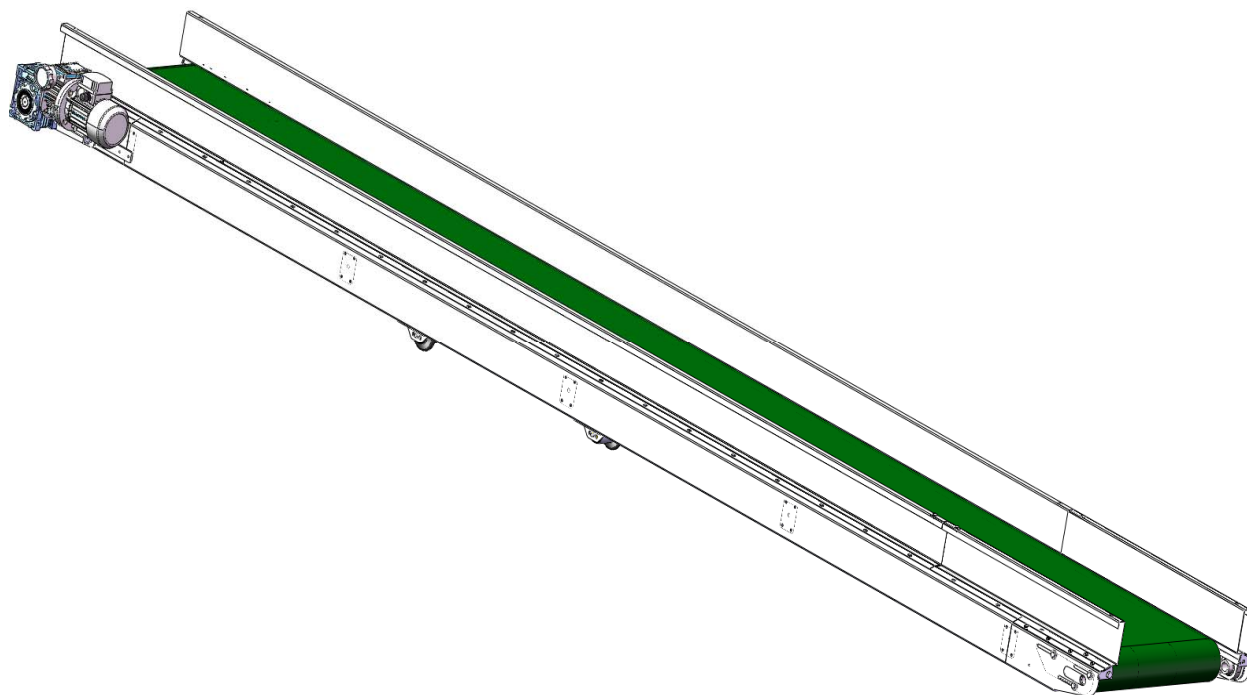


# SKALS

*- we'll sort it out!*

## INSTRUCTION MANUAL

Conveyor/elevator type TG/TM 11



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## Purpose and scope of operations

Read this manual thoroughly before using.

The conveyor/ elevator are designed to be used for transport and dosing of potatoes, onions and similar products.

Typeplate and CE mark is placed on the side of the conveyor near the motor.

## Installation

The conveyor/ elevator must stand firmly on all four legs on a level floor. Adjust the legs so that the machine stands level.

Connect the electricity supply in accordance with local regulations. Electricity supply should be connected through a motor protection relay, which corresponds to the size of the motor. If the conveyor/ elevator is supplied with a motor relay, connect the power supply to this.

For gear types where it is possible to check the oil level, the oil level in gear and variator must be checked before startup.

## Safety

People who work near the carrier must not wear loose clothing as this may endanger their safety.

Pictograms

### **DANGER - ROTATING PARTS.**

Do not come into contact with moving parts. This is true both with fingers like clothing, as this may lead to mutilation.



## Operation

When the conveyor/ elevator has been correctly placed in relation to other machines in the production sequence, start the machine by activating the motor relay.

If the conveyor/ elevator is supplied with a variable speed regulator, the speed regulator is regulated by turning the handle with the indicator on the variator. Ratio 5:1

Never turn the handle when the machine is not in operation.

## Lubrication and maintenance

### Bearings

All bearings are lubricated for life and require no further maintenance.

Grease nipples are mounted on the bearings as we by SKALS by the assembly make a refilling of bearings. This is done because of the low rotations speed of the bearings.

The extra greasing improves the sealing in the bearing.

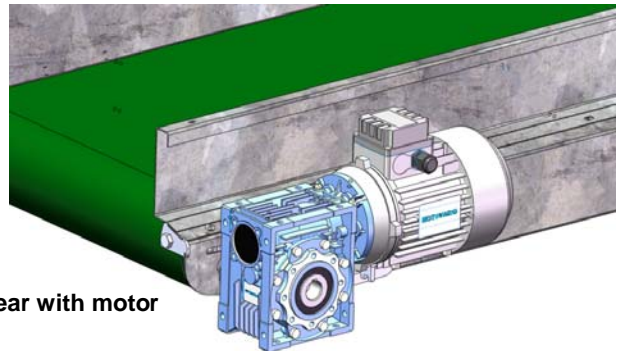
If the bearings are refilled, this should be done with a minimum of 1000 hours interval or at the earliest for every 6 months.

Make maximum 1 stroke with a standard grease gun on a TG / TM11.

Too much lubrication can damage the seal and thereby shorten bearing life considerably.

### Gear

Worm gear type NMRV are lifetime lubricated with IP TELIUM VSF, a synthetic grease for running in normal temperature range (-15oC to 40oC).



NMRV gear with motor

The worm drive type NMRV is lubricated for life with IP TELIUM VSF, a synthetic grease suitable for a normal temperature range of -15°C to + 40°C.

	<b>Syntetisk</b>	<b>Mineralsk</b>
IP	Telium VSF	Mellena oil 220
Shell	Tivela oil SC320	Omala oil 220
Agib	Blasia S320	Blasia 220
Mobil	Glygoyle 30	Mobilgear 220
Castrol	Alphasyn PG 320	Alpha 220

Change oil after 5,000 production hours.

### Variator

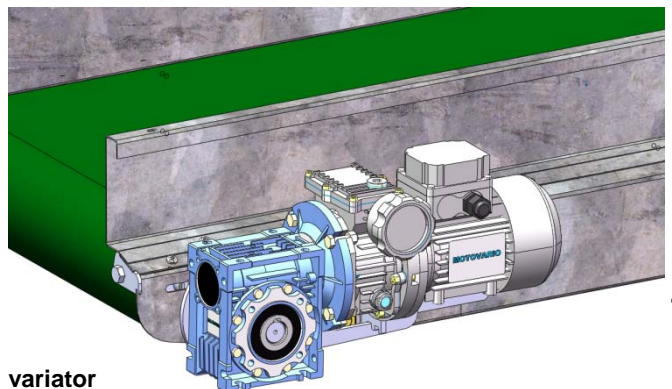
The variator is mounted between the worm drive and the motor. It must always be kept filled with long life oil and should be topped up to the middle of the observation glass.

Change the oil every 8 years.

It is imperative that there is always the correct amount and type of oil in the variator.

