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Casting Examples

Aluminum

Part Name: Pistol Frame
Application: 0.22 Caliber Pistol
Part Weight: 0.35 lbs.
Alloy: A380
Comments: Part was previously machined from stock. This is the first aluminum die casting used by Smith & Wesson.
Customer: Smith & Wesson



Aluminum

Part Name: Rocker Arm
Application: Honda Civic Engine
Part Weight: 0.48 lbs.
Alloy: 383
Comments: Process improvements and strict attention to detail resulted in cost savings on these high integrity, near porosity-free parts. The parts include a special "wear" insert chip and meet very tight specifications requirements
Customer: Honda of America Mfg., Inc.



Aluminum

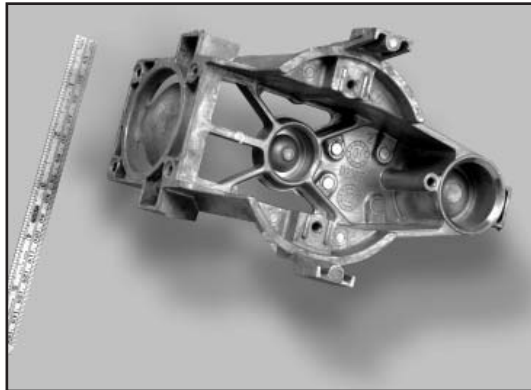
Part Name: Antenna Element
Application: Water Meter
Part Weight: 0.575 lbs.
Alloy: A380
Comments: Part was previously sand cast. Increased rate of production and near net shape made die casting attractive. Demonstrates ability to produce sound castings of thick section.
Customer: Schlumberger



Casting Examples

Aluminum

- Part Name:** Endbell
- Application:** Air Compressors
- Part Weight:** 0.85 lbs.
- Alloy:** 380
- Comments:** Major tooling and process improvements resulted in scrap reduction, increased cost savings, production and quality. Completed cast units highly competitive in the market against lower entry models produced using stamped steel.
- Customer:** Devilbiss Air Power Company



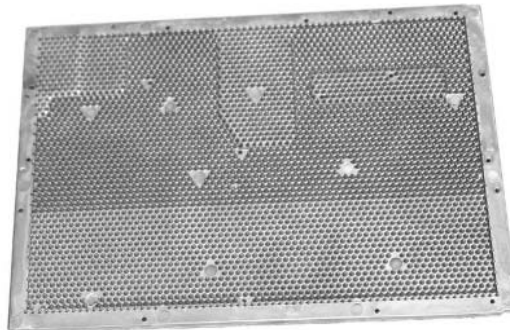
Aluminum

- Part Name:** Water Passage
- Application:** Honda Civic Engine
- Part Weight:** 1.4360 lbs.
- Alloy:** 383
- Comments:** The Water Passage hose mating surface is cast to specifications allowing the shipping of the part to the customer without any machining to the snout. This tight tolerance allows a cost savings to the customer. The customer saves the cost of machining for the snout, which is estimated at a 23% cost savings.
- Customer:** Honda of America Mfg. Inc.



Aluminum

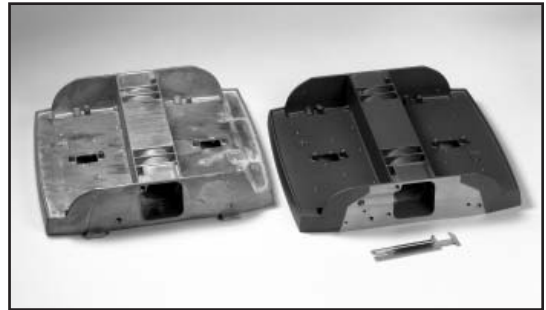
- Part Name:** Heat Sink Front & Back
- Application:** Garmin G-1000
Flat Panel Flight Display
- Part Weight:** 1.91 lbs.
- Alloy:** 360
- Comments:** Parts are assembled to collect & disperse heat from an LCD unit. Converted from machined parts to die castings. Increased production rate & reduced piece part cost. First time use of aluminum heat sink for this type of application. 360 alloy was selected based on its corrosion resistance which protects the assembly from oxidation & other corrosion resulting from frequent atmospheric changes experienced by components used in general aviation. Painting or coatings are not required & are ready for assembly upon arrival at customer location.
- Customer:** Garmin International



