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Ref fc1019

KAMAG 2106 HM2 (3 units)

Year built		1987
Capacity	at 25 km/h	134 tones
	at 5 km/h	170 tones
Dead Weigh approx.		34.000 kg
Number of axle rows		6
Steerable axle tyres		16 X 14/80 R 20
Drive axle tyres		8x 12.00-24
Number of drive axles		2
Number of brake wheel bogies		4
Traction		+/- 24.000 kg
Max. gradient ability loaded (Rolling resistance 25 kg /1) approx.		13 %
Max. speed unloaded approx.		32 - 34 km /h
Max. speed loaded on dry, level road approx.		12-14km/h




Engine

DAF- Diesel engine type	DKT 1160 V
Water-cooled	
Output 280 HP	= 207 KW/at 2,300 rpm,
Platform height in lowered condition approx.	1,450 mm
Total lifting stroke	600 mm
Lifting speed approx.	25 mm / s

Diesel Engine

Manufacturer	DAF, The Netherlands
Type	DKT 1160 V
Model	4-stroke direct injection diesel engine
Number of cylinders	6
Bore	130 mm
Stroke	146 mm
Displacement	11,630 cm^3
Output	280 HP = 207 KW
Engine Speed	2,300 rpm
Max. torque at 1,300 rpm	1.085 Nm
Lubrication type	pressure lubrication

Gearbox

Manufacturer	CLARK
Type	5421
Model	4-speed reversible gear, electric-hydraulic controlled

Forward / reserve ratios

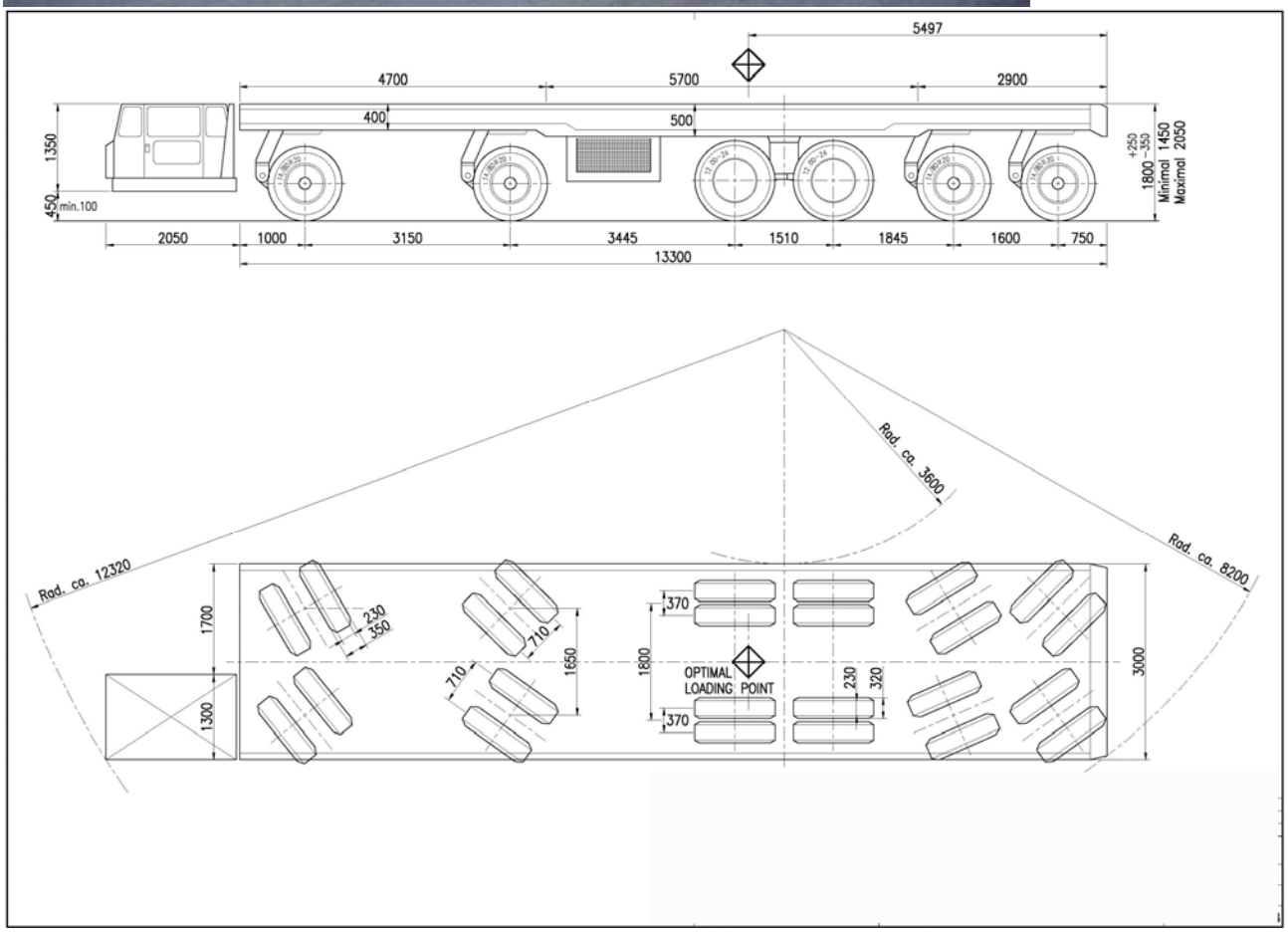
- 1st speed : 4.09
- 2nd speed : 2.27
- 3rd speed: 1.29
- 4th speed : 0.71

