BOMAG

Service Training

Tandem Rollers

BW 141 - 151 AD/AC-4

BW 154 AD/AC-4

Part-No. 008 097 16

06/2005

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Foreword

Reliable construction equipment is of greatest advantage for all parties involved:

- for the customer/user it is a basis for an exact calculation of utilization periods and the completion of projects as scheduled.
- in the rental business it means that the equipment can be reliably used and planned without having to stock a large number of stand-by machines.
- for the manufacturer it means that customers are satisfied, provides him with a good image and gives him a feeling of confidence.

It is BOMAG's philosophy to design and produce the machines with highest possible reliability. This aspect of simple and easy maintenance was one of the key issues when developing and designing the machine:

- the location of components in the machine eases maintenance work,
- the high quality standard of BOMAG is the basis for the considerable extension of the service and maintenance intervals.
- the After Sales Service of BOMAG, including excellent operating and maintenance instruction manuals, high quality training courses and on-site machine demonstrations helps the customer to maintain their machines in good condition over a long period of time.

Permanent training of BOMAG's own service personnel as well as the service personnel of BOMAG Profit Centres and dealers is therefore a general prerequisite for BOMAG's excellent world-wide service.

This program of permanent training is only possible with appropriate and up-to-date training material for trainers as well as persons attending the training courses.

This training manual has not only been written as a support for the professional work of the trainer, but also for the trainees attending these training courses.

The different levels of product training demand, that the training performed by BOMAG, its Profit Centres or its dealers reflects the high quality of the training conducted at the Training Centre at BOMAG in Boppard. For this reason we invested a lot of time in the preparation of these materials .

The structure of this training manual enables us to change or up-date individual chapters in case of alterations to the machine.

Documentation

For the BOMAG machines described in this training manual the following documentation is additionally available:

Attention!

The currently valid part numbers for the documents can be taken from the Doclist or the Customer Service page in the BOMAG (BOMAG Secured Area) in accordance with the serial number of the machine.

1. **Operating and maintenance instructions**
2. **Spare parts catalogue**
3. **Wiring diagram ***
4. **Hydraulic diagram ***
5. **Repair instructions**
6. **Service Information**

* The document versions valid at the date of printing are part of this training manual.

General

The tandem rollers of series BW 141 - 154 AD/AC-4 are high performance machines for the extremely difficult use in asphalt compaction and earth work.

The machines of this series are powered by engine oil cooled Deutz diesel engines of series BF4M 2011.

Engine driven pumps transfer the engine output power via hydrostatic circuits for travel and vibration systems to the drums. These hydrostatic drives ensure lowest possible power losses and a high efficiency. The steering and crab-walk functions as well as the additional edge cutter option are supplied by gear pumps driven by the auxiliary engine output.

The machines are equipped with a 2 cylinder operated articulated steering and a crab-walk function with a separate hydraulic cylinder to offset the front frame laterally relative to the rear frame.

For the first time a machine of this product range is equipped with axial piston drum drive motors with reduction gears The discs of the parking brakes are integrated in the reduction gears. When starting the engine and opening the brake valve the brakes are relieved by charge pressure. When closing the brake valve or when shutting the engine down the brakes are automatically applied by spring pressure. These parking brakes should not be used as service brake, because the deceleration effect is extremely high and the braking process may damage the brake discs.

The drums are equipped with an exciter shaft and two vibrator units each. The exciter shafts are driven by hydraulic motors via Bowex couplings. Vibration of the drum is caused by the centrifugal forces generated by the exciter shaft mounted eccentric weights.

Since the machines are designed for operation with two different frequencies and amplitudes, the sense of rotation of the exciter shaft can be reversed. Changing the sense of rotation also changes the position of the change-over weights inside the eccentric weights on the exciter shafts.

This also changes the centrifugal force and the amplitude. The rotary speed of the exciter shaft is also different to both directions of rotation. This means, that the vibration frequency will also change.

In combination with the hydraulic vibration drive the change-over weights are arranged in such a way, that the high amplitude works with low frequency and vice-versa.

The combination of high amplitude and low frequency is particularly suitable for compaction work in earthwork with high lift heights and for preliminary compaction. For soil compaction the combination of low amplitude and high frequency should be used for the finishing passes.

The individual machine functions like travel system, vibration and steering are described in more detail in the corresponding chapters. Optional equipment, such as BAM, BOMAG Asphalt Manager (Variomatic) and chip spreader etc. is not included in this training manual.

Technical data and adjustment values

The following pages contain technical data valid at the date of printing (see front page of this manual).

Attention!

The currently valid technical data and adjustment values can be taken from the BOMAG Intranet or Extranet (BOMAG Secured Area) in accordance with the serial number of the machine.

BOMAG Central Service - Technical data and adjustment values

Status: 2005-06-22

Product type:	**BW 141 AD Serie 4**
Type No.:	920 00
Serial numbers from:	101 920 00 1001

Engine:

Type:	BF4M 2011
Combustion principle:	4-stroke-Diesel
Cooling:	Oil
Number of cylinders:	4
Power acc. to ISO 9249:	60 kW
Power data at nominal speed of:	2500 1/min
Low idle speed:	850 +/-150 1/min
High idle speed:	2700+/-50 1/min
Spec. fuel consumption:	245 g/kWh
Valve clearance, inlet:	0,3 mm
Valve clearance, outlet:	0,5 mm
Opening pressure, injection valves:	210 +8 bar
Starter voltage:	12 V

Travel pump:

Type:	A4VG 56 HW/32
System:	Axial piston-swash plate
Max. displacement:	56 cm^3/U
Max. flow ratio:	136,1 l/min
High pressure limitation:	440 bar
Pressure override:	400+/-10 bar
Charge pressure, high idle:	25 +3/-1 bar

