

# India's **1<sup>st</sup>**  
Manufacture of **DISC BRAKES**  
For 3 Wheeler



**ENGGINNO**  
*an engineering innovation*



**Design & Manufacturer of Automotive Components**

An IATF 16949, ISO 9001, ISO 14001 and ISO 45001 Certified Co.

[www.engginno.com](http://www.engginno.com)

## Our Expertise

Step into ENGGINNO, where precision converges with innovation in the realm of manufacturing. Our relentless pursuit of excellence fuels a varied spectrum of manufacturing prowess, enabling us to provide tailor-made, superior solutions to match your distinct requirements. Backed by leading-edge technology and an adept workforce, we specialize in an array of processes, guaranteeing exceptional outcomes across a spectrum of Modernized Tech.



## Quality Assurance

At ENGGINNO, maintaining high-quality standards is an absolute priority. This commitment is embedded throughout our manufacturing operations.

Here's a more elaborate description of what this signifies:

**1. Rigorous Quality Control Measures:** We have stringent protocols and checks in place at every stage of production. These measures are designed to meticulously examine each component. By adhering to these procedures, we ensure that every single piece leaving our facility aligns with our uncompromising quality standards.



**2. Comprehensive Quality Assurance:** Our dedication to quality assurance isn't limited to a particular phase of production. It starts right from the design phase itself. We integrate quality considerations into the initial design process, ensuring that the products are not only functional but also capable of meeting our high-quality benchmarks.

**3. Commitment to Reliability and Durability:** We are committed to delivering components that our clients can rely on. These components aren't just of high quality; they're built to last. Our focus on durability ensures that the products we provide are sturdy, dependable and capable of withstanding the demands of their intended use.

**4. Client-Centric Approach:** Our dedication to quality isn't solely about meeting industry standards; it's about exceeding the expectations of our valued clients. By consistently delivering reliable and durable components, we aim to forge lasting relationships with our clients based on trust and satisfaction.

In essence, our emphasis on quality permeates every aspect of our operations, from the initial design stages to the final production, all to deliver top-tier components that our clients can rely on without compromise.

## Manufacturing Capabilities

Engginno stands as your trusted partner in precision manufacturing. With a relentless commitment to quality, innovation, and customer delight, we transform raw materials into precision-engineered solutions that exceed expectations.

**Cutting:** Utilize advanced cutting methods to shape materials with unparalleled accuracy and efficiency. We excel in tailoring cuts to precise specifications, ensuring optimal material utilization and superior end products.

**Forging:** Forge ahead with confidence as we leverage our forging capabilities to create components of exceptional strength and durability. Our forging processes involve shaping metal through controlled heating and compression, resulting in parts that boast superior mechanical properties and structural integrity.

**Heat Treatment:** Temperature and time converge in our heat treatment processes to optimize material properties. We meticulously control heating and cooling cycles to enhance toughness, hardness, and resistance to wear or corrosion, ensuring that our components meet the Stringently high-performance prerequisites.

**CNC Machining:** Experience the pinnacle of precision with our Computerised Numerical Control (CNC) machining services. Our cutting-edge CNC technology enables us to craft intricate parts with microscopic accuracy, allowing for consistency and quality in every piece produced.

**VMC Machining:** Vertical Machining Centers (VMCs) are the cornerstone of our machining capabilities. With VMC machining, we achieve exceptional precision and versatility, allowing us to efficiently fabricate components with complex geometries and tight tolerances.

**Other Conventional Machining:** Our expertise extends beyond modern techniques; we excel in conventional machining processes as well. From milling and turning to drilling and grinding, our mastery of traditional machining methods ensures flexibility and comprehensive solutions for diverse manufacturing needs.

Choose Engginno for

**Unmatched Performance and Tailored Precision. Your Drive, Our Commitment.**



## Certificate Standard and Policy



ENGGINNO proudly holds four prominent quality certifications: **IATF 16949**, **ISO 9001:2015**, **ISO 14001:2015** and **ISO 45001:2018**. These certifications reflect our unwavering commitment to maintaining exceptional quality standards in our manufacturing processes.

