

DIESEL LOCOMOTIVE



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Different types of

DIESEL

LOCOMOTIVES

Locomotives in Indian Railways

(Source: Indian Railways Year Book 2017-18)

Diesel	6086
Electric	5639
Steam	39
Total	11764

LOCOMOTIVES INTRODUCED (In India)

- STEAM LOCOMOTIVE - 1853
- ELECTRIC LOCOMOTIVE - 1925
- DIESEL LOCOMOTIVE - 1957

DIESEL LOCOMOTIVES

- MANUFACTURED AT DLW
- RE-MANUFACTURED AT DMW(DCW)
- OVERHAULED IN MANY WORKSHOPS
- ROUTINE MAINTENANCE IN HOME SHEDS
- MINOR / TRIP ATTENTION IN ANY SHED

- ENGINE TYPE
 - ALCO
 - GM
- ELECTRICS
 - BHEL
 - SEIMENS

CLASSIFICATION & CODES OF DIESEL LOCOS

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On Gauge, Use & Design (4 letter code)

-First Digit

>> Gauge (W-BG, Y-MG, Z-NG (762mm) and N-NG (610mm))

-Second Digit

>> Traction Mode (D-DSL., A-AC, C-DC)

-Third Digit

>> Service (P-Pass, G-Goods, M-Mixed, S-Shunting)

-Forth Digit

>>Loco Design

Example

WDM-2,

WDP-1

WAM4

CLASSIFICATION AND CODES OF DIESEL LOCOS

On wheel arrangement

- B Bi axle bogie with mechanical coupled axles
- C Tri axle bogie with mechanical coupled axles
- BO Bi axle bogie axles independently driven
- CO Tri axle bogie axles independently driven

DIESEL LOCOMOTIVES

IN USE

ON THE RAILWAYS

YDM4



- Year Introduced 1968-69
- Nos. Produced - 609

General Characteristic (YDM4)

▪ Installed Power	1350 HP
▪ Axle Load	12 T
▪ Gauge	1000 mm
▪ Wheel arrangement	Co-Co
▪ Wheel diameter	965 mm
▪ Height	3407 mm
▪ Width	2730 mm
▪ Overall Length (Over Buffer Beam)	13515mm
▪ Weight	72 T
▪ Max tractive effort	18.94 T
▪ Maximum speed	96 Kmph
▪ Fuel tank capacity	3000 lts
▪ Locomotive Control	3-Field Excitation

YDM4

Truck

- Tri-mount CO-CO Steel Cast bogie
- Adhesion – 0.263

Brakes

- WABCO, 28 LV-I System
- Air , Hand, Dynamic
- Air , Vacuum

Diesel Engine

- 6 Cylinder DLW 251D, 4 stroke
- Injection System – Direct Injector
- Governor – Woodward
- Compression Ratio- 12.5 : 1
- Lube Oil Sump Capacity – 530 Liter

Transmission

- Electrical DC -DC
- 6 Traction motor (3 per bogie)
- Suspension – Axle hung / nose suspension
- Gear Ratio – 92:19

WDS6/AD



- Year Introduced 1974-75
- Nos. Produced - 564

General Characteristic (WDS6/AD)

▪ Installed Power	1350 HP
▪ Axle Load	20 / 21T
▪ Gauge	1676 mm
▪ Wheel arrangement	Co-Co
▪ Wheel diameter	1092 mm
▪ Height	4027mm
▪ Width	3022 mm
▪ Overall Length (Over Buffer Beam)	16150 mm
▪ Weight	120 / 126 T
▪ Max tractive effort	34 /35.7 T
▪ Maximum speed	65 Kmph
▪ Fuel tank capacity	5000 lts
▪ Locomotive Control	E-Type Excitation

WDS6 / AD

Truck

- High adhesion Fabricated Co-Co bogie
- Adhesion – 0.35

Brakes

- Panel Mounted IRAB-1 Brake system
- Air , hand , Dynamic brake
- Pure air brake

Diesel Engine

- 6 Cylinder DLW 251D-6 Cyl. in-line, 4 stroke, turbocharged
- Injection System – Direct Injector
- Governor – Woodward
- Compression Ratio- 11.75 : 1
- Lube Oil Sump Capacity – 530 Liter

Transmission

- Electrical AC-DC
- 6 Traction motor (3 in per bogie)
- Suspension – Axle hung / nose suspension
- Gear Ratio – 74 : 18

