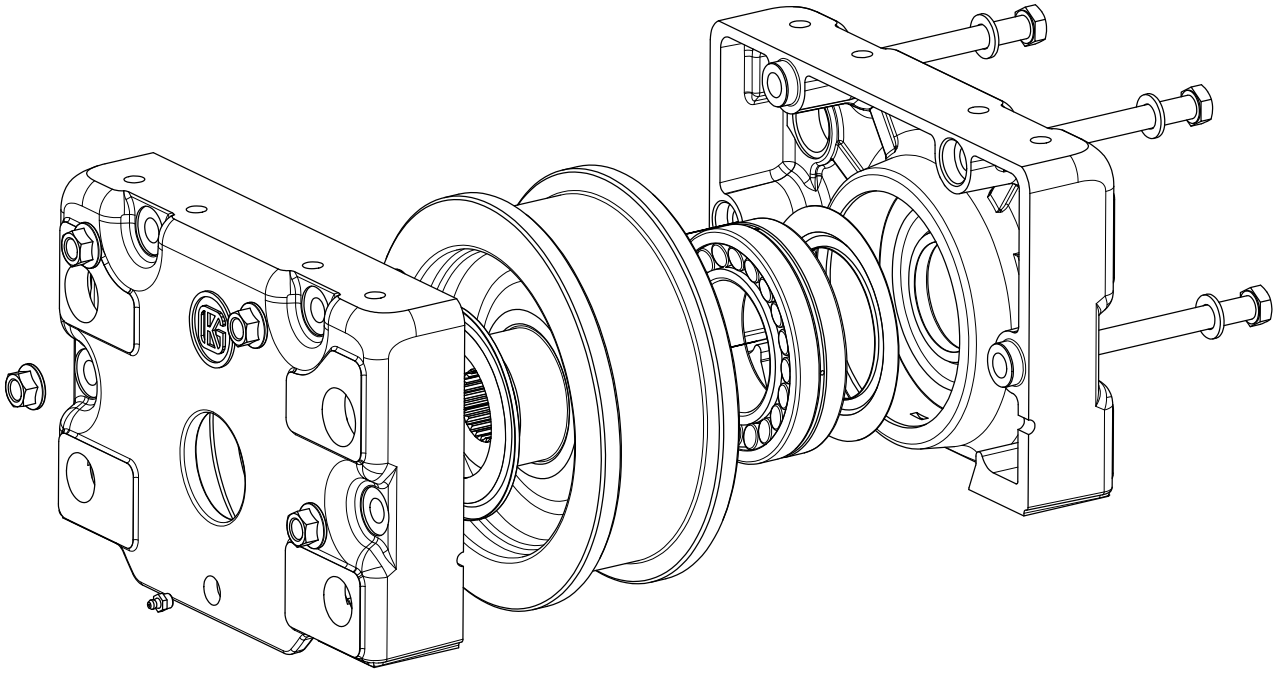
Assembly and maintenance instructions

OLYMP

WHEEL BLOCK SYSTEM



ORS 250-315

KARL GEORG

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1 Information on the use of these instructions

These assembly and maintenance instructions include all required notes on how to assemble and maintain the wheel blocks. Read these assembly and maintenance instructions carefully before the assembly and start-up. These instructions must be accessible at all times to the assembly and maintenance personnel.

1.1 Validity of these instructions

These assembly and maintenance instructions are valid for the following systems:

- ORS 250
- ORS 315

1.2 Signal words and symbols

Information of particular importance is marked with the following symbols in the assembly and maintenance instructions:

⚠ DANGER

indicates a danger that, if not avoided, will result in death or severe injury.

⚠ WARNING

indicates a danger that, if not avoided, may result in death or severe injury.

⚠ CAUTION

indicates a danger that, if not avoided, may result in minor or moderate injury.

NOTICE

indicates important information (e.g. referring to property damage), but not injury to persons.

1.2.1 Danger symbols

Danger due to suspended loads!
The text passages marked with this symbol provide you with information on hazardous situations regarding dangers that are posed by suspended loads.

Warning of hand injuries!
This sign indicates hazardous situations involving the risk of crushing your limbs.

Hazardous to the environment!
This sign indicates that the substance/material used may harm the environment.

1.2.2 Symbols relating to personal protective equipment

Wear protective headgear!

Protective headgear is absolutely required for carrying out the activities marked with this symbol.

Wear protective clothing!

Protective clothing is absolutely required for carrying out the activities marked with this symbol.

Wear hand protection!

Hand protection is absolutely required for carrying out the activities marked with this symbol.

Wear foot protection!

Foot protection is absolutely required for carrying out the activities marked with this symbol.

1.2.3 Info symbol

Info!
This symbol indicates general information. This information is introduced with the pictograph shown and with the word **Info**! printed in bold.

2 Safety

2.1 Intended use

The OLYMP wheel block system serves as a ready-to-install travelling unit for conveyor systems. Mounting of the wheel block system on the conveyor system must be carried out by top, side or pin connection.

Intended use also includes

- observing these assembly and maintenance instructions
- observing the supplementary information in the main catalogue
- observing the national regulations relating to occupational safety

Any other use than the intended use will be deemed as misuse.

2.2 Reasonably foreseeable misuse

Non-observance of these assembly and maintenance instructions and/or the supplementary information of the main catalogue will result in impermissible use of the wheel block system. Unfavourable conditions may entail malfunction, failure of the machine or danger to life and limb.

Reasonably foreseeable misuse includes the following activities:

- Incorrect dimensioning for the scheduled application (e.g. impermissible stresses, load peaks or extreme ambient conditions that have not been taken into consideration, or impermissible operating temperatures).
- Improper assembly (e.g. incomplete use of connection elements, use of third-party connection elements or insufficient alignment of the wheel blocks to the rail).
- Disregard of the maintenance intervals (e.g. non-compliance with the relubrication intervals in the case of extreme conditions).
- Disregard of tightening torques of the fastening screws and/or their inspection intervals.

2.3 General safety instructions

The wheel block system has been designed and built in accordance with the present state of the art and the recognised safety regulations. Nevertheless, the assembly and maintenance may result in danger to life and limb as regards both the user and third parties or damage to items of property. Observe the following safety instructions:

- When carrying out assembly and maintenance work on the wheel block system, wear your personal protective equipment, e.g. head protection, foot protection, protective clothing and hand protection.
- Secure the wheel block system and the corresponding component parts against falling down during the assembly/disassembly process.
- Carry out all work with and on the wheel block system carefully and in a safety-conscious fashion.
- When carrying out assembly and maintenance work, observe the applicable national regulations with regard to health, occupational safety, fire protection and the environment. The personnel carrying out the assembly and maintenance work must be familiar with these regulations.
- Define the competencies of the personnel before starting the work.
- Do not carry out any changes or additions and modifications to the wheel block system without the manufacturer's consent.

2.4 Safety instructions with regard to maintenance, fault rectification and cleaning

Observe the following safety instructions before starting maintenance work, fault rectification and cleaning:

- Maintenance work, fault rectification and cleaning activities may only be carried out by personnel with corresponding qualifications (chapter 2.5, page 6).
- Ensure compliance with the maintenance intervals specified in these assembly and maintenance instructions.
- Maintenance work, fault rectification and cleaning activities may only be carried out when the machine has been shut down.
- Before starting work, cut off the electrical, pneumatic and hydraulic supply of the machine following the instructions given in the machine manual.
- Only use suitable tools to carry out the work.
- Only use lubricants with properties that comply with those of the original manufacturer lubricants. Observe the safety data sheets of the lubricants.
- Adhere to the safety instructions in the manual for the machine into which the wheel block system is installed.
- Retighten screwed connections after having completed maintenance work or if they have been loosened for fault rectification.
- Remove tools or repair materials from the site of operation after having completed the maintenance work.

2.5 Personnel qualifications

Observe the following personnel requirements for the assembly and maintenance of the wheel block system:

- Ensure that the assembly and maintenance is only carried out by personnel specifically commissioned to these tasks.
- Working with and on the wheel block system is exclusively allowed to personnel that is familiar with these assembly and maintenance instructions.
- Personnel to be trained or briefed, or personnel serving an apprenticeship may only carry out work with and on the wheel block system whilst being constantly supervised by an experienced employee.
- Observe the statutory provisions regarding the personnel's minimum age applicable at the operating site.

The various qualifications comprise the following skills and knowledge:

Persons who have been briefed must be able to do the following:

- Operate the machine into which the wheel block is installed
- Recognise possible damage and potential hazards on the wheel block

Industrial mechanics/mechatronics engineers must be able to do the following:

- Read and comprehend design drawings
- Carry our mechanical assembly and maintenance activities
- Ensure the functional serviceability of mechanical components
- Recognise potential hazards when handling mechanical components

The individual activities on the wheel block system require different personnel qualifications that are listed in the following table:

Activities	Briefed persons[1]	Briefed persons[1] with the qualification "Industrial mechanic" or an equal qualification
Transport	x	x
Set-up, assembly		x
Mechanical work: Fault rectification, repair and maintenance		x
Dismantling, disassembly	x	x
Cleaning	x	
Disposal	x	

Tab. 1: Personnel qualifications

[1] Briefed persons must have undergone training in the operating company for handling the machine into which the wheel block system has been installed.

3 Technical information

3.1 Description of the wheel block system

This wheel block system is a ready-to-install travelling unit for conveyor systems.

The wheel block body consists of two housing halves that have been precisely machined and screwed together. The wheel block system can be mounted with top, flange or pin connection. The wheels run in spherical roller bearings sealed on both sides and consist of spheroidal graphite cast iron. The self-lubricating effect of the spheroidal graphite cast iron reduces the friction and therefore the wear of the wheel and rail.

The standard filling of the wheel blocks when they are delivered is a filling of standard grease. Sunk grease nipples are integrated for relubrication or for connection to a central lubrication device.

The wheel block is available in two versions – drivable and non-drivable.

