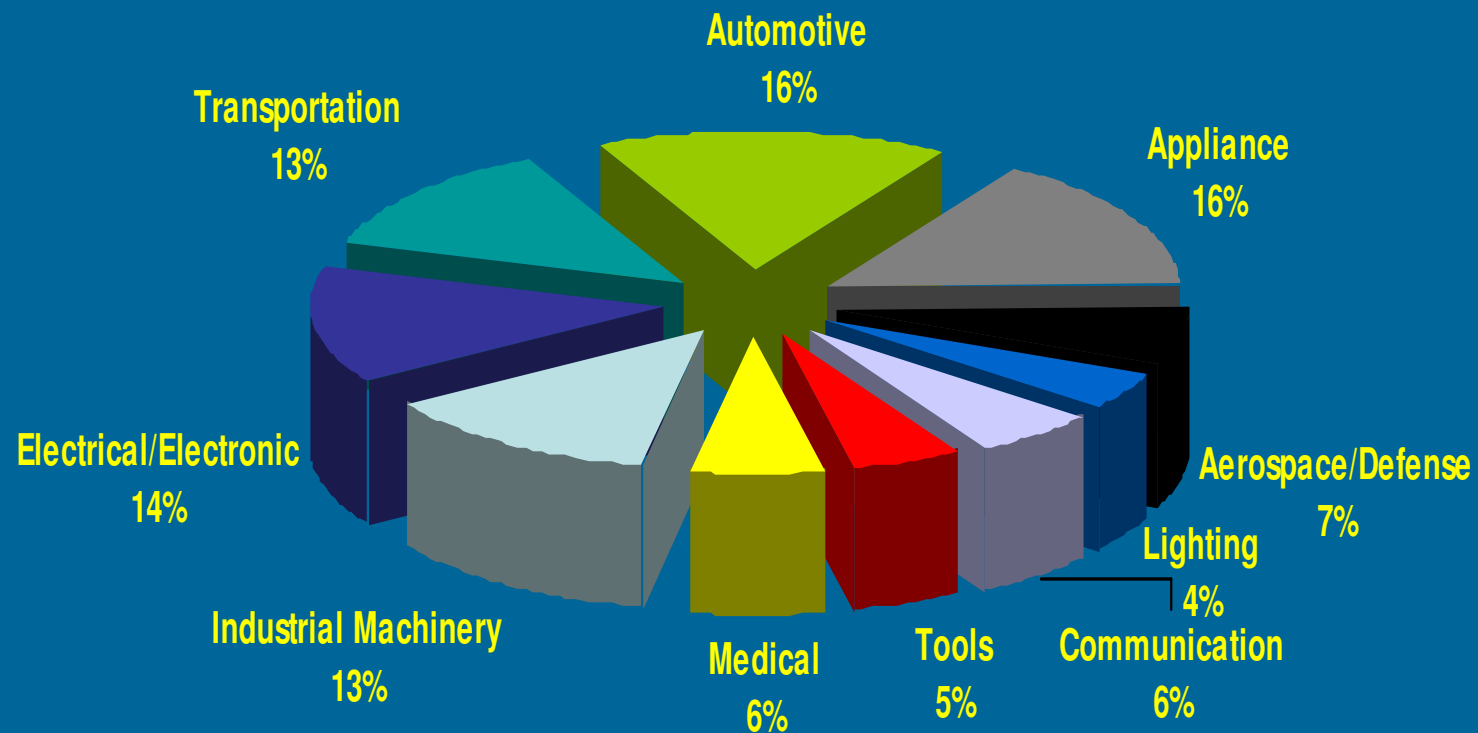
*“..... shortest route from molten metal to the finished product .....”*

## Inherent Advantages

- High Volume Production
- High Dimensional Accuracy
- Excellent Mech & Physical Properties
- Excellent Surface Finish
- Platability /Finishability
- Wide Range of Alloys
- Lowest Cost Per Piece

