ARBOGA - DARENTH

OPERATING INSTRUCTIONS
FOR
HINGED STEEL BELT CONVEYOR
TYPE TL1

Customer: .....

Order No.: .....

Manufacturing No.: .....

Delivery date: .....

ARBOGA-DARENTH AB

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Foreword

The life of the conveyor can be extended greatly by following the instructions and guidelines in this manual. Arboga-Darenth will guarantee the performance of this conveyor only when it is operated and maintained according to these instructions.
For this reason keep this manual on hand for your operator and maintenance department.

- A label on the conveyor lists our address.

First, we would like to thank you for choosing a ARBOGA-DARENTH conveyor. We are sure that our product will meet your expectations.

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.

In this manual we have listed the necessary instructions in order to guarantee an optimal use of your new ARBOGA-DARENTH conveyor.

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. Arboga-Darenth will guarantee the performance of this conveyor only when it is operated and maintained according to these instructions.
For this reason keep this manual on hand for your operator and maintenance department.

This maintenance manual consists of instructions and spare parts list for your new ARBOGA-DARENTH Hinged Steel Belt Conveyor. It also contains greasing instructions, spare parts list 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.

⚠ Nobody should work with this conveyor without careful reading and understanding the instructions in this manual. The operator should also carefully follow the safety precautions.

Please also consider:

- For any question regarding problems please refer to the supplier
- When ordering spare parts please mention the serial number of the machine as well as the date of production. (You can find these behind the cover of this book)

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 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 Hinged Steel Belt Conveyors are designed to handle a variation of material in different shapes and forms. They can convey short, long or curly swarf, dry as well as wet. They can also convey parts. Ask ARBOGA-DARENTH!

The conveyor consists of the following main components:

- Conveyor frame
- Precision hinged steel belt
- Drive system
- Accessories (standard or customized)

The frame is designed to cover the chain wheels and its components for increased reliability. The material is conveyed on the upper side of the belt, with a minimum of power, to your scrap bin. To get a clean area around the conveyor it is equipped with a top plate. Optional the frame can be welded waterproof.

Flights or cleats can be welded at regular intervals onto the belt in order to increase the capacity of the conveyor. The belt is endless driven by a gear motor placed directly onto the shaft.

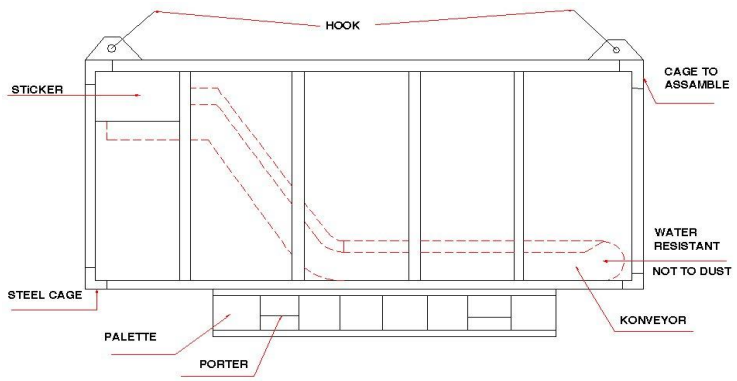
Examples of installations where the ARBOGA hinged belt conveyors are in successful use:

- Incorporated into machine tools to convey swarf from the machine into a scrap bin (as well as for conveying parts).
- In channels below floor level connecting several or a line of machines for automatic swarf removal.
- In press lines to remove press scrap from the machine area.
- I swarf handling systems

Packaging

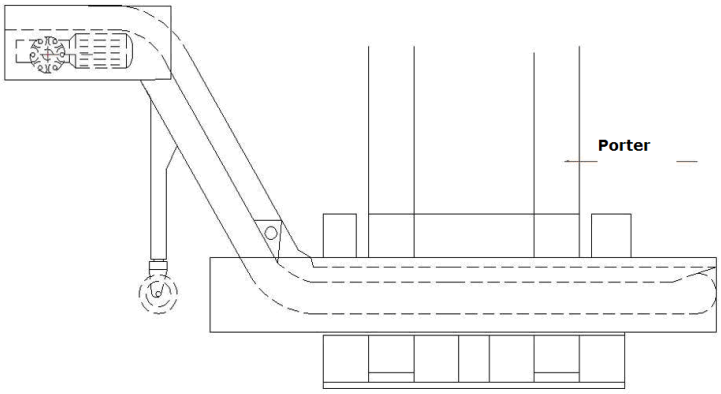
Our products will leave the factory wrapped in nylon coverage in order to protect them from dust and water. Put on palettes and in metal cages, lifting and transportation can be done with the 4 attached lifting rings. (figure 1-a and 1-b). When loading and unloading our products please make use of the point of balance as determined in figure 2.