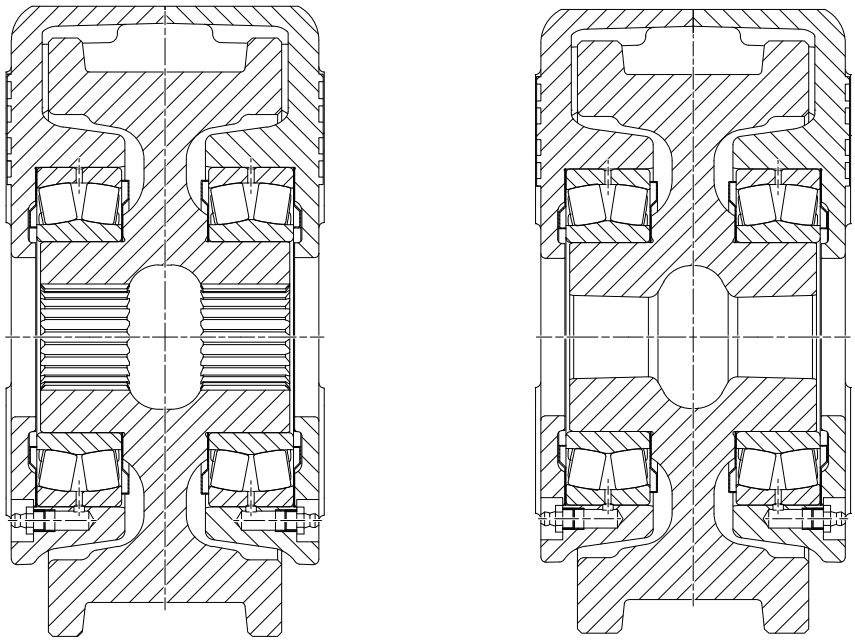


Fig. 1: Drivable wheel block (left) and non-drivable wheel block (right)

For the drivable wheel blocks, drive shafts with multiple splining (DIN 5480) can be installed.

A 1-K corrosion protection primer coat in silver-grey (RAL 7001) is a standard feature provided by the factory for the wheel block housing and the wheel bodies. On request, the wheel blocks can be equipped with a primer, intermediate coat and top coat.

3.2 Components of the wheel block

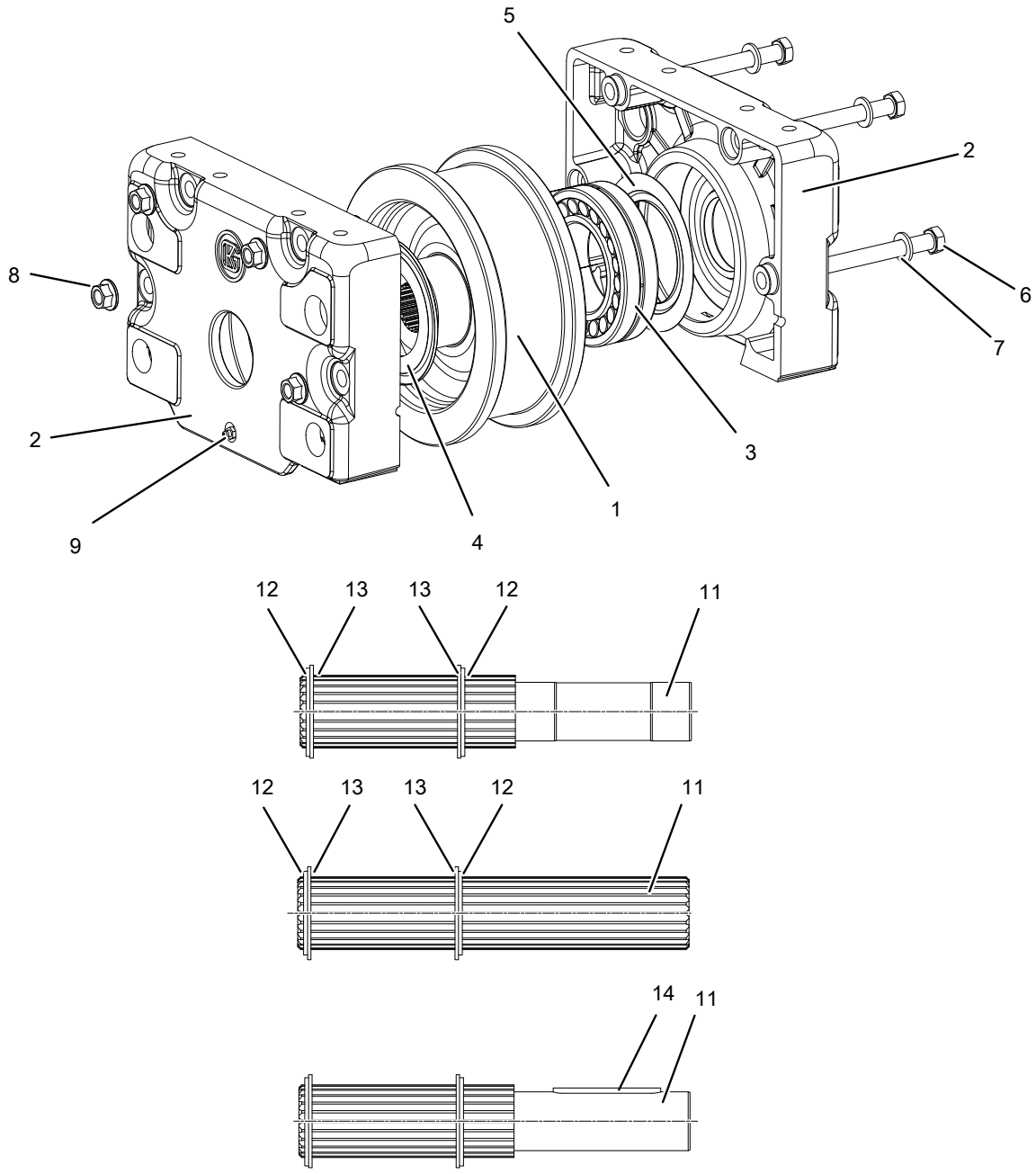


Fig. 2: Components of the wheel block

Position	Number of items	Components	Position	Number of items	Components
1	1	Wheel	8	4	Lock nut
2	2	Housing	9	2	Grease nipple
3	1	Spherical roller bearing	11	1	Drive shaft
4	2	NILOS ring	12	2	Circlip
5	2	NILOS ring	13	2	Supporting disc
6	4	Hexagon head screw	14	1	Feather key
7	4	Disc			

Tab. 2: Components of the wheel block

3.3 Transport

⚠ WARNING

Suspended load!

Risk of injury by falling load.

1. Use adequately dimensioned load handling attachments and lifting gear for transport. Details on the weight of the components can be found in the technical data and in the main catalogue.
2. Do not stand under the lifted components or in their vicinity.
3. Keep third parties away from the danger zone. Use corresponding barriers for this purpose or appoint persons in charge.
4. When transporting the components using a forklift, secure them against slipping from the fork.
5. Banksmen must stand within sight of the person operating the means of transport and must have voice contact with this operator.
6. Transport the component parts in dry condition.

The wheel block is delivered in completely assembled condition.

Transport the wheel block lashed on a pallet using a hoist / forklift or crane. Use adequately dimensioned lifting equipment for transport to the place of installation (e.g. ropes or ring bolts). When using ring bolts, install them in the existing bore holes by means of a thread.

3.4 Technical data

3.4.1 Mounting dimensions of the wheel block

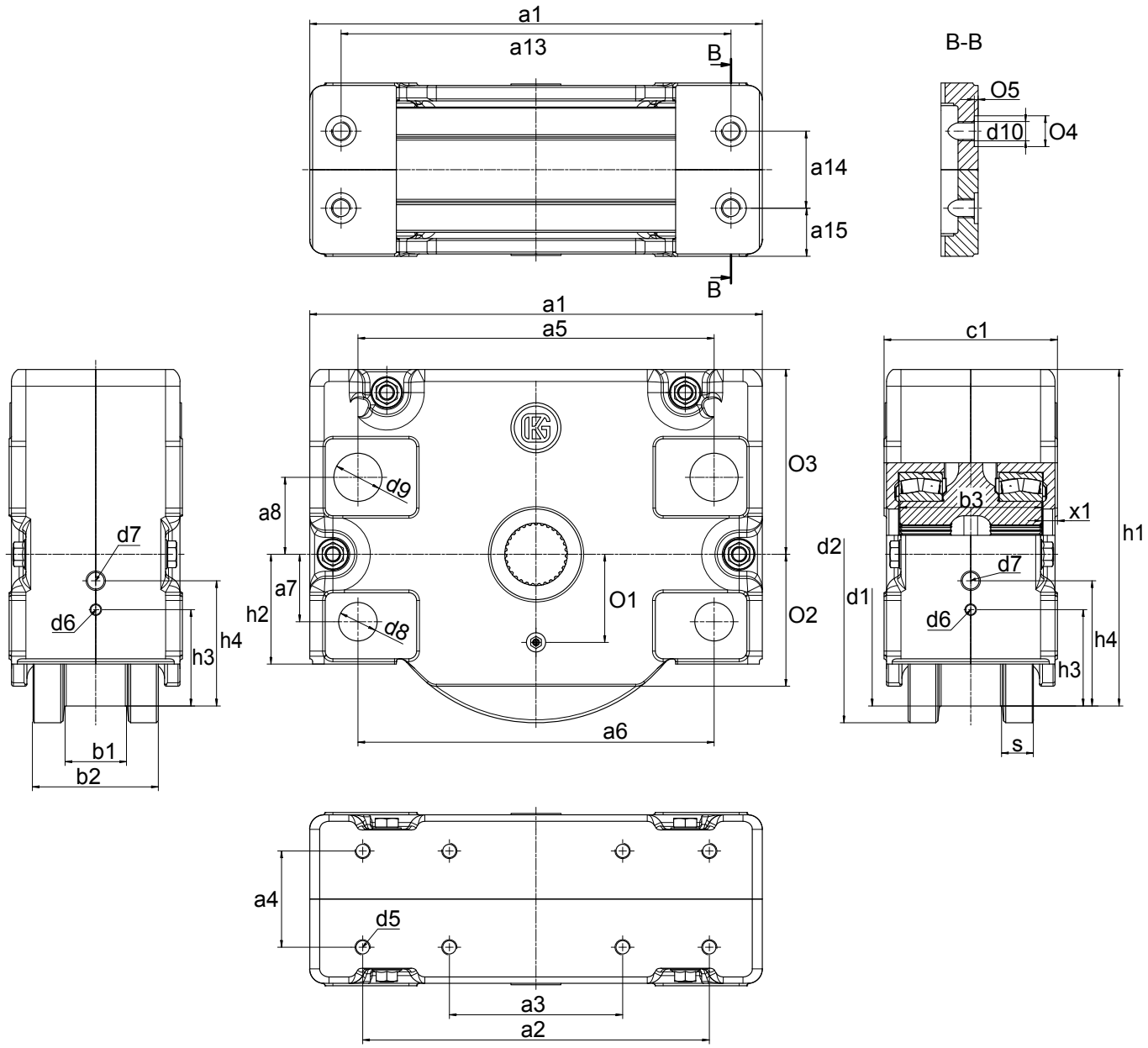


Fig. 3: Dimensions of the wheel block

Wheel block	Toothed hub profile (DIN 5480)	a1	a2	a3	a4	a5
ORS 250	N 50 / N 65	285	290 ± 0.2	140 ± 0.2	80 ± 0.2	310 ± 0.04
ORS 315	N 65 / N 75	470	360 ± 0.2	180 ± 0.2	100 ± 0.2	370 ± 0.04