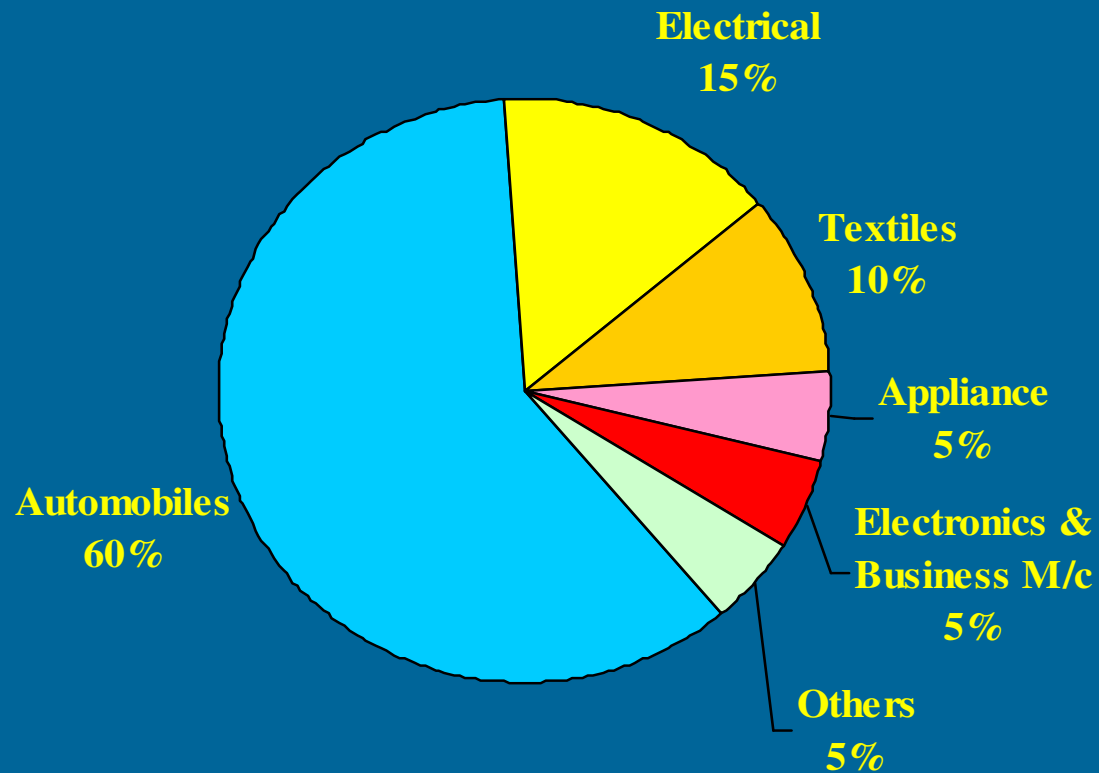


# Die Casting Markets in USA (Aluminium)



Source: NADCA

# Die Casting Markets in India (Aluminium)



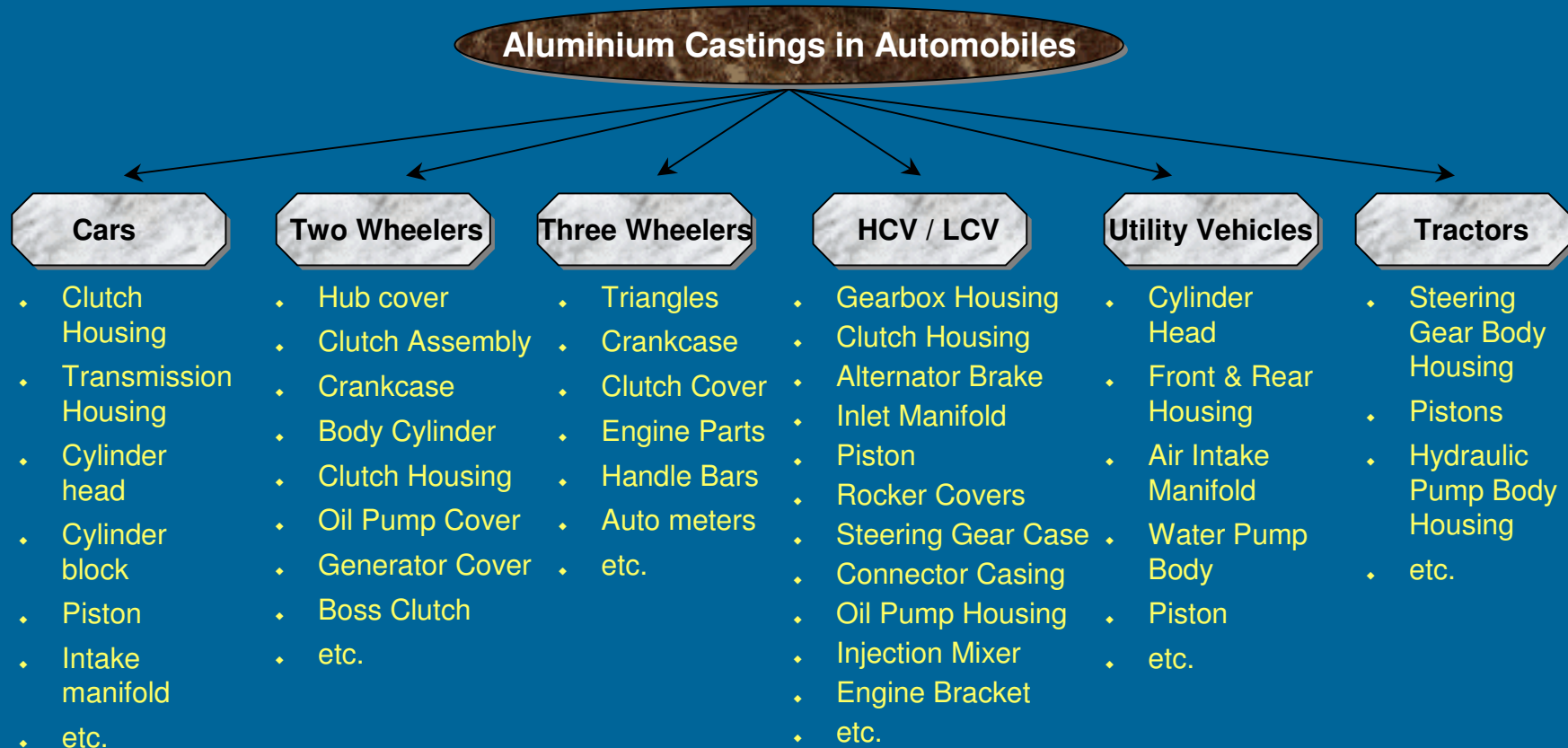
# Aluminium

## Die Casting Alloys

Alloy	Si	Fe	Cu	Mn	Mg	Ni	Zn	Sn	Ti	Pb
LM2	9.0 – 11.5	1	0.7-2.5	0.5	0.3	0.5	2	0.2	0.2	0.3
LM4	4.0 - 6.0	0.8	2.0-4.0	0.2-0.6	0.15	0.3	0.5	0.1	0.2	0.1
LM5	0.3	0.6	0.1	0.3-0.7	3.0-6.0	0.1	0.1	0.05	0.2	0.05
LM6	10.0 – 13.0	0.6	0.1	0.5	0.1	0.1	0.1	0.05	0.2	0.1
LM9	10.0 – 13.0	0.6	0.1	0.3-0.70	0.2-0.6	0.1	0.1	0.05	0.2	0.1
LM10	0.25	0.35	0.1	0.1	9.5-11.0	0.1	0.1	0.05	0.2	0.05
LM12	2.5	1	9.0-11.0	0.6	0.2-0.4	0.5	0.8	0.1	0.2	0.1
LM13	10.0-12.0	1	0.7-1.5	0.5	0.8-1.5	1.5	0.05	0.1	0.2	0.1
