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AERO CONVEYORS

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AEROBELT CONVEYORS
SOUTH AFRICA

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BELTCON 2

BELT CONVEYORS - DESIGN, OPERATION AND OPTIMIZATION

The Institute of Materials Handling — The Institution of Mechanical Engineers — The Materials Handling Research Group (University of the Witwatersrand)

CONVEYOR BELTS ON AIR BEAT THE IDLER PROBLEM
AEROBELT A LOW FRICTION BULK CONVEYING CONCEPT

L. THAIN AND J. BROUMELS
INSTAMOULD AEROCONVEYORS

INCLUDED IN THIS PAPER IS THE HISTORY OF AIR BELT CONVEYING. THE AEROBELT DESIGN CONCEPT, ITS ADVANTAGES OVER EXISTING DESIGNS. APPRECIATION AND A COMPARISON IN COST TO EXISTING CONVEYOR SYSTEMS.

HISTORY OF THE AEROBELT CONVEYORS.

The concept of Air Belt Conveying is not new, the oldest known patent is that of the U.S.A.'s Frederick G. Corning dated 1892. It describes an ore concentrating apparatus, consisting of a belt on a flat perforated bed through which water or air is pumped.

In 1904 James M. Dodge took out a U.S. patent on what was probably the first air supported belt conveyor, here the bed was perforated with openings that may be inclined, so that blasts of air impinge upon the underside of the belt; these not only lift it but also cause it to move forward. Patents followed from other inventors. None of them came on the market, probably because they did not work well in practice. A study of the numerous patents makes it clear that the inventors neither realised the possibilities nor the restrictions of air as a means of diminishing friction.

Renewed interest in this concept was shown by a Dutch Company together with a professor in material handling and together they ironed out all the flaws that were encountered in the past. Extensive development work was carried out perfecting this system, and in this paper we hope to bring across to you advantages that the Aerobelt System can provide.

1. Summary:-

Belt conveyors are nowadays widely used as one of the most economical methods of continuous conveying of bulk materials over medium and long distances. By virtue of their versatility, reliability and low energy requirements, and a high efficiency has been obtained, particularly when fitted with anti-friction bearings,but the large number of bearings - a 100 metre long conveyor can have up to 1000 is still a source of failures.

Problems arise on idler conveyors in the form of maintenance. To run a conveyor successfully it has to be maintained regularly. This costs time, money and labour. A few stuck idlers or belt misalignment will cause the belt to wander and be seriously damaged - a blunder to expensive to contemplate when some belts can cost up to 70% of the total installation. Belt drag over stuck idlers can also cause excessive temperature and amperage rise in the drive.

The optimum solution would be to elliminate troughing idlers and replace them with something more efficient, yet cheaper.

The use of air as a lubricant between a solid trough and belt has proven, through extensive study and development to be the most effective and economical way of transporting bulk materials.

2. DESIGN CRITERIA:-

Introduction to the Aerobelt Conveying System:-

2.1. The Aerobelt has solid mild steel or stainless steel rolled trough section. The radii of the trough is dependant upon the width of the conveyor belt to be used. The trough is supported along its length by a box section situated underneath the trough, which is a completely sealed unit. The return idlers can be hung from brackets along the conveyors length, or if the customer requires, can also be enclosed in a box section under the conveyor. When the conveyor belt lays in the trough it automatically takes on the shape of the trough. See figure 1.

Air is supplied to the sealed box section under the trough by means of a centrifugal fan or blower. Holes are drilled in the centre of the trough along its length to allow the air pumped in by the fan to circulate underneath the conveyor belt.

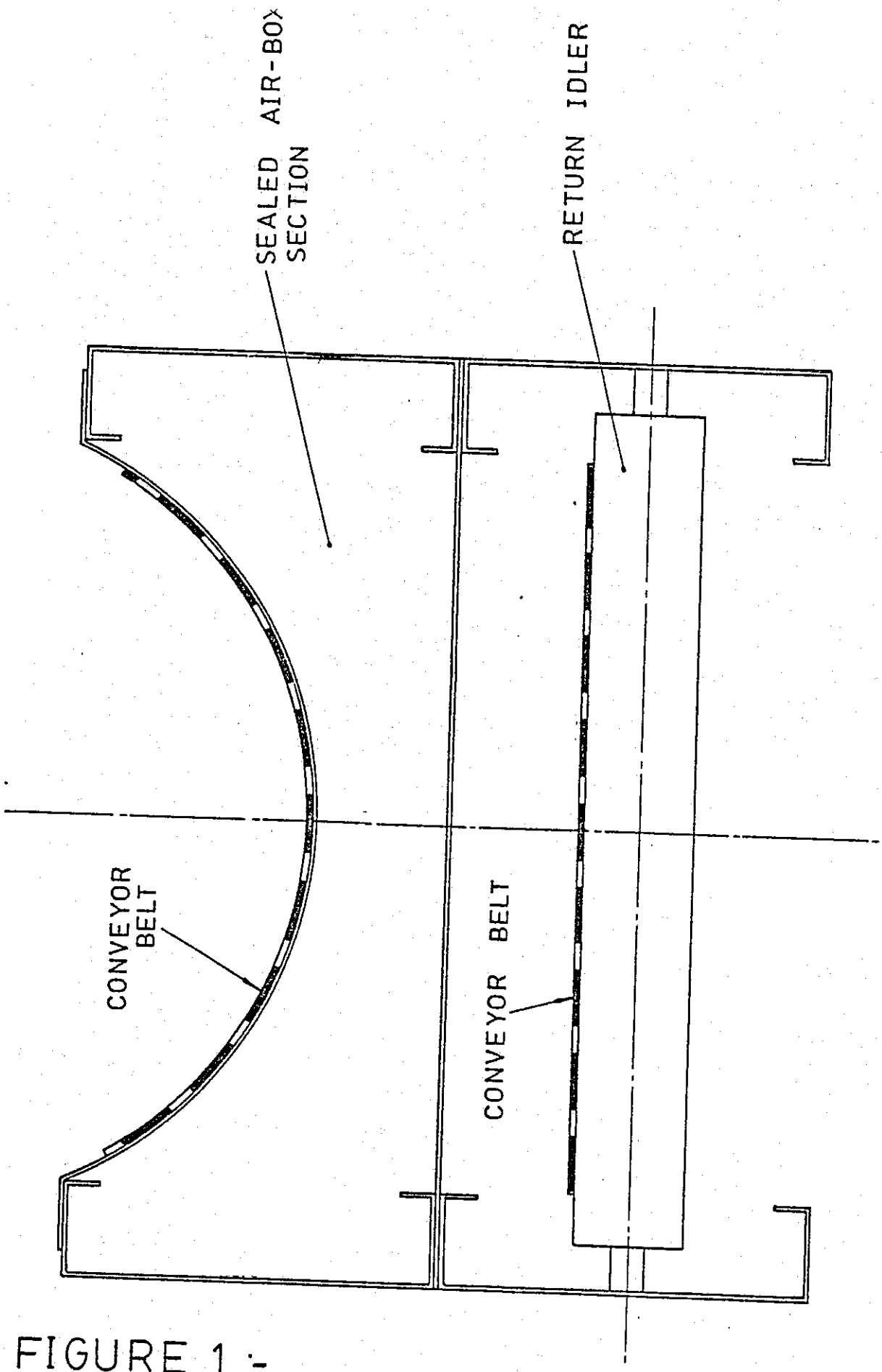


FIGURE 1 :-

SECTION THRU' AN AEROBELT CONVEYOR SHOWING THE CONVEYOR BELT IN THE TROUGH AND ON RETURN IDLER.

