

ISO 9001:2015, ISO 14001:2015

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ENSURING  
**SAFETY & COMFORT**  
IN RAIL TRANSPORT



## ESCORTS KUBOTA GROUP

Escorts Kubota Group, is one of India's leading engineering companies for farming, construction, and railway equipment. For seven decades, Escorts Kubota has helped to accelerate India's socio-economic growth through its presence across sectors like agri machinery, construction, material handling equipment, and railway equipment.

### ABOUT RAILWAY EQUIPMENT DIVISION

Escorts Kubota Limited Railway Equipment Division (EKL RED) possesses a rich, multi-decade experience in the design, development, and manufacturing of critical railway components. The division (operationalised in 1962) is one of the oldest such units in the country, partnering with the Indian Railways in its modernisation journey. The division is a market leader across all its products offerings like Brake Systems, Suspension Systems, Couplers, Rubber & Friction Products etc. RED is an ISO:9001:2015, ISO:14001:2015, and has received coveted Railway Industry specific IRIS: REV03 (ISO TS / 22163) certification with products conforming to Indian RDSO (Research Design & Standards Organization) and international standards (UIC, AAR, and IEC among others). The division's manufacturing facility is spread across 5,98,580 sq. ft., housing robust production and testing facilities. The division also possesses strong quality practices and systems backed by state-of-the-art calibration facilities and standard room including automatic 3D CMM and other facilities selected around MSA principles.

#### Strategy

- Presence across the rolling stock segments for passenger coaches, locomotives, wagons, EMUs and metro / MRTS
- Strong focus on the principles of lean and frugal engineering and operational excellence

#### Product

- Mix of in-house manufacturing, technology transfer agreements (and buybacks), and contract manufacturing
- Synergistic focus on other systems and components for the Indian Railways

#### Portfolio

- The division focuses on the safety, comfort, and reliability niche systems / sub-systems

#### Marketplace

- We explore railway networks across the globe. Indian Railways is the principal customer with more than 60 years of collaboration in developing safe and reliable products

## GLOBAL PRESENCE



- Presence across 4 continents
- Exporting Railway products to South Asian, South East Asian, African, Oceania and European countries
- Strong market position in passenger coaches and wagon segment

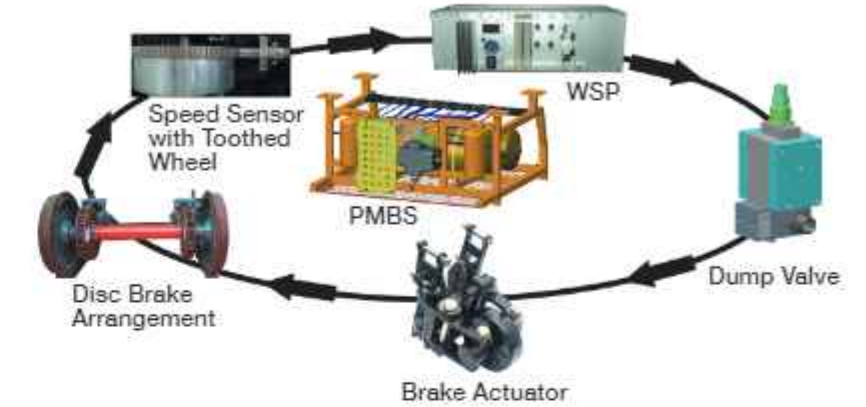


## BRAKE SYSTEMS

Escorts Kubota Limited was among the first to commence manufacturing of Compressed Air Brake systems in India for railway applications in 1981.

### AXLE-MOUNTED DISC BRAKE SYSTEM FOR SEMI-HIGH SPEED PASSENGER TRAINS (AMDBS)

The disc brake system consists of actuators in the form of brake cylinders, caliper units, integrated slack adjusting arrangement and wheel slide protection device (WSP). The system has a panel-mounted brake equipment consisting of tri-plates, DV, manifolds, etc. The WSP is approved by UIC which protects the wheels from sliding.