WDM2C



- **Year Introduced 1994-95**
- **Nos. Produced - 142**

General Characteristic (WDM2C)

▪ Installed Power	3100 HP
▪ Axle Load	18.8 T
▪ Gauge	1676 mm
▪ Wheel arrangement	Co-Co
▪ Wheel diameter	1092 mm
▪ Height	4115 mm
▪ Width	2864 mm
▪ Overall Length (Over Buffer Beam)	15863 mm
▪ Weight	112.8 T
▪ Max tractive effort	30.45 T
▪ Maximum speed	120 Kmph
▪ Fuel tank capacity	5000 lts
▪ Locomotive Control	E-Type Excitation

WDM2C

Truck

- Tri-mount CO-CO Steel Cast bogie
- Adhesion – 0.27

Brakes

- Panel mounted IRAB-1 Brake system
- Air , Hand, Dynamic brake
- Air , Vacuum

Diesel Engine

- 16 Cylinder DLW 251C, 4 stroke, turbocharged
- Fuel Efficient Engine
- Injection System – Direct Injector
- Governor – Woodward
- Compression Ratio- 11.75:1
- Lube Oil Sump Capacity – 1025 Liter

Transmission

- Electrical AC-DC
- 6 Traction motor (3 in parallel per bogie)
- Suspension – Axle hung / nose suspension
- Gear Ratio – 18:65

WDP I



- Year Introduced 1995-96
- Nos. Produced - 69

General Characteristic (WDP I)

- **Installed Power** **2300 HP**
- **Axle Load** **20 T**
- **Gauge** **1676 mm**
- **Wheel arrangement** **Bo-Bo**
- **Wheel diameter** **1092 mm**
- **Height** **4088 mm**
- **Width** **2864 mm**
- **Overall Length (Over
Buffer Beam)** **14810 mm**
- **Weight** **80 T**
- **Max tractive effort** **20 T**
- **Maximum speed** **120 Km/h**
- **Fuel tank capacity** **3000 lts**
- **Locomotive Control** **E-Type Excitation**

WDP 1

Truck

- BO-BO flexi-coil Bogie with two stage suspension – Coil springs
- Adhesion – 0.25

Brakes

- Panel Mounted 28LAV-1 Twin Type Dual Brake System
- Air , Vacuum ,
- Dual brake , hand

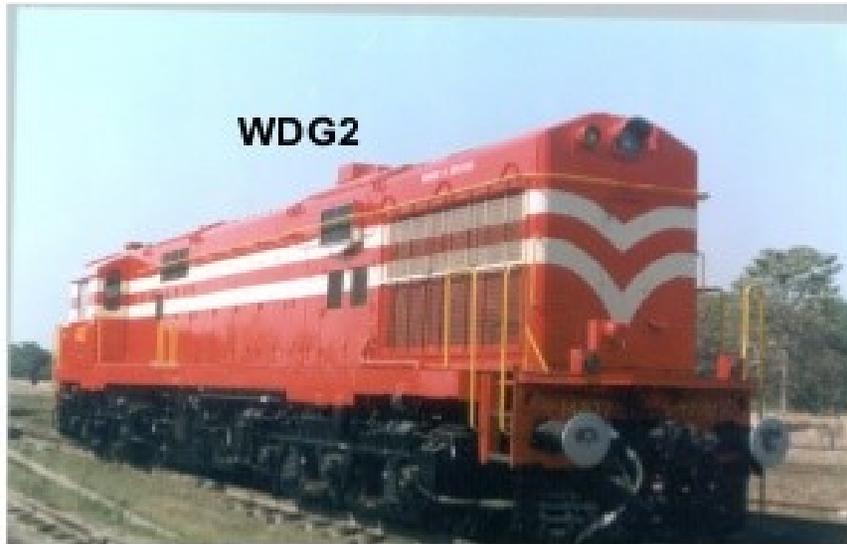
Diesel Engine

- 12 Cylinder DLW 251C (Uprated), 4 stroke, turbocharged
- Fuel Efficient Engine
- Injection System – Direct Injector
- Governor – Woodward
- Compression Ratio- 11.75 : 1
- Lube Oil Sump Capacity – 760 Liter

Transmission

- Electrical AC-DC
- 4 Traction motor (2 in per bogie)
- Suspension – Axle hung / nose suspension
- Gear Ratio – 18:65

WDG2/3A



- Year Introduced 1995-96
- Nos. Produced – 1183 (upto July-2010)