A pressure switch is situated outside the sealed box section and is electrically interlocked with the motor. The motor only operates when there is enough air in the box under the belt to create the air film between belt and trough. Thus elliminating unnecessary friction. The size of the holes drilled in the trough and also their distance apart is one of the most important factors taken into consideration when the design of an Aerobelt Conveyor is undertaken. Unlike a conventional idler conveyor that only supports the belt along the troughs length. Return idlers are used only to guide the belt on its return. See figure 2.

No compressor or high pressure fan is required to lift the belt off the trough as it is the volume of air supplied by the fan that acts as the lubricant between belt and trough.

The air film between belt and trough will not be penetrated so long as the material being conveyed comprises of 75% fine material (4" material and under) and 25% solids (4" material and over).

Uneven and intermittent loading of material has no effect on the operation of the Aerobelt Conveying System.

3. Appreciation of the Aerobelt System.

Due to the high competitivness between conveyor manufacturers on the local market, the local franchise holders Instamould Aero Conveyors are in the process of erecting an Aerobelt Conveyor at their premises in Boksburg for the undertaking of tests on the Aerobelt Conveyor with different materials.

In the future, if a prospective requires conveying tests on a specific material this will then be possible.

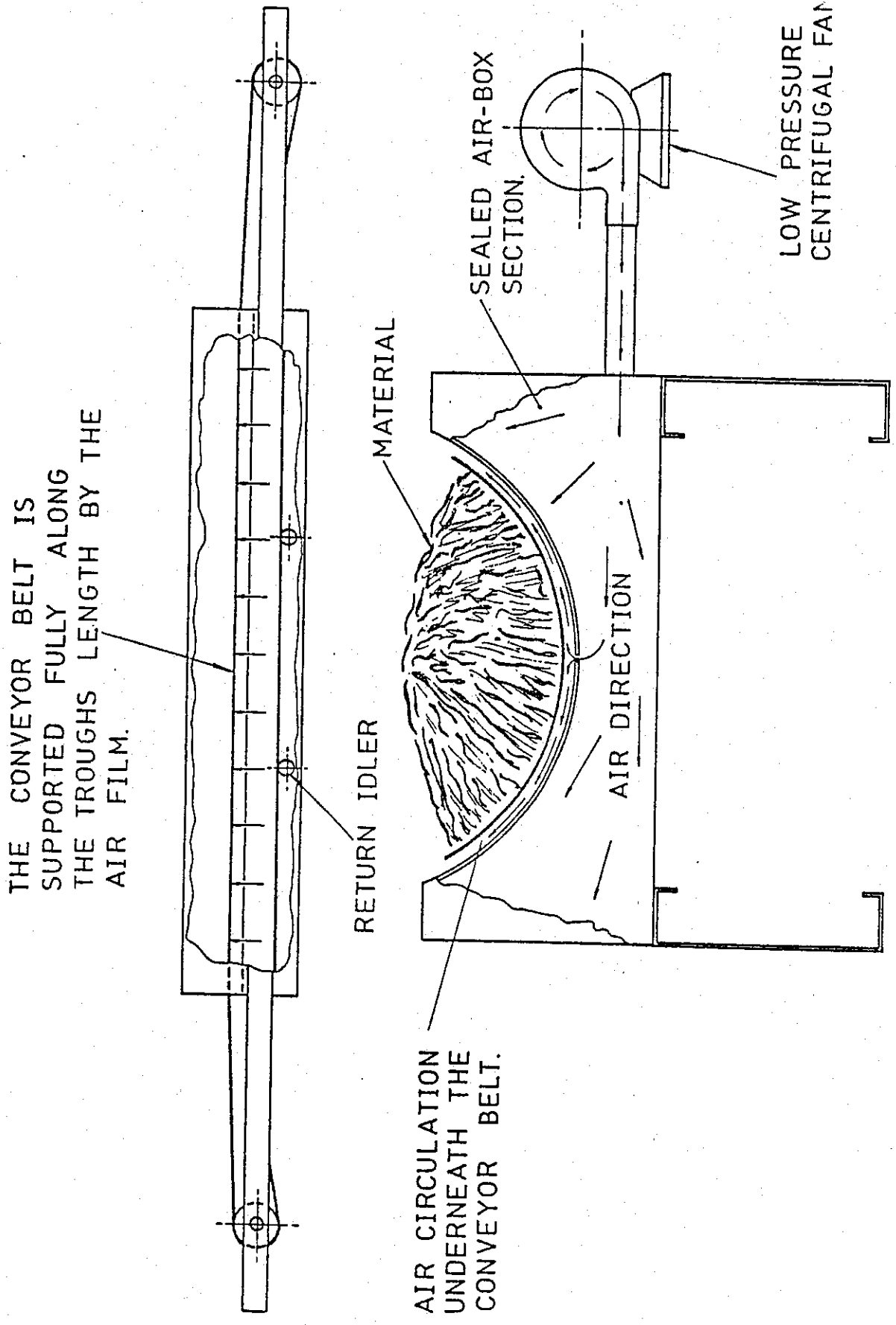


FIGURE 2 :-

SIDE VIEW AND SECTION THRU' AN AEROBELT CONVEYOR SHOWING HOW THE AIR FILM AND AIR CIRCULATION IS PRODUCED.

4. Advantages of the Aerobelt System.

Low mass belt. The air film provides a very low co-efficient of friction between trough and belt, and the carrying capacity extends over the entire belt. There is little tension force in the belt and a narrow belt is adequate. In addition, a lower - and cheaper specification belt can be used and yet still obtain a longer belt life.
Greater reliability as there are few moving parts.

Large capacity. The self troughing belt design running in the steel trough provides a deep section able to accomodate unusually large amounts of material for the belt width. Additionally, this type of belt is ideal for high speeds (over 5m/sec). So a high throughput can be achieved with a comparatively narrow belt.

Low power demand. Beyond a length of 20 metres fixed friction factors have a little effect so allowing a substantial power saving.

Conveyed material is undisturbed. Unlike conventional idler conveyors, the Aerobelt, having no idlers, permits material to remain motionless relative to the belt - an important factor when conveying powdery or easily degraded materials.

Also due to the smooth running of the Aerobelt, a large conveyor inclination is possible.

Self supporting construction saves money in supporting structures. The trough and integral air chamber form a box-type structure of great strength and spans of 20 metres are normal.

True running. The trough design employed, combined with the use of a flexible belt and the air cushion system ensures the material seeks the lowest point and that the belt always runs without the need for mechanical belt positioning devices.