Recommended oils:

IP	Transmission V. E.
IP	A.T.F. Dexron Fluid
AGIP	A.T.F. Dexron



Gear and variator

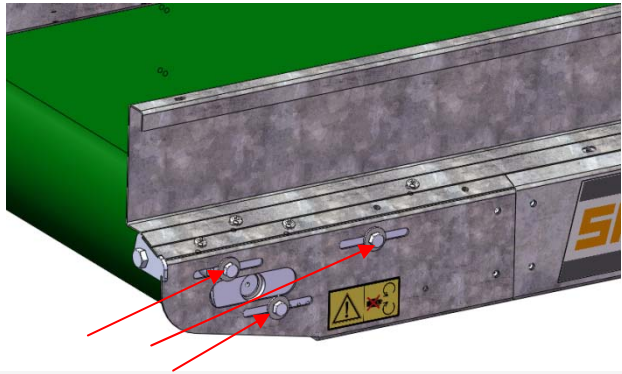
BP	Autran DX
Chevron	A.T.F. Dexron
ESSO	A.T.F. Dexron
Fina	A.T.F. Dexron
Mobil	A.T.F. 220
Shell	A.T.F. Dexron
Castrol	TQ Dexron II.

### Belt

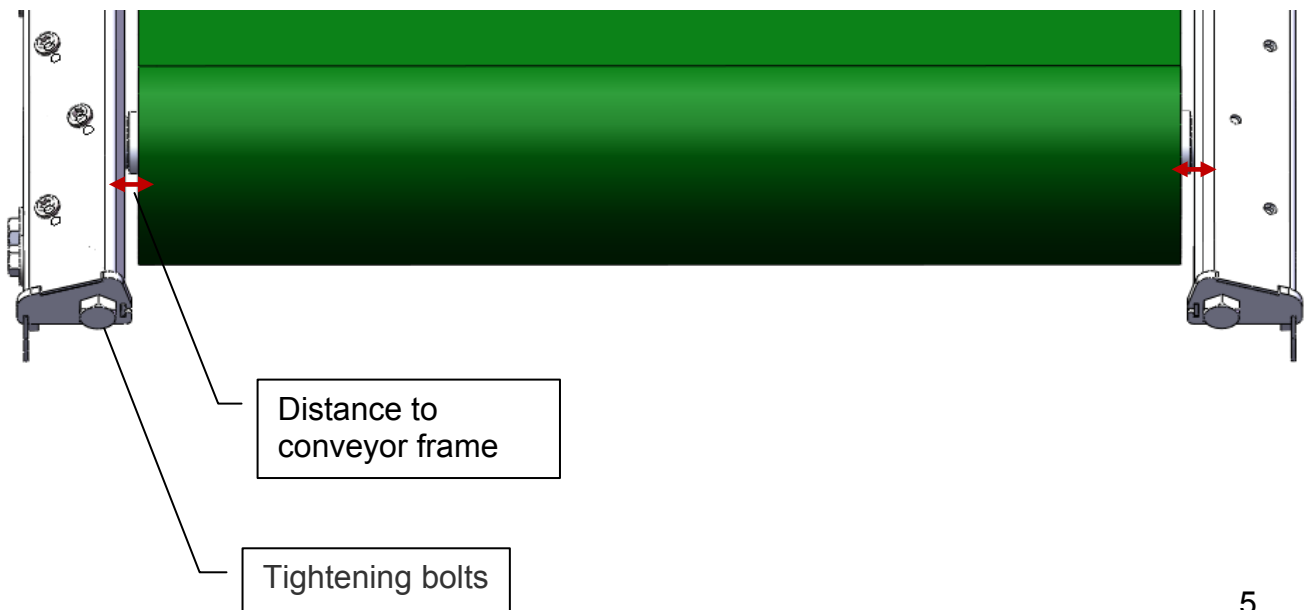
The conveyor is fitted with a PVC belt with guide profiles. track profiles helps to minimize the risk of belt skews.

The belt is dependent on a suitable tightening so as not to slip on the drum features.

After loosening the three tightening bolts on each side of the conveyor the two tightening bolts are tightened equally.



After tightening the belt start the conveyor and fine-tuning of the two tightening bolts. In the side where the belt drives to tighten the bolt until the distance to the side frame is equal on both sides. After adjustment, tighten the three bolts on each side again.



Belt alignment should be checked when the machine is in operation to ensure that it drives right in line when there are items on the conveyor.

It is at all times the owner's responsibility that the belt is properly adjusted.  
There is no warranty on belts that are misaligned.

## Cleaning

With reference to the Danish Plant Directorate's Order No. 965 of 13 December 1993 (p. 6).

- 2.3.3 Seed potato growers with contained propagation must clean and disinfect all sorting and ancillary equipment after each new variety. Disinfecting should be carried out using a product approved by The Danish Institute of Plant and Soil Science.
- 2.3.4 Companies authorised to sort potatoes and who also have the authorisation to propagate potatoes, must clean and disinfect sorting machinery etc. which is under the control of The Danish Plant Directorate before the sorting of own propagation is commenced. Disinfecting should be carried out using a product approved by The Danish Institute of Plant and Soil Science.
- 2.3.5 Premises and machinery etc. must be cleaned and disinfected each year before 30 June. Disinfecting must be carried out using a product approved by The Danish Institute of Plant and Soil Science.

In other countries, customers must conform to relevant, local food and hygiene regulations.

**When cleaning with high pressure equipment**, the following parts must be securely covered: Motor, variator, worm gear, conveyor cylinders, and all bearings.

In order to maintain effective production and keep maintenance costs at a minimum, regular lubrication, maintenance and cleaning are very important.

## Accessories

The conveyor can be fitted with attachments / accessories. The equipment described in this section.

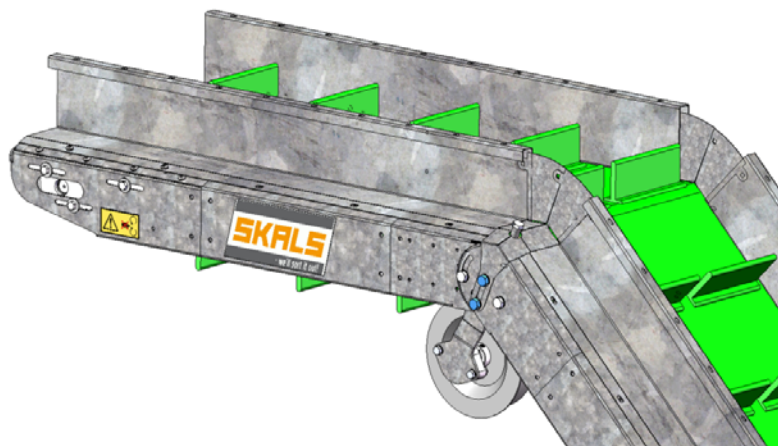
Bend down

Bend down are adjustable from 0 to 45 °.