In case the product will be delivered with damages please report it immediately to the carrier and to our company. Pictures taken from the incident will always be helpful.



(Figure 1-a: Conveyor Packaging)

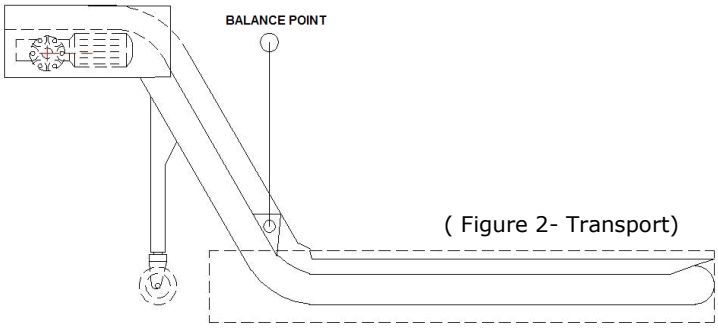
You can carry the conveyor with the palette located under the package or with the hooks.



(Figure 1-b: Conveyor Package)

Transport

You can lift the conveyor with the hooks on it. (Balance Point)



For loading / unloading with a forklift u should be careful and lift it from the balance points (Figure 2)

⚠ During transport, apply safety procedures.

Installation

TL1 conveyors will be delivered completely assembled, ready to install and to use

The conveyor or the conveying pieces can be handled by a crane.

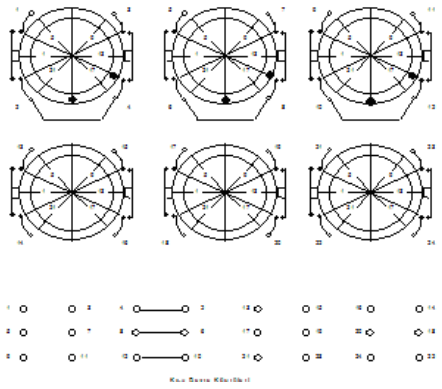
When frame junctions are used assure that the wheel path (the frame) is in level on both sides.

The belt side wings must overlap so that the rear part of the front side wing is conducted inside the front part of the rear side wing.

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

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

The two carrying wheels you will receive with the conveyor should be mounted. So, you can move the machine easily. The conveyor should be placed in the proper place under the machine bed. The conveyor under the machine should be leveled. The conveyor should be fixed with the fixing screw after mounting.



(Figure 3 – Electrical connection)

Before the conveyor is used, parts not having contact with cutting fluid should be greased.
Please wait for 5 minutes after the greasing before using the conveyor.

The conveyor must be electrically grounded, for grounding please use yellow – green cables only.
Don’t forget that mistakes with electrical connection cause accidents and damages.

When machine is stopped, the conveyor should also be stopped. This step can be made from the circuit breaker on the conveyor or from the loom automatically.

Also to be considered:

Before the initial start of the conveyor please do consider:

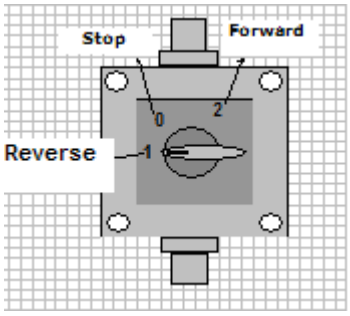
1. Carefully level the conveyor
2. The parts which are not in contact with cooling water should be greased.
3. Check the electrical connections and correct them if necessary.
4. Check the directions of the conveyor chain.