Converter

Manufacturer	CLARK
Type	C 8602
Converter Outlets (drive flange):	1.0

Drive axles

Manufacturer	KESSLER
Ratio	19,58



GENERAL INFORMATION Description of Equipment General

The KAMAG Transporter is a special-purpose vehicle which, equipped with hydraulically operated lift a lowering motions and hydrodynamic, mechanical drive, is suitable for transporting heavy loads.

The truck can drive in under pedestal-supported loads, lift the load by means of the lifting system, transfer it to any desired location, and set the load down.

This special truck is equipped with a one-man driver cabin and operates with equal efficiency in either direction of travel.

The steering system allowing large angles of turn affords high maneuverability in spite of the bulky size of the truck.

Operation is made by one man only. The design incorporates all the latest safety precautions to ensure safe and efficient operation.

Frame Structure

The load frame is a heavy-duty design of welded steel construction with outboard main beams and two cross support members per axle row. These results in optimum frame flex with torsion action. This design provides for minimum stress on the structure and makes the transporter most reliable and stable under varying road surface conditions.

Wheel Bogies

The individual wheel bogie assemblies are suspended from a rocker arm and turntable attached to the frame structure. Movement according to road irregularities transverse to the wheel bogie is provided by the swing axle. Vertical compensation according to longitudinal road irregularities is accomplished by the hydraulic cylinders.

The hydraulic cylinder interconnects at the same time the rocker arm to the wheel bogie frame, allowing lift and lowering of the platform in varying turn radii.

The rocker arm is connected to the wheel bogie frame and provided with antifriction bearings of long-term lubrication design.

Lateral wheel bogie movement is accomplished by adjustable spherical joints housed in an oil bath.

Drive Axles

The truck is equipped with two drive axles which are differential types with outside planetary gearing and mechanically actuated brakes and drums.

Suspension of Drive Axles

The suspension is designed to allow full balance. Even in the event of the maximum difference in height between the two axles of 600 mm, the universal shaft is always well within the allowable diffraction limits. Additionally, the axles can also swing sideways. The maximum allowable side swinging stroke is +/- 300 mm.

Turntable

The turntable is a ball-type design with hardened races and special dustproof sealing. Little-maintenance design for long-term lubrication.

Rims

Steel rims on idle and brake axle with 10-lug pattern. Steel rims on drive axle with 12-lug pattern.

Steering

The front and rear are steered in such a manner that the center lines of all axles meet at a common focal point.

The steering system is so designed that the transporter can also be steered at a standstill while under full load.

Brake System

The transporter is equipped with a spring over pneumatic brake system.

Brake Cylinders:

These spring-energy and diaphragm type (maxi brake) cylinders cause the brakes to be applied by the force exerted by the springs if the compressor should fail, resulting in an emergency stop procedure from the resultant loss of air pressure.

Parking Brake:

The parking brake is applied by bleeding pressure from the spring section of the brake cylinders so that the brake is actuated by the force exerted by the springs.

Hydro-dynamic Mechanical Driving System:

The torque converter is flange-mounted direct tot the SAE-flywheel housing of the engine. The converter output is transmitted through a universal shaft to 4-speed reversible power shift gear. This results in both high traction and relatively high road speed.

Converter: CLARK Type CL 8602

Gearbox: 4-speed power shift reversible gear 5421 with engine dependent auxiliary outlet.

Ratio (forward and reverse):

1^{st} speed : 4.09

2^{nd} speed : 2.27

3^{rd} speed: 1.29

4^{th} speed : 0.71

The cooler is hydrostatically driven.

Pipe Break Safety Feature

The worldwide patented pipe break safety feature of KAMAG (German Patent No. 2,319,611) gives a very degree of reliability.

We mentioned before that the KAMAG transporter structure is supported by hydraulic cylinders inside the wheel bogies. These cylinders are divided into groups of four by a tubing system. This enables the wheel bogies to compensate for irregular road surface conditions and to distribute the axle loads evenly.

If a pipe fracture occurs in the system, there is the danger that the transporter will drop at one side, causing the load to slide off or tip. The patented KAMAG pipe break safety feature is designed to preclude such danger to the maximum extent.

If a pipe fracture should occur, the hydraulic connections of all cylinders within their group are maintained in that two each hydraulic cylinders are interconnected by a dual piping system. The safety valve inlet end is connected to the cylinder and its two outlets are connected to the dual piping system. A pipe fracture produces a flow pulse immediately causing the pipe break safety valve to isolate the outlet connected to the broken line.

However, the second line maintains an operable connection with each of the hydraulic cylinders. The function of the axle load compensation feature is fully maintained, and the transporter is able to accomplish the transport job without delay or interruption.