• **IATF 16949:2016 Certification:** IATF 16949:2016 certification specifically focuses on the automotive industry, demonstrating our capability to consistently provide automotive components that meet stringent quality requirements. This certification is aligned with ISO 9001:2015. IATF 16949 outlines the quality management system requirements for organizations involved in automotive production and relevant service parts. It's aimed at ensuring the consistent quality of products within the automotive supply chain and promoting continuous improvement.

• **ISO 9001:2015 Certification:** The ISO 9001:2015 certification is a testament to our adherence to internationally recognized quality management principles, ensuring consistent delivery of high-quality products and services that meet customer expectations. ENGGINNO follows the standards outlined by the International Organization for Standardization (ISO) in their quality management system. ISO 9001:2015 specifies the requirements for a quality management system that an organization uses to demonstrate its ability to consistently provide products and services that meet customer and regulatory requirements. It's a globally recognized standard emphasizing continual improvement, customer satisfaction, and efficient processes.

• **ISO 14001:2015 Certification:** Engginno proudly upholds ISO 14001:2015 standards, demonstrating our commitment to effective environmental management practices. By aligning our operations with these stringent guidelines, we ensure sustainable processes, minimize environmental impact, and continuously improve our eco-friendly initiatives, all while delivering exceptional quality in our manufacturing solutions.

• **ISO 45001:2018 Certification:** Engginno stands as an ISO 45001:2018 compliant company, adhering meticulously to these rigorous standards. This certification is a testament to our unwavering dedication to occupational health and safety. By embracing ISO 45001:2018, we ensure a work environment that not only meets but exceeds international benchmarks for safety measures. It's our pledge to cultivate a culture where employee well-being is paramount, where every operational facet aligns with stringent safety protocols, fostering a workspace that prioritizes health, security, and excellence.

Engginno's commitment to maintaining superior standards across operations validates their dedication to exceeding customer expectations and ensuring consistent product quality. Their adherence to stringent criteria emphasizes continual improvement in processes, prioritizing both environmental responsibility and a safe, healthy work environment.

## Front Disc Brake Assembly

India's **1st Manufacturer** of **DISC BRAKES** for 3 Wheeler

Fitment Location: Double Shocker Front Fork



### **Comparative Study: Disk Brake v/s Drum Brake**

Feature	Disc Brakes	Drum Brakes
Mechanism of Operation	The caliper squeezes brake pads against a disc	Brake shoes press outward against a drum
Heat Dissipation	More efficient heat dissipation due to open design	Less efficient heat dissipation due to enclosed design
Self-Cleaning	Less prone to debris buildup	More prone to debris buildup
Weight	Generally lighter	Generally heavier
Maintenance	Easier inspection and maintenance due to accessibility	May require more extensive disassembly for inspection & maintenance
Cost	Tends to be more expensive	Tends to be less expensive

It's worth noting that the choice between disc brakes and drum brakes often depends on factors like the vehicle's application, performance requirements, and cost considerations. Additionally, some vehicles use a combination of both disc and drum brakes, with disc brakes commonly installed on the front wheels and drum brakes on the rear wheels.

Elevate your driving experience with our **Front Disc Brake Assembly**, Where Durability Meets Performance!

## Caliper Assembly

**Fitment Location:** Disc Brake

**Working Principle:** Caliper pistons facilitate smooth back-and-forth movement during brake application.

Functions as a precision clamp to compress brake pads onto the outer face of the disc. Initiates braking action effectively & responsively.



### Advantages

- **Efficient Braking:** Calipers play a crucial role in converting hydraulic pressure into mechanical force, resulting in effective and responsive braking.
- **Heat Dissipation:** Calipers are designed with features for effective heat dissipation, preventing brake fade and maintaining performance under high-stress conditions.
- **Reduced Weight:** Light weight materials like aluminum are often used in caliper construction, contributing to improved fuel efficiency.
- **Responsive Control:** Calipers provide precise control over brake force, allowing for modulation and responsiveness, enhancing safety and driving experience.
- **Low Maintenance:** Modern calipers often have low-maintenance designs, improving durability and reducing the need for frequent adjustments or replacements.