Safety systems

1. Electrical system: Circuit breaker box meets the IP 54 regulations. Power cables are carefully covered with plastic and covered steel spirals in order to prevent them from damage.
2. Engine: The complete drive system is covered.
3. Warning labels: Please observe the security sheets and labels which are attached to the machine.

Please observe general command switch: (optional, see figure 4)

Position 1: Chain moves in working direction
Position 2: Chain works in opposite direction and should not be loaded.



(Figure 4 –Command Switch)

⚠ While the conveyor belt is moving please stay away from the moving parts of the conveyor!

Optional safety remarks:

Motor parts are shielded with a cover. Do not remove this cover while in operation. Please also observe the warning signs which have been put on the conveyor!

CAUTION! ALWAYS DISCONNECT POWER BEFORE

PERFORMING ANY MAINTENANCE

Maintenance instruction

During the process the cutting fluid should be checked regularly on its cooling and oiling conditions. Once the cooling fluid looses its characteristics it may cause oxidation of the conveyor belt.

Please observe the proper direction of the belt. In opposite direction the objects on the chain may cause serious blockage and will damage the conveyor.

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

The following items shall be special attended.

1) Belt tension.
2) The chain and its position in the frame.
3) The rollers.

It can be necessary to retighten the belt. 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 belt must be in the middle of the frame to avoid unnecessary wear. When tightening the belt, 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 belt must then be tightened (untightened) with the tightening device, so that the belt 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 belt and the frame.

Cleaning the conveyor

1. Uncouple conveyor from water supply.
2. Clean the frame from chips with a cloth
3. Also clean the floor of the conveyor

1. Weekly Maintenance:

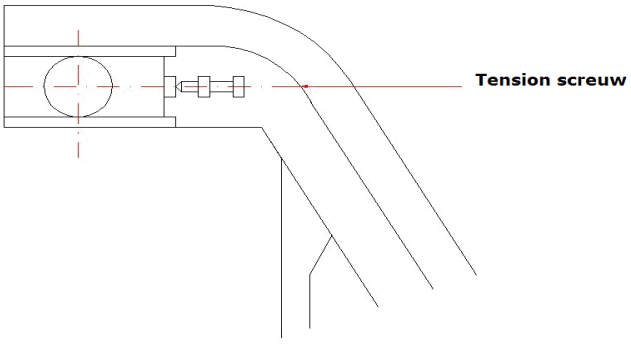
- Swarf, chips and other harmful materials need to be removed
- Check cutting fluid levels. Refill if necessary
- Check the electrical connections as well as motor mounting screws
- Control and correct the tension on the chain. (figure 6)

2. Monthly Maintenance:

- Remove the conveyor from the machine and remove the cutting fluid
- The cover need to be opened and cleaned.
- Control the chain tension. (figure 6)
- When reinstalling the conveyor carefully control that it is level.
- After refill of the cutting fluid the conveyor is ready to operate again.

Maintenance of chain:

If material blocks the chain it needs to be removed before continuing operation.
Do not remove material from the chain before the conveyor comes to a complete standstill and before disconnecting power supply. A complete removal of the belt from the conveyor can be necessary to remove the blocking material.

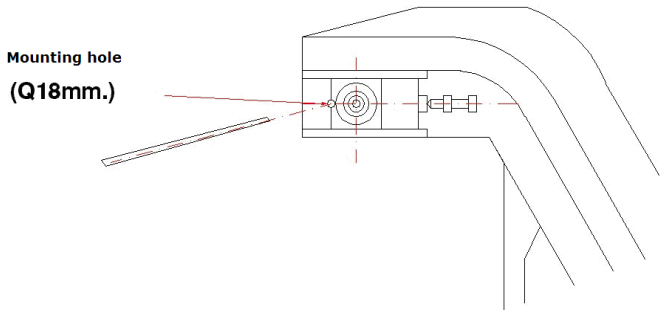


(Figure 6-)

In those conditions the belt should be pulled up and the material can be taken and cleaning of the machine should be done.

To pull up the conveyor belt part, first determine the place of palette chain. The pull up holes on the FK 205 beds should be placed on the belt body joint. The tensioning screws should be stretched. (Figure-6)

The pin on the lock should be taken out, from the mounting hole. (Figure-7). Palette is taken out from the upper part.