The Aerobelt Conveyor has exceptionally low belt-related maintenance costs as the belt cannot sag, runs almost entirely on air and has to cope with far less tensional force than conventional conveyors.

Today the focus in engineering is on cleanliness and safety. For a minimum of extra cost the Aerobelt Conveyor can be totally enclosed. Very dusty materials, and also materials dangerous to health can be conveyed.

5. Cost Structure.

The overall initial costs per metre compare very favourably with a conventional idler conveyor. But maintainance costs can be cut by ± 75 % by using the Aerobelt Conveyor System. The savings in drive power are also considerable.

Installations.

The tables on the following pages show a selection of the applications so far for Aerobelt Conveyors. Both in Europe and South Africa. Excluded are applications of the Aerobelt System in the U.S.A. and the Far East.

The Aerobelt Conveying System can convey any material, from flyash through to coal, ore, rock., etc.

The conveyors so far installed here in South Africa have been in work for more than a year but the operators are already convinced of the truth of the claims made for this new type of conveyor.

We thank you for your interest and time spent in reading this paper and any further information you require regarding the Aerobelt Conveying System can be obtained from:-

INSTAMOULD AERO CONVEYORS (Pty) Ltd
P.O. Box 5300, BOKSBURG NORTH 1461

TEL: 894-6794/5/6. TELEX: 8-4632 SA

AEROBELT CONVEYORS REFERENCE LISTS - SOUTH AFRICA

ITEM	DATE	CUSTOMER	CAP. t/h	LENGTH M	WIDTH mm	S.G. kg/m³	PRODUCT	BELT TYPE	BELT MANUF.	DRIVE kW	FAN DRIVE m³/min	mm.wg.	kW	INCLINE
1	5-82	BISONBORD BOKS	60	47,8	900	225	WOODCHIPS	CLASS 200 2	DUNLOP	7,5	10	300	1,5	25°
2	5-82	BISONBORD BOKS	60	22,9	900	225	WOODCHIPS	CLASS 200 2	DUNLOP	3	10	300	1,5	22°
3	5-82	BISONBORD BOKS	30	35	600	225	WOODCHIPS	CLASS 200 2	DUNLOP	3	10	300	1,5	6°
4	5-82	BISONBORD BOKS	30	15,8	600	225	WOODCHIPS	CLASS 200 2	DUNLOP	3	10	300	1,5	24°
5	5-82	BISONBORD BOKS	30	59,2	600	225	WOODCHIPS	CLASS 200 2	DUNLOP	5,5	10	300	1,5	15°
6	5-82	BISONBORD BOKS	60	19	900	225	WOODCHIPS	CLASS 200 2	DUNLOP	3	10	300	1,5	25°
7	5-82	GRAINEC JHB	150	17,5	900	600	ANIMAL FEED	E6 U10 V10	SIEGLING	7,5	10	300	1,5	27°
8	5-82	LEVER BROS BOKS	40	6,6	300	1,36	SODA	E6 U10 V10	SIEGLING	0,37	3	333	7,5	HORIZONTA
9	5-82	LEVER BROS BOKS	40	6,6	300	1,36	SODA	E6 U10 V10	SIEGLING	0,37	3	333	7,5	HORIZONTA
0	5-82	LEVER BROS BOKS	40	8,7	300	1,36	SODA	E6 U10 V10	SIEGLING	0,37	3	333		
1	5-82	LEVER BROS BOKS	3	12,85	300	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,37	2,1	285	3,7	HORIZONTA
2	5-82	LEVER BROS BOKS	3	7,26	300	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,37	2,1	285	3,7	HORIZONTA
3	5-82	LEVER BROS BOKS	12	2,43	300	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,37	2,1	285	3,7	HORIZONTAL
4	5-82	LEVER BROS BOKS	15	7,54	400	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	2,1	285	3,7	HORIZONTAL
5	5-82	LEVER BROS BOKS	9	13,8	300	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	2,1	285	3,7	HORIZONTAL
6	5-82	LEVER BROS BOKS	12	8,25	300	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	2,1	285	3,7	HORIZONTAL
7	5-82	LEVER BROS BOKS	25	17,1	400	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,37	2,1	285	3,7	HORIZONTAL
8	10	LEVER BROS BOKS	30	12	900	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	2,1	285	3,7	HORIZONTAL
9	10	LEVER BROS BOKS	30	12	900	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	1,5	2,1	285	3,7	HORIZONTAL
0	10	LEVER BROS BOKS	30	11,3	900	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	2,1	285	3,7	HORIZONTAL
1	10	LEVER BROS BOKS	30	11,3	900	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	2,1	285	3,7	HORIZONTAL
2	10	LEVER BROS BOKS	30	12,8	650	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	2,1	285	3,7	HORIZONTAL
3	10	LEVER BROS BOKS	30	12,8	650	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	2,1	285	3,7	HORIZONTAL
4	10	LEVER BROS BOKS	30	6,85	650	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	2,1	285	3,7	HORIZONTAL
5	10	LEVER BROS BOKS	30	6,85	650	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	2,1	285	3,7	HORIZONTAL
6	10	LEVER BROS BOKS	25	7	1200	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	3	333	7,5	20°
7	10	LEVER BROS BOKS	25	7,9	650	0,35	SOAP POWDER	E6 U10 V10	SIEGLING	0,74	3	333	7,5	20°