#### Salient Features

- Brake Caliper unit along with Brake Cylinder
- Brake Caliper units with different rigging ratio for coach application
- Wheel Slide Protection unit with latest features to avoid wheel skidding
- Brake Pads with excellent friction and wear rate

#### Application

- Semi-high Speed Passenger Coaches (LHB)
- Double Decker Coaches

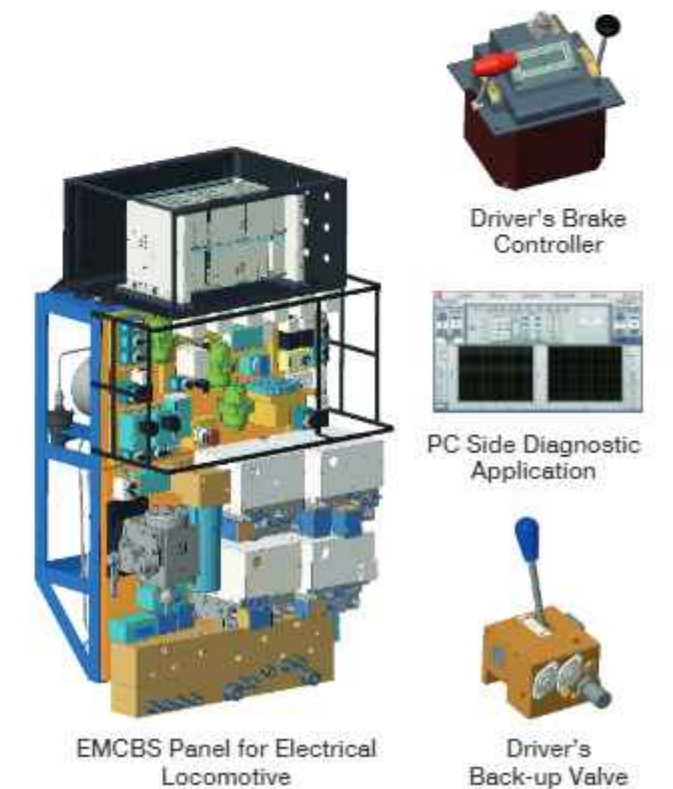
### MICROPROCESSOR CONTROLLED BRAKE SYSTEM FOR ELECTRIC LOCOMOTIVES (EMCBS)

EMCBS is a modular braking system developed for use in 3 Phase Electric Locomotive (EMCBS), suitable for application and release of train brake and locomotive brakes in accordance with a graduated release twin-pipe air brake system. Its LRU line replaceable intelligent modules are connected to the local network function together in conjunction with the locomotive computer (VCU) to achieve the desired brake functionality. The system has the following major parts

- Electronic Control Unit (ECU) consisting of Brake Control Electronics and Vigilance Control Device (VCD)
- Auxiliary Control Unit
- Brake Control Unit with Header for pneumatic connections
- Driver Brake Controller with diagnostics display
- Driver Back-up Valve

#### Salient Features

- Comparative with WAP-5, WAP-7 and WAP-9 Locomotives
- Comparative with EP Assisted Brake System
- Compact, modular, and reliable design
- Distributed control through 8 number of high performance micro controllers
- Intelligent LRU modules with three level redundancy feature
- Applies penalty brake in case driver becomes incapacitated
- Back-up in case of electronic brake failure
- Seamless interface with Loco propulsion system
- User-friendly operation and easy maintenance
- User-friendly graphical user interface based software with advanced features and better diagnostics





### BOGIE-MOUNTED BRAKE SYSTEM FOR FREIGHT WAGONS (BMBS)

Bogie-Mounted Brake System is a modular braking system developed for use in freight wagons. The system is designed to meet Indian Railways specification. This system shall be fitted on new wagons and can be retro-fitted on existing fleet wagons having maximum axle load of 22.9 tons.

#### Salient Features

The Bogie-mounted Brake System has the following features compared to the conventional brake system

- Improved braking efficiency
- Reduced weight
- Less number of parts
- Uniform brake shoe and wheel wear
- Increased reliability
- Easy maintenance
- Brake release and application indication
- No brake bindings
- In-built automatic slack adjustment
- Easy worn brake shoe replacement



Bogie-Mounted Brake System

#### Application

- All types of railway freight wagons having maximum axle load of 22.9 tons such as BOBRN, BOBRNHSM1, BOXN, BOXNHL, BCN, BCNA, etc.