Tab. 3: Dimensions a1-a5

Wheel block	a6	a7	a8	a13	a14	a15
ORS 250	310 ± 0.04	50 ± 0.02	80 ± 0.02	326 ± 0.4	70 ± 0.2	40 ± 0.2
ORS 315	370 ± 0.04	70 ± 0.02	80 ± 0.02	405 ± 0.4	80 ± 0.2	50 ± 0.2

Tab. 4: Dimensions a6-a15

Wheel block	b1 max.	b1[1]	b2	b3	c1	d1	d2
ORS 250	77	80	110	117.5	150	250 - 0.2	282
ORS 315	90	96	130	147	180	315 - 0.2	350

Tab. 5: Dimensions b1-d2

[1] Tread and flanges hardened

Wheel block	d3[1]	d5	d6	d7	d8	d9
ORS 250	270 - 0.2	8 x M16	M 12	x	34 F8	40
ORS 315	340 - 0.2	8 x M16	M 12	M 20	40 F8	50

Tab. 6: Dimensions d3-d9

[1] without flanges with a large diameter

Wheel block	d10	h1[1]	h2	h3	h4	s min.
ORS 250	M16 x 20t	281	89	100	x	17.5
ORS 315	M20 x 20t	349.5	114	100	130	20

Tab. 7: Dimensions d10-smin.

[1] relating to diameter d1

Wheel block	x1	o1	o2	o3	o4	o5
ORS 250	16.3	86.5	107	156	30 H7	4 + 0.2
ORS 315	16.5	91.5	137	192	32 H7	4 + 0.2

Tab. 8: Dimensions x1-o5

3.4.2 Other technical data

Wheel block	ORS 250	ORS 315
Weight	68 kg	120 kg
Permissible wheel load[1]	16,000 kg	22,000 kg
Wheel material	EN-GJS-700 (GGG-70)	
Housing material	EN-GJS-400 (GGG-40)	
Temperature range of plastic plug	-40 °C to + 60 °C	
Rolling bearing grease series	Multifak EP 2 (Texaco)	
Rolling bearing grease to max. 200 °C	OKS 424 (OKS)	

Tab. 9: Other technical data

[1] The value applies to optimum conditions. With temperatures > 150 °C, the wheel load is reduced.

4 Assembly and dismantling

⚠ WARNING

Risk of crushing!

Risk of injury for the hands when assembling the wheel block.

- Wear hand and foot protection.
- Consult a second person, if necessary, providing support during assembly/dismantling.

⚠ WARNING

Loose component parts!

Risk of injury by falling component parts.

- Wear protective headgear.
- When assembling/dismantling, secure all component parts against falling.

NOTICE

Premature wear due to lacking lubrication after too long storage!

- After a longer storage period (≥ 6 months), relubricate the wheel blocks prior to the assembly by rotating the wheel.

4.1 Top connection

When carrying out top connection, the top of the wheel block is screwed underneath the attachment design using threaded pins and nuts (e.g. for rolled profiles, welded constructions).

Top connection (precise direct connection) requires exact consistency of the drilling patterns on the wheel block and the attachment design.

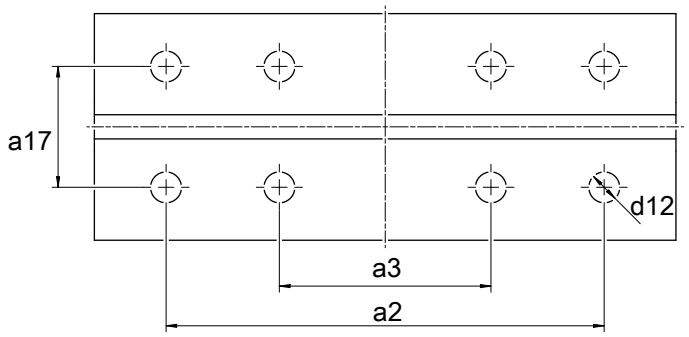


Fig. 4: Drilling pattern of the attachment design for top connection

Wheel block	a2	a3	a17	d12
ORS 250	290 ± 0.2	140 ± 0.2	80	Ø 20.5
ORS 315	360 ± 0.2	180 ± 0.2	100	Ø 20.5

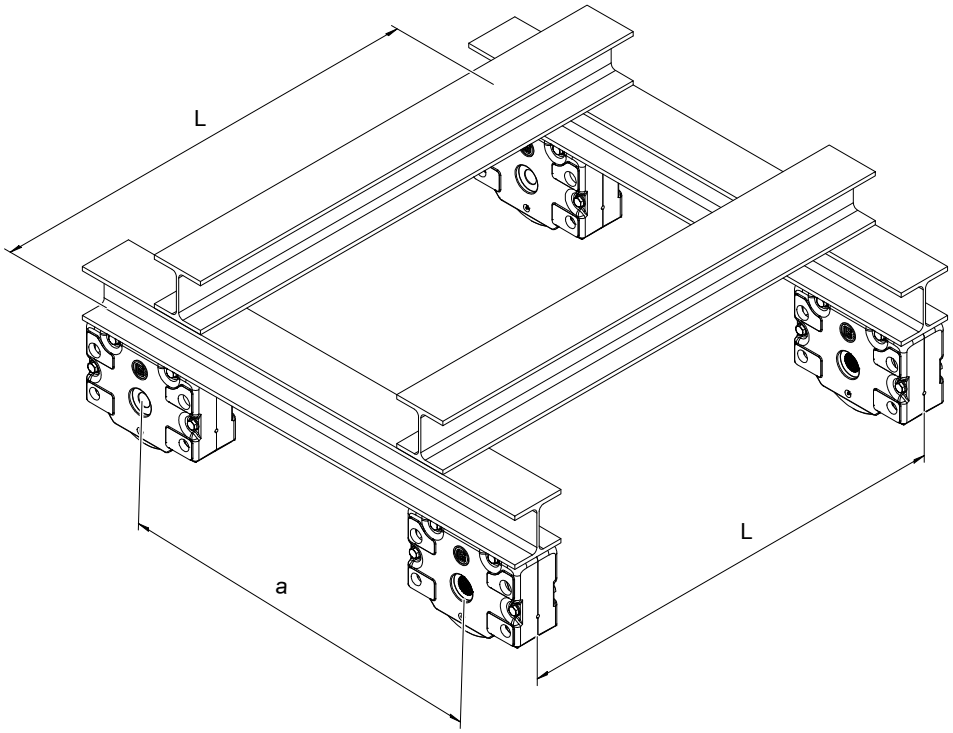
Tab. 10: Dimensions for the drilling pattern

NOTICE

Premature wear of the wheels when wheel blocks are aligned inaccurately!

- Align the mounting surfaces with the fixing holes precisely to the direction of travel.

The following illustrations show permissible deviations from the perfect alignment of wheel blocks in the interconnection:



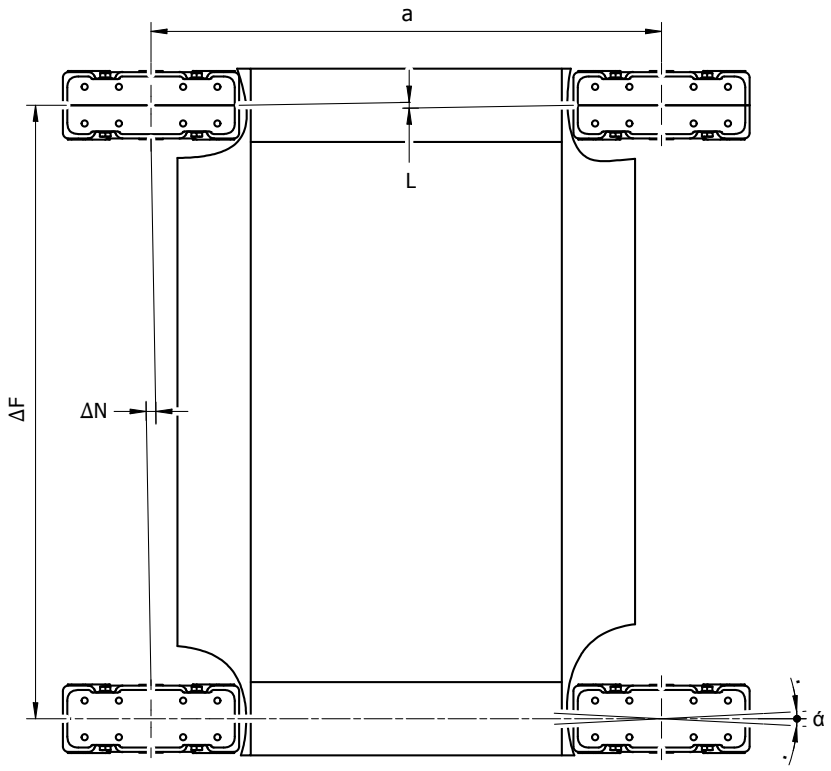


Fig. 5: Requirements regarding the alignment of the wheel blocks

ΔF	ΔN	L	α
≤ 0.5 ‰ × a (mm)	≤ 2 mm for a central drive	± 2 mm for L ≤ 10 m	≤ 2.5 ‰ for an individual drive
	≤ 6 mm for an individual drive		≤ 1.6 ‰ for a central drive

Tab. 11: Permissible deviations from the perfect alignment

The given values suffice for the normal case.