LM16	4.5-5.5	0.6	1.0-1.5	0.5	0.4-0.6	0.25	0.1	0.05	0.2	0.1
LM18	4.5-6.0	0.6	0.1	0.5	0.1	0.1	0.1	0.5	0.2	0.1
LM20	10.0-13.0	1	0.4	0.5	0.2	0.1	0.2	0.1	0.2	0.1
LM21	5.0-7.0	1	3.0-5.0	0.2-0.6	0.1-0.3	0.3	2	0.1	0.2	0.2
LM22	4.0-6.0	0.6	2.8-3.8	0.2-0.6	0.05	0.15	0.15	0.05	0.2	0.1
LM24	7.5-9.5	1.3	3.0-4.0	0.5	0.3	0.5	3	0.2	0.2	0.3
LM25	6.5-7.5	0.5	0.1	0.3	0.2-0.45	0.1	0.1	0.05	0.2	0.1
LM26	8.5-10.5	1.2	2.0-4.0	0.5	0.5-1.5	1	1	0.1	0.2	0.2
LM27	6.0-8.0	0.8	1.5-2.5	0.2-0.6	0.3	0.3	1	0.1	0.2	0.2
LM28	17.-20.0	0.7	1.3-1.8	0.6	0.8 – 1.5	0.8-1.5	0.2	0.1	0.2	0.1
LM29	22.0-25.0	0.7	0.8-1.3	0.6	0.8 – 1.3	0.8-1.3	0.2	0.1	0.2	0.1
LM30	16-18.0	1.1	4.0-5.0	0.3	0.4 – 0.7	0.1	0.2	0.1	0.2	0.1
ADC12	9.5-11.5	1	1.5-2.5	0.5	0.3	0.5	1.5	0.1	0.2	0.1