### AIR BRAKE ACCESSORIES & TEST BENCHES

Escorts Kubota manufactures air brake accessories for air brake systems for freight and passenger cars. Various accessories manufactured by Escorts Kubota are as follows:



#### Application

- A wide range of different vehicles (Passenger and freight cars)
- Single and twin-pipe brake system
- All sizes of brake cylinders



EP Test Stand



Distributor Valve Test Stand

### WHEEL-MOUNTED DISC BRAKE SYSTEM (WMDBS)

Escorts Kubota, in collaboration with South Korean major Yujin Machinery Ltd., developed a complete Brake System for the Semi-High Speed 'Vande Bharat' Express Train requirement.

The Brake System consists of advanced Electronic Control Systems, Pneumatic Systems, and Wheel-Mounted Friction Brakes to meet the requirements of Semi-High Speed train.

#### Salient Features

- Brake Electronic Control Unit along with Wheel Slide Protection System
- Brake Control Unit containing Electro-Pneumatic Unit
- Wheel-Mounted Brake Caliper along with Wheel-Mounted Brake Disc and suitable Brake Pads
- Brake Caliper Units with appropriate rigging ratio
- Pneumatic equipment

#### Major Components

- Brake Electronic Control Unit with WSP
- Brake Control Unit with EP Unit
- Wheel-Mounted Caliper Unit
- Wheel-Mounted Brake Disc and Brake Pads
- Pneumatic equipment – Valves, Cock, Test Points, etc.



Wheel-Mounted Brake Disc Brake Caliper

## COUPLERS

Over the past 60 years, Escorts Kubota has been a supplier of advanced coupler systems to Indian Railways for high-speed trains, metros, and EMUs. We also supply high capacity couplers for locomotives which include GM / EMD Locos and ALCO Locos.

We are one of the largest suppliers of couplers, with 50%+ market share for AAR-H type couplers and about 50% market share for Schaku couplers in Indian market.

#### Salient Features

- This coupler system offers anti-climb feature for safe journey of passengers in case of any derailment / accident
- All castings are passed through rigorous RT and MPI testing to filter the finest of the defects and pass only high class materials ensuring to meet high strength requirements

#### Application

- AAR-H Type Couplers with Balanced Draft Gear for high speed trains up to 160 kmph for passenger coaches
- AAR-H Type Coupler with transition screw for coupling with both Center Buffer Coupler or Hook Type Couplers
- GM / EMD and ALCO Locomotives couplers can couple with all Passenger Coach, CBCs, Transition Screw Type



LHB Coach Coupler with Draft Gear

### SEMI-PERMANENT COUPLERS

Provides safe and permanent connection of multiple units. Connection between the couplers is ensured by Adjustable Cup Sleeves, with screw type arrangement.

#### Salient Features

- Prevents overriding of coaches
- Draw and buff gear absorbs 8 kJ
- Rigid and slack-free connection
- Jerk-free start and braking during acceleration and deceleration

#### Application

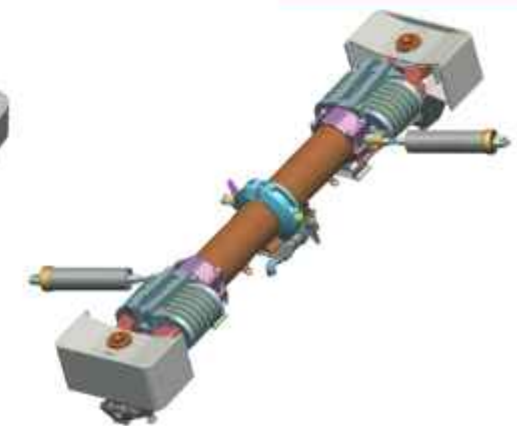
- EMU, MEMU, and DEMU
- Any other suburban / mass rapid transport system



Vande Bharat Train Coupler



Automatic Coupler



Semi-permanent Coupler



## SUSPENSION SYSTEM

The Railway Equipment Division has been manufacturing heavy duty hydraulic dampers for Indian railways since 1962. RED is the primary supplier of hydraulic dampers to the Indian Railways which is one of the most critical components. More than 10,00,000 dampers were supplied for various applications across the globe.

