

VAANI PRECISION INDUSTRIES



OUR PRODUCT RANGE & SPECIFICATIONS

Railways | Aerospace | Defence | Automotive | Agriculture

Engineered with Precision. Manufactured with Excellence.



RAILWAYS

Manufacturing high-precision and sensitive assemblies for rolling stock, braking systems, suspension assemblies, and locomotive applications. Engineered to deliver reliability, safety, and consistent performance across demanding railway operations.

“ PRECISION IN EVERY PART. RELIABILITY IN EVERY MILE. “

RAILWAYS

Product Name	End-Use & Functional Role

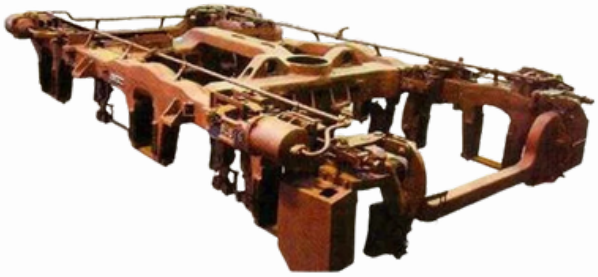


Hand Brake Set for LHB Power Car Coach

The Hand Brake Assembly is a vital safety-critical mechanical apparatus engineered for high-speed LHB passenger stock running on the Indian Railways network.

Positioned within the onboard brake panel cabin or end-wall layout of the coach, this assembly functions as an independent, manually operated auxiliary parking brake system.

It allows rail operators to secure the vehicle and maintain absolute zero-movement stabilization without relying on active pneumatic pressure from the main brake pipe (BP) or feed pipe (FP) systems



Brake Gear Arrangement

The Brake Gear Arrangement is a safety-critical structural rigging assembly engineered for high-tractive three-phase locomotives (WAG-9HC / WAP-7) running on the Indian Railways network.

Positioned entirely within the Co-Co bogie framework, this system functions as the primary force-transmission linkage.

It mechanicalizes, distributes, and multiplies kinetic force throughout the wheelsets to ensure highly responsive decelerating and stopping capabilities under maximum freight and high-speed passenger loads.



The Manganese Steel Pin and Bushes

The Manganese Steel Pin and Bushes is a safety-critical, high-impact structural pivot kit engineered explicitly for the heavy-duty bogie suspension and traction link mechanisms of three-phase electric locomotives on the Indian Railways network.

Operating in an environment subjected to continuous mechanical torque and horizontal tractive forces, this kit serves as the primary pivoting joint for traction rods and link assemblies.

It ensures zero structural slack, maintains rigid geometric spacing, and eliminates high-tempo wheel-truck vibrations during heavy freight hauling or high-speed passenger transit.

RAILWAYS

Product Name	End-Use & Functional Role



Centering Discs

Precision-machined for LHB passenger coaches, our Centering Discs are high-strength stabilizing components designed for Indian Railways' FIAT bogies. Cast from premium Spheroidal Graphite Cast Iron (SGCI) or high-grade cast steel, these discs securely anchor and guide primary and secondary coil suspension springs.

They are engineered to absorb intense vertical, lateral, and longitudinal forces during high-speed transit while meeting strict RDSO and RCF specifications.

By preventing spring displacement and integrating seamlessly with rubber bump stops, these discs dampen track vibrations, minimize wheel wear, and ensure ultimate passenger safety and ride comfort at operating speeds up to 160 km/h.



Stiffer Cam Shaft

The Stiffer Camshaft Assembly is a high-integrity, safety-critical mechanical management component engineered exclusively for heavy-duty rolling stock, traction control gearboxes, and auxiliary power systems within the Indian Railways network.

Positioned within high-vibration, high-load mechanical environments, this specialized camshaft features an amplified structural cross-section.

By completely eliminating the torsional twisting, bowing, and structural bending common in standard shafts, it ensures micro-second precise mechanical timing and reliable long-term performance under maximum hauling demands.



Control Arm

The Control Arm Assembly is a safety-critical structural alignment and suspension component engineered exclusively for the heavy-duty Co-Co bogie configurations of Indian Railways locomotives.

Operating as a critical link within the primary suspension and traction gear layout, this high-tensile component connects the axle box housing or bogie frame to secondary stabilization elements.