Engginno provides two categories of calipers: **The Rear Caliper Assembly** which has **The Parking Brake Integration Feature** whereas **The Front Caliper Assembly** which comes without the parking brake integration feature.

## Fastner & Bushes for 3 Wheeler Vehicle Assembly

**Working Principle:** Specially designed fastener for 3 wheeler vehicle assembly.

### Advantages:

- Graded and hardened materials for superior strength.
- Coated for enhanced durability.

### Fastener Types

**Trailer Forged Stud:** Engineered for robust performance. • **Collar Nut:** Ensuring secure and stable connections.  
**Square Nut:** Precision and reliability in every application. • **Front Shaft:** Tailored for seamless integration.



## Disc Rotor

**Fitment Location:** Front & Rear Braking System

**Working Principle:** A disc rotor in a disc brake system involves the conversion of kinetic energy into heat energy to decelerate & eventually stop the rotation of the vehicle's wheels



### Advantages

- **High-Quality Material:** Graded casting used in rotor production. Heavy-Duty Design: Ensures durability and reliability. Rustproof and Corrosion-Free: CED coated for extended lifespan.

### Variants

- 3 Stud, 100 mm PCD
- 4 Stud, 100 mm PCD
- 4 Stud, 70 mm PCD

### Custom Solutions

Tailored solutions available to meet specific customer requirements.

## Front Wheel Hub

### 3rd Gen Integrated



### Conventional



**Fitment Location:** Front Disc Brake

**Working Principle:** It supports and allows smooth rotation of the wheel through bearings, while connecting it to the suspension.

### Advantages

- **Higher Loading Capacity:** Engineered with Generation 3 Hub & Bearing Assembly technology for Stellar Performance, this forged integrated hub ensures a robust loading capacity, surpassing conventional hubs.
- **Extended Lifespan:** Experience longevity with reduced friction, contributing to a prolonged product life.
- **Superior Shock Absorption:** Optimized for superior shock-absorption, the hub features enhanced capabilities achieved through precision induction hardening.

- **Superior Quality Metal:** Engineered from highly graded casted material and employing Generation 1 Hub & Bearing Assembly technology, our engineered hub stands as a pinnacle of optimal performance. Particularly tailored for lower load carrying capacity vehicles.
- **Ease of Maintenance:** Reduced maintenance expenses are achieved through the changeability of individual components.
- **Cost-Efficient Solution:** Lower initial acquisition cost.

## Front Drum Assembly

**Fitment Location:** Double Shocker Front Fork

**Working Principle:** Drum brake functions by harnessing friction generated when a set of Brake Shoes apply outward pressure against a rotating, cylinder-shaped component known as the brake drum.



### Advantages

- **Frequency of Maintenance:** Explore the advantages of drum brakes over disc brakes when it comes to maintenance frequency. The enclosed design of drum brakes provides better corrosion resistance, contributing to prolonged intervals between maintenance sessions. This article delves into how the improved resistance to corrosion enhances the reliability of drum brakes, making them an appealing choice for specific automotive applications.

- **Longevity:** The extended lifespan of drum brakes can be attributed to their larger friction contact area, allowing for enhanced braking performance and wear resistance. This design feature enables drum brakes to withstand prolonged use and contributes to their reputation for lasting longer than some alternative braking systems.

## Trailer Arm Assembly

**Fitment Location:** Rear Chassis

**Working Principle:** Trailing arms are essential metal links connecting the rear axle to the vehicle body. Enables free up-and-down movement of the rear axle while maintaining precise vehicle alignment.



### Advantages

- **Heavy-Duty Design:** Significantly enhances load-carrying capacity.
- **Square Shape Innovation:** Facilitates optimal load distribution, minimizing wear and tear from impact loads. Extended lifespan compared to conventional round trailer arms.
- **Engginno provides two types of trailer arm assemblies:** **The trailer arm disc brake assembly and the trailer arm drum brake assembly.** The disc brake assembly is designed for efficient and responsive braking, while the drum brake assembly offers a reliable braking solution with its enclosed design. These options allow users to choose the trailer arm assembly that best suits their specific needs and preferences for various applications.