Casting Examples

Aluminum

Part Name: Chassis
Application: Human Transporter
Part Weight: 8.2 lbs.
Alloy: 380
Comments: The casting is produced to net shape and meets strict specifications. True position tolerances on critical dimensions were reduced resulting in reductions in machining and substantial cost savings.
Customer: Segway



Aluminum

Part Name: B Pillar
Application: Automotive Structural Support
Part Weight: 9.2 lbs.
Alloy: 380
Comments: A new part cast for automobile body framing support application. Yields weight savings benefit over fabricated steel components.
Customer: —



Aluminum

Part Name: Trimmer Deck Housing
Application: Walk Behind Trimmer
Part Weight: 9.2 lbs.
Alloy: 380
Comments: As compared to a previous die casting design and tooling design, newly designed tooling allowed for scrap reduction (34%), cycle time reduction (52 sec.) and weight reduction (2 lbs.).
Customer: Garden Way, Inc.



Casting Examples

Aluminum

- Part Name:** Communications Housing
- Application:** Microwave Communications
- Part Weight:** 9.9 lbs.
- Alloy:** 413
- Comments:** Formerly produced as an investment casting. Provides heat dissipation and electrical conductivity. Die casting reduced lead time and machining requirements.
- Customer:** Harris Corporation,
Microwave Communications Division



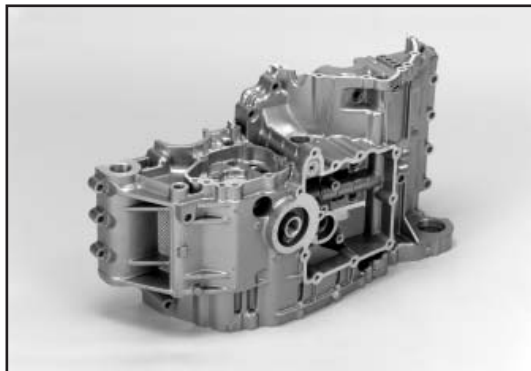
Aluminum

- Part Name:** 757 Impeller
- Application:** 757 Impeller
- Part Weight:** 10.29 lbs
- Alloy:** A380
- Comments:** Impeller used in industrial and commercial blowers. The application of the die cast part enabled the unit to operate at higher speeds, with less noise, while reducing the amount of secondary machining.
- Customer:** Ametek Rotron



Aluminum

- Part Name:** Lower Crankcase
- Application:** Motorcycle
- Part Weight:** 16.31 lbs.
- Alloy:** LM2 to JVM Specifications
- Comments:** Redesign of original T120, 1959 Bonneville high performance version of Triumph's 650cc twin. Eliminated costly secondary machining operations, additional engine parts and fully utilized the benefits of high pressure die casting process.
- Customer:** Triumph Motorcycles



Casting Examples

Aluminum

Part Name: Differential Carrier

Application: Independent Rear Suspension

Part Weight: 16.5 lbs.

Alloy: ADC-12 -T6 Heat Treatment

Comments: Past generation was an iron casting. First high volume squeeze casting used in an independent rear suspension axel carrier. Squeeze casting decreased weight by 22 pounds over cast iron process

Customer: Visteon Corporation



Aluminum

Part Name: Beta Crankcase Right & Left

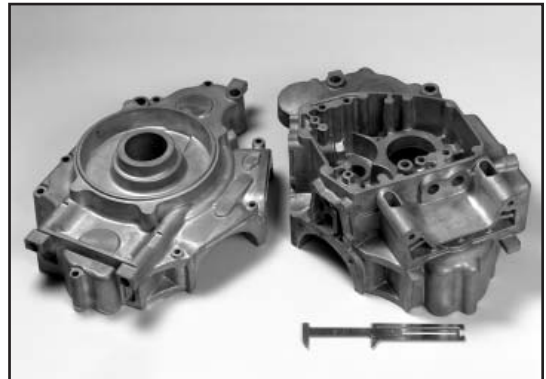
Application: Motorcycle

Part Weight: 16.8 lbs.

Alloy: 383

Comments: These net-shape, complex castings were converted from the permanent mold process to meet stringent specifications of improved quality, pressure tightness, cosmetic appearance, higher volume and cost reductions.