By enforcing rigid geometric alignment while allowing controlled pivoting movement, the control arm prevents excessive lateral or longitudinal axle shifting, ensuring optimal track tracking and vehicle stability under massive tractive loads..

RAILWAYS

Product Name	End-Use & Functional Role



Brake Head

The Locomotive Brake Head Assembly is a safety-critical, high-impact mechanical component engineered exclusively for the under-slung Co-Co bogie brake rigging layout of heavy-duty electric and diesel locomotives (including the WAG-9, WAG-9HC, and WAP-7 platforms).

Operating as the pivotal link between the pneumatic brake rigging beams and the wheel tread, this precision-machined component serves as a rigid backing shoe.

It ensures that high-tonnage deceleration forces are applied completely symmetrically across the wheel perimeter, eliminating localized hot spots and maintaining stable brake block friction.



AEROSPACE

Manufacturing high-precision Aerospace Ground Support Equipment, assemblies and specialized tooling engineered to support critical aviation operations with exceptional accuracy, reliability, and performance.

" ENGINEERED FOR FLIGHT-CRITICAL EXCELLENCE "

AEROSPACE

Product Name	End-Use & Functional Role



Shipboard Engine Stand

The Shipboard Engine Stand is a specialized, military-grade tactical maintenance and transport platform engineered for naval vessel deployments. this heavy-duty fixture is purpose-built to securely support, stabilize, and transport helicopter turboshaft power plants—such as the GE T700 engine series utilized in H-60 Seahawk / Black Hawk variants—directly aboard seafaring vessels.

Fabricated from high-tensile structural steel, it features reinforced tie-down mounting interfaces designed to resist severe pitch, roll, and heave motions in high-sea environments.
The compact footprint allows the assembly to pass through narrow bulkheads and hangar bay workspaces while maintaining a ruggedized, corrosion-resistant marine coating.

This specialized surface layer withstands constant exposure to salt spray, hydraulic fluids, and severe oceanic climates, serving as a critical asset for onboard organizational aviation maintenance.



Lifting Bar Assembly

The Lifting Bar Assembly is a military-grade aviation rigging fixture engineered for H-60 Black Hawk / Seahawk helicopter platforms.

Precision-machined from high-tensile 4130 alloy steel, this static load-bearing beam is purpose-built to facilitate the safe hoist, removal, and installation of critical propulsion and drivetrain modules—including the Main Rotor Head, Main Gear Box, and APU housings.

It delivers zero-deflection stabilization and perfect geometric balance during crane manoeuvres, ensuring maximum safety for ground crews and preventing damage to multi-million-dollar aviation assets.



Trim Tab Bending Tool Set

The Trim Tab Bending Tool Set is a specialized, flightline aviation maintenance kit Purpose-built for military rotary-wing operations, this precision ground support kit is engineered to alter and refine the physical trailing angles of main rotor blade trim tabs during dynamic track-and-balance routing.

It is strictly used on legacy, non-wide chord main rotor blade architectures found across H-60 Black Hawk / Seahawk and H-53 Sea Stallion helicopter platforms.
Fabricated from high-grade structural aluminium to prevent material marring and scratching, the tool interfaces cleanly with the tab metal, supplying linear leverage for minute adjustments.

Utilizing this tool set during active vibration analysis loops allows flight line ground crews to accurately mitigate aerodynamic blade track disparities, optimizing flight smoothness and suppressing intensive mechanical cabin buffeting

AEROSPACE

Product Name	End-Use & Functional Role



Flight Control Rigging Set

The Flight Control Rigging Set is a highly specialized, military-grade aviation ground support alignment system.
This precision toolkit is purpose-built for the maintenance and repair shop servicing of SH-60B Seahawk and alternative H-60 Black Hawk helicopter families.

The assembly features an engineered sequence of precision-machined rig pins, blocks, and alignment templates designed to mechanically lock primary flight control mechanisms at a baseline, zero-reference point.

Ground crews use this system during routine overhauls or after replacing crucial linkages to meticulously calibrate the mechanical inputs between the pilot's cockpit controls and the main/tail rotor servo actuators.

Ensuring absolute geometric uniformity eliminates control surface slop, prevents asymmetric flight responses, and guarantees that flight control systems match factory airworthiness parameters



Taper Pin removal tool

The Taper Pin / Locking Device Removal Tool is a specialized, non-powered mechanical service fixture engineered for precision aviation maintenance depots.
This compact hand tool is purpose-built to facilitate the safe extraction of heavy-duty taper pins, keys, washers, and locking plates embedded within aircraft mechanical frameworks without inducing structural component damage.