If the belts at a bend down conveyor not are running properly do as this:

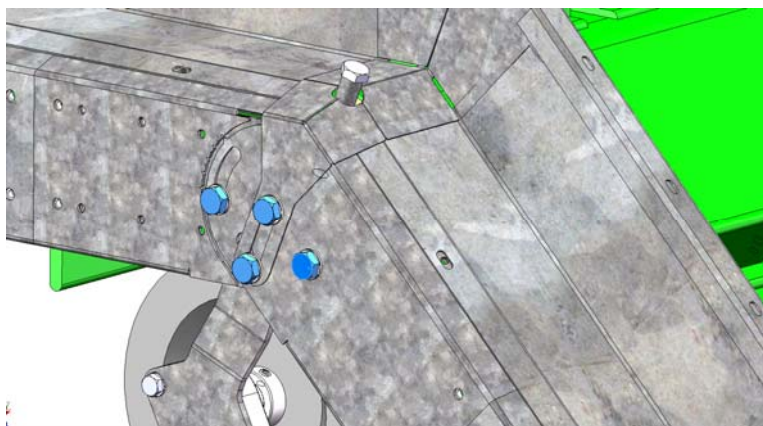
1. The 2 bolts (marked in blue) on the side that the belt is running against, has to be loosened, max 1 turn.
2. Belt must be adjusted with the bolt pointing up.
3. The 2 bolts must be tightened again.

**In general tightening of the belt must take place at the end of the conveyor!**



If you want to change the angle of the bend:

1. Loosen the band at the end of the conveyor.
2. Loosen all 4 bolts on each side of the bend, max 1 turn (marked in blue)
3. Changed the angle of the bend.
4. Tighten the 2 outer bolts on each side of the bend
5. Tightening the bolts in the where they have been released.
6. The conveyor is started up.
7. The conveyor must be adjusted at the end and on the bend.
8. The center bolt is tightened on each side of the bend.



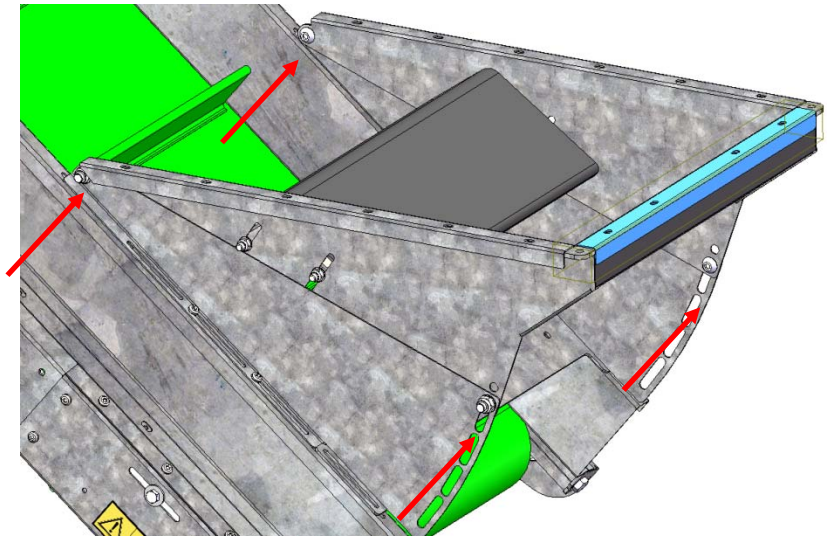
## Inlethopper

The conveyor are fitted with an adjustable hood and can be adjusted from 20 to 40 gr. This is done by loosening the front and rear bolt on each side of the hopper (marked by the red arrows). When the hopper is positioned at the desired angle tighten the bolts.

The track is marked with blue, loosen and rubber

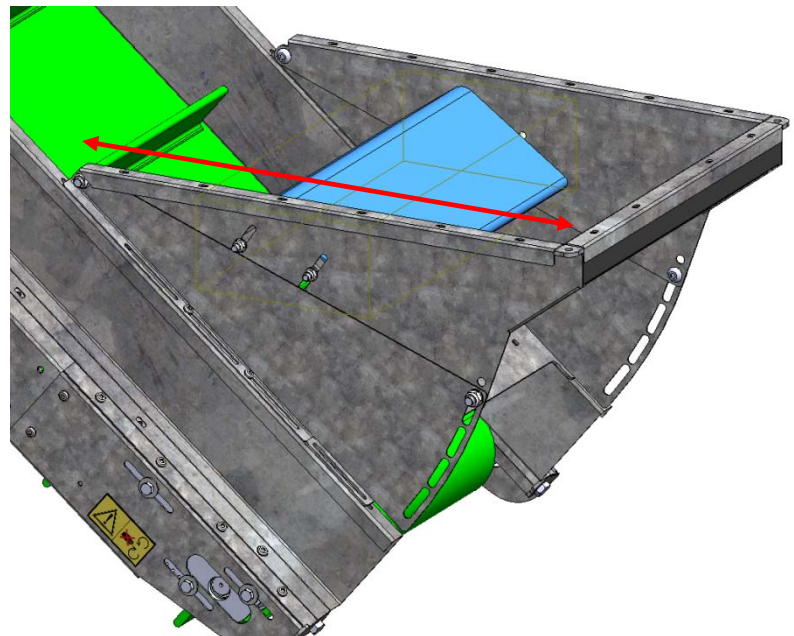
tightened up. The excess rubber on the back of the funnel may be cut off if you want.

**NOTE: If you cut the rubber off the hopper you are not able to later on to adjusted the angel upwards in degrees.**



Drop reduction Plate Hoppers that are larger than 500 in the length may be provided with a drop reduction plate. This plate reducing the drop height significantly. The plate may only be mounted in hoppers that are aligned at an angle of between 30 and 40 gr.

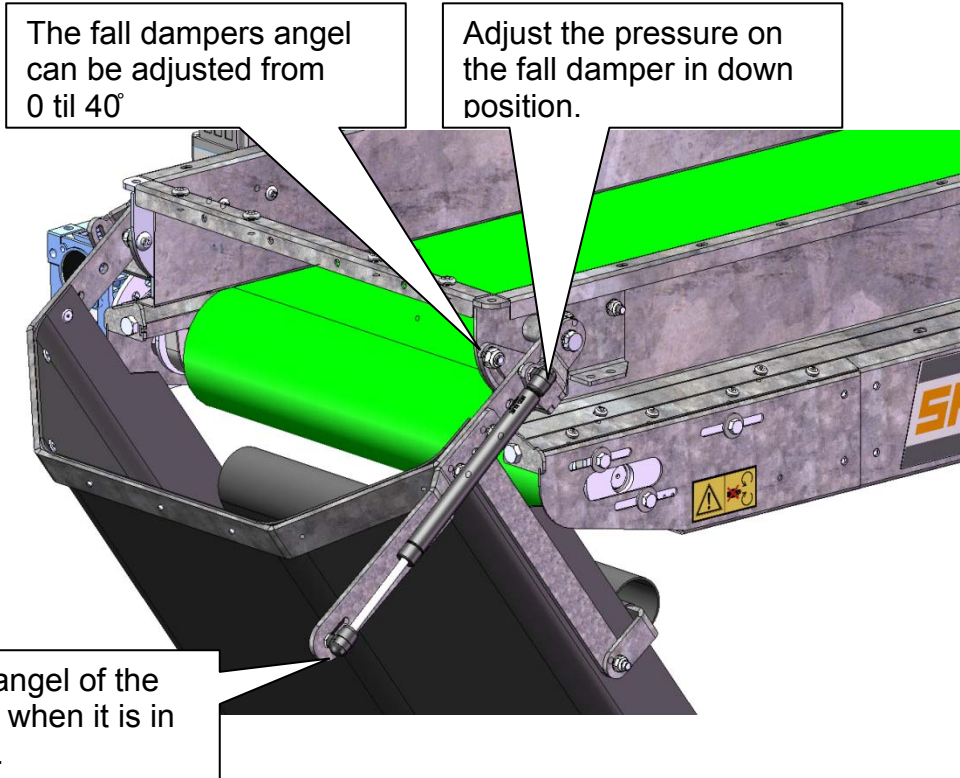
**NOTE:** If there is waste dropping from the hopper it should be fitted elevated panels at the sides where it is possible.