AEROBELT CONVEYORS REFERENCE LIST - EUROPE

ITEM	CUSTOMER	CAP t/h	LENGTH M	WIDTH mm	SG kg/m³	PRODUCT	BELT TYPE	BELT MANUF.	DRIVE kW	FAN m³/min	FAN mm.wg	FAN DRIVE kW
1	Wegenbouw Ooms	200	31	650	14	Sand & Stone	2TNX63 2+1	Dunlop	3	5	200	0,5
2	Scholten- Foxhol	30	21	400		Powder			1,1	3	88	,13
3	AKZO Hengelo	60	93	400	1,1	Salt	160/3TNX 50r.t.2+1	Dunlop	4	10,8	187	7,5
4	AKZO Hengelo	20	14	400	1,1	Salt	160/3TNX 50r.t.2+1	Dunlop				
5	Pleisner Herzberg	30	23	400	1,4	Hot Sand			1,1	3	88	1,3
6	Maltings Ruizbroek	60	65	400	0,5	Wheat	2T 046	Ammeraal	4	7,3	150	2,5
7	British Salt	100	16	500	1,2	Salt	2TNX63TN125 1,5+0	Dunlop	4	3	333	7,5
8	Hesteren & Jansen	60	58	400	1,6	Sand	2TNX63TN125 1,5+0	Dunlop	1,1	5	200	3,7
9	AKZO Hengelo	36	9	300	1,1	Salt	2TNX63TN125 1,5+0	Dunlop	1,5	5,5	200	7,5
10	AKZO Hengelo	36	9	300	1,1	Salt	2TNX63TN125 1,5+0	Dunlop	1,5			
11	AKZO Hengelo	36	10	300	1,1	Salt	2TNX63TN125 1,5+0	Dunlop	2,2			
12	AKZO Hengelo	36	11	300	1,1	Salt	2TNX63TN125 1,5+0	Dunlop	2,2			
13	AKZO Hengelo	100	33	400	1,1	Salt	2TNX63TN125 1,5+0	Dunlop		10,8	187	7,5
14	AKZO Hengelo	100	33	400	1,1	Salt	2TNX63TN125 1,5+0	Dunlop				
15	Hesteren & Jansen	2	10	400	2	Sand	2TNX63TN125 1,5+0	Dunlop	3			
16	Hesteren & Jansen	0,8	12	400	2	Sand	2TNX63TN125 1,5+0	Dunlop	1,1	57	370	2,2
17	Hesteren & Jansen	0,9	16	650	2	Sand	3TNX63 3+1	Dunlop	3			
18	Kemach Lemmer	5	5	400	0,55	Fish	2MO46+A13	Ammeraal	0,37	0,1	100	3,7
19	Wessanen Meppel	120	9	650	0,6	Animal Feed	2T4612	Ammeraal	2,2			
20	Wessanen Meppel	120	9	650	0,6	Animal Feed	2T4612	Ammeraal	2,2			
21	Grasdroogerij	20	15	400		Pellets	2TNX63TN125 1,5+0	Dunlop	0,75	5,4	135	2,5
22	Hesteren & Jansen	48	27	400	1,7	Clay	Conv1300/3EP1001+0	Ammeraal	5,5			
23	AKZO Hengelo	60	29	400	1,2	Salt	2TNX63Tn125 1,5+0	Dunlop	2,2			
24	AKZO Hengelo	60	25	400	1,2	Salt	2TNX63TN125 1,5+0	Dunlop	2,2	16,8	394	2,2
25	AKZO Hengelo	60	15	400	1,2	Salt	2TNX63TN125 1,5+0	Dunlop	2,2			
26	AKZO Hengelo	60	32	400	1,2	Salt	2TNX63TN125 1,5+0	Dunlop	2,2	16,8	394	2,2
27	Eternit Goor	5	18,5	400		Asbestos	2MO29	Ammeraal	0,37	4	250	3,7
28	Eternit Goor	5	14	400		Asbestos	2MO29	Ammeraal	0,37	4	250	3,7
29	Eternit Goor	5	7,2	400		Asbestos	2MO29	Ammeraal	0,37	4	250	3,7
30	Eternit Goor	5	5,8	400		Asbestos	2MO29	Ammeraal	0,37	4	250	3,7
31	Kellogg Bremen	6,4	26	500		Cornflakes	E2/1 UO/U2 wit	Siegling	2,2	3	88	1,3
32	Kellogg Bremen	6,4	12	1200		Cornflakes	E8/2 UO/U2 wit	Siegling	2,2	3	88	1,3

AEROBELT CONVEYORS REFERENCE LIST - EUROPE

ITEM	CUSTOMER	CAP t/h	LENGTH M	WIDTH mm	SG kg/m	PRODUCT	BELT TYPE	BELT MANUF.	kW	FAN m³/min	DRIVE mm.wg.	kW
33	Kellogg Bremen	1,7	14	650		Rice Crispis	E8/2 UO/U2 wit	Siegling	1,5	3	88	1,
34	Kellogg Bremen	1,7	5	500		Rice Crispis	E2/1 UO/U2 wit	Siegling	2,2	3	88	1,
35	Kellogg Bremen	3,3	13	1000		Popcorn	E8/2 UO/U2 wit	Siegling	2,2	3	88	1,
36	Kellogg Bremen	3,3	13	500		Popcorn	E2/1 UO/U2 wit	Siegling	2,2	3	88	1,
37	Cebeco Rotterdam	150	35,5	650	0,7	Grain	3TN63 mors 2+1	Dunlop	2,2	3	265	3,
38	AKZO Delfzijl	80	30	650	0,6	Soda	3TN125starhete4+2	Dunlop	4	2,1	250	3,
39	D.E. Utrecht	24	25,8	400	0,65	Coffee	E5/2 O/V5	Siegling	1,1	2,2	180	3,
10	D.E. Utrecht	35	31,5	400	0,65	Coffee	E5/2 O/V5	Siegling	1,1	2,2	180	3,
11	D.E. Utrecht	35	9,8	400	0,65	Coffee	E5/2 O/V5	Siegling	0,75	0,7	180	3,
12	D.E. Utrecht	35	9,5	400	0,65	Coffee	E5/2 O/V5	Siegling	0,75	0,7	180	3,
13	D.E. Utrecht	35	7,5	400	0,65	Coffee	E5/2 0V5	Siegling	0,75	0,7	180	3,
14	D.E. Utrecht	35	7,5	400	0,65	Coffee	E5/2 0V5	Siegling	0,75	0,7	180	3,
15	D.E. Joure	10	3,7	400	0,65	Coffee	E5/2 0V5	Siegling	0,75			
16	D.E. Joure	10	3,7	400	0,65	Coffee	E5/2 0V5	Siegling	0,75			
17	D.E. Joure	15	5,7	400	0,65	Coffee	E5/2 0V5	Siegling	0,75	0,7	180	3,
18	D.E. Joure	15	3,7	400	0,65	Coffee	E5/2 0V5	Siegling	0,75	0,7	180	3,
19	D.E. Joure	24	9,2	400	0,65	Coffee	E5/2 0V5	Siegling	0,75	0,7	180	3,
50	D.E. Joure	10	9,8	400	0,65	Coffee	E5/2 0V5	Siegling	0,75	0,7	180	3,
51	D.E. Joure	10	9.8	400	0,65	Coffee	E5/2 0V5	Siegling	0,75	0,7	180	3,
52	AKZO Delfzijl	250	25,2	650	1,2	Salt	2TN63TN125 1,5+0	Dunlop	7,5			1,
53	AKZO Delfzijl	250	5,5	650	1,2	Salt	2TN63TN125 1,5+0	Dunlop	15			2,
54	AKZO Delfzijl	250	30,2	650	1,2	Salt	2TN63TN125 1,5+0	Dunlop	11			1,
55	AKZO Delfzijl	20	20,7	300	1,1	Salt	2TN63TN125 1,5+0	Dunlop		2,7	200	3,
56	Turmac Zevenaar	5	55	500		Tobacco	E12/2 UO/U2 G	Siegling	2,2	1	100	3,
57	Turmac Zevenaar	5	10,5	500		Tobacco	E12/2 UO/U2 G	Siegling	0,75	1	100	3,
58	Turmac Zevenaar	5	12,5	500		Tobacco	E12/2 UO/UH FDA	Siegling	1,1	1	100	3,
59	A.v.d. Valk	250	42,5	500	0,8	Animal Feed	2TN63TN125 1,5+0	Dunlop	3	3,5	283	3,
60	C.A.F. Drachten	100	24	500	0,8	Animal Feed	GB 250/3 1,5+0	Dunlop	1,5	2,1	282	3,
61	C.A.F. Drachten	100	24	500	0,8	Animal Feed	GB 250/3 1,5+0	Dunlop	1,5	2,1	282	3,
62	C.H.V. Veghel	60	27	400	0,65	Peas	E5/2 O/V5	Siegling	1,5	6,7	167	3,
63	C.H.V. Veghel	60	19	400	0,65	Peas	E5/2 O/V5	Siegling	1,5	6,7	167	3,7
64	C.H.V Veghel	60	15	400	0,65	Peas	E5/2 O/V5	Siegling	1,1	6,7	167	3,7