Fabricated from hardened tool steel, the compact 1.5-inch assembly is designed to slide cleanly into ultra-restricted compartments—such as flight deck control columns or steering linkages—where traditional hammers and slide-pullers cannot safely fit.
By securing itself directly over the host universal joint or mechanical shaft and utilizing a linear, high-torque press bolt, the tool breaks frozen taper pins free without inducing shock waves or vibrations that could alter neighboring avionics calibrations



PAS Spline Socket

The PAS Spline Socket is a specialized, military-grade internal-drive aerospace tool Purpose-built for advanced aviation maintenance depots and naval shipboard environments, this tool functions as a dedicated Hydraulic Mechanical (HM) Check Tool.

It is engineered explicitly to interface with high-torque splined fasteners on critical aircraft engine sub-assemblies—such as the Pilot Assist Servo (PAS) pack found in H-60 Black Hawk and Seahawk helicopters.

Machined from single-piece hardened tool steel to absolute structural tolerances, its internal multi-flute design transfers dynamic fastening loads directly across the spline ridges rather than the outer vertices.

This eliminates component slippage or stripping on expensive flight-critical components, ensuring accurate torque calibration during complex depot-level servo overhauls.

AEROSPACE

Product Name	End-Use & Functional Role



LDS Spline Socket

The LDS Spline Socket is a specialized, military-grade internal-drive aerospace hand tool Engineered as a dedicated Hydraulic Mechanical (HM) Check Tool, this precision socket is designed explicitly to interface with high-torque splined fasteners on the Load Demand Servo (LDS) sub-assembly within H-60 Black Hawk and Seahawk helicopter hydraulic flight control systems.

Machined LDSfrom a single block of hardened tool steel to near-zero structural tolerances, it mirrors the exact multi-flute geometry of the LDS actuator valve input shaft.

This specialized interface distributes massive breakaway torque loads evenly across the splined ridges rather than the outer vertices, completely mitigating the risk of micro-fractures, slippage, or expensive component stripping during critical depot-level overhauls and maintenance cycles.



Inflator Assembly

The High-Pressure Safety Tire Inflator Assembly is a ruggedized, military-grade pneumatic servicing tool . this direct-reading, remote-control pressure instrument is engineered for flightline, hangar, and field depot maintenance sectors.

It is primarily deployed to safely inflate high-pressure aircraft tire and wheel assemblies, landing gear shock struts, and accumulation systems. the tool is equipped with a 10-foot high-pressure hose assembly.

This extended length provides a critical safety distance for ground personnel, protecting them from potential wheel flange failures or tyre bursts during high-pressure servicing.



Fuel System Preservation Hose

The Fuel System Preservation Hose is a specialized aerospace ground support maintenance Purpose-built for military and commercial aviation logistics, this high-integrity fluid transfer assembly is a mandatory tool utilized during long-term storage or depot-level engine layups for Sikorsky H-60 Black Hawk / Seahawk helicopter configurations.

Designed to flush out residual jet fuel and introduce anti-corrosive preservation oils directly into the General Electric T700 engine core, the hose is fabricated from advanced chemical-resistant elastomeric polymers.

It features a robust multi-layer reinforcement layer capable of handling fluctuating fluid pressures without collapsing or degrading when exposed to harsh preservation oils, solvents, and fuel vapors. Complete with precision-matched end couplers, this ground support equipment ensures leak-free connections to the internal fuel lines, preventing volatile fluid leaks and protecting sensitive fuel injection manifolds from internal oxidation during inactive deployment cycles.

AEROSPACE

Product Name	End-Use & Functional Role

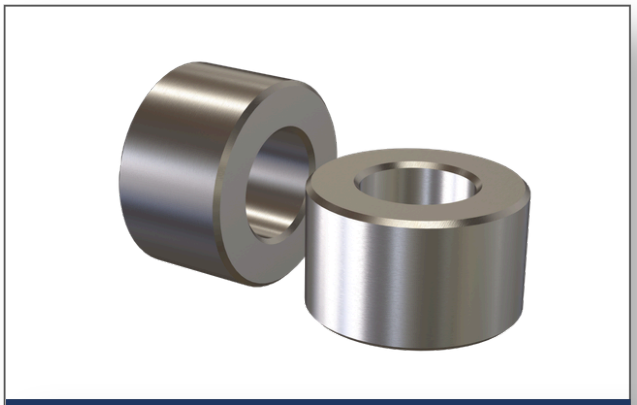


Drain Hose Assembly

The Drain Hose Assembly is a precision-machined ground support sealing component certified for military and commercial airframe servicing. this hardware fixture functions as an end-line fluid isolation plug for specialized onboard drain systems.