### Fall damper

To be adjusted so far under the conveyor to create the best reduction of fall off the products.



## Scraper

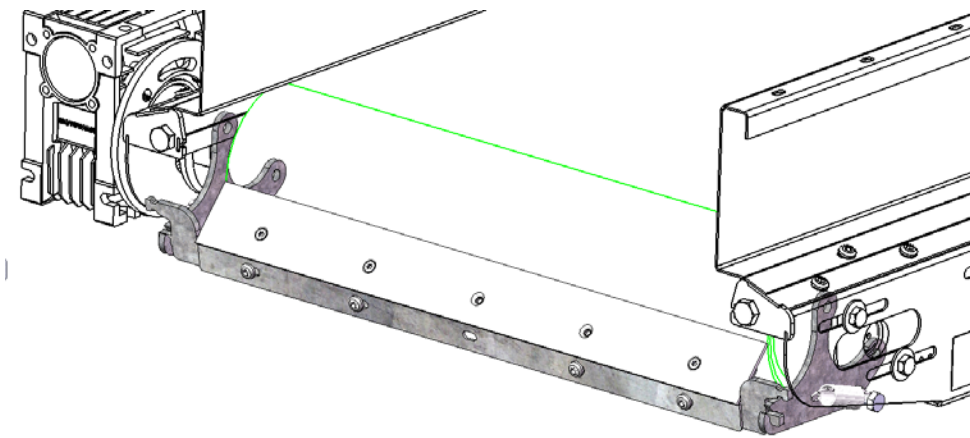
Scraper can be fitted in the conveyors outlet end.

When the belt is adjusted the scraper follows the belt and should not be adjusted subsequently.

**NOTE: The tension of the scraper should be no more than absolutely necessary as it helps to increase the wear on the belt.**

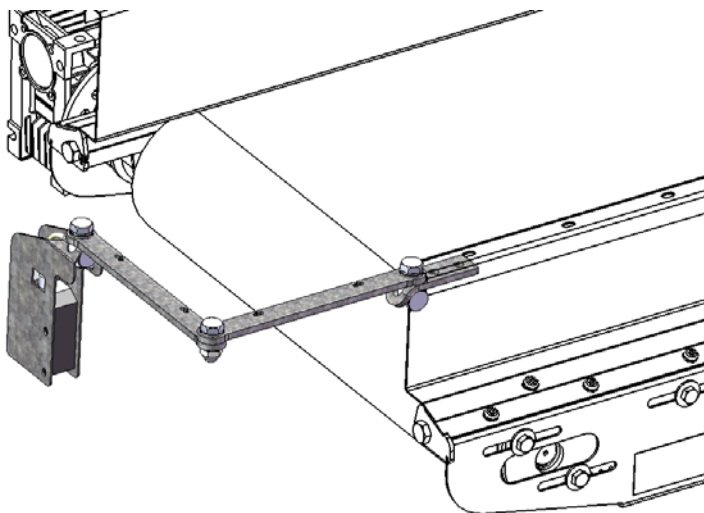
The scraper can be easily removed for service by:

1. Tilt it away from the belt.
2. Disconnecting the springs.
3. Rotating the scraper so that it can be pulled out through the groove which is on the sides.



## Photocell

The bracket for the photocell can be adjusted in all directions while providing good protection to the photocell.



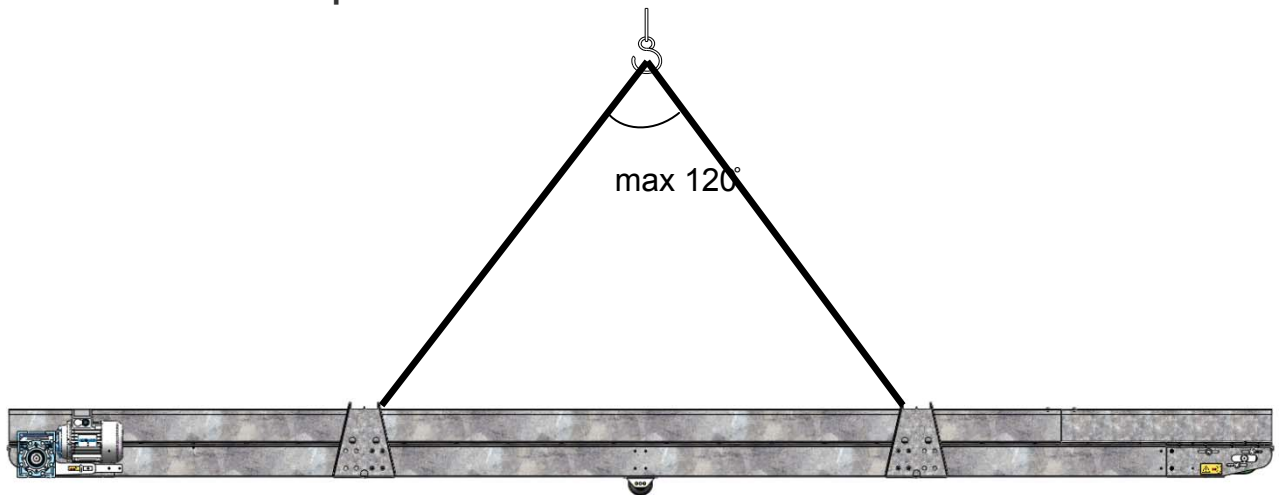
## Transport

If the machine is damaged on delivery must immediately inform the dealer.

## Lifting

If the machine is lifted, this must be done using nylon straps according to illustration below (Fig. 1). Please be attention to that the spread angle between the slings/chains maximal must be 120 degrees.