## Aluminium Die Casting

In automobiles, aluminium alloy castings are used mainly in various engine components and other assembly housings



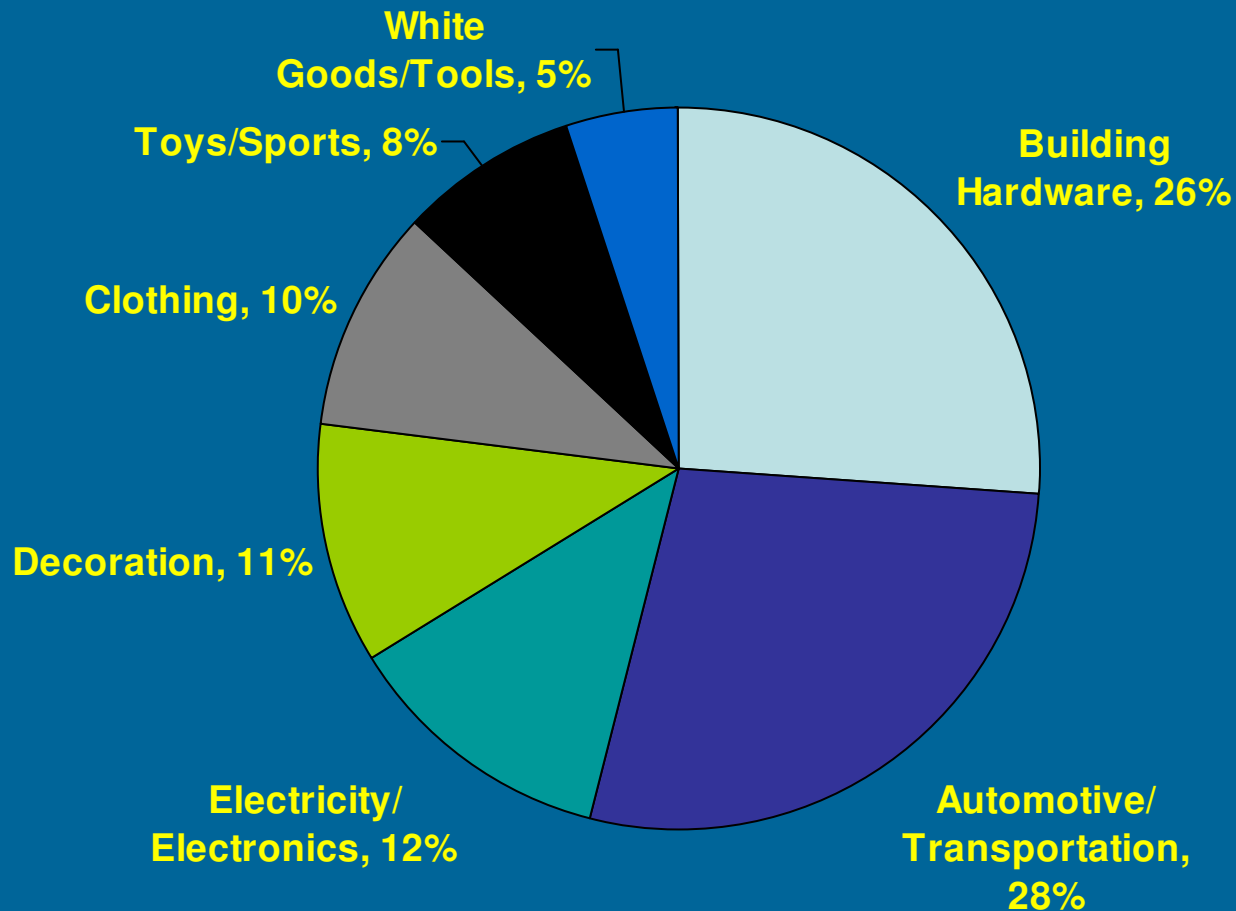
**Note :** The above list is not exhaustive and covers only the major components. Demand from Railways for pistons and overhead tanks has also been considered in this segment.