It is designed to securely cap off or seal specialized drain hoses during non-servicing states. Fabricated from premium, chemical-resistant corrosion-resistant alloys, the plug forms a fluid-tight compression seal when inserted into the hose.

This specialized design prevents environmental debris from infiltrating critical fluid lines while eliminating low-level dripping or leakage of aviation oils, hydraulic fluids, and line residuals.



Distance Bush

Distance Bush serves as a precision spacer or sleeve in aerospace components, maintaining exact separation between parts like shafts, bolts, and assemblies to ensure structural integrity and alignment.

Crafted from high-strength alloys such as aluminium or titanium, it reduces friction, absorbs vibrations, and withstands extreme temperatures and loads in aircraft engines, landing gear, and control systems.

This critical fastener enhances safety and performance in demanding flight conditions



DEFENCE

Manufacturing mission-critical defence components engineered to meet the stringent requirements of military and strategic applications. Built with uncompromising precision, durability, and reliability for demanding operational environments.

" ENGINEERED FOR MISSION READINESS. "

DEFENCE

Product Name	End-Use & Functional Role



Protecting Ring Assembly

The Protecting Ring Assembly is a high-precision, military-grade defensive hardware component designed for heavy tracked armored fighting vehicles (AFVs), primarily utilized within the T-90 Main Battle Tank platform.

Positioned within the critical rotational layouts—such as the turret bearing assemblies and the final drive systems—this component acts as a high-durability shielding unit.

Its structural integration protects underlying rolling rings, bearings, and planetary gear systems against the most severe elements of mechanized battlefield environments.



Base Transit

The Base Transit is a heavy-duty, precision-machined logistics and structural safety component engineered for the military defense sector.

Fabricated strictly to military blueprint, this critical apparatus functions as a specialized protective platform and baseline integration unit for high-capacity military payloads, large-caliber ammunition housings, and ordnance structures weight-rated up to 1000 lbs.

It is designed to preserve structural integrity, maintain precise geometry, and safeguard mission-critical hardware during high-risk transit, warehouse positioning, and tactical deployment.



Charge Carrier

The Charge Carrier is a defense-grade, safety-critical internal hardware component engineered for advanced ballistic systems and large-caliber ammunition manufacturing.

Functioning as a high-integrity propellant management element, this specialized unit is designed to securely orient, contain, and stabilize the main explosive or secondary ignition charges within the weapon system's housing.

It ensures precise combustion geometry, optimal gas pressure distribution, and complete field reliability under severe tactical operating conditions.

DEFENCE

Product Name	End-Use & Functional Role



Core Barrel

The Core Barrel is a highly specialized, military-grade manufacturing component engineered for defense production lines within ordnance factories.

Operating inside heavy industrial armament tooling or specialized explosive and chemical filling plants, this precision component functions as a rugged structural casing, housing liner, or high-torque mechanical sleeve.

It is built to ensure dimensional perfection and maximum safety when handling massive dynamic loads or high-vibration machining setups on the ordnance factory floor.