**Never walk under a suspended load.**



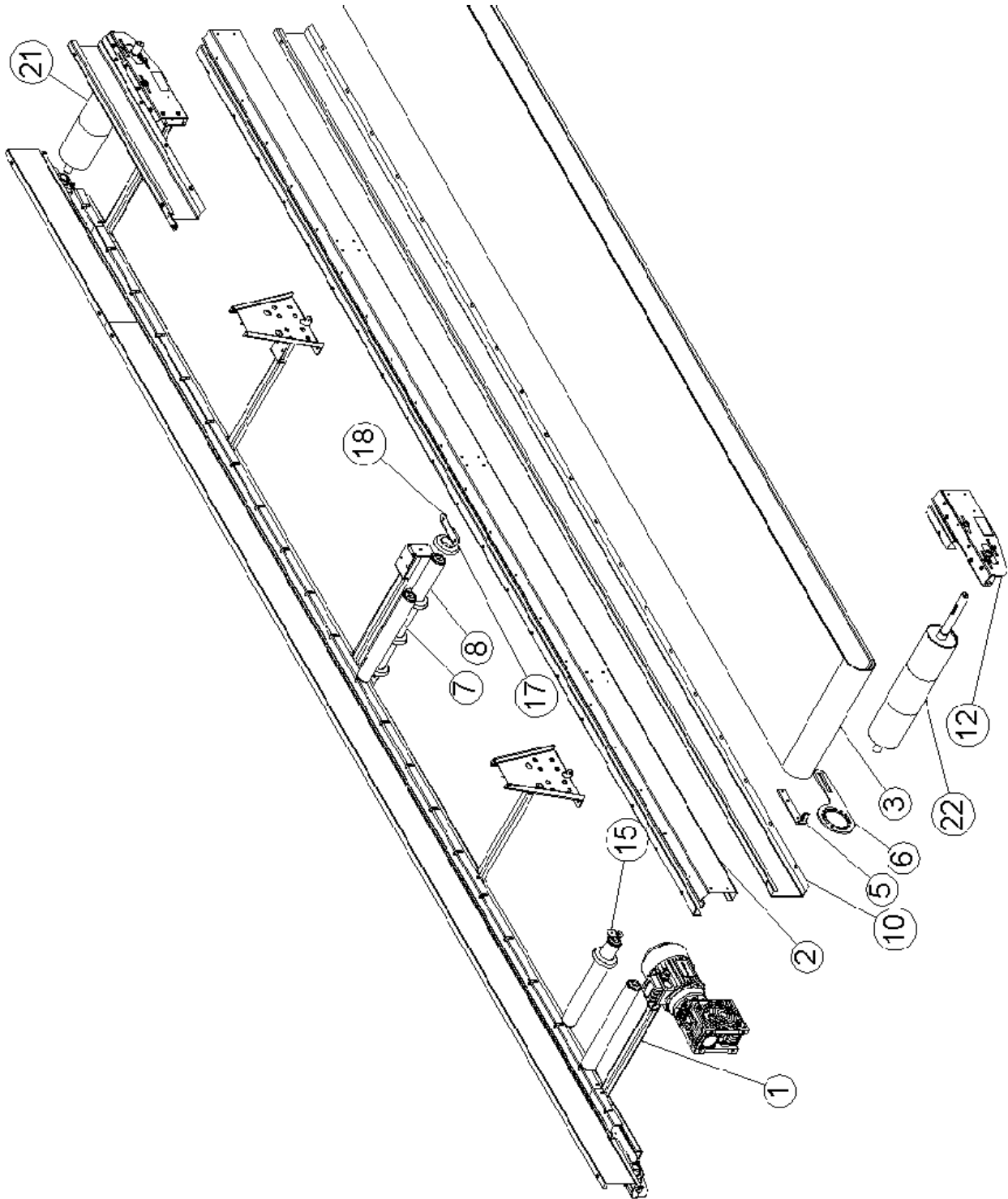
Transport / Lifting brackets can be removed after final placement.

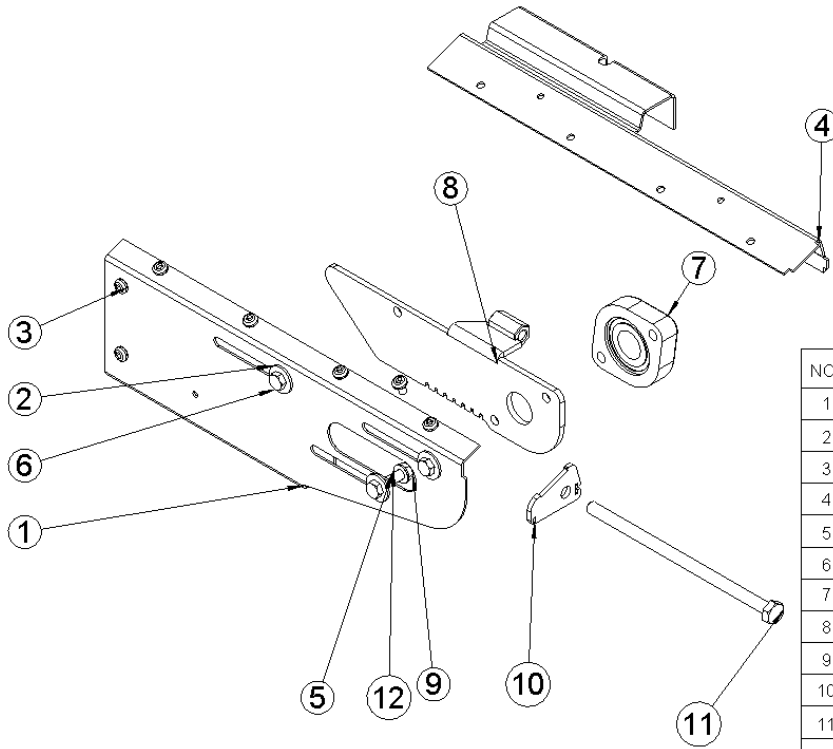
Smaller carriers will not be equipped with lifting brackets.

## Spareparts

When ordering spares, state machine type, serial no. and, if possible, position no..