# Aluminium Usage Norms (Kgs)

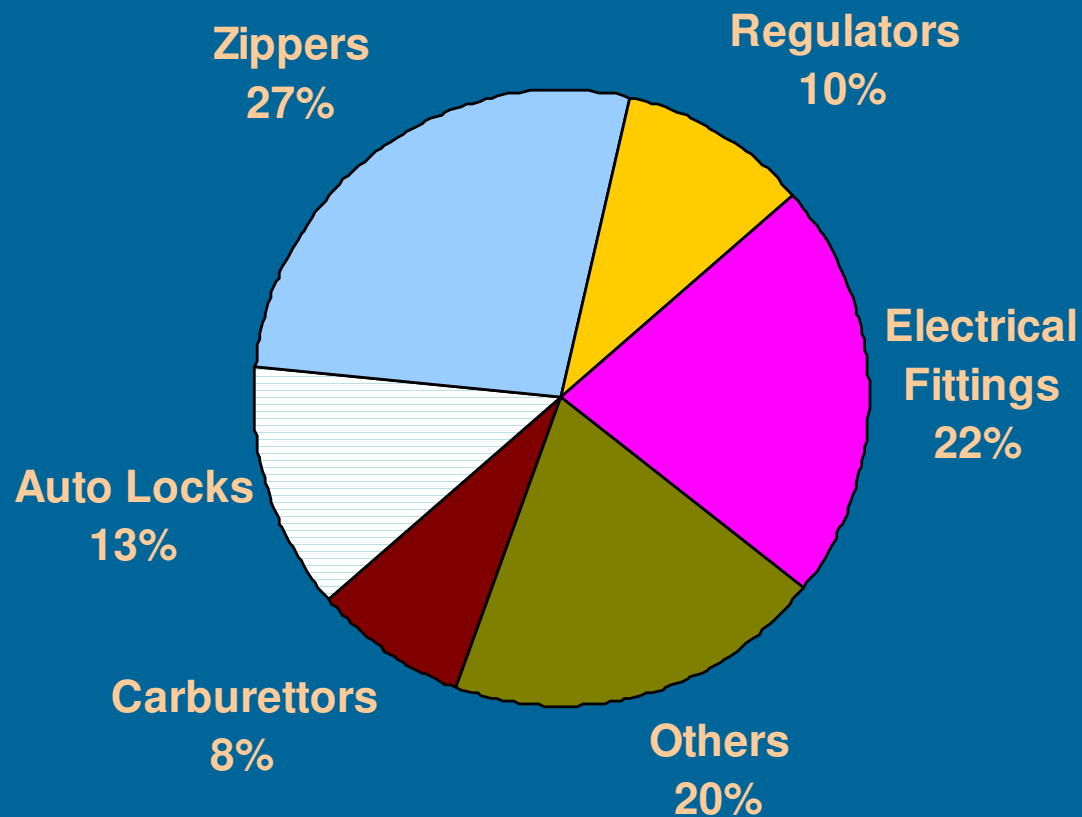
Scooter	12.3 - 15.8
Motorcycle	12.5 - 16.1
Mopeds	6 - 15.1
Cars	20 - 55
Three Wheelers	15 - 22
Utility Vehicles	30 - 55
Tractors	10 - 14
Commercial Vehicles	30 - 40