Customer: Harley-Davidson



Aluminum

Part Name: Scooter Monocoque Frame

Application: Honda Scooter Super Sport

Part Weight: 23.4 lbs.

Alloy: JIS ADC12; 383 equivalent

Comments: Previously fabricated from steel sheet stamping and pipes. Die casting provided weight savings and cost reduction.

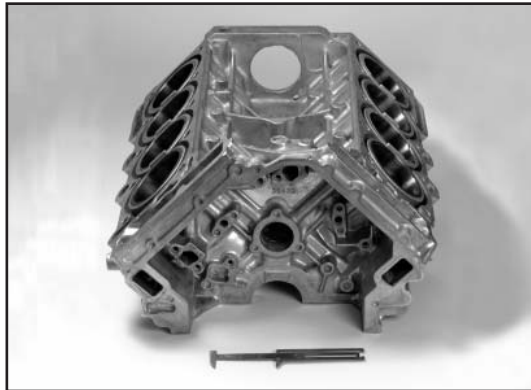
Customer: Honda R&D Co., Ltd.



Casting Examples

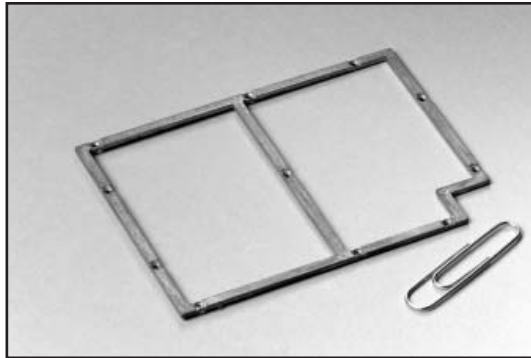
Aluminum

Part Name: Rear Wheel Drive Northstar Block Casting
Application: Rear Wheel Drive Northstar Engine
Part Weight: 79.83 lbs.
Alloy: A380
Comments: –
Customer: GM Powertrain



Magnesium

Part Name: Frame
Application: Novatel Expedite Modem
Part Weight: 0.01 lbs.
Alloy: AZ91D
Comments: Converted from a plastic part. The magnesium casting eliminated a plastic part sandwiched between two metal plates and held together with self tapping screws, resulting in cost savings to the customer.
Customer: Novatel Wireless Technologies, LTD



Magnesium

Part Name: Head Node
Application: Mountain Bike
Part Weight: 0.22 lbs.
Alloy: AZ91D
Comments: Originally designed as two aluminum investment cast parts, this unique die cast mag design and application yields a 30% weight savings, part and assembly cost savings, better consistency in impact and fatigue and better performance.
Customer: Cannondale



Casting Examples

Magnesium

Part Name: Fishing Reel
Application: Ardent XS Fishing Reel
Part Weight: 31.3 grams
Alloy: AZ91D
Comments: Converted from plastic & die cast aluminum components. Complex geometry & varying wall thickness. Tooling uses 3 slides to form entire exterior of part. Tight tolerance machining of bores and surfaces for mating components. 100% made in USA (Components & Assembly).
Customer: Marsh Technologies, Inc.



Magnesium

Part Name: Radio Housing
Application: ITT "Spearhead" Military Radio
Part Weight: 90 grams
Alloy: AZ91D
Comments: Converted from plastic. Magnesium alloy provides shielding and hence, no secondary shielding is required as with plastic. Smallest & lightest frequency-hopping, secure VHF radio available for military use.
Customer: ITT Aerospace/Communications Division



Magnesium

Part Name: Clutch Cover
Application: All Terrain Vehicle Clutch
Part Weight: 0.44 lbs.
Alloy: AZ91D
Comments: A conversion from aluminum die casting to magnesium die casting resulted in a weight reduction of 45% and a significant cost reduction by eliminating machining.
Customer: Polaris Industries, ATV Div.