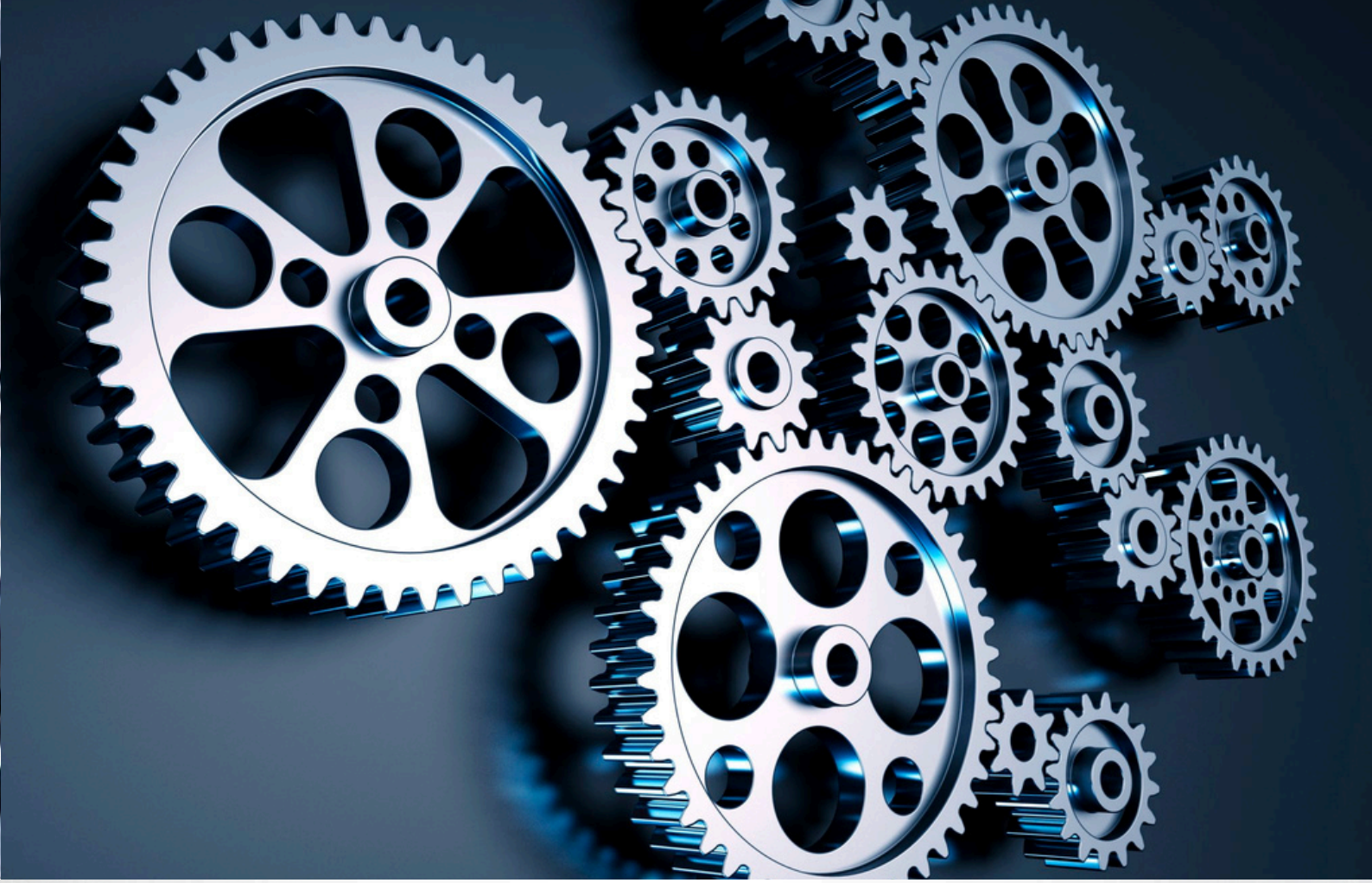


Pin Cat

The PIN CAT-1255 is a heavy-duty, defense-grade mechanical linkage and load-bearing dowel pin designed for heavy military structures and tactical deployment assemblies.

Fabricated in accordance with strict material planning sheet, this precision-hardened element functions as a core locking pivot or static shear alignment connector.

It ensures maximum structural integrity, zero axial play, and reliable geometric positioning under intense mechanical torque, concussive pressure, and cross-country transport vibrations.



AUTOMOTIVE

Driving performance through precision-engineered automotive components designed for strength, reliability, and durability. Our solutions support demanding transportation, towing, mobility, and specialized equipment applications across global markets.

" ENGINEERED FOR STRENGTH. DESIGNED FOR MOBILITY. "

AUTOMOTIVE

Product Name	End-Use & Functional Role



Truck Tow Hitch with Adjustable Ball Mount

The Adjustable Multi-Ball Tow & Stow Hitch Series (Double & Triple Ball Formats) represents a premium line of high-capacity, heavy-duty towing systems engineered specifically for commercial pickup trucks, utility fleets, and industrial transport platforms.

Designed around a highly versatile vertical drop-channel shank, this universal system utilizes an integrated rotating ball block available in both Double Ball and Triple Ball configurations.

This elite setup allows fleet operators to adjust towing heights and instantly match varying trailer coupler sizes using a single, permanently mounted hitch assembly, eliminating the need to carry multiple fixed drawbars.