# ZINC DIE CASTING MARKETS (GLOBAL)



# ZINC DIE CASTING MARKETS (INDIA)



Source: ILZDA

# ZINC DIE CASTING ALLOYS

 6

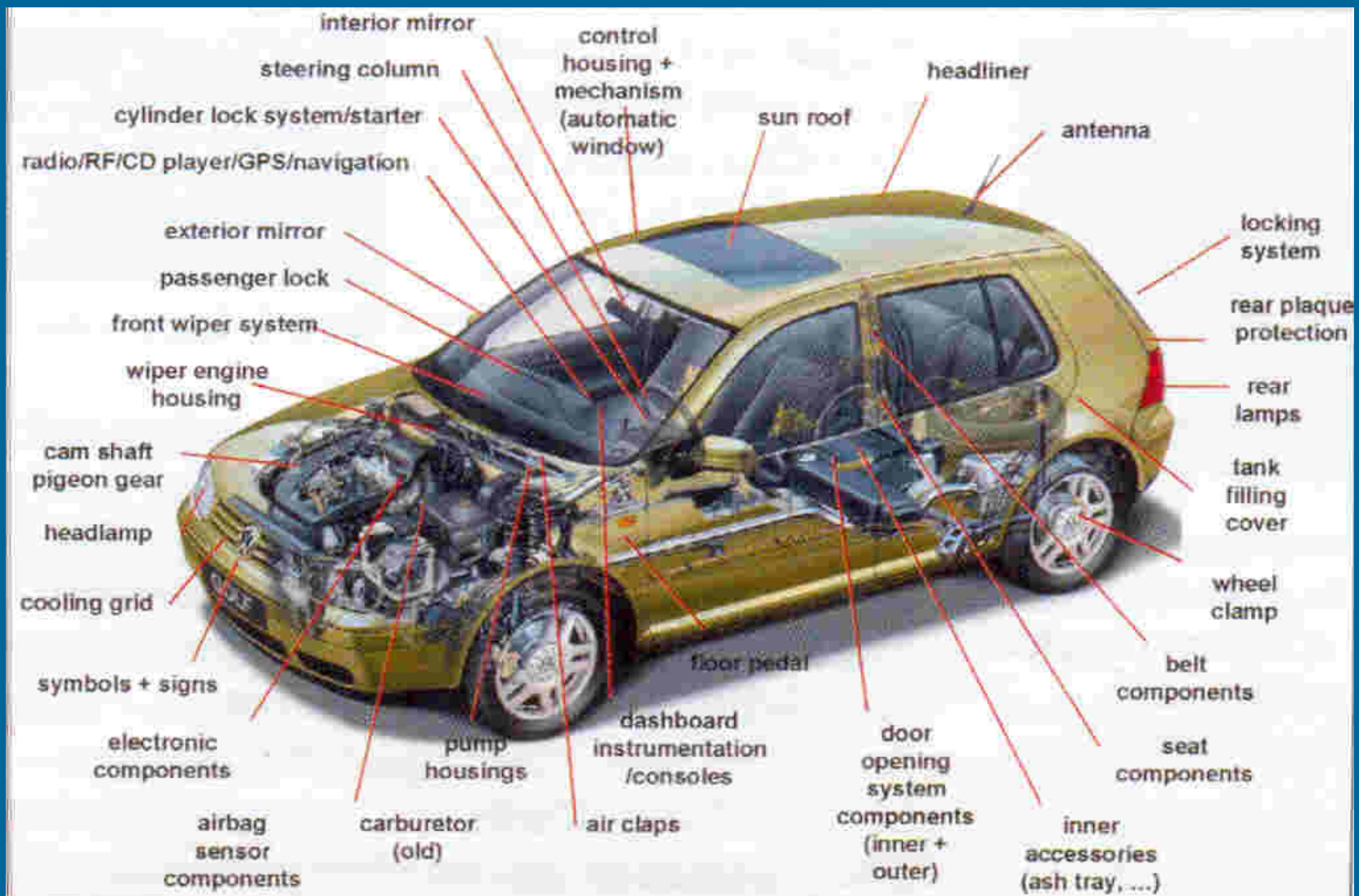
# Zinc Usage Norms (gms)