General Characteristic (WDG2/3A)

▪ Installed Power	3100 HP
▪ Axle Load	20.5 T
▪ Gauge	1676 mm
▪ Wheel arrangement	Co-Co
▪ Wheel diameter	1097 mm
▪ Height	4162 mm
▪ Width	3016 mm
▪ Overall Length (Over Buffer Beam)	17840 mm
▪ Weight	123 T
▪ Max tractive effort	40.6T / 37.9 T
▪ Maximum speed	100 Kmph
▪ Fuel tank capacity	6000 lts
▪ Locomotive Control	E Type Excitation / Micro-processor

WDG2/3A

Truck

- High adhesion Fabricated Co-Co bogie
- Adhesion – 0.33

Brakes

- Panel Mounted IRAB-1 Brake system
- Air , hand , Dynamic brake
- Pure air brake

Diesel Engine

- 16 Cylinder DLW 251C, 4 stroke, turbocharged
- Fuel Efficient Engine
- Injection System –Direct Injector
- Governor – Woodward
- Compression Ratio- 11.75:1
- Lube Oil Sump Capacity – 1270 / 1025Liter

Transmission

- Electrical AC-DC
- 6 Traction motor (3 in parallel per bogie)
- Suspension – Axle hung / nose suspension
- Gear Ratio – 18:74

WDP2



- Year Introduced 1998-99
- Nos. Produced - 44

General Characteristic (WDP2)

▪ Installed Power	3100 HP
▪ Axle Load	19.5 T
▪ Gauge	1676 mm
▪ Wheel arrangement	Co-Co
▪ Wheel diameter	1092 mm
▪ Height	4081 mm
▪ Width	3000 mm
▪ Overall Length (Over Buffer Beam)	17900 mm
▪ Weight	117.0 T
▪ Max tractive effort	29.25 T
▪ Maximum speed	160 Kmph
▪ Fuel tank capacity	6000 Its
▪ Locomotive Control	E –Type Excitation

WDP2

Truck

- Fabricated flexi coil MK-V Co-Co Bogie
- Adhesion – 0.25

Brakes

- Panel mounted IRAB-1 system
- Air , hand, Dynamic
- Pure Air brake

Diesel Engine

- 16 Cylinder DLW 251C (Uprated), 4 stroke, turbocharged
- Fuel Efficient Engine
- Injection System –Direct Injector
- Governor – Woodward
- Compression Ratio- 11.75 : 1
- Lube Oil Sump Capacity – 1025 Liter

Transmission

- Electrical AC-DC
- 6 Traction motor (3 in per bogie)
- Suspension – Axle hung / nose suspension
- Gear Ratio – 22:61

WDG4



- Year Introduced 1999-2000
- Nos. Produced – 308 (upto July-2010)

General Characteristic (WDG4)

▪ Installed Power	4000 / 4500 HP
▪ Axle Load	21 T
▪ Gauge	1676 mm
▪ Wheel arrangement	Co-Co
▪ Wheel diameter	1092 mm
▪ Height	4201 mm
▪ Width	3127 mm
▪ Overall Length (Over Buffer Beam)	19964 mm
▪ Weight	126 T
▪ Max tractive effort	54 T
▪ Maximum speed	100 Kmph
▪ Fuel tank capacity	6000 lts
▪ Locomotive Control	EM 2000 with/without SIBAS-16 Traction Control /MAS 696

WDG4

Truck

- High adhesion HTSC (High Tensile Steel Cast) truck of bogie
- Adhesion – 0.42

Diesel Engine

- 16 Cylinder 710 G3B, 2 stroke, turbocharged – after cooled
- Fuel Efficient Engine
- Injection System – Direct Unit Injector
- Governor – Woodward
- Compression Ratio- 16:1
- Lube Oil Sump Capacity – 950 Ltrs

Brakes

- Electronic Air Brake System (KNORR-NYAB-Computer Controlled Braking)
- Air , hand , dynamic brake
- Pure air brake

Transmission

- Electrical AC-AC
- 6 Traction motor (3 in parallel per bogie)
- Suspension – Axle hung / taper roller bearing
- Gear Ratio – 90:17

WDP4 /4B



- **Year Introduced 2002-03 / 2010-11**
- **Nos. Produced – 91 / 08 (upto July-2010)**

General Characteristic (WDP4 /4B)