Further tolerance specifications can be found in the following standards and regulations:

- DIN EN ISO 13920:1996-11: Welding — General tolerances for welded constructions — Dimensions for lengths and angles; Shape and position
- VDI 3576: Rails for crane systems — rail connections, rail fastenings, tolerances

For this type of fastening, one OLYMP top connection set is available for each size, containing:

- 8 x Threaded pin
- 8 x Lock nut
- 8 x Washer

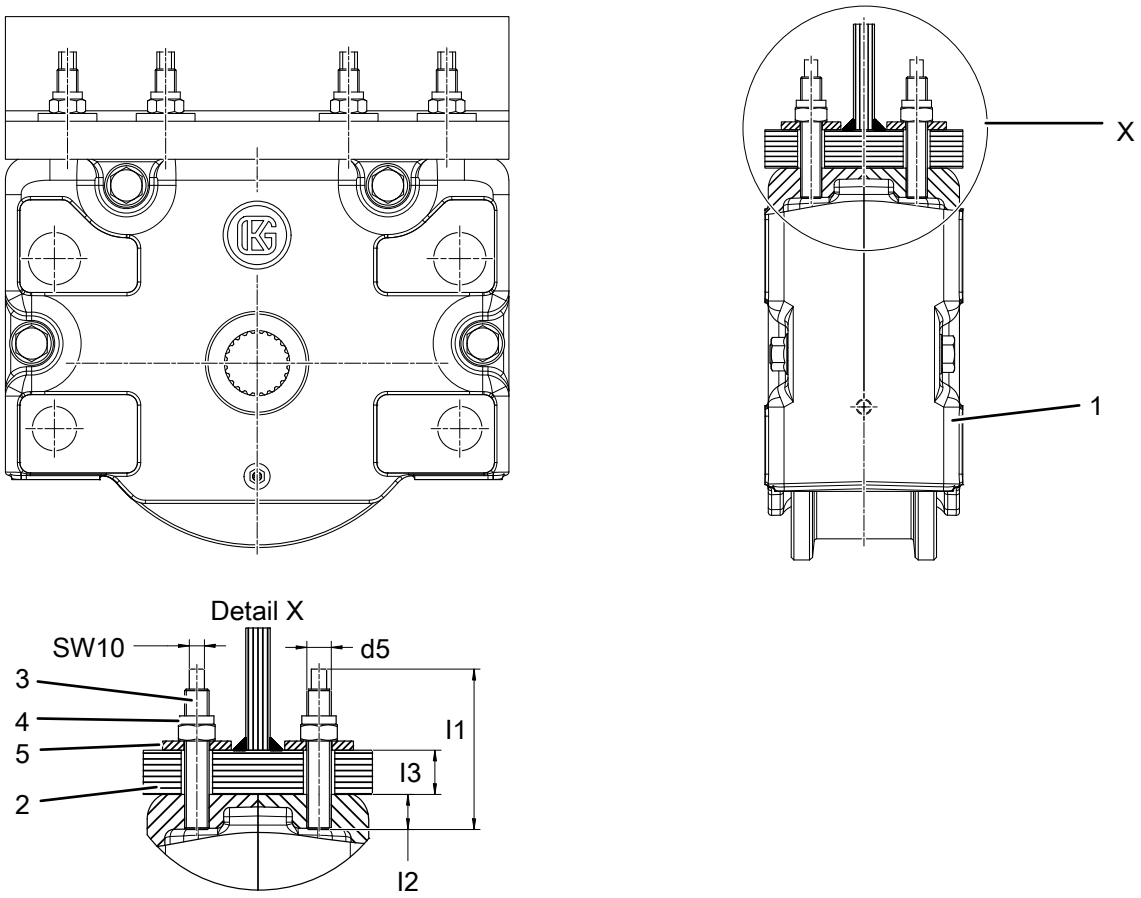


Fig. 6: Wheel block with top connection

Wheel block	l1	l2	l3	d5
ORS 250	105	21-23	15-30	M16
ORS 315	105	25-27	14-40	M16

Tab. 12: Dimensions for top connections of the different sizes

Preparatory activities:

- Remove the preservation material on the connection face and the tread of the wheels.
- Remove possible coats of paint or grease on the connection faces of the design.
- Glue the threaded pins (3) into the fixing holes at the wheel block housing (1).

Assemble the wheel block as follows:

- Insert the wheel block (1) with the glued-in threaded pins (3) into the fixing holes of the attachment design (2).
- Fit the discs (5) and hand-tighten the lock nuts (4) to the threaded pins (3).
- Align the wheel block at the system accurately, in order to prevent position errors and premature wear of the wheels. Use the machined side faces to determine the alignment.
- Tighten the lock nuts (4) as follows:
  - ⇨ ORS 250 and ORS 315: Torque 245 Nm

4.2 Side connection

Side connection is a lateral connection option for low-construction designs.

This fastening type offers different mounting sets for each size:

- 1 x Set for side connection ORS (size) A (driven)
- 1 x Set for side connection ORS (size) NA/ZAM (non-driven / central drive rotating side)

The set of fastening elements for ORS side connection includes the following components:

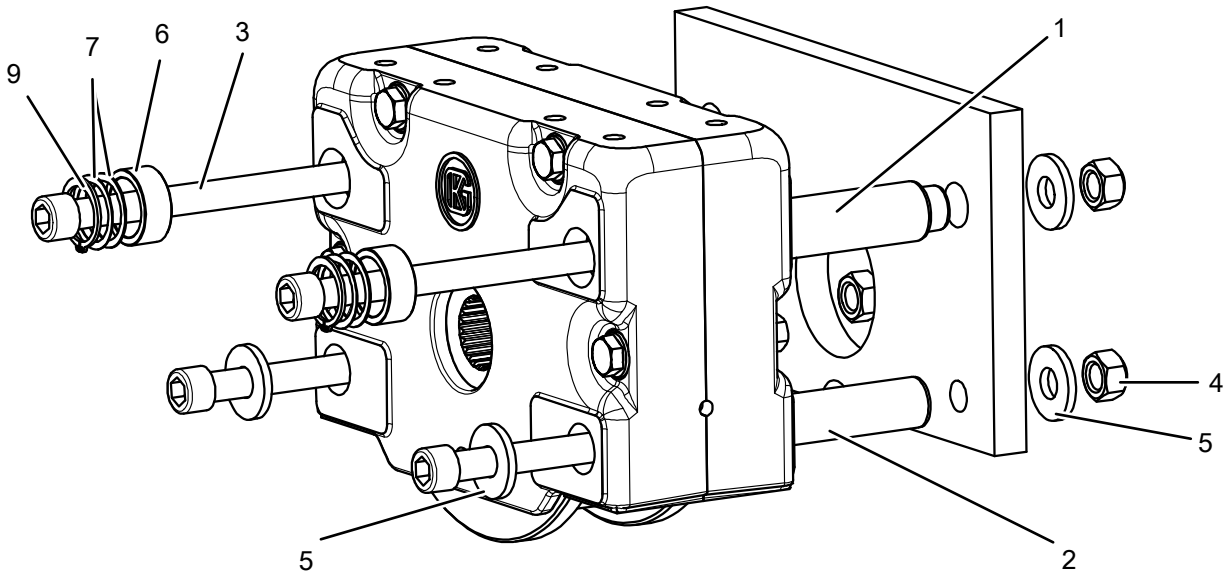


Fig. 7: Side connection

Position	Components	Comment
1	Bolt	
2	Spacer sleeve	
3	Fastening screw	
4	Lock nut/hexagon nut	
5	Disc	
6	Spacer sleeve	is omitted in the case of a torque support
7	Shim rings	
9	Circlip	

