

## Technical description

of the

### **DGS 62 N**

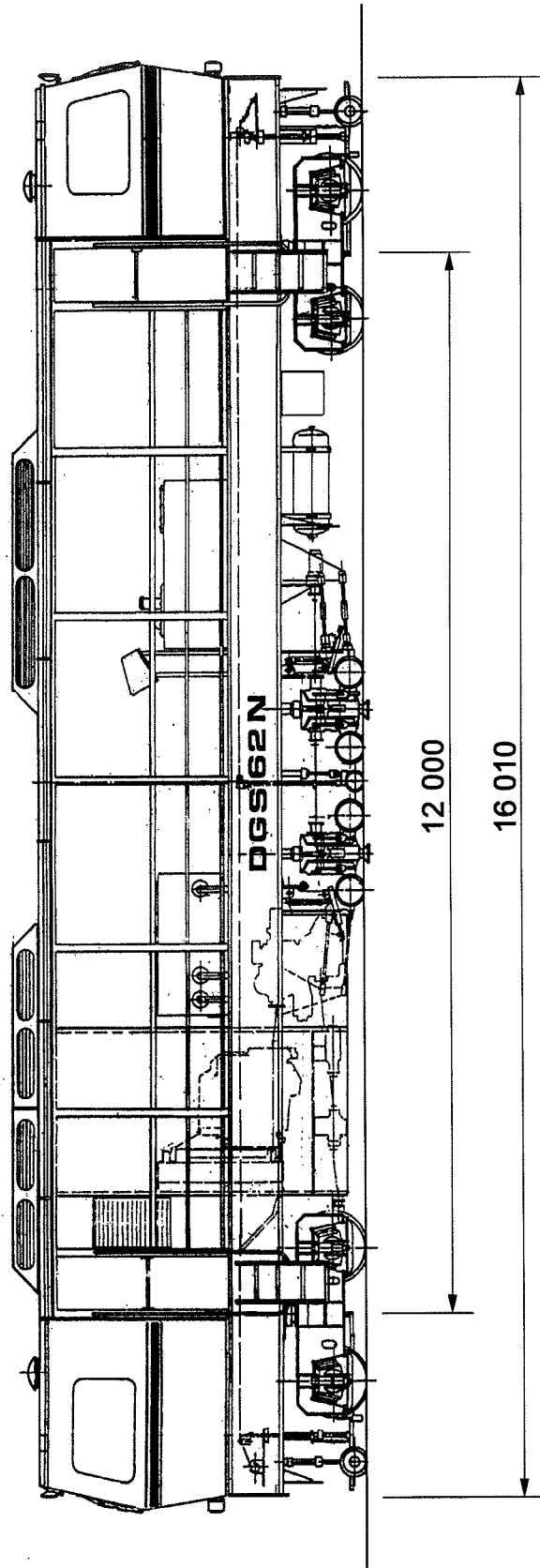
Dynamic Track Stabilizer

Gauge 1067 mm

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## 1 GENERAL

Track will always settle under loads following maintenance operations which change the position of the ballast grains, such as cleaning, tamping or lining. This settlement per load unit is important at the beginning (immediately following the maintenance) to diminishes with passing train loads. The greater the settlements, the more irregular they are.

Furthermore the change in position of the ballast grains reduces the lateral resistance of the track, which may result in its displacement under train loads or warping under the influence of heat.

The DGS 62 N is designed to achieve a rapid and measured consolidation of the track following maintenance (levelling, lining and tamping), track renewal or track laying, in working behind the tamping machine.

Through a combination of horizontal vibration with a static vertical pressure, the unavoidable initial settlements are accurately anticipated, directly after tamping operations. The track is uniformly settled, the ballast grains rearranged closer together, with more surface contact and thus are subjected to lower specific pressure stresses during load transmission. The result is a geometrically unchanged track position of higher vertical and horizontal stability.

When working on a tamped line the stabilizer does not alter the track geometry, it only achieves its controlled settlement.

On newly tamped tracks the DGS 62 N may either work alone or jointly with a levelling, lining and tamping machine. The work of the stabilizer does in no way impair the neighbouring track.

The machine is capable of working on all types of permanent way (provided the rail fastenings are tight and in good condition) without causing any deformations or twists on the fastenings. The machine may work under live catenary.

Experience has shown a sound stabilisation of the ballast bed, following maintenance operations, is an absolute requirement for the introduction of high speed traffic.