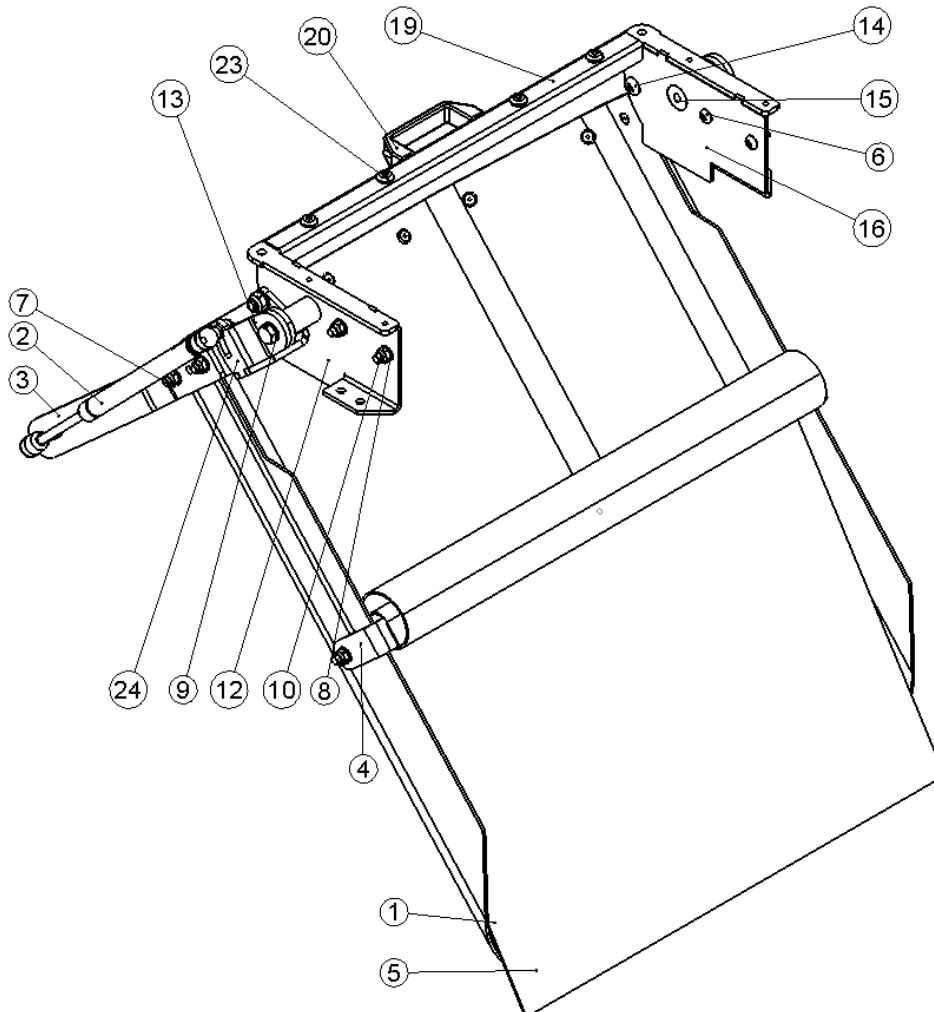
NO.	Default/Qty	DESCRIPTION
1	5	Tværstiver svejst
2	2	L/B Vange for 11trp.
3	1	Glat bånd m. 2 styreprofiler
5	1	L/B Beslag til momentarm
6	1	L/B Momentarm for 63 gear
7	3	Bærerulle
8	1	Returrulle
9	1	L/B Beslag for bremseleje
10	2	L/B Sideplade for TP/TM11.
11	2	L/B Sideplade for 11TG.
12	2	Samlet transportør ende h/v
13	2	Samlet transportør ende h/v
15	1	L/B Beslag f.transportr.m. diskoringe
16	2	L/B Montagebeslag m. huller
17	5	DISKORING 90X50X25
18	2	L/B Plade for returrulle
20	1	Træktromle sidestyr m. brems.
21	1	Løstromle m. sidestyr
22	1	Træktromle m. sidestyr
23	3	FARE roterende dele
24	1	
25	1	Afskraber samlet
26	1	MOTOVARIO-NMRV_063_120X19
27	2	L/B Transport og løftebeslag



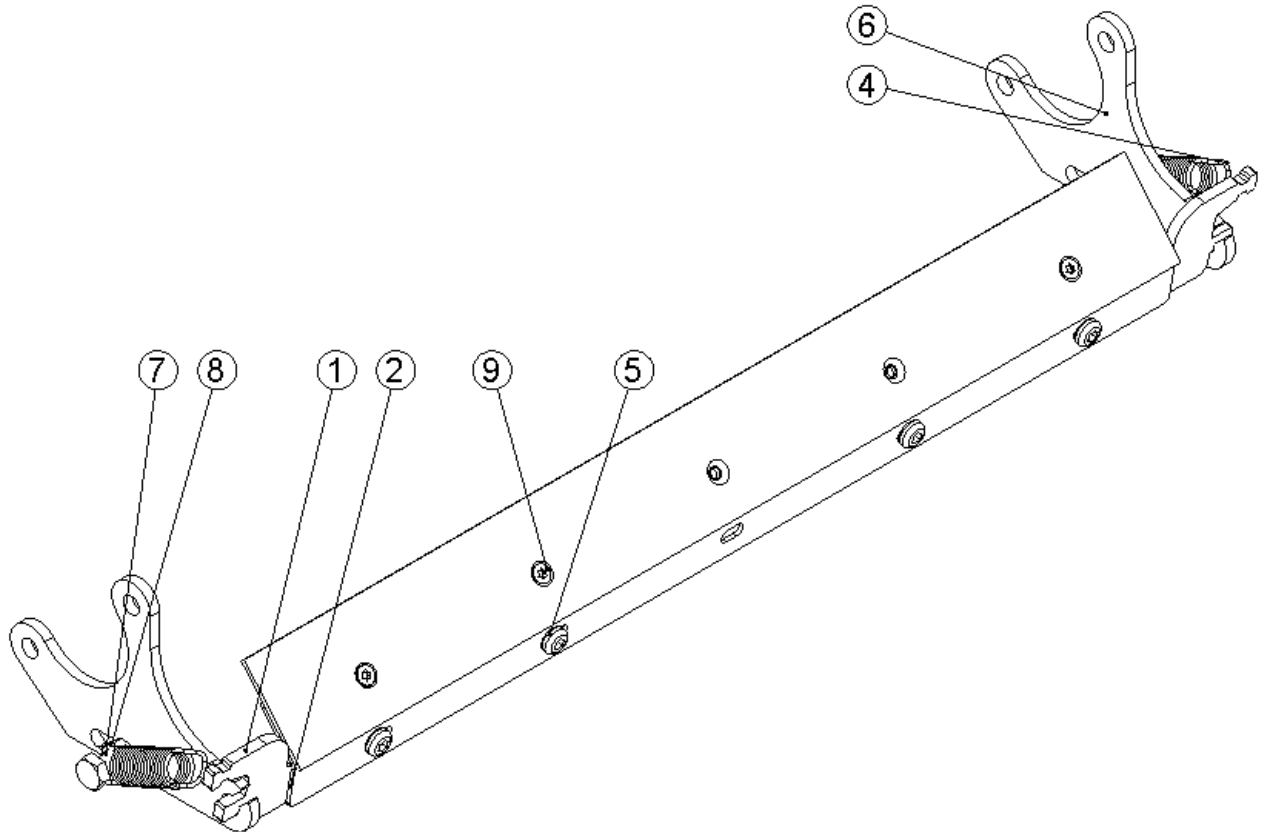


NO.	QTY.	DESCRIPTION
1	1	L/B Transportør ende h/v
2	3	Skærmskive M8
3	7	Gevindform. skrue M6x12
4	1	L/B Vange ende h/v
5	2	Stålsætskrue M8x40
6	1	Stålsætskrue M8x20
7	1	Leje OWFK25
8	1	Lejeplade svejst h/v
9	3	Låsemøtrik M8
10	1	L/B Spændepåse
11	1	Stålsætskrue M10x200
12	3	Skive M8 Facet