AEROBELT CONVEYORS REFERENCE LIST - EUROPE

ITEM	CUSTOMER	CAP t/h	LENGTH M	WIDTH mm	SG , kg/m	PRODUCT	BELT TYPE	BELT MANUF.	kW	FAN m/min	DRIVE mm.wg.	kW
06	Dorr Olivier	50	5,6	400	0,75	MAIZE	2AM093 FDA	Ammeraal	0,75	0,5	600	1,5
07	Dorr Olivier	50	28,8	400	0,75	MAIZE	2AM093 FDA	Ammeraal	1,5	3	600	2,2
08	Dorr Oliveir	50	28,8	400	0,75	MAIZE	2AM093 FDA	Ammeraal	1,5	3	600	2,2
09	AKZO Hengelo	50	31,5	300	1,2	SALT	2TN63TN125 1,5+0	Dunlop	1,5			1,1
70	AKZO Hengelo	50	19,5	300	1,2	SALT	2TN63TN125 1,5+0	Dunlop	3			1,1
71	C.H.V. Veghel	60	7	500	12,5	FERTILIZER	GBextra250/3 1,5+0	Dunlop	1,5	1	400	7,5
72	C.H.V. Veghel	60	7	500	12,5	FERTILIZER	GBextra250/3 1,5+0	Dunlop	1,5	1	400	7,5
73	A.v.d. Valk	60	16	400	0,75	GRAIN	2TN63TN125 1,5+0	Dunlop	1,1	2,1	283	3,7
74	A.v.d. Valk	60	4,5	400	0,75	GRAIN	2TN63TN125 1,5+0	Dunlop	1,1	2,1	283	3,7
75	A.v.d. Valk	60	21,5	400	0,75	GRAIN	2TN63TN125 1,5+0	Dunlop	1,1	2,1	283	3,7
76	A.v.d. Valk	60	21,5	400	0,75	GRAIN	2TN63TN125 1,5+0	Dunlop	1,1	2,1	283	3,7
77	A.v.d. Valk	60	54	400	0,75	GRAIN	2TN63TN125 1,5+0	Dunlop	3	12	212	1,1
78	Cebeco Rotterdam	100	25,5	500	0,6	ANIMAL FEED	E12/2U0/U2	Siegling				
79	Seghers Baasrode	80	20	300	0,8	ANIMAL FEED	E5/2 0/V5	Siegling				
80	C.H.V. Veghel	25	14	300	0,65	PEAS	E5/2 0/V5	Siegling				
81	Grasdrogerij	30	22,5	300	0,6	PELLETS	RTS 200/2 1,5+0	Ammeraal	0,75	6,7	167	3,7
82	Granaria Rotterdam	150	32	500	0,8	MAIZE	2TN63TN125 1,5+0	Dunlop	4	3	333	7,5
83	D.O.K. Deventer	100	40	400	0,75	GRAIN	2TN63TN125 1,5+0	Dunlop	2,2	2,1	283	3,7
84	Lever Sunlight	25	19,7	300	0,4	SOAP POWDER	E4/1/ U0/V2C	Siegling	0,75	1,1	140	3,7
85	D.E Utrecht	30	8	400	0,6	COFFEE	E5/2 0/V5	Siegling	0.75	6,7	167	3,7
86	D.E. Utrecht	30	20	400	0,6	RAW COFFEE	E5/2 0/V5	Siegling	0,75	6,7	167	3,7
87	v. Aarsen Panheel	100	11	400	0,75	CEREALS	RTS 200/2 1,5+0	Ammeraal	2			
88	A.v.d. Valk LB21	320	8,1	650	0,8	GRAIN	ATN 315/3 2+0	Ammeraal	4			7,5
89	A.v.d. Valk LB22	320	33	650	0,8	GRAIN	ATN 315/3 2+0	Ammeraal	5,5			7,5
90	A.v.d. Valk LB 24	300	8	650	0,8	GRAIN	ATN 315/3 2+0	Ammeraal	4			7,5
91	A.v.d. Valk LB 25	300	8	650	0,8	GRAIN	ATN 315/3 2+0	Ammeraal	4			7,5
92	A.v.d. Valk	35	11	300	0,8	GRAIN	ATN 315/3 2+0	Ammeraal	0,75			3,7
93	Kijlstra Beton	205	40	400	1,65	SAND & STONE	GBextra 200/3 1,5+0	Dunlop	15			2,2
94	C.H.V Veghel	210	50	650	0,6	TAPIOCA MEAL	RTS 200/2 1,5+0	Ammeraal				7,5
95	Karlebo Stockholm	40	38	300	1,5	HOT SAND	ATN 315/3 2+0	Ammeraal	1,5			3,7
96	C.L.C. B1 Steenwijk	80	16	300	1,25	FERTILIZER	ATN 315/3 2+0	Ammeraal	1,5			7,5
97	C.L.C. B2 Steenwijk	80	24	300	1,25	FERTILIZER	ATN 315/3 2+0	Ammeraal	0,75			7,5