## 2 DIMENSIONS AND WEIGHTS

Gauge	1 067 mm
Length over buffer bars	16 010 mm
Width approx.	in accordance with the clearance gauge
Height approx.	in accordance with the clearance gauge
Distance between bogie pivots	12 000 mm
Wheel base on bogies	1 500 mm
Wheel diameter	730 mm
Weight, approx.	55 t

### STABILIZING UNITS

Vibration frequency, adjustable	0 - 42 1/s
Recommended working frequency (actual working frequency depends on permanent way conditions)	30 - 35 1/s
Vertical load, adjustable up to	2 x 178 kN

The machine is fitted for tropical weather conditions.

## 3 FRAME AND UNDERCARRIAGE

### 3.1 Frame

Sturdy welded construction of rolled steel profiles and steel sheets manufactured according to the most modern welding techniques and manufacturing methods. The frame is standard equipped with buffer bars, couplers (manufacturer, type and drawing should be provided by the customer) and air hoses at front and rear end.

#### Undercarriage

Two 2-axle bogies, one bogie powered, one bogie idle during transfer, both bogies powered during work.

Distance between bogie pivots: 12 000 mm

Wheel base on bogies: 1 500 mm

## WHEEL SETS

Through axles with pressed-on solid disc wheels.

Wheel diameter 730 mm.

## AXLE BEARING

The axles are supported by means of large dimensioned roller bearings outside the wheels in separate axle bearing housings.

## SUSPENSION

Suspension by bonded metal-rubber springs between axles and bogie frame als well as between bogies and machine frame, provides sufficient absorption of vibrations and smooth running of the vehicle.

## SHOCK ABSORBERS

Hydraulic shock absorbers between axle bearing and bogie frame.

## 4 CABINS

Enclosed cabin at rear and front end of the machine. One cabin contains all controls for work and travel, the other all controls for transfer clearly arranged for ergonomic operation. Therefore the machine may be operated for transfer from the front or rear cabin as demanded. Driver's and operator's seats meet ergonomic requirements. Large safety glass windows provide a good view. In order to provide good visibility even during rain, both cabins are standard equipped with windshield wipers. Screen washers are also provided.

The cabins of the standard model are equipped with a roof opening. The machine is completely roofed from the front to the rear cabin.

The entrance to the cabins is via a platform. A passage leads from the front to the rear cabin.

### 4.1 Vibration and sound insulation of the cabins

The cabins are located on a frame which absorbs vibrations and shocks from the main machine frame by rubber springs.

The cabins are heat and sound insulated.

### 4.2 Intercommunication system

Between front and rear cabin.

## **5 DRIVE**

### **5.1 Engine**

Water cooled Diesel engine, type: DEUTZ BF8M1015C  
gross output approx. 370 kW (500 HP)  
equipped with an electronic engine controller EMR:

The engine housing is sound insulated

#### **LOCATION**

The engine and accessories are fixed to a separate frame supported on the chassis by means of metal-rubber springs. The engine is easily accessible.

### **5.2 Drive-Transfer**

Hydrodynamic drive from engine over power shift transmission to the distributor gear, from there by cardan shafts to the axle gear boxes of one bogie.

#### **CONTROL**

For transfer the machine is controlled from the front or rear cabin.

Maximum driving speed self-propelled: up to 90 km/h in either direction.

Maximum permissible speed, hauled: 100 km/h

(subject to the observance of the regulations concerning the operation, maintenance, conveyance and the pertinent rules of vehicle registration).

### **5.3 Working drive**

Hydraulic drive from hydraulic motors on both axles of both bogies.

## 6 BRAKES

### 6.1 Type

Pneumatic block brakes acting on all wheels according to UIC-regulations, one block per wheel.

#### CONTROL

During transfer under its own power the brakes are operated by a hand controlled valve.

The machine is equipped with a through train brake line.

### 6.2 Parking brake

Mechanical brake, activated by a hand wheel over a spindle, a chain pull, and levers, applying on the wheels of one bogie.

## 7 PNEUMATIC SYSTEM

Two-cylinder compressor for pressure air supply of:

- brake system
- auxiliary operations as lockings
- warning device

The pneumatic plant essentially consists of compressor with filter, cooling circuit, pressure regulator, defroster, air containers, air dryer, antifreezer, water separator, air lubricator and brake and control valves.

## 8 HYDRAULIC SYSTEM

Vane pumps and axial piston adjusting pumps provide the working units and drive with the required pressure oil.

