

# ARBOGA - DARENTH

## OPERATING INSTRUCTIONS FOR ROLLER CHAIN DRAG CONVEYOR HDT (TYPE TRS2)

Customer:

Order No.: **A10237**

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## Foreword

ARBOGA-DARENTH Conveyors guarantee good design, quality components and skilled labour plus years of experience in swarf handling and swarf crushing. All these abilities have been used to design a product with high reliability and long service life. We are convinced that your experiences will confirm your choice of ARBOGA-DARENTH Swarf Conveyors.

Length of life and reliability can, as with any machine tool, be prolonged with correct installation and correct maintenance. It pays off to follow our advice for maintenance.

This maintenance manual consists of instructions and spare parts list for your new ARBOGA-DARENTH Roller Chain Drag Conveyor. It also contains greasing instructions, exploded view and a simple schedule for trouble-shooting.

ARBOGA-DARENTH Swarf Conveyors are normally used in all machine tools on the market

as well as in swarf handling systems which ARBOGA-DARENTH designs, sells and installs.

All Conveyors which leave our works are checked and do not need any additional maintenance other than stated in this manual.

For orders of spare parts and if you want to contact our engineers please find our phone number and address at the front page of this instruction.

## Guarantee

All products from ARBOGA-DARENTH are guaranteed free from any fault in material and labour during a period of one year. One year consists of 365 calendar days or 1800 hours which ever occurs first. The guarantee period for our products starts the day the equipment is sent to the client and continues during one year as earlier described. This is due if our maintenance and control recommendations are followed.

The guarantee is not valid for incorrect erection, misuse, incorrect maintenance or if maintenance is not made due to our recommendations and accepted industry practice.

During the guarantee period and after written notice to us, we guarantee that all parts manufactured in our plant which are faulty regarding material or labour shall be replaced. We give no further guarantee either written or verbal for costs except material and man labour.

### **This guarantee or other guarantees from us do not cover:**

1. Damage after the guarantee period is ended.
2. Damage caused by chemical reactions or wear due to the detail has been submitted to external influences.
3. Equipment damaged at delivery or by accidents.
4. Damage through misuse, incorrect use or feeding of the centrifuge or if recommended maintenance is not followed.
5. Damage to equipment which have been repaired or changed by others than by the one who has been acknowledged as our sole representative.
6. Wear parts.

## **Safety regulations**

- Electrical installations have to be done by qualified personnel only.
- At connection of voltage feed as well as at service and maintenance work on the conveyor the circuit breaker must be off.
- Test the emergency stop at installation and always when maintenance and service have been done.
- The conveyor must not be operated with the covers removed.
- The data sheet from the coolant supplier must be studied as parts from coolant can cause allergic reactions.

### **WARNING!**

The floor around the conveyor might get slippery from coolant getting outside the machine.

## Operation

ARBOGA Roller Chain Drag Conveyors are designed to handle a variation of material in different shapes and forms. They can convey short, long or curley swarf, dry as well as wet.

The conveyor consists of the following main components:

- ◆ Conveyor frame
- ◆ Roller drag chain
- ◆ Drive system
- ◆ Accessories (standard or customized)

The frame has not only the function to support the chain, but also to cover the chain and its components for increased reliability. The chain is equipped with scrapers, 3 per metre. The chain is endless driven by a gear motor placed directly onto the shaft.

Examples of installations where the ARBOGA-DARENTH Roller Chain Drag conveyors are in sucessful use:

- ◆ Incorporated into machine tools to convey swarf from the machine into a scrap bin.
- ◆ With coolant tank and pump, the conveyor can also be used as a simple coolant equipment.
- ◆ Connecting several or a line of machines for automatic swarf removal. The conveyors are normally placed in channels below floor level.
- ◆ In press lines to remove press scrap from the machine area.
- ◆ In swarf handling systems

## Installation

Shorter conveyors will be delivered completely assembled, ready to install and to use. Longer conveyors will be delivered in sections.

The conveyor or the conveying pieces can be handled by a crane. See that the lifting equipment have approved quality and strength and that they are adapted in a safe way in the lifting lugs.

When frame junctions are used assure that the wheel path (the frame) is in level on both sides.

The conveyors shall be placed on a plane ground. They need not to be fastened, but it is an advantage to securely fasten the conveyors with expansion bolts, if it is possible. No dynamic forces are being transmitted from the conveyor.

The lubrication directions from the gear manufacturer have to be followed (see enclosure).

## Maintenance

After approx. 3 months operation in one shift, the conveyor shall be checked.