## Locking Systems

<b>Scooters</b>	<b>600</b>
<b>Motor cycles</b>	<b>500</b>
<b>Mopeds</b>	<b>400</b>
<b>Three wheelers</b>	<b>510</b>
<b>Cars</b>	<b>975</b>

## LPG Regulators

<b>Cover</b>	<b>92</b>
<b>Plate, fork, lever</b>	<b>13</b>
<b>Body</b>	<b>242</b>



## Zinc alloy die casting parts

# Auto Mission Plan (2006-2016)

Turnover in 2016	US \$ 122-159 billion (us \$ 34 billion, 2006)
Share in GDP	10% in 2016 (5% in 2006)
Investment by 2016	US \$ 40 billion
Manufacture vehicles & auto components - domestic & export markets	



# India to be key hub for Fiat's low-cost brand, says COO

Pankaj Doval | TNN

**Mumbai:** India is set to play an important role in Fiat's plans to launch an all-new global low-cost car brand by 2010. While the Italian auto major is looking at possibly marking India as one of the key hubs for supply of components for this brand, the company may also tap into the experience of its Indian partner Tata Motors, that already holds the distinction of rolling out the world's cheapest car, Nano.

Silverio Bonfiglioli, chief operating officer of Fiat Group Automobiles International, told TOI that the company sees India as an important participant in the ambitious low-cost brand project, though clarifying that their

plan is not aimed at developing a Nano-type ultra cheap car. "The Nano is positioned in the bottom end of the A segment. We have experience in developing vehicles in the top-end of the A segment or the bottom end of the B segment. It's that area where we probably want to develop a low-cost car," Bonfiglioli said.

Indian component suppliers would be tapped for this project. "Local Indian suppliers are cheaper than the suppliers in other countries. And their quality is good too. So we can use India as a base for supply of certain components," he said.

Fiat already has a purchasing office at New Delhi for components and expects to export parts worth euro 250 million by next year. On help

from Tata Motors for the low-cost brand, he said Fiat would rely mainly on its own experience of producing low-price cars, especially in South America. "And if necessary, we will use the Tata experience," Bonfiglioli said.

To revive its operations in India, the company has lined up aggressive model launch plans. It made a strong entry into the mid-size car segment with the Linea sedan that would compete with the likes of Suzuki Dzire and Honda City.

The petrol Linea costs between Rs 6.17-7.2 lakh while the diesel version costs between Rs 7.1-8.3 lakh (ex-showroom Mumbai). The next new launch from the company is that of Grande Punto hatchback.



## INTERVIEW: HAKAN KARLSSON

PRESIDENT AND CEO, VOLVO BUS CORPORATION

# India to be Volvo's 2nd largest manufacturing hub

*Swedish commercial vehicle (CV) major Volvo, one of the world's biggest automobile corporations, is lining up further investments in the country. At a time when domestic CV manufacturers were projecting their sub-₹25 lakh vehicles as luxury coaches, Volvo introduced premium products in the price band of ₹70 lakh to ₹1 crore and succeeded. Today, its buses are plying across 12 cities in the country. Hakan Karlsson, president and CEO of Volvo Bus Corporation discusses with FE's Jaishankar Jayaramiah the corporation's plans for India in the immediate future. Excerpts:*

### How important is the Indian market for you?

India will play a major role in Volvo's growth. Being a global player, we are eyeing business across the world. If there is downturn in one region, it can be balanced in other geographical areas. Though there is a slowdown in the north American market, sales in Asian countries, India and China in particular, are encouraging. India will be one of our global hubs for select

models. We have built a strong footprint in India for the past 10 years. More than 5,000 vehicles are plying on Indian roads. We have 70% market share in the inter-city luxury coach segment and 50% share in the low floor air-conditioned city bus segment.