Fifth Wheel Hitch (Standard)

Engineered for maximum stability and heavy-duty performance, our Standard Fifth Wheel Hitch is the benchmark for secure, long-haul towing.

Built specifically for long-bed pickup trucks, this fixed-position hitch utilizes a robust dual-jaw locking mechanism to provide an exceptionally secure link between your truck and trailer.

The advanced structural design optimizes weight distribution directly over the truck's rear axle, minimizing chucking and eliminating unwanted road rattle.

Finished with a high-durability, corrosion-resistant powder coating, this hitch delivers a smooth, predictable towing experience and uncompromising reliability for drivers who demand the highest standard of safety on the road.GTW / 5,000 lb VTW. Standard (fixed) variant for fixed wheelbase applications.



Fifth Wheel Hitch (Slider)

Designed to solve the clearance challenges of short-bed pickup trucks, our Slider Fifth Wheel Hitch delivers premium towing capability without sacrificing maneuverability.

This innovative system features a dynamic, heavy-duty rolling mechanism that provides up to 12 inches of rearward travel, creating the vital spacing needed between the truck cab and the trailer nose during sharp turns and complex jackknife maneuvers.

With its seamless locking system, drivers can easily transition between stable highway towing positions and high-clearance parking positions.

This hitch removes the risk of costly cab damage, offering short-bed truck owners total confidence, tighter turning radiuses, and ultimate versatility on any journey.



AGRICULTURE

Engineered for the demanding needs of modern agriculture, our precision-manufactured components are designed to enhance durability, efficiency, and performance across tractors, harvesters, transmission systems, and heavy-duty farm equipment.

“ PRECISION THAT DRIVES MODERN AGRICULTURE “

AGRICULTURE

Product Name	End-Use & Functional Role

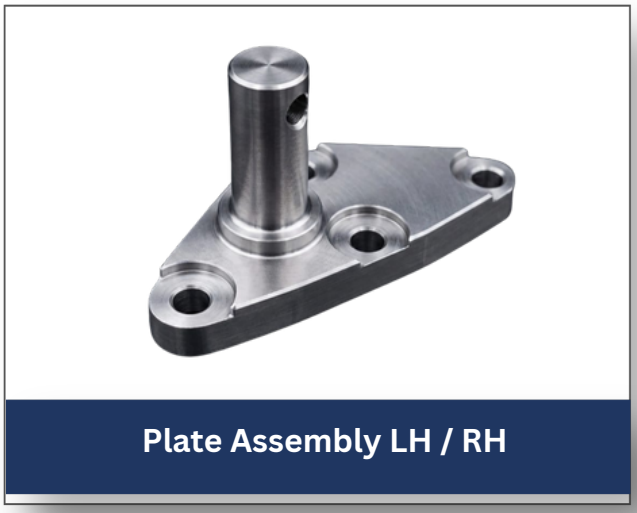


Plate Assembly LH / RH

Engineered specifically for heavy-duty tractor rear axle assemblies, our Left-Hand (LH) and Right-Hand (RH) Tube Plate Assemblies provide foundational anchoring for standard three-point linkage systems.

Precision-forged from high-grade structural steel, each plate features a heavy-duty welded vertical mounting pin designed to withstand immense draft forces and sudden torque spikes during deep tillage or towing.

The multi-hole bolt pattern ensures perfect geometric alignment with the tractor's axle housing, distributing heavy implement loads evenly to eliminate structural stress fatigue.

Finished with an industrial anti-corrosive coating, this mirroring LH/RH pair provides exceptional resistance against moisture, mud, and chemical fertilizers, ensuring maximum operational uptime in rough agricultural fields



Wet Brake Housing Assembly

The Wet Brake Housing Assembly is a high-capacity, heavy-duty oil-immersed braking enclosure engineered exclusively for the primary drive axles of agricultural combine harvesters.

Positioned at the wheel-end planetary hubs or main transaxle output, this component functions as a rugged, fluid-tight structural chamber.

It secures the harvester's multi-plate friction discs, separator plates, and hydraulic pistons.

Given the extreme weight distribution changes inherent to harvesting operations—shifting from a light empty chassis to a high-tonnage loaded grain tank—this housing is structurally maximized to deliver stable, slip-free braking performance on soft, muddy, or sloping terrain.