NO.	QTY.	PART NO.	DESCRIPTION	MATERIAL
1	1	20002430	Gummi til falddæmper	Glat 700 polymax 2M24B
2	1	16125120	GASFJEDER LIFT O MAT 083615	
3	1	6000652	Arm til gascylinder galv.	6mm . stålplade Dom ex 240 el. tilsv.
4	1	6000656	Bøjle til forhæng galv.	5mm . stålplade Dom ex 240 el. tilsv.
5	1	20002433	Gummi til forhæng	Glat 750 polymax 1M12B
6	4	16930100	Unbraco flangehoved M8x20	FZB
7	3	16930105	Unbraco flangehoved M8x25	FZB
8	8	17095066	Skive M8 Facet	HFC 9167 8.8 Elforz.
9	4	17095068	Skive M10 Facet	HFC 9167 8.8 Elforz.
10	8	17000062	Låsemøtrik M8	HFC 840 ELF ORZ.
11	2	17000064	Låsemøtrik M10	HFC 840 ELF ORZ.
12	1	6000651	Montageplade til falddæmper sv.	Samling
13	9	16100102	Popnitter 5,0x12 K14 Alu/stål	
14	2	16930145	Unbraco flangehoved M10x25	FZB
15	1	6000654	Bøjle til falddæmper svejst	Samling
16	1	6000651	Montagebeslag til falddæmper h/v	Samling
17	2	15859904	Glideleje igus GFM 1416-06-1	Indkøbt
18	1	20002371	L/B Plade til gummi-forhæng	2mm Galv. plade
19	1	20002437	L/B Bøjle til håndtag	2mm . galv. stålplade
20	1	32705627	Bøjlegreb 37031 bredde 21mm	Plast
21	1	17000062	Låsemøtrik M8	HFC 840 ELF ORZ.
22	1	17095066	Skive M8 Facet	HFC 9167 8.8 Elforz.
23	4	16761816	Gevindform . skrue M8x16	Torx, 7516T080162
24	1	6000653	Yderbeslag til falddæmper h/v sv.	Samling
25	1	6000653	Yderbeslag til falddæmper h/v sv.	Samling
26	2	16910322	Stålsætskrue M10x40	8,8 Elforz. HFC 473

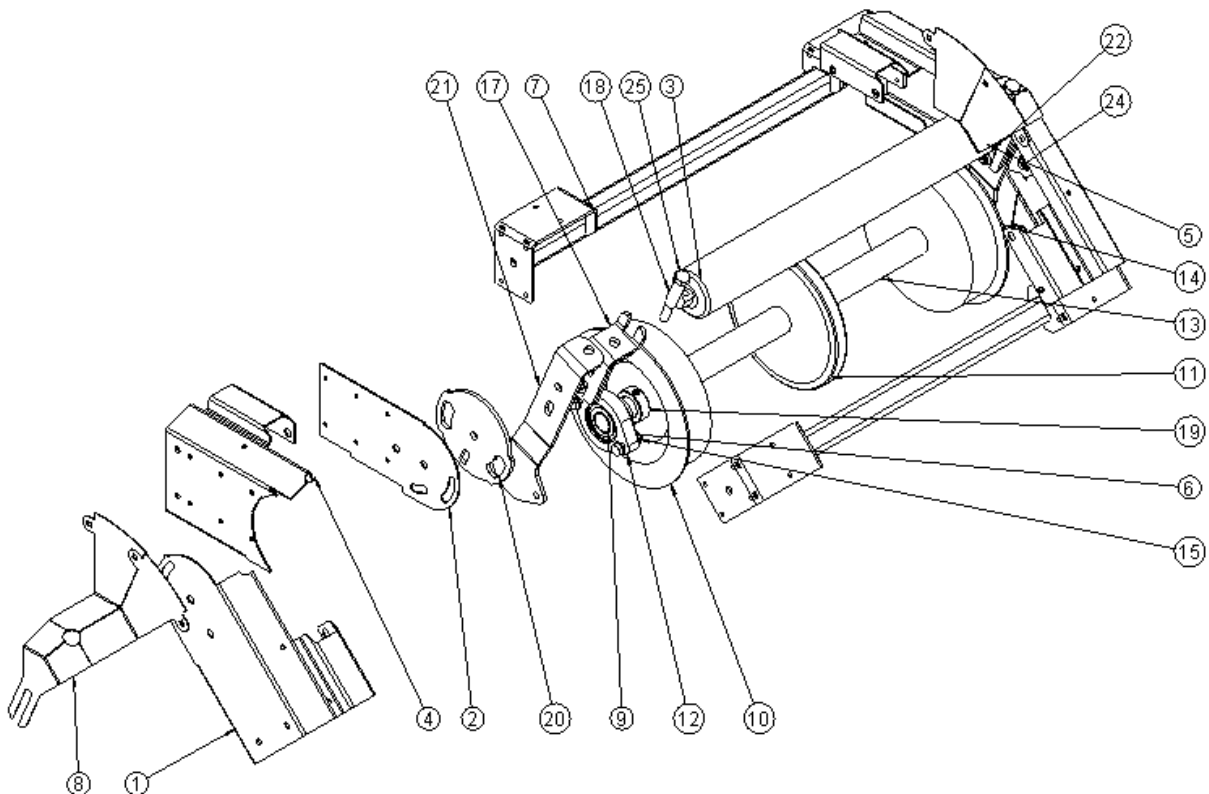


NO.	QTY.	PART NO.	DESCRIPTION	MATERIAL
1	2	60000348	HOLDER F. AFKRABER GALV. TG11	5mm. stålplade Domex 240 el. tilsv.
2	1	20001768-500	L/B Profil for afskraber	2mm. varmgalvaniseret stålplade
3	1	20001769-500	Afskraber	PE HD 1000 Hvid
4	2	16115250	Trækfjeder	
5	4	16761612	Gevindform. skrue M6x12	
6	2	60000349	L/B Beslag for afskraber Galv.	5mm. stålplade Domex 240 el. tilsv.
7	2	16900100	Stålbolt M8x35	8,8 Elforz. HFC 472
8	4	16970090	Møtrik M8	HFC 9832
9	3	16762631	Gevindformende skrue M5 undersænket	