AEROBELT CONVEYORS REFERENCE LIST- EUROPE

ITEM	CUSTOMER	CAP t/h	LENGTH M	WIDTH mm	SG kg/m³	PRODUCT	BELT TYPE	BELT MANUF.	kW	FAN DRIVE m³/min	mm.wg.	kW
98	C.L.C. B3 Steenwijk	80	12	300	1,25	Fertilizer	ATN 315/3 2+0	Ammeraal	0,75			7,5
99	C.L.C. B4 Steenwijk	80	29	300	1,25	Fertilizer	ATN 315/3 2+0	Ammeraal	0,75			7,5
100	C.L.C. B5 Steenwijk	80	24	300	1,25	Fertilizer	ATN 315/3 2+0	Ammeraal	0,75			7,5
101	C.L.C. B6 Steenwijk	80	12	300	1,25	Fertilizer	ATN 315/3 2+0	Ammeraal	0,75			7,5
102	C.L.C. B7 Steenwijk	80	28	500	1,25	Fertilizer	ATN 315/3 2+0	Ammeraal	4			7,5
103	C.L.C. B9 Steenwijk	80	7,5	300	1,25	Fertilizer	ATN 315/3 2+0	Ammeraal	0,75			3,7
104	v.d.BergWaddinxveen	60	31	500	0,75	Grain	ATN 315/3 2+0	Ammeraal	3			7,5
105	Wessanen Wormerveer	150	34	500	0,75	Animal Feed	RTS 200/2 1,5+0	Ammeraal	3			7,5
106	G. Reuter Velbert	20	18	300	1,3		RTS 200/2 1,5+0	Ammeraal	0,75			7,5
107	C.H.V. Veghel	210	10	1200	0,7	Animal Feed	ATN 315/3 2+0	Ammeraal	2,2			1,1
108	C.H.V. Veghel	125	118	500	0,7	Animal Feed	ATN 315/3 2+0	Ammeraal	5,5			2,2
109	Aankoop Centale	190	40	500	,5/,8	Meal & Maize	RTS 200/2 1,5+0	Ammeraal	3			7,5
110	Aankoop Centrale	190	66	500	,5/,8	Meal & Maize	RTS 200/2 1,5+0	Ammeraal	4			7,5
111	Aankoop Centrale	190	61	500	,5/,8	Meal & Maize	RTS 200/2 1,5+0	Ammeraal	4			7,5
112	AKZO Hengelo	10	22	300	1,1	Salt	2TNX63TN125 1,5+0	Dunlop	0,75			3,7
113	AKZO T333AHengelo	110	10	400	1,26	Salt	2TNX63TN125 1,5+0	Dunlop	2,2			2,2
114	AKZO T333B Hengelo	110	9,25	400	1,26	Salt	2TNX63Tn125 1,5+0	Dunlop	2,2			
115	AKZO T333C Hengelo	110	9,25	400	1,26	Salt	2TNX63TN125 1,5+0	Dunlop	2,2			2,2
116	AKZO T333D Hengelo	110	9,25	400	1,26	Salt	2TNX63TN125 1,5+0	Dunlop	2,2			
117	AKZO T319 Hengelo	100	20	400	1,2	Salt	2TNX63TN125 1,5+0	Dunlop	4			2,2
118	Beatrix Eindhoven	60	6	300	1,4	Mortar	ATN 315/3	Ammeraal	1,5			3,7
119	Beatrix Eindhoven	60	4	300	1,4	Mortar	ATN 315/3	Ammeraal	1,1			3,7
120	Mathis Freiburg	135	31	650	1	Mortar	ATN 315/3 2+0	Ammeraal	4			2,2
121	Aluminium Delfzijl	10	17,5	650	1,1	Kryoliet	ATN 315/3 2+0	Ammeraal	2,2			7,5
122	Baas Ouderkerk	60	20	400	0,75	Animal Feed			2,2			3,7
123	Wijnveen Ede	135	38	500	0,8	Animal Feed	ATN 315/3 2+0	Ammeraal	3			3,7
124	Cargill Antwerpen	75	64,5	400	0,75	Soya Beans	E 10M V1/V10Cda wi	Siegling	3			7,5
125	AKZO T4102 Hengelo	20	9	300	1,25	Salt	2TNX63TN125 1,5+0	Dunlop	1,1			3,7
126	U.T. Delfia BA 91	47	39,3	400	0,5	Animal Feed	E5/20V5	Siegling	2,2			3,7
127	U.T. Delfia BA 90	47	10	400	0,5	Animal Feed	E5/20V5	Siegling	1,5			3,7
128	Bloemendal Deventer	70	67	400	0,6	Animal Feed	E5/20V5	Siegling	3			3,7
129	Phenolpers Eibergen	25	27,5	300	1,5	Steel Pellets	ATN 315/3 2+0	Ammeraal	1,5			2,2
130	Phenolpers Eibergen	25	84	300	1,5	Steel Pellets	ATN 315/3 2+0	Ammeraal	1,1			

ITEM	CUSTOMER	CAP t/h	LENGTH M	WIDTH mm	S.G. kg/m³	PRODUCT	BELT TYPE	BELT MANUF	DRIVE kW	FAN m³/min	FAN mm.wg	DRIVE kW
131	Silo Doetinchem	150	285	650	0,6	Animal Feed	E5/2 OV5	Siegling				
132	Silo Doetinchem	150	28,5	650	0,6	Animal Feed	E5/2 OV5	Siegling				
133	Silo Doetinchem	150	31	650	0,6	Animal Feed	E5/2 OV5	Siegling				
134	Silo Doetinchem	150	11,4	650	0,6	Animal Feed	E5/2 OV5	Siegling				
135	Silo Doetinchem	150	12,8	650	0,6	Animal Feed	E5/2 OV5	Siegling				
136	Silo Doetinchem	150	16	650	0,6	Animal Feed	E5/2 OV5	Siegling				
137	AKZO B48 Delfzijl	250	23	650	1,2	Wet Salt	2TNX63TN 125 1,5+0	Dunlop	15			11
138	AKZO B50 Delfzijl	250	39	650	1,2	Wet Salt	2TNX63TN 125 1,5+0	Dunlop	15			11
139	Granico Stein	75	49	400	0,75	Cereals	E5/2 OV5	Siegling	2,2			7,5
140	Mathis Freiburg	135	26,5	650	1,5	Morter	E10M V1/V 10zwart/s	Siegling	4			2,2
141	Wessanen Wormerveer	100	9	500	0,55	Pellets	E5/2 OV5		1,1			
142	Alluminium Delfzijl	10	13	300	1,4	Elektroliet	E5/2 OV5	Siegling	1,5			7,5
143	Alluminium Delfzijl	10	19,6	300	1,4	Elektroliet	E5/2 OV5	Siegling	1,5			7,5
144	Windmill Vlaarding		27,5	500		Chem. Prod.	E5/2 V3/V5	Siegling	1,5			7,5
145	Sallandse Deventer	120	47	400	0,75	Animal Feed	E5/2 OV5	Siegling	2,2			7,5
146	Sallandse Deventer	120	160	400	0,75	Animal Feed	E10M V1/V10	Siegling	4,4			2,2
147	Beauduin Warremme		9,5	300	1,25	Fertilizer	E5/2 OV5	Siegling	0,75			7,5
148	Beauduin Warremme		27,2	300	1,25	Fertilizer	E5/2 OV5	Siegling	0,75			7,5
149	Marknesse Dronten		73	650		Animal Feed	E5/2 OV5	Siegling	2,2			7,5
150	Interagri Seiles	120	64	500	0,6	Animal Feed	E5/2 OV5	Siegling	5,5			7,5
151	U.T.D. Akkrum	200	34,6	500	,5-,8	Animal Feed	E5/2 OV5	Siegling	5,5			2,2
152	U.T.D. Akkrum	200	33	500	,5-,8	Animal Feed	E5/2 OV5	Siegling	3			2,2
153	Turmac B35 Zevenaar	7,7	16,4	500	0,1	Tobacco	E12/2 UO/U2c	Siegling	0,55			5,7
154	Turmac B36 Zevenaar	7,7	61,3	500	0,1	Tobacco	E12/2 UO/U2c	Siegling	3			5,7
155	Turmac B37 Zevenaar	7,7	17,7	500	0,1	Tobacco	E12/2 UO/U2c	Siegling	0,55			5,7
156	Maxit Azendorf	90	15,9	500	1-1,5	Mortar	E10M V1/V10	Siegling	3			11
157	Moralt Bad Tolz	2	32,3	300	0,1	Woodchips	E5/2 OV5	Siegling	0,55			5,7
158	Suiker Unie	30	17	650	1,5	Lime Stone	D250/2 3+1	Dunlop	3			2,2
159	L.Z.G. Oldenburg	150	65,5	500	0,75	Animal Feed	DunloflexROS 250/2	Dunlop	4			2,2
160	L.Z.G. Oldenburg	150	35	500	0,75	Animal Feed	E5/2 OV5	Siegling	2,2			11
161	L.Z.G. Oldenburg	150	108	500	0,75	Animal Feed	E5/2 OV5	Siegling	4			2,2
162	Turmac Zevenaar	7,3	14,35	800	0,195	Tobacco	E12/2 UO/U2c	Siegling	075			5,7
163	Turmac B7 Zevenaar	7,5	17,5	800	0,195	Tobacco	E12/2 UO/U2c	Siegling				