Tab. 13: Components of the side connection set

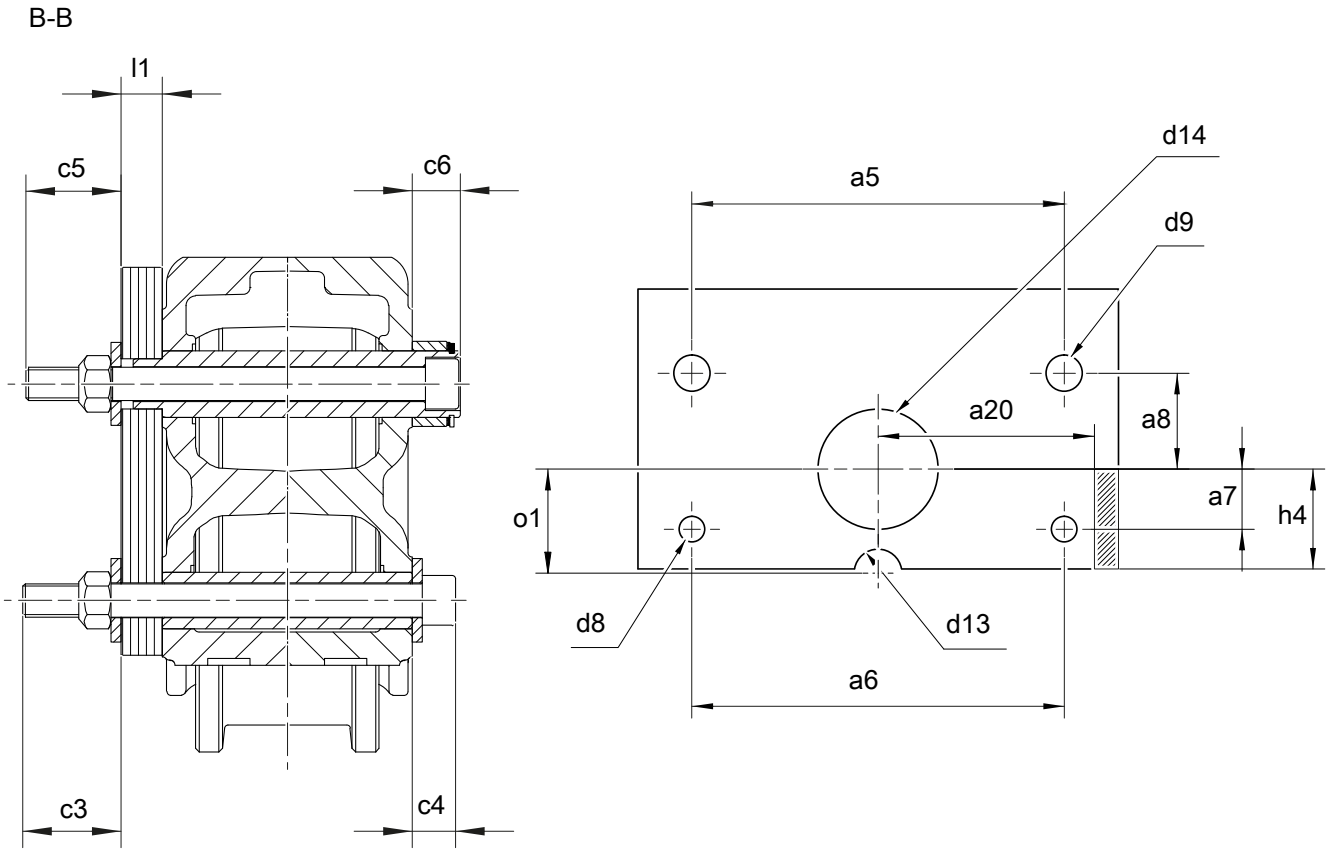


Fig. 8: Side connection and drilling pattern for side connection

Wheel block	a5 ± 0.05	a6 ± 0.1	a7 ± 0.1	a8 ± 0.1	a20[1]	c3 min-max	c4	c5 min-max	c6	d8	d9 H13	d13	d14	h4[1]	l1 min-max	o1[2]
ORS 250	310	310	50	80	192	39-44	26	37-42	29	21	30	50	100	83	20-25	86.5
ORS 315	370	370	70	80	235	37-47	32	34-44	37	25	35	50	120	108	25-35	91.5

Tab. 14: Dimensions for the side connection and drilling pattern

[1] recess only when a roller guide is mounted

[2] only required with relubrication option

NOTICE

Premature wear of the wheels when connection faces are uneven and aligned inaccurately!

- Prior to the assembly, ensure that the connection faces of the attachment design are even, allowing perfect fit of the wheel block with the machined surfaces.
- Align the connection faces to the wheel block (chapter 4.2, page 16).

Preparatory activities:

- Drill the four holes as shown in the illustration.
- Remove the conservation on the connection face and the tread of the wheels.
- Remove possible coats of paint or grease on the connection faces of the design.

Assemble the wheel block as follows:

1. Place the bolt (1) with the step facing the side plate side and insert the spacer sleeves (2) into the wheel block.
2. Insert one fastening screw (3) each into the bolts (1, top) and push the former through the attachment design. Make sure that the step of the bolt is inserted into the hole of the attachment design.
3. Insert a fastening screw (3) with disc (5) into each spacer sleeve (2, bottom) and push the former through the attachment design.
4. Screw the wheel block together using four nuts (4) and discs (5).
5. Tighten the lock nuts (4) as follows:
   - ⇨ ORS 250: Torque 450 Nm
   - ⇨ ORS 315: Torque 960 Nm
6. **Only for NA versions (non-driven) and ZAM (central drive)**: Mount the spacer sleeve (6) onto the bolts (1) and secure the latter using the shim rings (7) and circlip (9).

For version A (driven), the spacer sleeves (6) are not required. The torque support of the drive (not included in the scope of supply) is mounted onto the bolts (1).

4.3 Pin connection

The pin connection installation variant with a threaded pin and bolt connection with spacer plates is for instance used for hollow profiles and swing arms. Both variants differ from each other by the technique of aligning the wheel block to the mean track.

This fastening type offers different mounting sets for each size:

- 1 x Set for pin connection ORS (size) A (driven) with threaded pins
- 1 x Set for pin connection ORS (size) A (driven) with spacer plates
- 1 x Set for pin connection ORS (size) NA/ZAM (non-driven / central drive rotating side) with threaded pins
- 1 x Set for pin connection ORS (size) NA/ZAM (non-driven / central drive rotating side) with spacer plates

The sets for ORS pin connection include the following components:

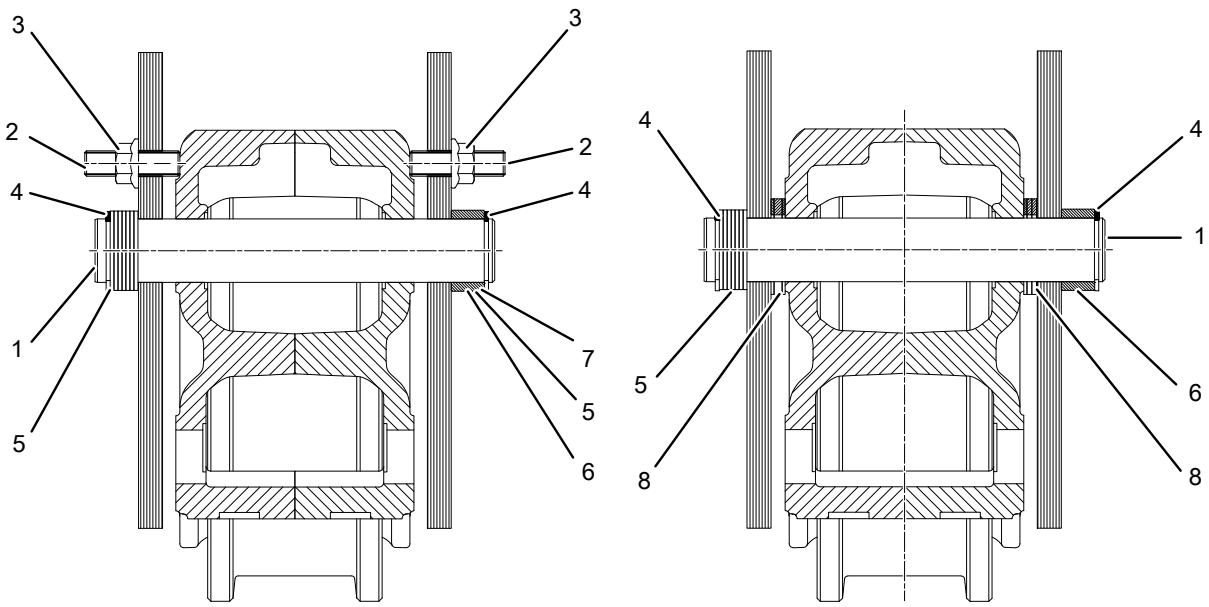


Fig. 9: Pin connection with alignment of the mean track via threaded pin (left-hand illustration) or spacer plates (right-hand illustration)

Position	Components	Comment
1	Bolt	
2	Threaded pin	only for set with threaded pins
3	Lock nut	only for set with threaded pins
4	Circlip	
5	Supporting disc	
6	Spacer sleeve	is omitted in the case of a torque support
7	Shim rings	
8	Spacer plate	only for set without threaded pins

Tab. 15: Components of the pin connection sets

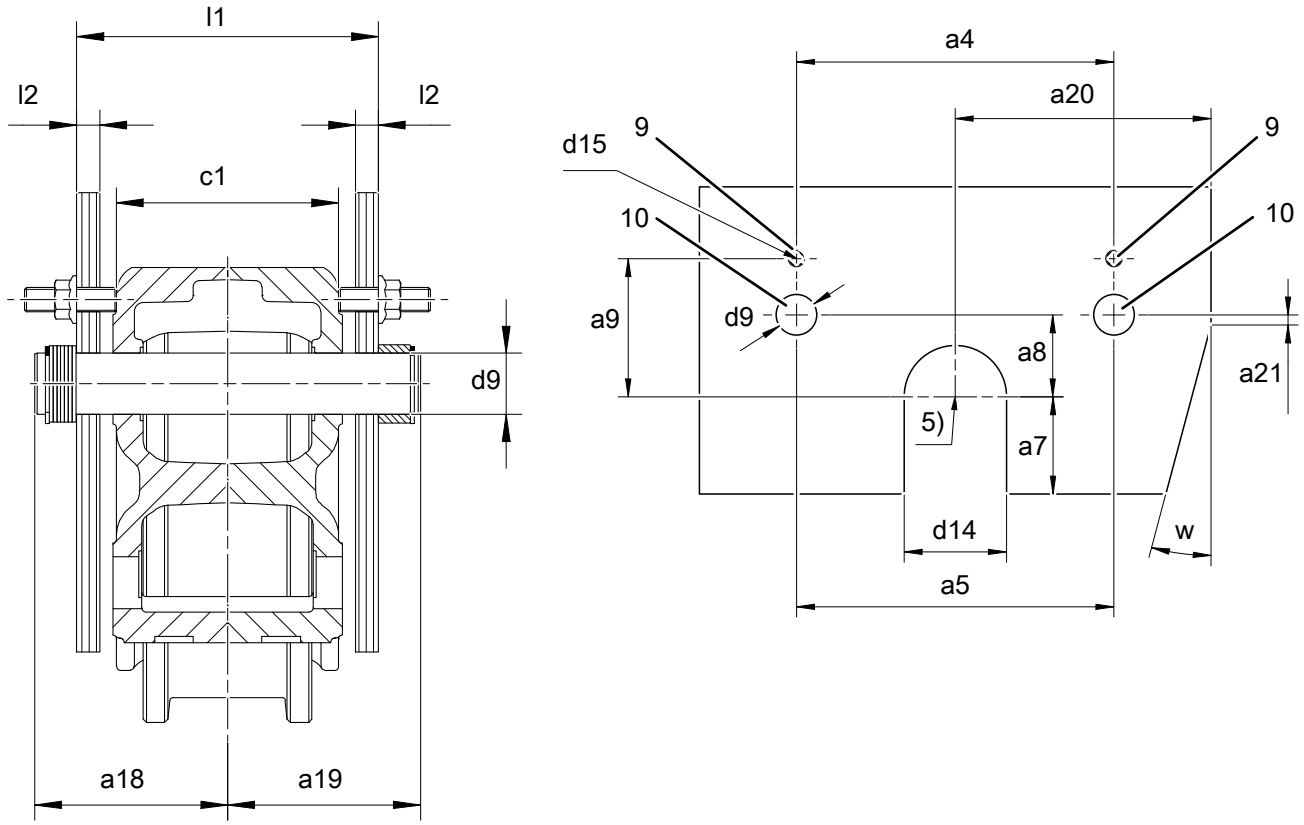


Fig. 10: Drilling pattern for pin connection with alignment of the mean track via threaded pin or spacer plates

Wheel block	a4[1]	a5 ±0.05	a7	a8	a9[1]	a18	a19	a20[2]	a21[2]	c1	d9/ D9	d14	d15[1]	l1 max	l2 min	w
ORS 250	310	310	95	80	135	118/120	134/132	200	10	150	40	100	M16	210	15	15°
ORS 315	360	370	120	80	135	162/159	162/159	250	10	180	50	120	M16	250	18	15°

Tab. 16: Pin connection dimensions for pin connection from drilling pattern

[1] for centring with threaded pins

[2] recess only when the roller guide is mounted

[5)] wheel centre

NOTICE

Premature wear of the wheels when fixing holes are aligned inaccurately in the attachment design!