King Pin Stub Axle Assembly

The King Pin Stub Axle Assembly is a safety-critical, high-load steering and suspension component engineered for agricultural tractors, construction machinery, and heavy industrial front axles.

Operating as the primary wheel-attachment spindle and steering pivot, this assembly links the wheel hubs directly to the main axle beam structure.

It is designed to handle extreme vertical load stresses (especially when utilizing heavy front loaders or attachments) while ensuring smooth, precise wheel articulation and directional stability over rugged, off-road terrain.

AGRICULTURE

Product Name	End-Use & Functional Role



Swinging Drawbar Assembly

Engineered to handle extreme pulling forces, our Swinging Drawbar Assembly serves as the primary heavy-duty towing interface for modern agricultural tractors.
This structural assembly allows the drawbar to pivot horizontally, shifting the implement's tongue weight and pulling center directly underneath the tractor's rear axle.

This dynamic swinging action facilitates tighter turning radiuses, dramatically reduces tire scuffing, and prevents front-end lifting under heavy loads.

Fabricated from thick, high-tensile solid forged steel, the assembly is built to absorb massive draft loads and sudden shock impacts from trailing implements like silage wagons, manure spreaders, and heavy seeders.

The entire unit is finished with a hard-baked, anti-corrosive industrial coating to resist moisture, abrasive mud, and chemical fertilizers, ensuring absolute towing safety and long-term durability in open field operations



Differential Cage

The Differential Cage is a safety-critical, high-precision drivetrain component engineered for heavy commercial vehicles, agricultural machinery, and industrial off-road axles.

Serving as the central structural housing for the differential gear train, this assembly is designed to anchor internal star/spider gears, pinion pins, and thrust washers under massive torsional loads.

It ensures balanced power splitting, consistent gear backlash, and optimal wheel-speed differentiation during heavy hauling and rough terrain cornering.



Intermediate Transmission Plate

The Intermediate Transmission Plate is a high-integrity, structural divider and precision alignment plate engineered for multi-stage heavy vehicle transmissions, commercial transaxles, and agricultural machinery.

Mounted completely between independent transmission housing chambers, this specialized plate serves as a structural backbone.

It provides robust axial support for transmission gear shafts, maintains strict bearing centreline configurations, and acts as a heavy-duty mating boundary to seal high-pressure lubricants under immense torsional strains.

AGRICULTURE

Product Name	End-Use & Functional Role



House Swivel Front Axle LH & RH

The House Swivel Front Axle LH & RH is a safety-critical, high-load pivoting housing assembly engineered for 4x4 agricultural tractors, utility industrial vehicles, and heavy-duty front-driven axle systems.

Acting as the mechanical steering pivot, these mirrored left-hand and right-hand units safely enclose internal constant velocity (CV) axle joints, bearings, and drive shafts while anchoring the wheel spindle.

This assembly allows the front wheels to swivel smoothly under high hydraulic steering forces while simultaneously bearing the full front-end static weight and dynamic torque loads during harsh field operations.



Shaft Assembly Brake Pedal Outer
Shaft Assembly brake pedal inner

Engineered to deliver responsive and independent braking control for heavy-duty agricultural machinery, our Inner and Outer Brake Pedal Shaft Assemblies form the mechanical backbone of a tractor's dual-pedal braking system.

Precision-machined to work in seamless coaxial harmony, the inner shaft nests perfectly within the hollow outer shaft sleeve, allowing independent actuation of the left and right wheel brakes for tight field manoeuvres and zero-radius turns.
Forged from high-tensile alloy steel, both components are hardened to endure repetitive mechanical foot pressure, sudden panic stops, and high rotational torque loads without deformation.

Each assembly is finished with a chemical-resistant anti-corrosive layer to prevent binding, rust, and premature wear caused by constant exposure to moisture, dust, and harsh agricultural chemicals, guaranteeing smooth pedal return and operator safety season after season.



Fork Set

The Transmission Shift Fork is a high-precision, heavy-duty mechanical actuator engineered for multi-speed gearboxes, synchronized transmissions, and power-take-off (PTO) assemblies in agricultural tractors and commercial machinery.

Positioned securely inside the main transmission casing and mounted directly onto a sliding rail, this component functions as the primary yoke assembly.

It physically translates the operator's gear selection into lateral motion, sliding the synchronizer sleeves smoothly across the shaft to change gear ratios without mechanical binding.

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