The following items shall be special attended.

- 1) Chain tension
- 2) The chain and its position in the frame
- 3) The rollers

It can be necessary to retighten the chain. The frame and the chain should be checked for eventual excessive wear. The rollers should be easy to move and should run freely. If necessary, the rollers should be greased.

The chain must be in the middle of the frame to avoid unnecessary wear. When tightening the chain, check that it will come in the middle of the frame, otherwise the shaft will not be in a straight angle to the conveying direction. The chain must then be tightened (untightened) with the tightening device, so that the chain will come into its correct position.

The conveyor must be checked in intervals. Damaged parts must immediately be replaced, otherwise the function of the conveyor will be disturbed and even other parts can be damaged, e.g. the chain and the frame.

## Chain tightening

Proceed as follows by tightening the chain:

1. Loosen the bolts on the bearing attachment (3) and the motor attachment (19).
2. Tighten or untighten with the tightening screws (8, 14).
3. Tighten the chain so much that it is possible to press it down about 5-10 mm just before the tail end.
4. If it is not enough to tighten the chain with the tightening device, it is necessary to take away 2 links (see chain disassembly).
5. After the tightening of the chain, the bolts mentioned in item 1 above shall be fastened.

**NB!** We recommend to take extra care in checking the chain and to follow the procedure above when tightening. If the chain is tightened too hard or too loose, both conditions can cause problems in operation and damage the chain and the conveyor itself.

## Chain disassembly

Disassembly of the chain can be done for two reasons:

- To replace damaged parts.
- Cleaning and maintenance of the conveyor trough.

### Chain

The chain is to be disassembled in the following order:

1. Loosen the bolts on the bearing attachment (3) and the motor attachment (19).
2. Untighten the chain by loosening the tightening screws (8, 14). The screw to be totally untightened.
3. Remove the motor (4 screws).
4. Remove the bearing and the motor plate.
5. Locate the drive shaft (12) so that the chain shaft (23) will be positioned in the middle of the slot of the frame.
6. Remove the pipe pin (22) from the chain shaft.
7. Pull out the chain shaft through the slot in the frame.
8. Unlink the chain links (24, 27) of the chain and pull it out of the frame.
9. **NB!** We recommend to secure the chain so that it is not rolling back into the frame.
10. If you wish to exchange one link, just exchange the damaged one.
11. If you wish to shorten or lengthen the chain, you must remove or add two (2) links due to that the chain has inner and outer links.
12. Assembly takes place in the reverse order.

When you change the complete chain, please note that the chain comes in the correct position in the frame. If the chain not goes parallel in the frame it can be damaged or causes damage on the conveyor.

It is possible to pull out and mount the chain with the motor.

When disassembling the chain as per above, run the motor forwards.

When mounting a new chain, put it over the drive shaft and run the motor in reverse.

Cleaning and maintenance of this conveyor shall be conducted due to existing conditions.

## Lubrication

### Gear

The gear manufacturer's specifications are to be followed (see enclosure).

**NB!** Some gears are delivered without oil. It is in these cases fully marked on the gear. The manufacturer's specification is valid.

### Drive

The drive shaft bearings are to be greased every 6th month.

### Pulley wheel shaft bearing

When pulley wheel shaft bearings are used the shaft bearings are to be greased every 6th month.

It is to recommend to grease the bearings additionally, when the conveyor is placed outdoors. Bearing grease of good quality is to be used.

## Trouble-shooting

Problem	Cause	Measures
The chain runs irregular	The chain not tightened	Tighten the chain
Excessive wear on frame	The chain uneven tightened	Adjust the tightening bolts
The chain jammed	The chain not tightened or scrap pieces block the conveyor	Tighten the chain. If any foreign parts can have entered into the conveyor, it is necessary to disassemble the conveyor for inspection of chain and frame
The chain "squeaks"	The chain too tight	Release tension by adjusting the tightening screws