(Figure 7- Mounting Hole)

WRONG USAGE

Please make sure that the electrical connections are correct according to factory instructions.
When the conveyor is used for metal chips, brass, and copper or otherwise make sure that, in order to avoid chain lock, you check the chain every hour.
The conveyor should run in the forward direction. The opposite direction is only used for cleaning purposes.
When the motor protector has cut off power, do not re-start before the cause of the damage has been detected and is removed. See also the warning labels. (Figure 8)
Do not remove the labels from the machine and do not work without consulting them.
If labels are removed for any reason please use the labels in your manual or ask for additional ones from the manufacturer.

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

Belt disassembly

Disassembly of the hinged belt can be done for two reasons:

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

Hinged belt

The belt is to be disassembled in the following order:

1. Loosen the screws (16) on the bearing plate (8) and the motor plate (5).
2. Untighten the belt by loosening the tightening screws (17). The screws to be totally un-tightened.
3. Remove the motor (4 screws).

4. Remove the bearing plate and the motor plate.
5. Locate the drive shaft (10) so that the belt shaft (34) will be positioned in the middle of the slot in the frame.
6. Remove the screw (35) from the belt shaft.
7. Pull out the belt shaft through the slot in the frame.
8. Unlink the chain links (33) and the side wings (30, 31), separate the belt and pull it out of the frame. NB! We recommend that you secure the belt so that it is not rolling back into the frame.
9. If you wish to exchange one belt plate, just exchange the damaged one.
10. Assembly takes place in the reverse order.

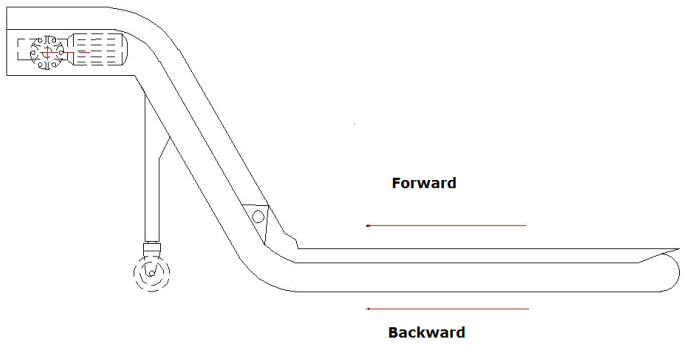
When you change the complete belt, please note that the side wings on the plate come in the correct position. The wings must overlap in the conveying direction, i.e. to avoid jamming and destruction of the wings. It is recommendable to note the position of the wings on the old belt for correct mounting of the new belt. You can also find the correct position in the drawing in this manual.

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

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

When mounting a new belt, 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.



(Figure 5- Cleaning of the Conveyor)

Lubrication

Gear
The gear on the TL1 should not be greased. In case the gear is damaged call our service.

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.

Use additional grease on the bearings, when the conveyor is placed outdoors. Bearing grease of good quality is to be used.

Labels

On the conveyor, there are warning labels and the information about the firm. They are placed to warn the user during the conveyor working and upkeep from the risks.

(Figure–8).

Don’t take the labels out and do not work without labels.

Trouble-shooting

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

Spare parts list (Figure -9)

1. Body.
2. Top cover plate
3. Outlet Protection plate
4. M6x1,5 screw.
5. Circuit breaker box
6. M6x3,5 screw
7. M6X3,5 screw
8. Slide bar
9. UCT 205 bed
10. Pin
11. Shaft
12. 31,75mm 8 tooth sprocket
13. 8x7x40 wedge
14. Stretching nut
15. M12x110 screw
16. M12 nut
17. 7x8x70 wedge
18. M8x15 screw
19. Motor shelf
20. M8x2,5 screw
21. M8x2,5 screw
22. 0,37 kW 9 rev./min. 63 body motor
23. M12x70 screw
24. Ø 125 polyester wheel

25. Foot

26. Foot nut

27. Support

28. M10X3,5 screw

29. Ø 5 shaft

30. Side wing

31. 31,75 belt chain

32. Belt plate

33. Bearing support

34. Shaft

35. 3/4'' Washer

36. Bearing

37. M6x1,5 screw

38. Front plate