▪ Installed Power	4000 / 4500HP
▪ Axle Load	19.5 / 20.2 T
▪ Gauge	1676 mm
▪ Wheel arrangement	A-A-I I-A-A / CO-CO
▪ Wheel diameter	1092 mm
▪ Height	4201mm
▪ Width	3127 / 3250mm
▪ Overall Length (Over Buffer Beam)	19964 mm
▪ Weight	117 / 121.2T
▪ Max tractive effort	27 / 38T
▪ Maximum speed	160 / 130Kmph
▪ Fuel tank capacity	4000 Its
▪ Locomotive Control	EM 2000 with/without SIBAS-16 Traction Control /MAS 696

WDP4 /4B

Truck

- High adhesion HTSC (High Tensile Steel Cast) truck or bogie
- Adhesion – 0.42

Brakes

- Electronic Air Brake System (KNORR-NYAB-Computer Controlled Braking)
- Air , hand , dynamic brake with fully blended with automatic brakes
- Pure air brake

Diesel Engine

- 16 Cylinder 710 G3B, 2 stroke, turbocharged – after cooled
- Fuel Efficient Engine
- Injection System – Direct Unit Injector
- Governor – Woodward
- Compression Ratio- 16:1
- Lube Oil Sump Capacity – 1073 Lts

Transmission

- Electrical AC-AC
- 4 Traction motor (3 in parallel per bogie)
- Suspension – Axle hung / taper roller bearing
- Gear Ratio – 77:17

WDM3D



General Characteristic

▪ Installed Power	3300 HP
▪ Axle Load	19.5 T
▪ Gauge	1676 mm
▪ Wheel arrangement	Co-Co
▪ Wheel diameter	1097mm
▪ Height	4162 mm
▪ Width	3016 mm
▪ Overall Length (Over Buffer Beam)	17350 mm
▪ Weight	117 T
▪ Max tractive effort	38.6 T
▪ Maximum speed	120 Kmph
▪ Fuel tank capacity	5000 lts
▪ Locomotive Control	Microprocessor

Truck

- High adhesion Fabricated Co-Co bogie
- Adhesion (μ)– 0.33

Diesel Engine

- 16 Cylinder 251 C- (Uprated) Engine, 4 stroke, turbocharged
- Fuel Efficient Engine
- Injection System – Direct Injector
- Governor – Woodward
- Compression Ratio- 11.75:1
- Lube Oil Sump Capacity – 1025 Liter

Brakes

- Panel mounted IRAB-1 Brake system
- Air , Hand, Dynamic brake
- Pure Air Brake system

Transmission

- Electrical AC-DC
- 6 Traction motor (3 in parallel per bogie)
- Suspension – Axle hung / nose suspension
- Gear Ratio – 18:65

WDG4D



- Year Produced - 2013
- Nos. Produced - 215

General Characteristics	
Installed Power	4500 HP
Axle Load	21.7 T
Gauge	1676 mm
Wheel arrangement	Co-Co
Wheel diameter	1092 mm
Height	4201mm
Width	3062 mm
Overall Length	23 m
Weight	130.2 T
Starting tractive effort	540 KN
Maximum speed	100 Kmph
Fuel tank capacity	6000 ltrs.
Locomotive Control	Loco Control Computer Traction Control

Truck

- ▶ High Traction, High Speed Bolsterless, 3 axle, Cast Steel /Fabricated Bogie Frame & Unidirectional Traction Motor arrangement for high adhesion

Brakes

- ▶ Electronic Air Brake System (KNORR-NYAB-Computer Controlled Braking)
- ▶ Air , hand , dynamic brake
- ▶ Pure air brake

Transmission

- ▶ Electrical AC-AC
- ▶ 6 Traction motor (3 in parallel per bogie)
- ▶ Suspension – Axle hung / taper roller bearing
- ▶ Gear Ratio – 90:17

Diesel Engine

- ▶ 16 Cylinder 710 G3B, 2 stroke, turbocharged – after cooled
- ▶ Fuel Efficient Engine
- ▶ Injection System – Mechanical Unit Injector
- ▶ Governor – Woodward
- ▶ Compression Ratio- 16:1
- ▶ Lubricant Oil Sump Capacity - 1457 Ltr.

WDG4G



- Year Produced - August 2017
- Nos. Produced - 87 upto May 2019

General Characteristics

- Installed Power 4500 HP@ 900 RPM
- * Wheel Arrangement Co-Co

Maximum Speed 100 KMPH