- Prior to the assembly, ensure that the connecting drill holes of the attachment design are implemented accurately, so that the drilled holes in the steel construction and wheel block are aligned with each other. If you use spacer plates, the contact surfaces of the wheel block and the inner surface of the steel construction must be implemented in parallel.
- Align the connection faces to the wheel block.

Preparatory activities:

- Drill the holes (10) as shown in the illustration.
- **Only for pin connection using a threaded pin and lock nut**: Drill the holes (9) as shown in the illustration.
- Remove the conservation on the connection face and the tread of the wheels.
- Remove possible coats of paint or grease on the connection faces of the design.

Assemble the wheel block as follows:

- Insert the wheel block into the completed steel construction and fasten it using the two bolts (1).
- **For the NA/ZAM version**: Mount the supporting disc (5) and the circlip (4) onto one side and the spacer sleeve (6), shim rings (7), if required, and circlip (4) onto the other side, in order to secure the bolt axially with low-backlash.
- **For the A version**: Mount the supporting disc (5) and the circlip (4) onto the far side of the drive and the spacer sleeve (6) and circlip (4) onto the other side, in order to secure the bolt axially. The final fastening step does not take place before the torque support is mounted (not included in the scope of supply), since the latter is
  attached to the protruding bolts.

Aligning the mean track using threaded pins and lock nuts

- Screw the four threaded pins (2) into the drilled holes above the bolt (1) and in this way adjust the mean track.
- Tighten the four lock nuts (3) whilst counter-holding the threaded pin (2).

Aligning the mean track using spacer plates

- Adjust the mean track by shifting the wheel block onto the bolt (1). Fasten the wheel block by correspondingly inserting some spacer plates (8).

4.4 Assembly of the cellular plastic buffer

The cellular plastic buffer serves as a limit stop at the end of the rail.

The scope of supply of the cellular plastic buffer includes the following components:

- 1 x Cellular plastic buffer (1)
- 1 x Threaded pin (2)

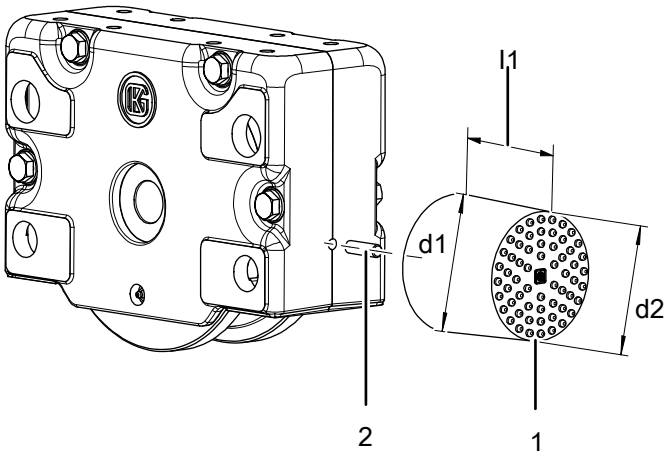


Fig. 11: Wheel block with cellular plastic buffer

Nominal size	d1	d2	l1	Energy absorption [kJ][1]	Spring travel [mm][1]	End force [kN][1]	Unit weight [kg]
Pu 70	70	65	66	0.25	55	7	0.3
Pu 100	100	95	100	0.80	74	40	0.6
Pu 130	130	122	120	1.60	86	54	1.0
Pu 160	160	155	150	4.20	120	110	2.1

Tab. 17: Dimensions and properties of the cellular plastic buffers

[1] These values apply to impacts as they occur during crane operation (V = 120 m/min)

Assemble the cellular plastic buffer as follows:

- ▶ Screw the threaded pin (2) halfway into the buffer (1).
- ▶ Screw the cellular plastic buffer (1) into the wheel block with the threaded pin.

4.5 Assembly of the horizontal roller guide

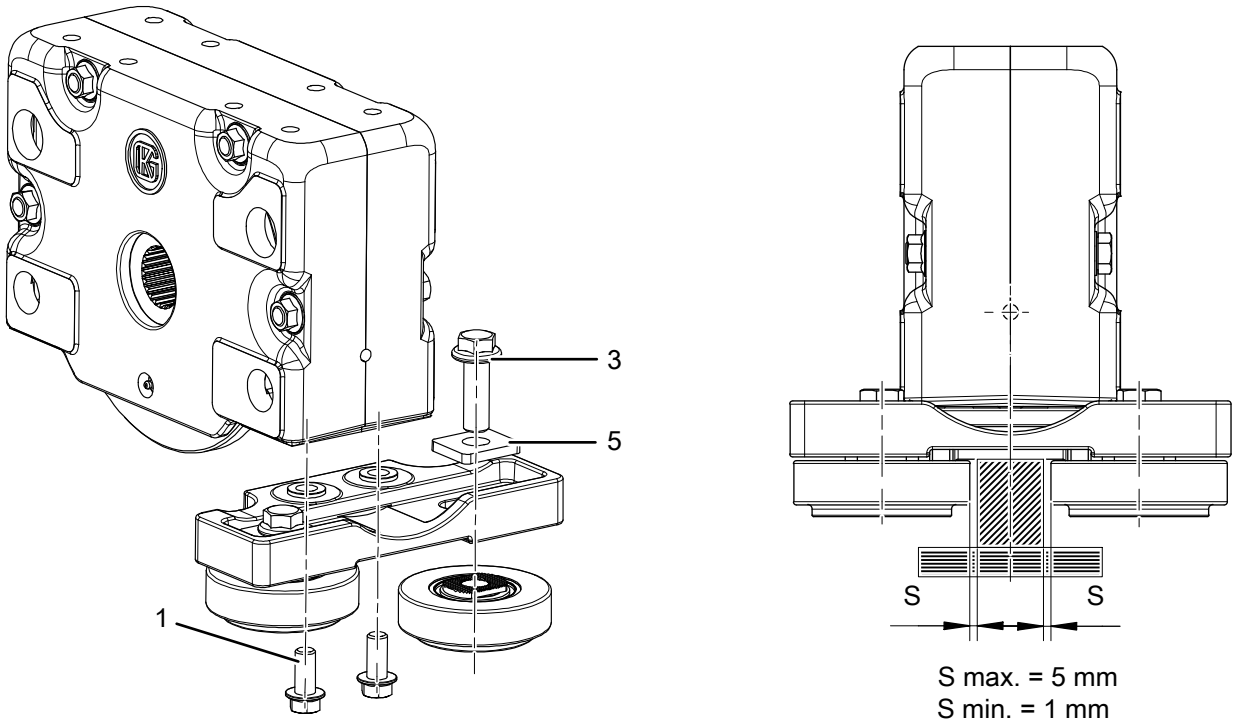


Fig. 12: Horizontal roller guide

Position	Components	Comment
1	Fastening screw	
3	Locking screw	
5	Disc (KG in-house production)	

NOTICE

- The horizontal load of a horizontal roller guide screwed onto the wheel block must only be maximally 15 % of the permissible wheel load. If the roller guide is mounted to the attachment design, the horizontal load may be 20 % of the permissible wheel load.

Proceed as follows to carry out the assembly:

1. Remove the corrosion protection.
2. Assemble the roller guide by means of the fixing screws (1).
   ⇨ ORS 250: Torque = 330 Nm
   ⇨ ORS 315: Torque = 720 Nm
3. Adjust the roller distance (dimension“S”) and align the guide rollers with the rail.
4. Tighten the locking screw (3).
   ⇨ ORS 250/ORS 315: Torque = 720 Nm
5. When you have assembled the components, treat construction surfaces that are not required and joints with a suitable anticorrosive.

NOTICE

- **Size ORS 315**: The spline at the guide roller bolt must be mounted with the counter-spline at the roller support so that they intermesh!

4.6 Assembly of the drive shaft

Provide the following details when making your order:

- Gearbox type
- Shaft end
- Manufacturer

Ordering example: 1 x Set drive shaft set ORS 315 , FV 77 DT/DV – W 50 – SEW

The scope of supply of the drive shaft set includes the following components:

- 1 x Drive shaft
- 2 x Circlip
- 2 x Supporting disc
- 1 x Bushing (depending on the version, 1 or 2 pieces)
- 1 x Circlip or feather key (depending on the shaft end)

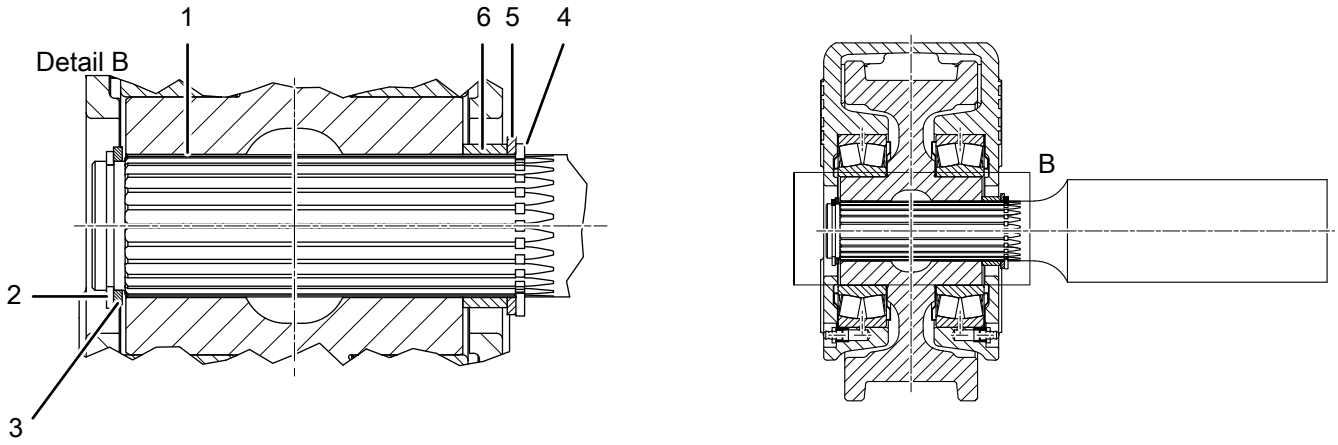


Fig. 13: Mounting the drive shaft

Position	Components	Comment
1	Drive shaft	
2	Circlip (insertion side)	
3	Supporting disc (insertion side)	
4	Circlip (drive side)	
5	Supporting disc (drive side)	
6	Bushing	

Tab. 18: Components of the drive shaft

Assemble the drive shaft as follows:

1. In order to prevent corrosion in the splined hub, apply a coat of suitable bearing grease to the drive shaft prior to the assembly.
2. Insert the drive shaft (1) into the wheel with the assembled circlip (4), the supporting disc (5) and the bushing (6).
3. Mount the supporting disc (3) and circlip (2).
4. Apply a coat of bearing grease to the drive shaft (1) in the area of the slip-on gearbox.
5. Slide on the slip-on gearbox and fasten it in accordance with the manufacturer's specification.