## Independent Suspension

**Fitment Location:** Rear Chassis and Shocker



### Comparative Study: Independent suspension v/s Differential

Feature	Independent Suspension	Differential
<b>Functionality</b>	Each wheel moves independently of the Others, improving ride quality & handling.	Distributes torque between the wheels, allowing them to rotate at different speeds.
<b>Ride Quality</b>	Generally provides a smoother & more Comfortable ride, especially on uneven surfaces.	Primarily addresses differences in wheel speeds, less directly related to ride quality.
<b>Traction &amp; Handling</b>	Enhances traction and handling by allowing each wheel to react independently to road conditions.	Facilitates stability during turns but may not directly improve traction or handling.
<b>Steering Response</b>	Contributes to more responsive & precise steering due to the independent movement of each wheel.	Not directly related to steering response, focuses on torque distribution.
<b>Body Roll</b>	Can help minimize body roll during cornering, contributing to improved stability.	Doesn't directly address body roll, relies on other suspension components for stability.
<b>Customization/Tuning</b>	Allows for customization & tuning of components for a balance between comfort and performance.	Limited customization in terms of ride characteristics, adjustments may focus on differential lock settings.
<b>Adaptability to Load</b>	Adapts well to changes in load distribution, beneficial for vehicles carrying varying loads.	Does not directly address changes in load distribution, may affect differential performance.
<b>Unsprung Weight</b>	Can result in lower unsprung weight, contributing to improved handling.	Unsprung weight may vary depending on the design but is generally lower than solid axles.
<b>Space Utilization</b>	Provides flexibility in vehicle design due to its potentially compact and adaptable nature.	Takes up less space compared to solid axles, providing flexibility in vehicle design.

While independent suspension offers these advantages, it's essential to note that the specific benefits can vary depending on the design, components, and intended use of the vehicle.



## Propeller Shaft Assembly

**Fitment Location:** Between Engine-side/Gearbox side Flange & Wheel-side Flange

**Work Principle:** Transmits torque from the engine/ gearbox to the wheel axle; suitable for a four-slot flange cup.

### Advantages

- **Longer lifespan of Flange Cup:** Achieves longer life span of the flange cups as **slider rollers** are integrated instead of square slider block, minimizing wear and tear due to reduction in friction.
- **Flexibility:** Works in two axis, absorbing vibrations from the engine/ gearbox and propeller, providing a smoother driving experience and noise reduction.
- **Low Power Losses:** The power losses in the propeller shaft assembly are very low.
- **Double Protection:** Offers double protection for the flange cup area with a **Grease Cover & Bellows**.

### Differentiators

#### Exclusive Technological Edge:

The ENGGINNO Propeller Shaft Assembly is an integral part of an independent transmission system, exclusively available in ENGGINNO.

#### Tailor-Made Solutions:

Offers an extensive range of solutions tailored to meet specific length requirements.



#### Customized Coating Options

- CED Coating • Zinc Coating • Phosphating • Blackening



## Gear Box Shaft

**Fitment Location:** Gear Box and Flange Cup

**Working Principle:** Transmits torque from gearbox to flange cup.

### Advantages

- **High Strength Shaft:** Made from graded steel.
- **Extended Lifespan:** Enhanced durability and a lengthier operational life result from improved control over the heat treatment process for this shaft.

### Variants

Gear Box Shaft, 16-T

Motor Shaft, 22-T

Gear Box Shaft, 6-T

Gear Box Shaft, 18-T

Gear Box Shaft, 22-T



### Custom Solutions

- We can develop shafts as per customer requirements.

## Flange Cup

**Fitment Location:** • Between Gearbox Shaft and Propeller Shaft • Between Propeller Shaft and Axle



### Variants:

- Wide range of Flange Cup options.
- Total length range: 79 mm to 89 mm.

### Working Principle:

- Acts as a mediator for power transmission in variable-axis differences.
- Transmits power from Gearbox to Propeller Shaft and from Propeller Shaft to Axle.

### Advantages:

- Manufactured with graded and hardened materials.
- Zinc-coated option available upon request.

### Customization:

- We can develop FLANGES according to customer requirements.

## New Arrivals



Front Fork



Brake Shoe & Wheel Cylinder



Brake Plate Assembly



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