## Spare parts list

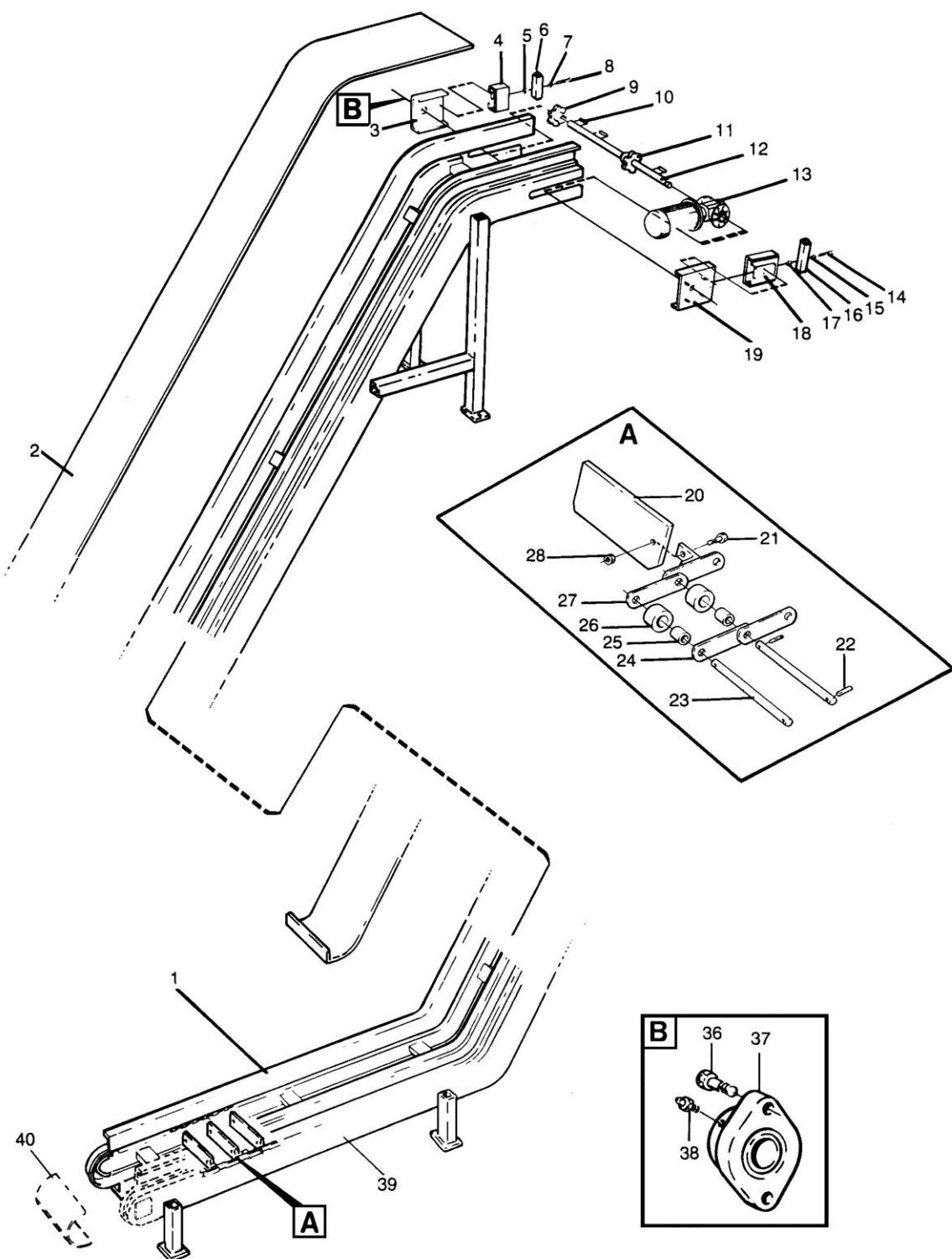
**NB!** When ordering spare parts, please specify the following data:

- Order number
- Serial number
- Designation
- Article number

<b>Pos.nr</b>	<b>Article No.</b>	<b>Designation</b>	<b>Unit</b>
1	-	Side wall (80 mm)	m
	-	Side wall (150 mm)	m
2	TL2 700	Top cover 6"	m
	TL2 701	Top cover 9"	m
	TL2 702	Top cover 12"	m
	TL2 703	Top cover 18"	m
	TL2 704	Top cover 24"	m
	TL2 705	Top cover 30"	m
	TL2 706	Top cover 36"	m
	TL2 707	Top cover 42"	m
	TL2 708	Top cover 60"	m
3	9002503	Bearing attachment dia 35	pce
	9002504	Bearing attachment dia 45	pce
4	9002500	End protection	pce
5	-	Nut	pce
6	9002506	Tightening holder	pce
7	-	Nut	pce
8	-	Clamping screw	pce
9	940240	Chain wheel dia 35	pce
	940267	Chain wheel dia 45	pce
10	970381050	Key for chain wheel dia 35	pce
	970381450	Key for chain wheel dia 45	pce
	9703810140	Key for drive dia 35	pce
	9703814140	Key for drive dia 45	pce
11	940240	Chain wheel dia 35	pce
	940267	Chain wheel dia 45	pce
12	940213	Shaft 6" dia 35	pce
	940214	Shaft 9" dia 35	pce
	940215	Shaft 12" dia 35	pce
	940216	Shaft 18" dia 35	pce
	940217	Shaft 24" dia 35	pce
	940218	Shaft 30" dia 35	pce
	940219	Shaft 36" dia 35	pce
	940223	Shaft 42" dia 35	pce
	940277	Shaft 6" dia 45	pce
	940260	Shaft 9" dia 45	pce
	940261	Shaft 12" dia 45	pce
	940262	Shaft 18" dia 45	pce
	940263	Shaft 24" dia 45	pce
	940264	Shaft 30" dia 45	pce
	940265	Shaft 36" dia 45	pce
	940266	Shaft 42" dia 45	pce