4.7 Assembly and disassembly of the central drive

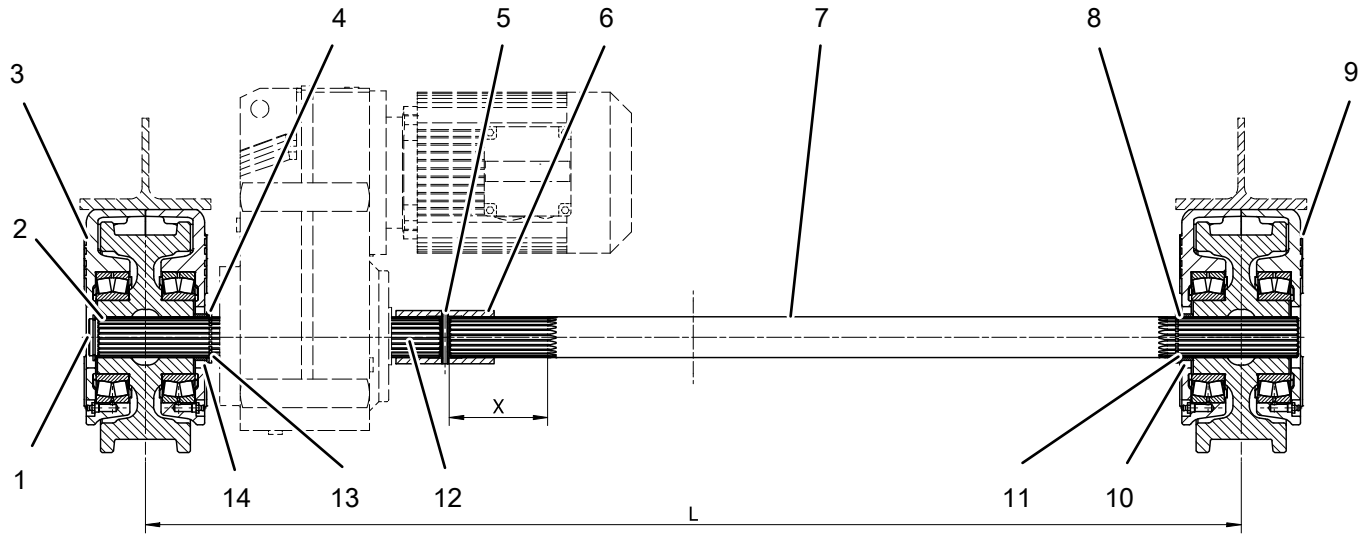


Fig. 14: Wheel blocks with central drive

Assemble the central drive as follows:

1. Mount the wheel block (3) at the drive end to the steel construction.
2. In order to prevent corrosion in the splined hub, apply a coat of suitable bearing grease to the drive shaft (12) prior to the assembly.
3. Insert the drive shaft (12) into the wheel block (3) with the assembled circlip (13), the supporting disc (4) and the bushing (14).
4. Mount the supporting disc (2) and circlip (1).
5. Slide the slip-on gearbox onto the drive shaft (12) and fasten it in accordance with the manufacturer's specification.
6. Apply a coat of bearing grease to the area X (without circlip groove) of the central drive shaft (7) and slide the coupling (6) completely onto the central drive shaft.
7. Apply a coat of bearing grease to the other end of the central drive shaft (7).
8. Fit the circlip (11), the supporting disc (8) and the bushing (10) to this end of the central drive shaft (7).
9. Insert the central drive shaft (7) into the wheel block (9).
10. Mount the complete unit to the steel construction and align the latter to the wheel block at the drive end.
11. Slide the coupling (6) halfway from the central drive shaft (7) onto the drive shaft (12) and drive in the clamping sleeve (5).

    ⇨ The central drive shaft (7) is secured in axial direction.

To carry out the disassembly process, proceed in reverse order.

4.8 Disassembling the wheel block

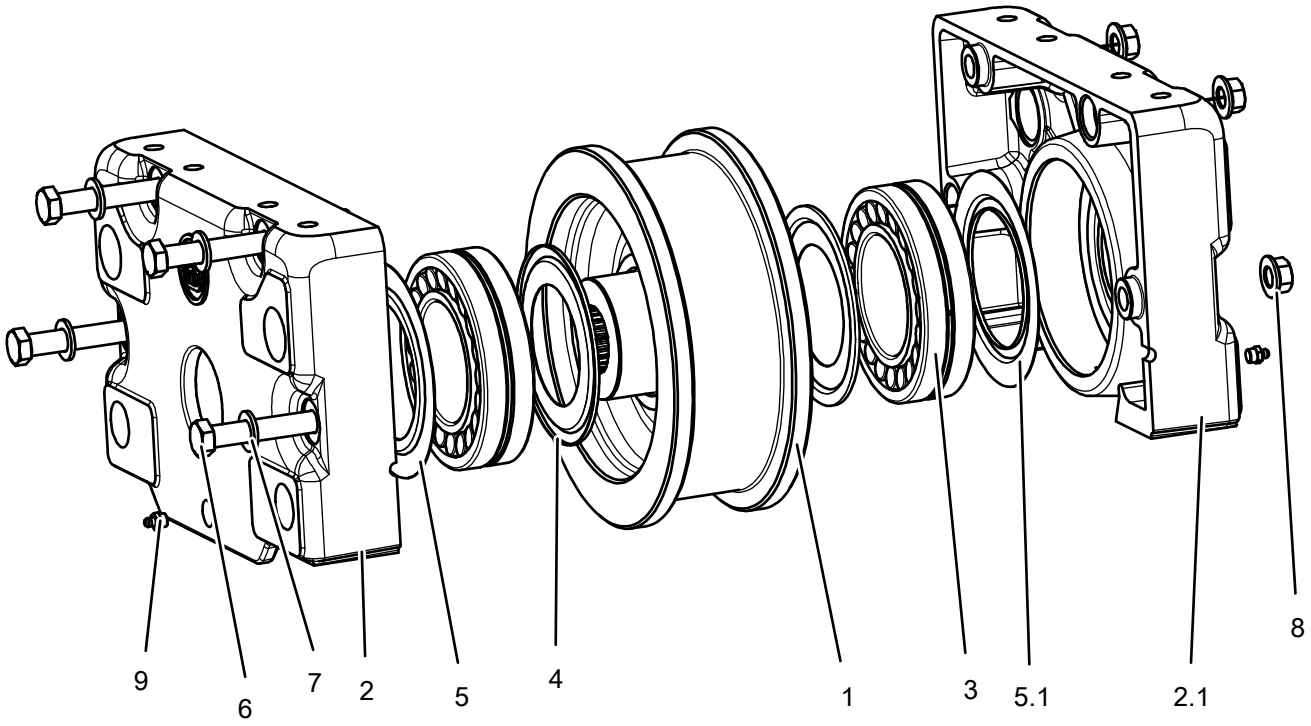


Fig. 15: Components of the wheel block

1. Place the wheel block on the top surface.
2. Loosen the hexagon head screws (6), to do so, apply the torque to the screw head.
3. Remove the lock nuts (8) and the hexagon head screws (6) with the discs (7).
4. Place the wheel block on the side.
5. Remove the housing half (2.1) from the spherical roller bearing (3).
6. Remove the sealing ring (5.1).
7. Pull the wheel unit (1, 3 ,4) out of the housing half.(2)
8. Remove the sealing ring (5).
9. Clean the housing halves (2 and 2.1) and check the bearing seats for damage.

Replace the disassembled wheel unit by a completely pre-assembled set, consisting of a wheel (1) sealing washers (4) and spherical roller bearing (3) as well as two loosely enclosed sealing rings (5 and 5.1).