Casting Examples

Magnesium

- Part Name:** Camera Assembly
- Application:** Digital Camera
- Part Weight:** 0.48 lbs.
- Alloy:** AZ91D
- Comments:** Originally designed as aluminum investment cast parts, the design complexity and required precision mandated a transition to magnesium die cast parts.
- Customer:** Eastman Kodak



Magnesium

- Part Name:** Hand-Held Computer Housing
- Application:** Hand-Held Computer
- Part Weight:** Over 0.5 lbs.
- Alloy:** AZ91D
- Comments:** —
- Customer:** Telxon Corporation



Magnesium

- Part Name:** Gear Case Housing Assembly
- Application:** Automatic Power Pruner
- Part Weight:** 0.64 lbs.
- Alloy:** AZ91D
- Comments:** Magnesium was chosen for its strength and low weight for this application over plastic and aluminum. Bearing diameter tolerances of 0.001" are required and eliminate machining and masking cost.
- Customer:** Echo



Casting Examples

Magnesium

Part Name: Lock Housing
Application: SUV Tilt Steering Column
Part Weight: 2.02 lbs.
Alloy: AM60B
Comments: This die casting controls the tilt/telescoping features in the steering column and incorporates the ignition switch, shift lever and brake-shift interlock into one casting. In addition to tight dimensional control, the higher elongation in AM60B alloy provides good crash energy management.
Customer: Visteon/Ford



Magnesium

Part Name: Seat Back and Cushion
Application: Luxury Car Seat Back and Cushion
Part Weight: –
Alloy: AM60B
Comments: –
Customer: –



Magnesium

Part Name: Rear Frame
Application: Luxury Car
Part Weight: 7.51 lbs.
Alloy: AZ91D
Comments: –
Customer: CTS/Venture Industries



Casting Examples

Magnesium

Part Name: Dashboard

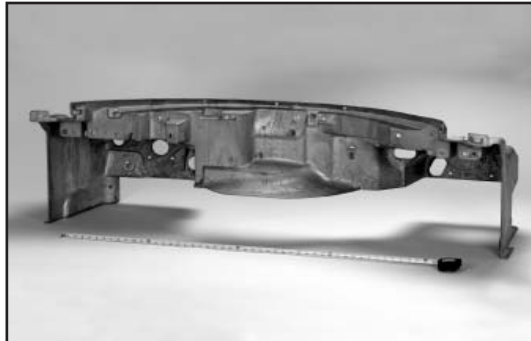
Application: Next Generation Viper

Part Weight: 21.0 lbs.

Alloy: AM60B

Comments: This die casting achieved significant cost savings by lowering tooling costs, requiring fewer components and reduced assembly, greater part-to-part repeatability and improved part integrity.

Customer: Daimler Chrysler Corporation



Magnesium

Part Name: Cross Car Beam for Instrument Panel

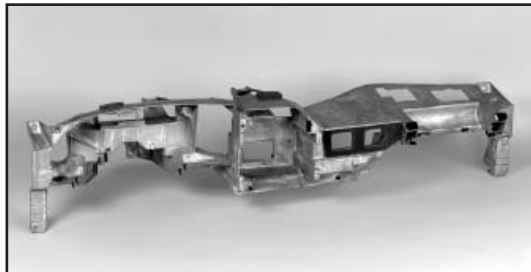
Application: General Motors Medium Duty Trucks

Part Weight: 21.5 lbs.

Alloy: AM60B

Comments: An example of maximizing the die casting process, machine and die to obtain substantial cost savings. The improvements resulted in weight savings & cost reductions through decreased material, downtime, and elimination of machining/repair.

Customer: General Motors Truck



Zinc

Part Name: Bracket

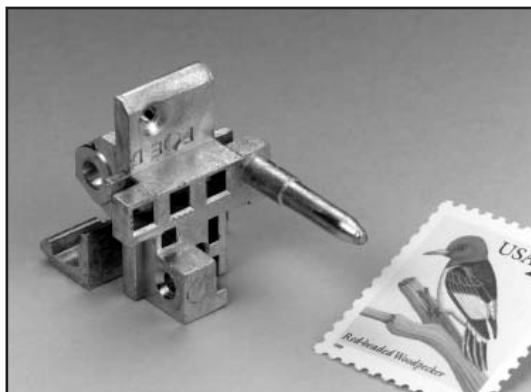
Application: Electronics Enclosure

Part Weight: 15.42 Grams

Alloy: Zamak No. 3

Comments: Converted from a machined aluminum alloy resulting in cost savings. The part is cast to net-shape thereby totally eliminating any machining.