<b>Pos.nr</b>	<b>Article No.</b>	<b>Designation</b>	<b>Unit</b>
13	-	Motor	pce
14	9002501	Clamping screw	pce
15	-	Nut	pce
16	9002506	Tightening holder	pce
17	-	Nut	pce
18	9002500	End protection	pce
19	9002502	Motor attachment dia 35 mm	pce
	9002505	Motor attachment dia 45 mm	pce
20	9002800	Scraper 6"	pce
	9002801	Scraper 9"	pce
	9002802	Scraper 12"	pce
	9002803	Scraper 18"	pce
	9002804	Scraper 24"	pce
	9002805	Scraper 30"	pce
	9002806	Scraper 36"	pce
	9002807	Scraper 42"	pce
	9002808	Scraper 60"	pce
21	97031000825	Screw	pce
22	970360424	Pipe pin	pce
23	9002620	Chain shaft	pce
24	940258	Chain link, inner	pce
	940208	Chain link, outer	pce
25	940257	Bushing	pce
26	940259	Roll	pce
27	940258	Chain link, inner	pce
	940208	Chain link, outer	pce
28	970320108	Nut	pce
36	97031001225	Screw	pce
37	970103	Flanged bearing	pce
38	971501	Lubricator	pce
39	TRS2 200	Frame 6" incl bottom cover	m
	TRS2 201	Frame 9" incl bottom cover	m
	TRS2 202	Frame 12" incl bottom cover	m
	TRS2 203	Frame 18" incl bottom cover	m
	TRS2 204	Frame 24" incl bottom cover	m
	TRS2 205	Frame 30" incl bottom cover	m
	TRS2 206	Frame 36" incl bottom cover	m
	TRS2 207	Frame 42" incl bottom cover	m
	TRS2 208	Frame 60" incl bottom cover	m
40	-	End protection	pce