4.9 Assembly of the wheel block

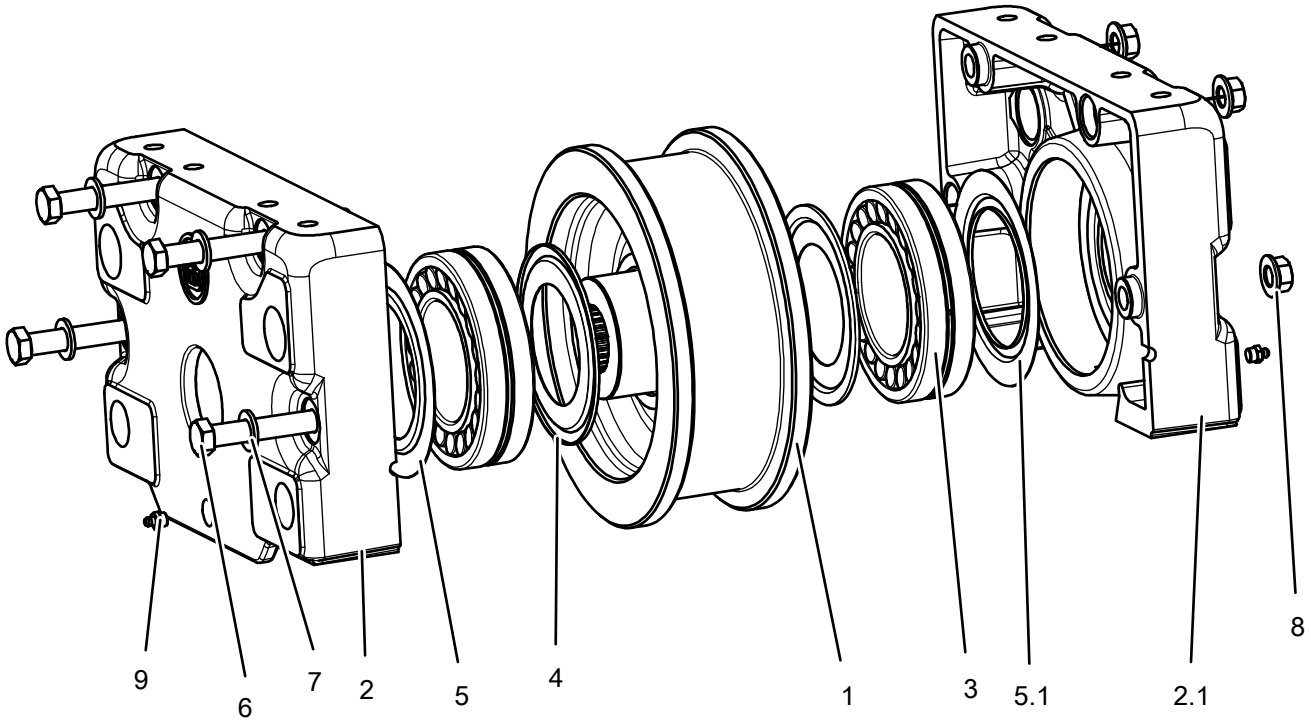


Fig. 16: Components of the wheel block

1. Place the housing half (2) on the side.
2. Apply a small amount of lubricant to the mounting hole of the spherical roller bearing.
3. Place the seal ring (5) into the mounting hole of the spherical roller bearing. Observe the mounting direction.
4. Insert the pre-assembled wheel unit (1, 3, 4) with the spherical roller bearing into the housing half (2).
5. Attach the seal ring (5.1) onto the spherical roller bearing. Observe the mounting direction.
6. Apply a small amount of lubricant to the mounting hole of the spherical roller bearing in the housing half (2.1).
7. Attach the housing half (2.1) onto the spherical roller bearing (3).
   ⇨ In doing so, make sure that the centring bolts of the two gearbox halves are accurately inserted.
8. Place the wheel block on the top surface.
9. Insert the hexagon head screws (6) with the discs (7).
10. Attach the lock nuts (8) onto the screws (6).
11. Tighten the screws (6), to do so, apply the torque to the screw head.
    ⇨ ORS 250 (M16): Torque = 250 Nm
    ⇨ ORS 315 (M16): Torque = 250 Nm
12. Use the two grease nipples (9) to lubricate both spherical roller bearings, while doing so, rotate the wheel (1).
    ⇨ ORS 250 (222 18): Lubricant amount of each spherical roller bearing = 90 g
    ⇨ ORS 315 (230 22): Lubricant amount of each spherical roller bearing = 100 g

5 Maintenance

Before starting maintenance work, cleaning tasks and fault rectification, observe the safety instructions in chapter 2.4, page 5.

5.1 Maintenance intervals

Maintenance activity	Maintenance interval	Further information
Visual inspection for externally visible damage and defects	daily	chapter 5.2.1, page 30
Check wheel block and drive shafts for corrosion, material breakage (in particular shaft breakage) and ensure that the alignment is correct	daily	chapter 5.2.1, page 30
Check the treads and flanges for wear and/or damage	every 3 months	chapter 5.2.1, page 30
Cleaning	in accordance with the interval of the machine to which the wheel block is mounted	chapter 5.2.1, page 30

Tab. 19: Maintenance intervals - complete wheel block

Maintenance activity	Maintenance interval	Further information
Check tightening torque of the fastening screws	after the first 3-6 operating hours or after 100 load changes	chapter 5.2.2, page 31
Retighten all fastening screws	After an operating time of 3 months, then in accordance with the operating conditions and the operational conditions or every year	chapter 5.2.2, page 31

Tab. 20: Maintenance intervals - screwed connections

Maintenance activity	Maintenance interval	Further information
Removal of leaking grease	at regular intervals	-
Relubrication	in accordance with the operating conditions and operational circumstances of rolling bearings for high temperatures (- 25 °C to + 200 °C), relubrication is carried out depending on the temperature	chapter 5.2.3, page 31

Tab. 21: Maintenance intervals - rolling bearings

5.2 Maintenance activities

5.2.1 Visual inspection

- Check the wheel blocks for externally visible damage and defects (e.g. check the wheel for cracks and fracture points).
- Report changes that have occurred (including changes of the operational performance) to the responsible party and/or person immediately.
- Shut down the associated machine immediately and secure it against restart.
- Check the wheel block and drive shafts for corrosion, material breakage (in particular shaft breakage) and ensure that the alignment is correct

Wear of the wheel

- Check the running treads and wheel flanges for wear and/or damage.
- Replace the wheel unit if one of the following limit values is reached:

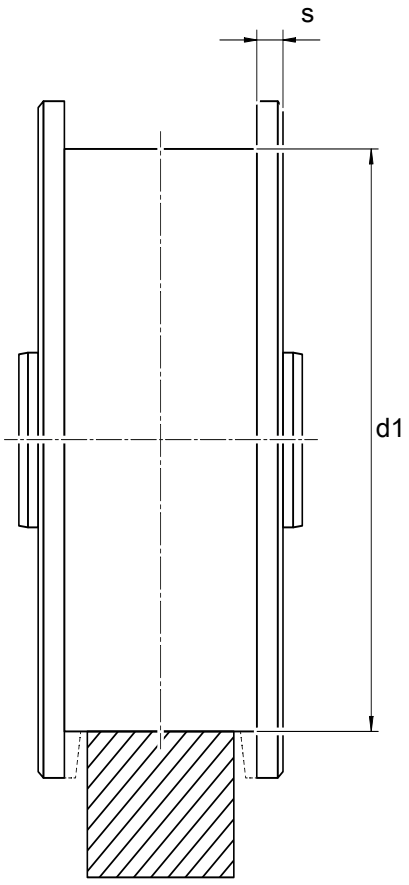


Fig. 17: Wear limits of the wheels

Nominal wheel diameter	Remaining smallest wheel flange width s	Smallest wheel diameter d1	Greatest difference of the wheel diameters with coupled wheels
250	9.5	242	0.2
315	11	307	0.2

Tab. 22: Dimensions in mm for the wear limits of the wheels

Increased wheel wear or wear at the wheel flange may have the following causes:

- Misalignment of the wheel block: Re-align the wheel blocks.
- Soiled rail: Clean the rail at regular intervals. If required, use a rail cleaning system or a rail sweeper.

In the event of a bearing defect, check the whole wheel unit and replace the defective parts.

Info!
On request, Karl Georg GmbH offers wheels with slip-free hardened running treads and wheel flange inner surfaces with a significantly increased lifespan.
In the event of a bearing defect, check the whole wheel unit and replace the defective parts.

Info!
On request, Karl Georg GmbH offers a complete repair of wheel blocks.

5.2.2 Retightening the screwed connections

After an operating period of three months, retighten all screwed connections with the torques specified. Further intervals depend on the operating conditions and the operational circumstances. The screwed connections must be retightened at least once a year (see provisions for the employer's liability insurance coverage (BGV) D6 accident prevention regulations for cranes).

5.2.3 Lubricating the rolling bearings

Use the grease nipples (9) provided on both sides at the wheel blocks to lubricate the rolling bearings. Only use lubricants with properties that comply with those of the original manufacturer lubricants. Observe the safety data sheets from the lubricant manufacturers.

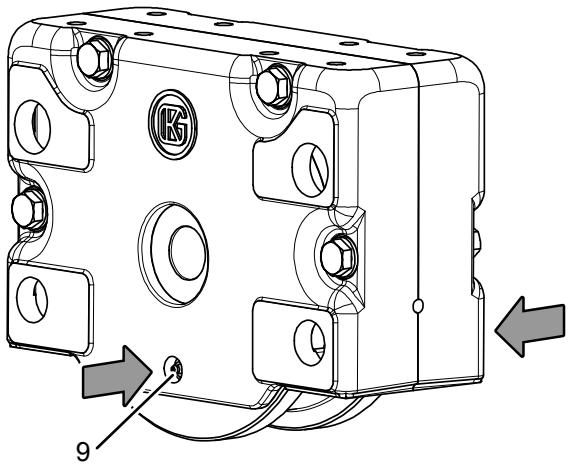


Fig. 18: Lubricating the rolling bearings

Rolling bearings (series)

- Usable for temperatures from - 30 °C to + 120 °C.
- By factory default, the rolling bearings are lubricated with Mutifak EP2 (Texaco).

Carry out relubrication in accordance with the operating conditions and the operational circumstances.

Rolling bearings for higher temperatures

- Usable for temperatures from - 25 °C to + 200 °C.
- By factory default, the rolling bearings are lubricated with high temperature grease 424 (OKS).

Info!
All intervals specified are guide values. If necessary, adapt them to the operating conditions.

6 Storage

Observe the following storage conditions to store the wheel blocks:

- dry,
- weatherproof (e.g. underneath a roof)
- Storage temperature in the range of the local outdoor temperature

Turn the wheels several times every six months to prevent them from stalling. After a longer storage period (≥ 6 months), relubricate the wheel blocks prior to the assembly by rotating the wheel.

7 Disposal

NOTICE

Environmentally hazardous greases and oils!

Danger of environmental pollution by oils or greases.

- ▶ Do not let oils and greases enter the soil, bodies of water or the sewer system.
- ▶ Dispose of waste oil, greases or rags contaminated with oil in an environmentally friendly fashion, complying with local legislation, e.g. at collecting stations. Information on the type of auxiliary materials can be found in the technical data and in the safety data sheets.

To dispose of the wheel block system, dismantle it and disassemble it into its individual material groups:

- Steel
- Lubricants

Dispose of the materials in compliance with local legislation.

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Therefore, no claim can be derived from the information, illustrations and descriptions in these operating instructions.