AEROBELT CONVEYORS REFERENCE LISTS - EUROPE

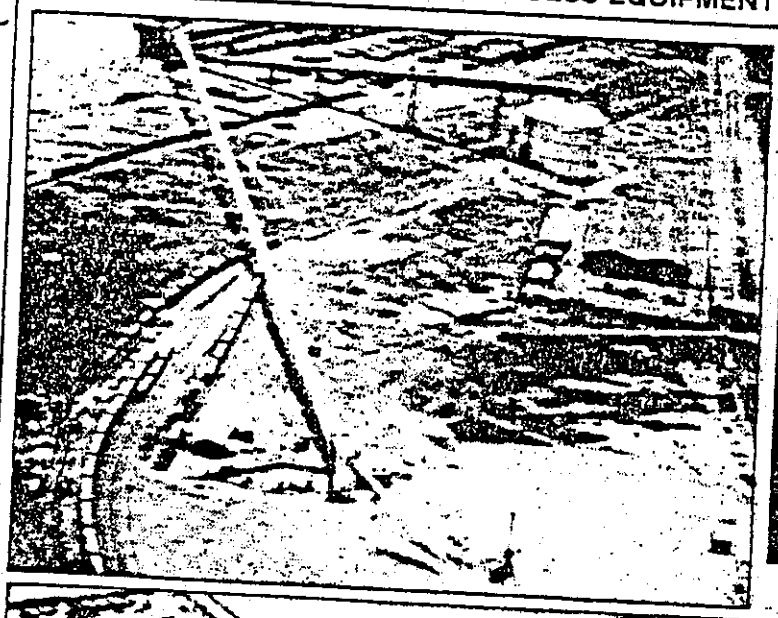
ITEM	CUSTOMER	CAP t/h	LENGTH M	WIDTH mm	S.G. kg/m	PRODUCT	BELT TYPE	BELT MANUF.	DRIVE kW	FAN m/min	DRIVE mm.wg	kW
164	Turmac B8 Zevenaar	7,3	10	800	0,195	TOBACCO	E12/2 UO/U2c	Siegling	0,75			3,7
165	TurmacB14 Zevenaar	1,92	20	300	0,195	Tobacco	E12/2 UO/U2c	Siegling	0,55			3,7
166	TurmacB15 Zevenaar	1,92	12,7	300	0,195	Tobacco	E12/2 UO/U2c	Siegling	0,55			3,7
167	TurmacB17 Zevenaar	2,62	11,9	300	0,203	Tobacco	E12/2 Uo/U2c	Siegling	0,55			3,7
168	TurmacB18 Zevenaar	2,62	20,1	300	0,203	Tobacco	E12/2 UO/U2c	Siegling	0,55			3,7
169	TurmacB41 Zevenaar	1,91	13	800	0,062	Tobacco	E12/2 UO/U2c	Siegling	0,75			3,7
170	TurmacB42 Zevenaar	3	12,5	500	0.195	Tobacco	E12/2 UO/U2c	Siegling	0,75			3,7
171	Windmill	120	19,8	500	1	Fertilizer	E5/2 V3 /V5	Siegling	4,4			7,5
172	Windmill	120	19,8	500	1	Fertilizer	E5/2 V3 /V5	Siegling	4,4			7,5
173	PGEM Nijmegen	300	21	1400	0,5	Fly Ash	D250 5+2 Betahete	Dunlop	3			2,2
174	Laurens1 Den Haag	6	37,75	800	0,05	Tobacco	E12/2 UO/U2c	Siegling	1,5			2,5
175	Laurens2 Den Haag	6	9	800	0,05	Tobacco	E12/2 UO/U2c	Siegling	1,1			2,5
176	Laurens11 Den Haag	6	7,25	800	0,05	Tobacco	E12/2 UO/U2c	Siegling	1,1			2,5
177	Laurens28 Den Haag	2	22,5	500	0,05	Tobacco	E12/2 UO/U2c	Siegling	0,55			2,5
178	Laurens30 Den Haag	8	12	800	0,05	Tobacco	12/2 UO/U2c	Siegling	1,1			2,5
179	Laurens48 Den Haag	2	8,6	500	0,05	Tobacco	E12/2 UO/U2c	Siegling	0,55			2,5
180	Laurens49 Den Haag	2	6,7	500	0,05	Tobacco	E12/2 UO/U2c	Siegling	0,55			2,5
181	Laurens51 Den Haag	2	9,5	500	0,05	Tobacco	E12/2 UO/U2c	Siegling	0,55			2,5
182	Prayon Rupel	150	71,5	650	1	Pyrite	2TNX63TN125 1,5+0	Dunlop	5,5			2,2
183	Prayon Rupel	150	18	650	1	Pyrite	2TNX63TN125 1,5+0	Dunlop	2,2			2,2
184	TurmacB20 Zevenaar	2,62	10,8	300	0,195	Tobacco	E12/2 Uo/U2c	Siegling	0,55			3,7
185	TurmacB 9 Zevenaar	2,26	121	300	0,195	Tobacco	E12/2 UO/U2c	Siegling	0,55			3,7
186	TurmacB21 Zevenaar	2,62	22,4	300	0,195	Tobacco	E12/2 Uo/U2c	Siegling	0,55			3,7
187	de Heus Barneveld	150	27	650	0,5	Animal Feed	E10M V1/V10fda wit	Siegling	5,5			7,5
188	de Heus Barneveld	225	23	800	0,5	Animal Feed	E10M V1/V10fda wit	Siegling	3			7,5
189	O. Behrens	300	19,6	650	0,75	Grain	2TNX63TN125 1,5+0	Dunlop	3,13			7,5
190	O. Behrens	300	25,4	650	0,75	Grain	2TNX63TN125 1,5+0	Dunlop	3,13			7,5
191	O. Behrens	300	15,5	650	0,75	Grain	2TNX63TN125 1,5+0	Dunlop	2,85			7,5
192	AKZO Delfzijl	250	65,6	650	1,05	Salt	2TNX63TN125 1,5+0	Dunlop	7,5			7,5
193	Dinnissen - Sevenum	25	25	300	0,6	Pellets						
194	Turmac B26 Zevenaar	7,726	8	500	0.1	Tobacco	E12/2 UO/U2c	Siegling	0,55			3,7
195	Turmac B27 Zevenaar	7,726	10,8	500	0,1	Tobacco	E12/2 UO/U2c	Siegling	0,55			3,7

