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II. Technical Data

1. Construction Site Data

- Name and location **High Speed 2, lot N1 & N2, England**
- LIW jobsite:
- Total tunnel length **2 x 1,600 m**
- Slope on the tunnel road **0.68%**
- Maxi slope of the haul road **2%**
- Inside diameter of the tunnel **8,800 mm**
- External diameter of the tunnel **9,600 mm**
- Minimum curve radius **13,000 m**
- BRO jobsite:
- Total tunnel length **5,700 m and 5,600 m**
- Slope on the tunnel road **2.9%**
- Maxi slope of the haul road **NA**
- Inside diameter of the tunnel **7,550 mm**
- External diameter of the tunnel **8,250 mm**
- Minimum curve radius **4,000 m**
- Temperature: **0°C to 25°C**
- Rolling surface in the tunnel **segment**
- Rolling surface out of the tunnel **Flat concrete ground or flat bitumen**

2. Vehicle Type

Double Multiservice Vehicle, (8-wheel drive, 14-wheel steering, total of 16 wheels)	MSV 85-2-1900

3. Dimensions

Width	1,900 mm
Height (unloaded)	3,202 mm
Height (loaded)	3,194 mm
Length	32,980 mm

4. Weight

Weight unloaded	35,800 kg
Pay load	82,000 kg
Maxi Pay load	117,800 kg

5. Performance for 85 Tons-load

Maximum clearable slope with load	4.5%
Empty vehicle speed on flat ground	25 km/h
Speed with load upward slope (2.9%)	8 km/h
Speed with load on flat ground	13 km/h

6. Power Unit

6.1. Engine

Brand	235 KW
Certifications	Stage 5
Type	D8
Cooling system	water
Fuel tank with MSV autonomy : 12 hours	320 L
Power	235 kW at 2,200 rpm

6.2. Hydraulics

Translation	2 main pumps
Steering	1 auxiliary pump
Hydraulic tank	420 L
Fire resistant hydraulic fluid	HF DU 46

6.3. Electrical

Supply	24 V

7. Fire Protection

Automatic and manual extinguishing system installation on each MSV- Please see Ardent documentation.

8. Chassis

Box frame chassis

9. Undercarriage

9.1. Wheel Modules

9.1.1.Truck

2 drive and steering bogies, each consisting of:

- 4 half rockers
- 4 hydraulic cylinder articulated pivots
- 1 dead axle with dynamic brake
- 1 driving axle with static brake

- 4 wheels equipped with air-inflated tires 14.00 R24

9.1.2. Trailer

Composition of trailer undercarriage identical to tractor undercarriage.

9.2. Steering

4 steering bogies

3 steering modes:

- conventional
- short
- crab

By bogie:

- 2 steering drag links
- 2 hydraulic steering cylinders
- 2 synchronizing rods

10. Driver's Cabins

Reinforced cabin structure

Suspension seat with seat belt

Steering wheel

Control panel, including:

- Emergency brake
- Signal horn
- Forward/backward selector
- Fault indicator

Dead-man pedal

Dynamic brake pedal

Accelerator pedal

11. Safety System for Slope Travel

Installation of an alarm and shut-off inclinometer on the vehicle.

- 0-3° Transmission permission
- >3° Visual alarm
- >6° Audible, visual alarm and transmission shut-off

12. Additional Equipment on the Vehicle

2 flashlights (1 in each cabin)

2*2 working lights (lights are lit in the direction of travel)

2*2 red lights (lights are lit in the opposite direction of travel)

Reversing alarm

13. Electrical Specifications

Cable type C2

Identification in accordance with circuit diagrams

14. Options

14.1. Supplied with the vehicle

14.1.1. Additional -person cabin
14.1.2. Tunnel Segment Supports
14.1.3. Material Platform
14.1.4. Crane
14.1.5. A&B component tanks