A hydraulic accumulator guarantees a sufficient supply, uniform pressure and smooth function of all hydraulic operations. A special cooling circuit with large oil cooler and thermostat maintains a constant operating temperature. Modern control valves guarantee the exact sequence of all hydraulic operations.

The hydraulic oil tank is provided with absorption and recoil filters with contamination indicators.

During transfer the hydraulic pumps are mechanically disconnected.

## 9 ELECTRIC SYSTEM

24 V d.c. plant for starter, lights, signals and control circuits.

All electronic elements exposed to weather influences are in splash-proofed design.



## 9.1 Power supply

One 140 A generator

Two 12 V-batteries in series, 200 Ah.

## 9.2 Microprocessor control

The machine is equipped with a microprocessor control to effect the execution of the hydraulic working processes and the sequence of operations. It consists of a digital part (microprocessor), several control circuit boards and an analogue part. The modular design enables the printed circuit boards to be interchanged easily.

The process control improves the reliability of all circuits. It replaces all relay controls. Which means that a fast availability of the machine is always guaranteed.

## 9.3 Lights

Head and tail lights corresponding to railway prescriptions.

By adjustable reflectors sufficient illumination of the working area, of the working units, and of the track in front and behind of the machine. Lamps on the ceiling of the cabins.

## 9.4 Signal installation

Electric horn and engine stop button operated from outside or inside the cabin.

## 10 STABILIZING UNITS

Two stabilizing units are located under the vehicle. The units are attached to the frame by means of longitudinal stay bars.

Each unit is composed of a frame equipped with four inner board rollers and a horizontal roller at each rail and an eccentric vibrator. During vibration the flanged rollers are pressed against the gauge face while the horizontal rollers apply to the rail head from outside.

The stabilizing units produce purely horizontal vibration forces. The vibration drive of the two units are connected by a cardan shaft. The vibrations are hydrostatically engendered, their frequency is adjusted in infinite variations from 0 to 42 cycles.

If the machine comes to a standstill during work the vibration drive is stopped automatically.

Each vibrator is flexibly connected to the main frame via two hydraulic cylinders. These cylinders exert an adjustable, vertical load on the track. The vertical load is adjusted proportional to the settlement value.

The maximum load is limited by pressure relieve valves, so derailment of the machine is prevented.

For transfer the stabilizing units are hydraulically lifted and locked pneumatically.

## 11 LEVELLING SYSTEM

The track is scanned at three points on each rail:

- behind the rear bogie
- between the stabilising units
- in front of the front bogie

A steel chord is spanned over each rail from the rear reference point to the front reference point forming the reference line for the longitudinal level.

Located between the stabilising units, the measuring rod carries a transducer on each side, left and right, which measures the height of the steel chord. Together with these transducers, this levelling system monitors the track lowering by controlling the load acting on the rails.

The control and monitoring of the cross level is done by precision pendulums positioned on the measuring trolley in front of the front bogie and at the measuring rod between the stabilising units.

## 12 FURTHER EQUIPMENT

### 12.1 Amplitude measuring and display unit

With mm-display for optimum regulation of frequency.

### 12.2 Compact sound insulation incl. engine compartment temperature monitoring system

The engine housing is completely lined with soundproofing materials and all suction and exhaust openings are provided with silencing devices.

The engine compartment is fitted with temperature sensors. An optical pre-alarm (blinking light) is triggered by a control unit when the temperature rises in the engine compartment. When the set temperature threshold is exceeded, an optical and acoustic alarm will go off.

### 12.3 Digital display of superelevation

An electronic pendulum located on the rear trolley, together with a digital display in the cabin serves for monitoring of cross level of stabilized track.

## 12.4 Indirect train brake system with KE-valve

The machine is equipped with an KE-valve and connections for train braking system allowing the machine to be braked by the traction vehicle during transfer.

## 12.5 Tachograph

In conjunction with a speedometer a tachograph can be installed in the machine, which gives information on speed reached, distance covered etc.

## 12.6 Radio equipment

Both driver's cabs are equipped with the complete set of railroad radio equipment consisting of power supply, transmitter, separate control head with handset, mounting rack, antenna and connection cables.

## 12.7 Air conditioning

For cooling in the cabin in case of high outside temperatures. One unit A/C will be provided in each cabin.

## 12.8 Lighting and signal equipment

Brake lights on both ends.  
Rotating beacon on the roof.

## 12.9 Tools for repair and maintenance of the machine

We reserve the right to make alterations in line with the further technical development!

To safeguard possible applications for letters patent, we feel obliged to state the following explicitly:

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