Travel motors:

Type:	A2 FE 32
Number:	2
System:	Axial piston
Displacement stage 1:	32 cm^3/U
Perm. leak oil quantity:	2 l/min
Flushing quantity:	5 l/min

Reduction gear, drum:

Type:	705 C 2H
Transmission ratio:	48
Number:	2

Vibration pump:

Type:	A10VG 45 EZ
System:	Axial piston-swash plate
Max. displacement:	45 cm^3/U

Starting pressure:	360+/-20 bar
Operating pressure, soil dependent:	ca.100 bar

Vibration motor:

Type:	A4FM 22
Number:	2
System:	Axial piston-swash plate
Displacement:	22 cm^3/U
Frequency:	40/60 Hz
Amplitude:	0,7/0,34 mm

Steering and charge pump:

Type:	HY/ZFFS11/11+8
System:	Tandem-/Gear pump
Displacement:	11 / 8 cm^3/U
Max. steering pressure:	200 +/-5 bar

Steering valve:

Type:	OSPF 400 LS
System:	Rotary valve

Filling capacities:

Engine oil:	13 l (SAE 15W-40, API CG-4 (for details see maintenance manual))
Hydraulic oil:	60 l (HVLP 46 VI 150)
Vibration bearing housing:	7,5 l (SAE 15W-40, API SJ/CF)
Reduction gear, drum:	1,5 l (SAE 90 EP, API GL 5)
AC refrigerant:	1100 g (R 134a)
Compressor oil (filling the system):	100 ml (PAG Öl)

BOMAG Central Service - Technical data and adjustment values

Status: 2005-06-23

Product type:	**BW 154 AD Serie 4**
Type No.:	920 31
Serial numbers from:	101 920 31 1001

Engine:

Type:	BF4M 2011
Combustion principle:	4-stroke-Diesel
Cooling:	Oil
Number of cylinders:	4
Power acc. to ISO 9249:	60 kW
Power data at nominal speed of:	2500 1/min
Low idle speed:	850 +/-150 1/min
High idle speed:	2700+/-50 1/min
Spec. fuel consumption:	245 g/kWh
Valve clearance, inlet:	0,3 mm
Valve clearance, outlet:	0,5 mm
Opening pressure, injection valves:	210 +8 bar
Starter voltage:	12 V

Travel pump:

Type:	A4VG 56 HW/32
System:	Axial piston-swash plate
Max. displacement:	56 cm^3/U
Max. flow ratio:	136,1 l/min
High pressure limitation:	440 bar
Pressure override:	400+/-10 bar
Charge pressure, high idle:	25 +3/-1 bar

Travel motors:

Type:	A2 FM 32
Number:	4
System:	Axial piston
Displacement stage 1:	32 cm^3/U
Perm. leak oil quantity:	2 l/min

Reduction gear, drum:

Type:	GFT 7 G2801
Transmission ratio:	25,1
Number:	4

Vibration pump:

Type:	A10VG 45 EZ
System:	Axial piston-swash plate
Max. displacement:	45 cm^3/U
Starting pressure:	360+/-20 bar

Operating pressure, soil dependent: ca.100 bar

Vibration motor:

Type:	A4FM 22
Number:	2
System:	Axial piston-swash plate
Displacement:	22 cm^3/U
Frequency:	40/60 Hz
Amplitude:	0,7/0,34 mm

Steering and charge pump:

Type:	HY/ZFFS11/11+8
System:	Tandem-/Gear pump
Displacement:	11 / 8 cm^3/U
Max. steering pressure:	200 +/-5 bar

Steering valve:

Type:	OSPF 400 LS
System:	Rotary valve

Filling capacities:

Engine oil:	13 l (SAE 15W-40, API CG-4 (for details see maintenance manual))
Hydraulic oil:	60 l (HVLP 46 VI 150)
Vibration bearing housing:	7,5 l (SAE 15W-40, API SJ/CF)
AC refrigerant:	1100 g (R 134a)
Compressor oil (filling the system):	100 ml (PAG Öl)

BOMAG Central Service - Technical data and adjustment values

Status: 2005-06-22

Product type:	**BW 154 AD AM Serie 4**
Type No.:	920 51
Serial numbers from:	101 920 51 1001
Engine:	
Type:	BF4M 2011
Combustion principle:	4-stroke-Diesel
Cooling:	Oil
Number of cylinders:	4
Power acc. to ISO 9249:	60 kW
Power data at nominal speed of:	2500 1/min
Low idle speed:	850 +/-150 1/min
High idle speed:	2700+/-50 1/min
Spec. fuel consumption:	245 g/kWh
Valve clearance, inlet:	0,3 mm
Valve clearance, outlet:	0,5 mm
Opening pressure, injection valves:	210 +8 bar
Starter voltage:	12 V
Travel pump:	
Type:	A4VG 56 HW/32
System:	Axial piston-swash plate
Max. displacement:	56 cm^3/U
Max. flow ratio:	136,1 l/min
High pressure limitation:	440 bar
Pressure override:	400+/-10 bar
Charge pressure, high idle:	25 +3/-1 bar
Travel motors:	
Type:	A2 FM 32
Number:	4
System:	Axial piston
Displacement stage 1:	32 cm^3/U
Perm. leak oil quantity:	2 l/min
Reduction gear, drum:	
Type:	GFT 7 G2801
Transmission ratio:	25,1
Number:	4
Vibration pump:	
Type:	A10VG 45 EZ
System:	Axial piston-swash plate
Max. displacement:	45 cm^3/U
Starting pressure:	360+/-20 bar

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