### Product Range

- Primary Vertical Damper
- Secondary Vertical Damper
- Secondary Lateral Damper
- YAW Damper

### Salient Features

- Extremely long service life (special rod guide bush and non-metallic wear rings)
- Wide range of damping characteristics
- Robust construction (forged eyes, induction-hardened piston rods)
- Easy and simple to overhaul

### Application

- High-Speed Passenger Trains
- EMU Trains
- Locomotives
- Passenger Mainline Trains
- Special Vehicles-Overhead Cranes, Accident Relief, etc.



Damper

### AIR SPRING AND CONTROL EQUIPMENT

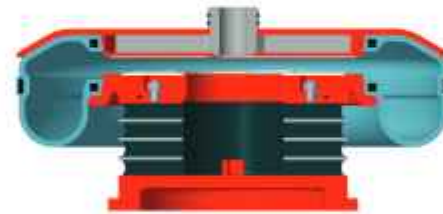
Air spring control equipment ensures a constant floor height on coaches by optimising the values of stiffness and damping the vibration to provide passenger comfort.

### Salient Features

- Provides more passenger comfort
- Optimised value of stiffness
- Damps the vibration during train movement
- Maintains gap between frame and bogie bolster

### Application

- EMU / DMU Trains
- High-Speed Passenger Trains
- Metros



Air Spring



Duplex Check Valve



Leveling Valve

### FAILURE INDICATION AND BRAKE APPLICATION (FIBA FOR LHB AND EMU COACHES)

FIBA is connected with each air spring fitted under the coach. The main role is to actuate the application of brakes in the event of air spring failure, which will immediately reduce the speed of the train and ultimately bring the train to a standstill.



FIBA

## FRICITION & RUBBER PRODUCTS

### COMPOSITE BRAKE BLOCKS

Escorts Kubota Limited is manufacturing Composite Brake Blocks and Pads for Indian Railways and export markets. The raw materials are sourced from prime manufacturers / mines to ensure proper quality.

#### GRADE EBP-01 / KNAP (Brake Pad for Passenger Coach)

An organic, non-asbestos composite brake pad. It is a rigid cold process moulded in dark brown and colour having synthetic, minerals and organic fibres to meet the strength and performance.



Brake Pad

#### GRADE F03 / LNAL (CBB for Diesel & Electric Locomotives)

L-Type Non-Asbestos composite brake block for railway application. It is a rigid hot process moulded in dark grey colour having synthetic, minerals and organic fibres to meet the strength and performance.



Brake Block

### RUBBER PRODUCTS

Escorts Kubota Limited manufactures various types of rubber products for Indian Railways.



Rubber Bellow

Seals and Gaskets

Rubber Spring Plate

### SILENT BLOCK

Silent Block provides an interface between two parts, damping the energy transmitted through it, rubber separates the faces of two metal objects while allowing a certain amount of movement and directly affects the safety and comfort of drive. Rubber is a visco-elastic material, it acts as a liquid to absorb shock and as an elastic solid when at rest. It performs by converting the impact of the shock energy to a small amount of heat.



Silent Block for LHB Coach Dampers and Disc Brake Caliper

Silent Block for Metro and Train-18 Dampers

Silent Block For Anchor Link, Center Pivot Of Bg Coach And Couplers (Metro & AARH)



## SPECIAL RANGE OF PRODUCTS

### VACUUM EVACUATION SYSTEM (VES)

Railway Equipment Division has developed a modular Bio-toilet System for Vande Bharat Train with technology partner Medel Electronic, Turkey. It is designed to suck out the waste from the toilet with minimum use of water into the Bio-digester tank installed under the carriage. The amount of water used for each flush is only about 0.5L so the tank capacity, both for the fresh water and the waste, can be kept small.

#### Product Range

- Asian Type
- EU Type

#### Salient Features

- Low water consumption
- Sensitivity to human health and environmental pollution
- Quick and easy to use
- Hassle-free and quick fitment



Vacuum Evacuation Systems

### ROOF MOUNTED AC PACKAGING UNIT (RMPU)

Microprocessor controlled, Roof-mounted AC Package Unit (RMPU) maintains comfort for the passengers inside the coaches by controlling the temperature and humidity level. Depending on ambient temperature, the modes of heating, ventilation, cooling, and dehumidification can be easily selected through HMI panel.