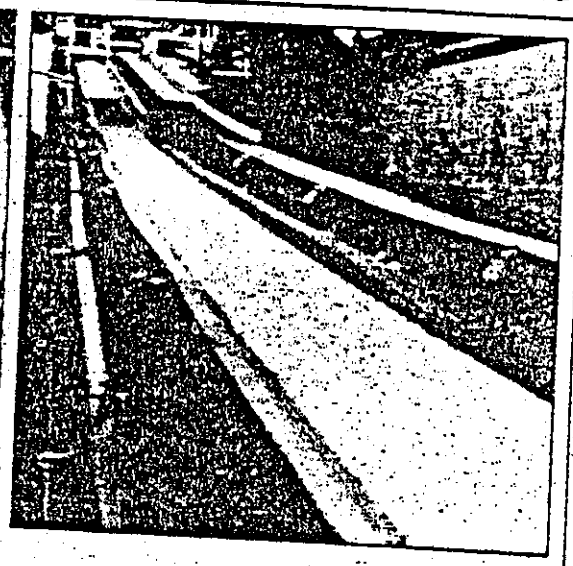
ITEM	CUSTOMER	CAP t/h	LENGTH M	WIDTH mm	S.G. kg/m³	PRODUCT	BELT TYPE	BELT MANUF.	DRIVE kW	FAN m³/min	DRIVE mm.wg.	kW
196	Turmac B28Zevenaar	,726	22,8	500	0,1	Tobacco	E12/2 UO/U2c	Siegling	0,55			3
197	Turmac B32Zevenaar	,726	18,8	500	0,1	Tobacco	E12/2 UO/U2c	Siegling	0,55			3
198	G.E.M. Rotterdam	600	35,5	1000	0,75	Grain	Dunloflex 250/2ROM	Dunlop	15			2
199	G.E.M. Rotterdam	600	38,5	1000	0,75	Grain	Dunloflex 250/2ROM	Dunlop	9,2			2
200	Purit Klazienaveen	123	22,5	800	0,35	Turf	2TNX63TN125 1,5+0	Dunlop	5,5			7
201	Niemeyer Groningen	2,5	4,6	500	0,1	Tobacco	E12/2 UO/U2c	Siegling	0,75			2
203	Mathis Merdingen	90	10,5	650	1,65	Mortar	E10M V1/V10zwart	Siegling	2,2			1
203	Numec G.B.		27	400								
204	COVA Amersfoort	200	13,2	500	0,7	Animal Feed	E5/2 OV5	Siegling	2,2			7
205	Faxe Braueri-Faxe	50	52	400	0,55	Malt	Dunloflex 200/2ROM	Dunlop	2,2			7
206	Bremer RolandMühle	200	84	650	0,75	Grain	Dunloflex 200/2ROM	Dunlop	4,4			
207	J. Schaefer Diez	115	41	400	1,53	Mortar	E10M V1/V10zwart	Siegling	5,5			7
208	Turmac B29 Zevenaar	0,7	12,1	500	0,05	Tobacco	E12/2 UO/U2c	Siegling	5,5			2
209	Suiker Unie	140	23	650	0,5	Pulp	Dunloflex 250/3+1ROS	Dunlop	5,5			2
210	Suiker Unie	140	45,8	650	0,5	Pulp	Dunloflex 250/3+1ROS	Dunlop	5,5			2
211	Turmac B14 Zevenaar	7,3	19,3	800	0,05	Tobacco	E12/2 UO/U2c	Siegling	0,75			3
212	Turmac B15 Zevenaar	7,3	39,7	800	0,05	Tobacco	E12/2 UO/U2c	Siegling	0,75			3
213	De Vrede Zaandam	40	29	400	0,9		Dunloflex 200/3+1RA	Dunlop	1,5			3

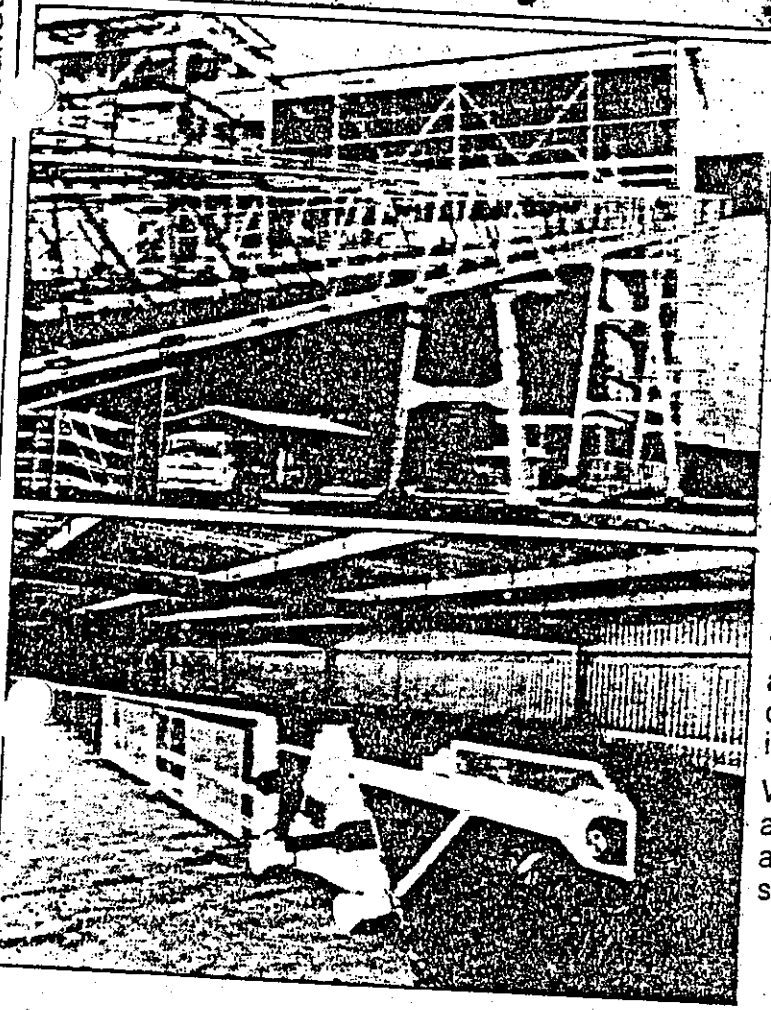
SPIRAL CHUTES — ABATTOIR PROCESS EQUIPMENT — GRAIN HANDLING — FEED MILLING —

PACKAGE HANDLING — CONSTRUCTION CONVEYORS — GRAVITY CONVEYORS — INDUSTRIAL CONVEYORS — SCREW CONVEYORS —

BUCKET ELEVATORS — BULK HANDLING SYSTEMS — UNDERGROUND CONVEYORS — BAG CONVEYORS —







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