Customer: —



Casting Examples

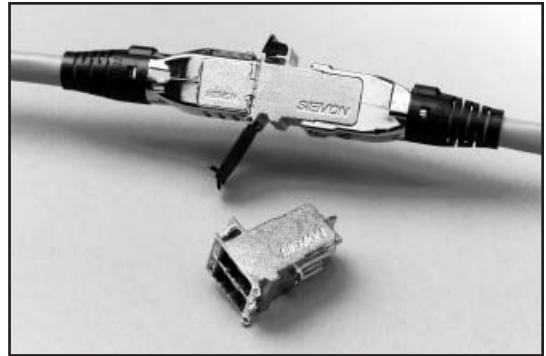
Zinc

Part Name: Faucet Handle
Application: Two Handle Lavatory Faucet
Part Weight: 119 Grams
Alloy: Zamak No. 3
Comments: Major cost savings were achieved from tooling changes, which eliminated trimming, reduced polishing the parting line and machining operations.
Customer: Delta Faucet Company



Zinc

Part Name: Connector
Application: "TERA" Connector
Part Weight: 0.4 oz.
Alloy: Zamak No. 3
Comments: Die casting offered superior EMI shielding and mechanical integrity at a favorable cost.
Customer: Siemon Company



Zinc

Part Name: Kitchen Faucet Hub
Application: Pull-Out Faucet
Part Weight: –
Alloy: Zamak No. 3
Comments: –
Customer: Delta Faucet Company



Casting Examples

Zinc

Part Name: Fuel Fitting

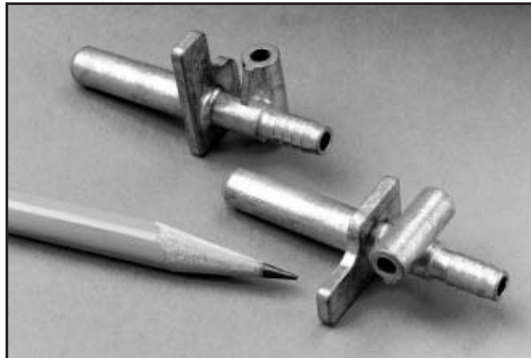
Application: Dragon Fly™ Cook Stove

Part Weight: 0.5 oz.

Alloy: Zamak No. 3

Comments: Originally designed as an assembly of three screw-machined components. Converting the component to die cast Zamak 3 provided a cost reduction and allowed for the streamlining.

Customer: Mountain Safety Research



Zinc

Part Name: Reverse Valve Casting

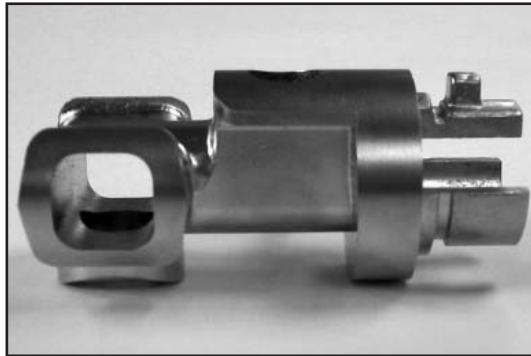
Application: Snap-On Tools

Part Weight: 1.06 oz.

Alloy: Zamak No. 5

Comments: Exceedingly complex, high tolerance die casting produced in high volumes & requiring minimum machining. Zinc die casting selected over powder metallurgy, machining & metal injection molding because of lower production costs. 50 mils to 230 mils casting thickness & a stepped hole (to a final ID of 0.3000") extending the length of the cylinder with minimum draft.

Customer: Vic Royal



Zinc

Part Name: Casket Arm

Application: Casket

Part Weight: 3.5 oz.

Alloy: Zamak No. 3

Comments: This precisely cored zinc die casting provides the right amount of friction with the hinge to allow the lift bar to remain in the position it was last set. Was a steel stamping.

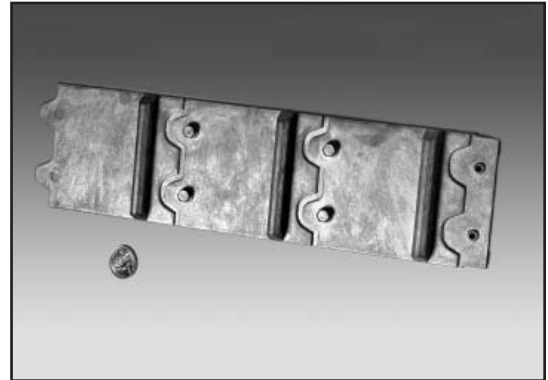
Customer: Vic Royal



Casting Examples

Zinc

Part Name: Display Frame Component
Application: Store Display Unit
Part Weight: 26.16 oz.
Alloy: Zamak No. 3
Comments: Conversion from a steel weldment to a die casting resulted in substantial cost savings. The casting is used as the frame for a track running shoe display rack.
Customer: CDC Marketing