#### Salient Features

- Cooling capacity > 8 T.R. ( or ) 28.1 kW
- Heating capacity ~10 kW
- Maximum power consumption : 18.5 kVA
- Robust and lightweight housing structure made of SS-304 grade S2 material
- Servo-motor controlled fresh air flow for automatic pre-cooling / pre-heating
- Intelligent micro controller - as per RDSO Specs (RDSO / PE / SPEC / EMU / 0196-2019 (Rev.0) RS-485 port for TCMS connectivity in future
- Complies with UIC 553, IEC 61373, IEC 60571



Microprocessor Controller



Roof-mounted AC Packaging Unit (RMPU)



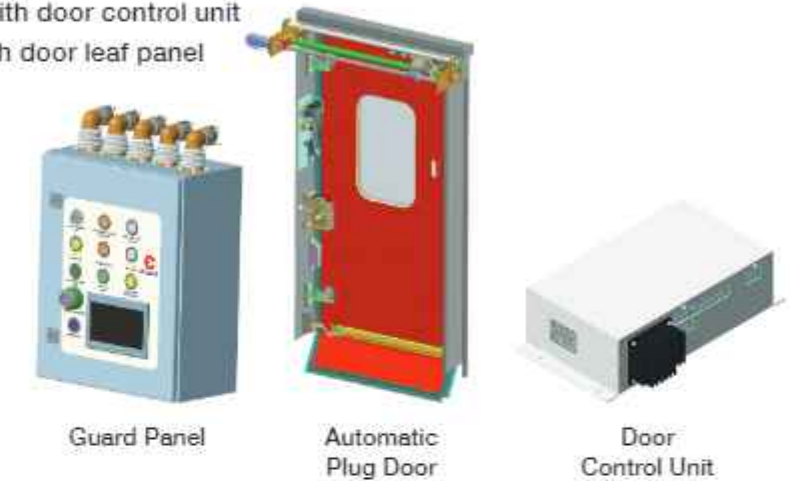
Front Panel Assembly

### AUTOMATIC PLUG DOOR

Compatible with different rail vehicles ranging from metros to regional and long-distance passenger trains. Our product complies with international standards and ensures world-class system reliability and passenger safety. Boasting a powerful and robust electrical drive mechanism complied with SL3-complied Door Control Unit. The system is easy to install, offers long-lasting performance, and has minimal maintenance requirements.

#### Salient Features

- Indigenously designed Sliding Plug Door system with door control unit
- Lightweight, slim, and modular aluminium sandwich door leaf panel
- Provides thermal and acoustic insulation
- Lubricant-free spindle drive
- SL3-complied Door Control Unit
- Reliable obstacle detection feature
- Self-diagnostic feature for easy maintenance
- System compatible with TCMS / Ethernet / Hardwired Interfaces
- Complies with EN-14752, EN-45545, IEC-60571, IEC-61373, EN-50128 and EN-50129



Guard Panel

Automatic Plug Door

Door Control Unit

### ELECTRIC DISTRIBUTION BOARDS

Electric panel consists of MCBs, Relays, Contactors, Terminal Blocks, and Cables. Main application of electric panel is for protecting and controlling the operation of compressor, motors, fan, light, doors, braking, traction system, CCTV, FDS, and other related accessories.

#### Salient Features

- Equipped with all necessary protection device
- It acts as a bridge between controller and equipment
- Easy maintenance
- Simple user interface
- Customised design as per requirements
- Compliances as per IEC61373, Category 1, Class A, Body Mounted, IEC60068-2-2 and IEC60529



Electric Distribution Boards



## MANUFACTURING EXCELLENCE

- Operationalised in 1962, oldest such units in the country partnering with customers globally
- Major customers: Indian Railways, Wagon Builders, Metros in India, Railway Organisations outside India



Division's Plant Layout



Research & Development



Machining Center



Assembly Area



Shocker Testing Facility



EMCBS Testing Facility



Caliper Testing Facility



Coordinate Measuring Machine

## CERTIFICATIONS