## Exploded view



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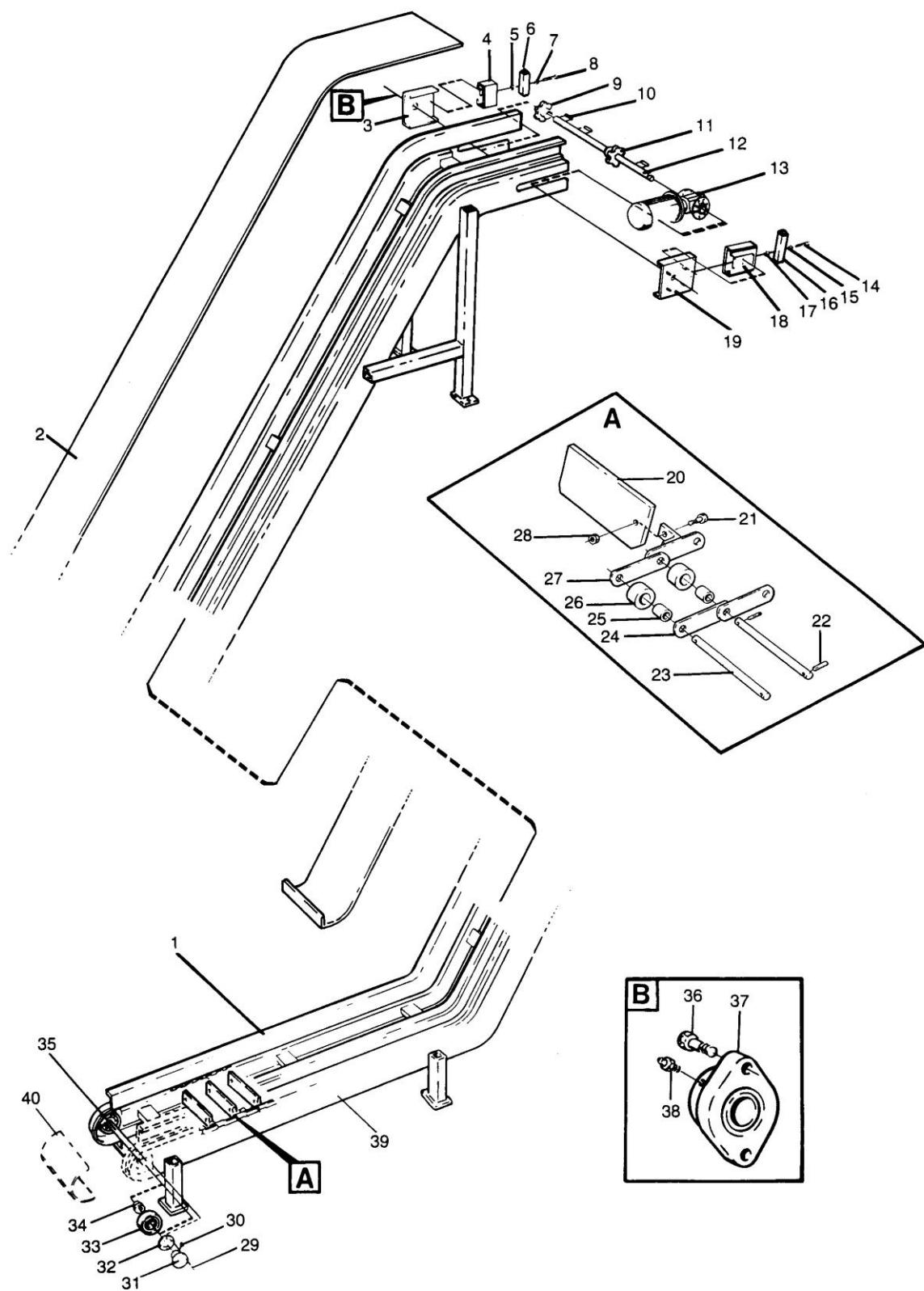
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6	9002506	Tightening holder	pce
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8	-	Clamping screw	pce
9	940240	Chain wheel dia 35	pce
	940267	Chain wheel dia 45	pce
10	970381050	Key for chain wheel dia 35	pce
	970381450	Key for chain wheel dia 45	pce
	9703810140	Key for drive dia 35	pce
	9703814140	Key for drive dia 45	pce
11	940240	Chain wheel dia 35	pce
	940267	Chain wheel dia 45	pce
12	940213	Shaft 6" dia 35	pce
	940214	Shaft 9" dia 35	pce
	940215	Shaft 12" dia 35	pce
	940216	Shaft 18" dia 35	pce
	940217	Shaft 24" dia 35	pce
	940218	Shaft 30" dia 35	pce
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14	9002501	Clamping screw	pce
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16	9002506	Tightening holder	pce
17	-	Nut	pce
18	9002500	End protection	pce
19	9002502	Motor attachment dia 35 mm	pce
	9002505	Motor attachment dia 45 mm	pce
20	9002800	Scraper 6"	pce
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27	940258	Chain link, inner	pce
	940208	Chain link, outer	pce
28	970320108	Nut	pce
29	-	Screw	pce
30	-	Screw	pce
31	980240	Cover	pce
32	-	Packing	pce
33	940240	Chain wheel	pce
34	970155	Spherical bearing	pce
35	940293	Shaft internal tail section 6"	pce
	940294	Shaft internal tail section 9"	pce
	940290	Shaft internal tail section 12"	pce
	940295	Shaft internal tail section 18"	pce
	940296	Shaft internal tail section 24"	pce
	940297	Shaft internal tail section 30"	pce
	940298	Shaft internal tail section 36"	pce
	940299	Shaft internal tail section 42"	pce
	940210	Shaft internal tail section 60"	pce
	940248	Shaft external tail section 6"	pce
	940241	Shaft external tail section 9"	pce
	940242	Shaft external tail section 12"	pce
	940243	Shaft external tail section 18"	pce
	940244	Shaft external tail section 24"	pce

<b>Pos.nr</b>	<b>Article No.</b>	<b>Designation</b>	<b>Unit</b>
	940245	Shaft external tail section 30"	pce
	940246	Shaft external tail section 36"	pce
	940247	Shaft external tail section 42"	pce
	940249	Shaft external tail section 60"	pce
36	97031001225	Screw	pce
37	970103	Flanged bearing	pce
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39	TRS2 200	Frame 6" incl bottom cover	m
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