Zinc

Part Name: Cross Member
Application: Telephone Wiring Systems
Part Weight: 2.0 lbs.
Alloy: Zamak No. 3
Comments: Die casting provided the ability to form the complex part and maintain structural strength. Die casting also provided quick delivery times and tremendous economy.
Customer: Nortel Networks



Zinc

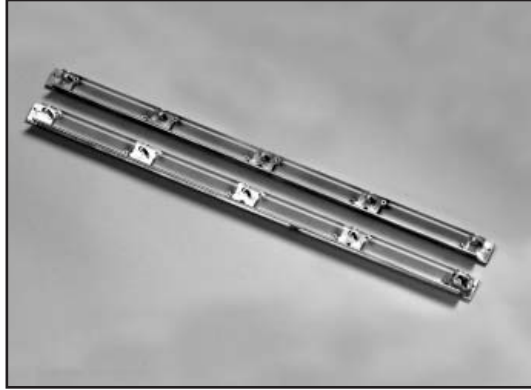
Part Name: Outside Cover
Application: Power Lever Door Lock
Part Weight: 3.0 lbs.
Alloy: Zamak No. 3
Comments: Converted from a permanent mold casting, these die cast parts offer thinner walls, less prep for plating due to the extraordinary surface finish and cost savings (39%).
Customer: Mas-Hamilton Group



Casting Examples

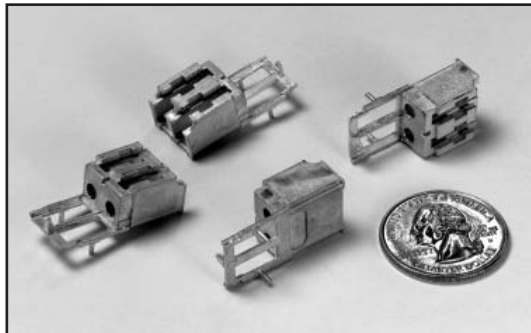
Zinc

Part Name: Front Plate L-20
Application: Telecommunications Extension Shelf
Part Weight: 3.53 oz.
Alloy: Za4Cu1
Comments: New part for mounting optical and electrical cartridges. Challenge of fill very thin walls and narrow (0.2 mm) flatness tolerance. Success related to vacuum technology, die thermal conditioning and precision and sprue runner design.
Customer: ALCATEL ITALIA S.p.A.



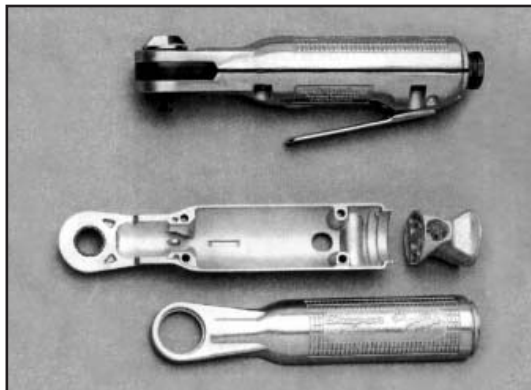
Zinc

Part Name: Connector Housing
Application: Fiber Optic Transceiver
Part Weight: 0.19 oz.
Alloy: Zamak No. 2
Comments: Previously produced from multiple machined cast metal or sheet metal fabricated parts, which lacked precision for speedy assembly of components. Cost savings in material, production methods and labor were achieved with the conversion to die casting.
Customer: Agilent Technologies



ZA (Zinc-Aluminum)

Part Name: Tool Housing & Components
Application: Air-Powered Hand Tool
Part Weight: —
Alloy: ZA-8 and ZA-27
Comments: —
Customer: —



Casting Examples

ZA (Zinc-Aluminum)

Part Name: Transmission Shift Selector Tube Unit

Application: Passenger Car & Light Truck

Part Weight: 1.1 lb.

Alloy: ZA-8

Comments: –

Customer: –