### Can you elaborate your India specific plans?

Our target is to become a \$1 billion company by 2015 here. In 2010, we witnessed around ₹560-crore business in the country. Our new manufacturing facility will have a capacity of 2,500 bus units while also expanding its production plant near Bangalore from the current 1,000 units to 2,500 units. Both the plants will produce and sell 5,000 units per year by 2015.

### Are you planning any new products for India?

Yes. We are present in the premium bus segment in the country. Our next step is to introduce buses in medium segment, but it will not be in the low budget category. It will be just below our premium segment. We are



the ones who created the new luxury bus segment in India.

Now, we intend to play a major role in the medium category as well. These buses will be designed at the R&D centre in India. The company will export 20-25% of its products from India in the next five years.

### Will India become one of the major manufacturing hubs for Volvo in future?

Yes. By 2015, India is likely to be Volvo's second largest manufacturing centre next only to China. At present, India is in the fourth position among the company's manufacturing units across the world. We have a plan to make 'Asia range buses' at the manufacturing facility in India.

### What kind of hiring plans do you have for India?

The company employs close to 9,000 employees across the world, while it has over 1,000 employees in India. We will keep hiring in India for various operations, particularly for production. In the next five years, the company will expand its workforce to 5,000 employees in India.

### What kind of government support are you receiving?

Compared to five years ago, there is a vast development on the infrastructure front. The government is fairly okay on regulations. Still the govern-

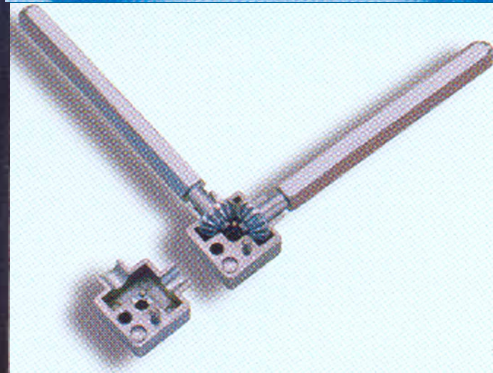
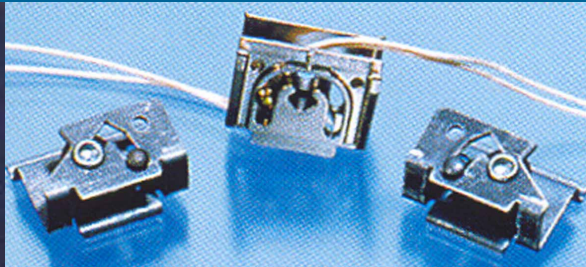
ment can push infrastructure projects harder. Care for the environment is going to be a big challenge in all mega cities including in India in the future. More and more people are coming to big cities. Bus transport systems will reduce traffic congestion and CO2 emissions in city. The government should encourage bus manufacturers like us to use available technologies. These are the things that should be high on government agenda.

### Can you elaborate on your R&D activities?

We have a very big R&D centre in Gutenberg in Sweden, two in north America and one each in India, China, Mexico and Canada. For Volvo group, the R&D centre in India is the fastest growing among all R&D centres across the world. The India specific and Asian range of buses will be developed at Indian R&D centre. In 2010, the company witnessed around ₹15,000-crore turnover through its global sales. Our global R&D spend remained in the range of 3.5% of total sales.



# Zinc Die Castings in Our Daily Lives



# Builders Hardware



# Builders Hardware



***“Local Indian suppliers are cheaper than the suppliers in other countries. And their quality is good too. So we can use India as a base for supply of certain components”***

**- Silver Bonfiglioli,  
COO, Fiat Group Automobiles Intl.**