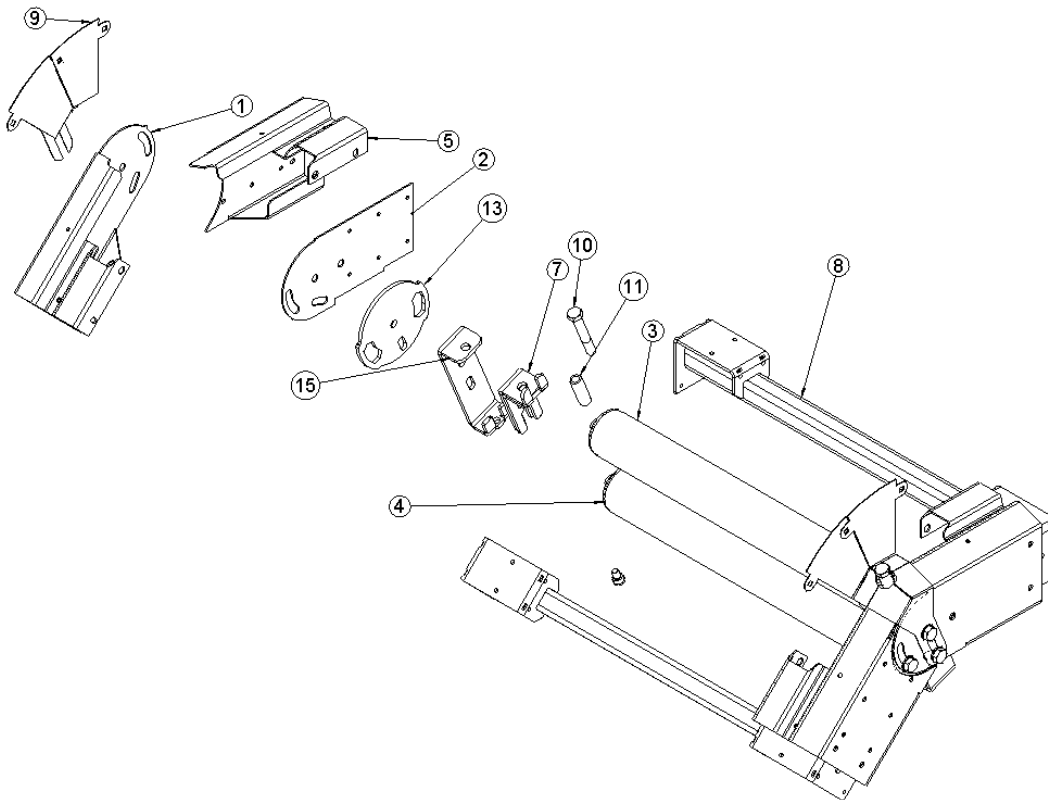




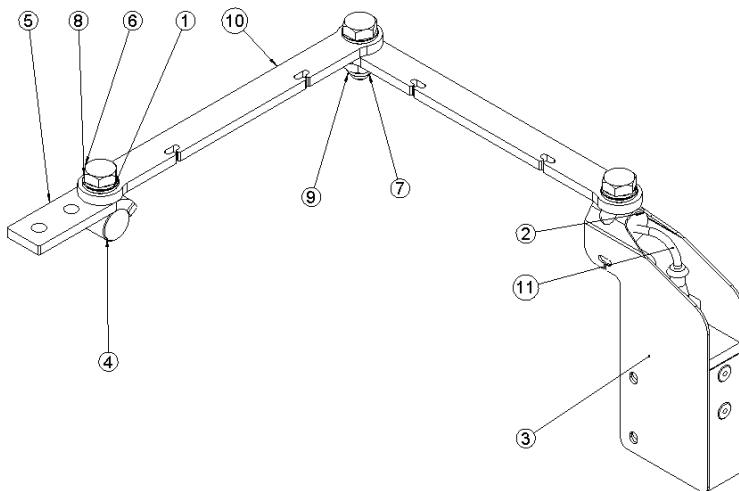
NO.	QTY.	PART NO.	DESCRIPTION	MATERIAL
1	2	20001759	L/B Vange for knæk m.runding	2mm. varmgalvaniseret stålplade
2	2	20001760	L/B Plade for vange	2mm. varmgalvaniseret stålplade
3	1	15620200	EL=475mm	Stålrulle
4	2	20001758	L/B Vange for knæk	2mm. varmgalvaniseret stålplade
5	5	17000064	Låsemøtrik M10	HFC 840 ELFORZ.
6	4	17000062	Låsemøtrik M8	HFC 840 ELFORZ.
7	2	60000336-500	Tværstiver svejst	Samling
8	2	20002124	L/B afskærmning til knæk TM11	1mm galvaniseret stålplade
9	1	20002105	Aksel til returulle TM11 knæk	Comprimerestål 25
10	2	20001973	Sidehjul til TM11 knæk	PA6
11	1	20001972	Midterhjul	PA6
12	2	15400600	Leje OWFK25	Indkøbt
13	2	20002104	Mellemrør	Galv.SØML.RØR 1"
14	4	16900100	Stålbolt M8x35	8,8 Elforz. HFC 472
15	8	17095066	Skive M8 Facet	HFC 9167 8.8 Elforz.
16	2	16920182	Pinolskrue M8x10	HFC 710
17	2	60000476	Rulleholder svejst	Samling
18	2	20002127	Rør til justering af knæk	RØR HYDR. GALV.CROM 6-FRIT 14-2,0
19	2	3RB00010	Stopring kædehjul m. skrue	Samling
20	2	60000568	Mellemlade m. møtrikstyr galv.	5mm stålplade domex 240 el. tilsv.
21	2	60000570	Plade til justering af rulleholder galv.	5mm stålplade domex 240 el. tilsv.
22	2	16910320	Stålsætskrue M10x35	8,8 Elforz. HFC 473
23	4	17095068	Skive M10 Facet	HFC 9167 8.8 Elforz.
24	2	16910314	Stålsætskrue M10x20	8,8 Elforz. HFC 473
25	2	16910336	Stålsætskrue M10x75	8,8 Elforz. HFC 473



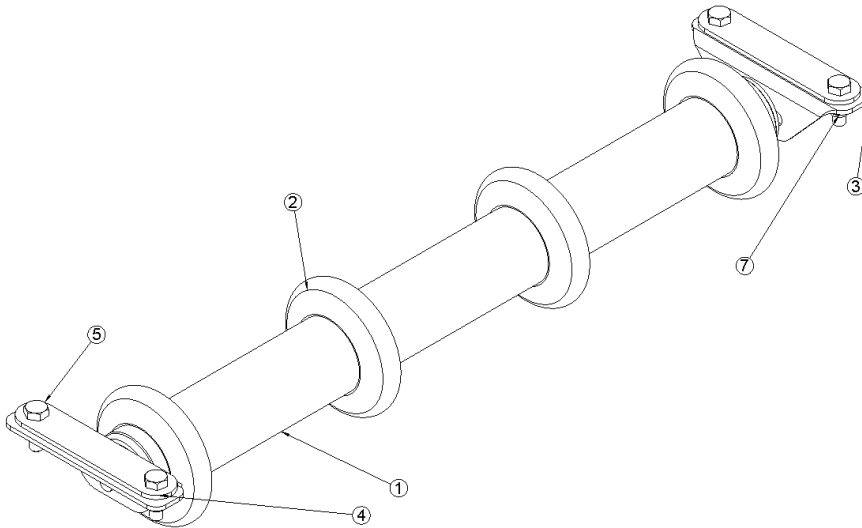
NO.	QTY.	PART NO.	DESCRIPTION	MATERIAL
1	2	20001759	L/B Vange for knæk m.runding	2mm. varmgalvaniseret stålplade
2	2	20001760	L/B Plade for vange	2mm. varmgalvaniseret stålplade
3	1	15620200	EL=475mm	Stålrulle
4	1	15620210	EL=525mm	Stålrulle
5	2	20001758	L/B Vange for knæk	2mm. varmgalvaniseret stålplade
6	3	17000064	Låsemøtrik M10	HFC 840 ELFORZ.
7	2	60000476	Rulleholder svejst	Samling
8	2	60000336 -500	Tværstiver svejst	Samling
9	2	20002123	L/B afskærmning til knæk TG11	1mm galvaniseret stålplade
10	2	16900164	Stålbolt M10x75	8,8 Elforz. HFC 472
11	2	20002127	Rør til justering af knæk	RØR HYDR. GALV.CROM 6-FRIT 14-2,0
12	1	16926171	Unbracoskrue CH M8x12	
13	2	60000568	Mellemlade m. møtrikstyr galv.	5mm stålplade domex 240 el. tilsv.
14	2	16910320	Stålsætskrue M10x35	8,8 Elforz. HFC 473
15	2	60000569	Plade til justering af rulleholder galv.	5mm stålplade domex 240 el. tilsv.
16	3	17095068	Skive M10 Facet	HFC 9167 8.8 Elforz.
17	1	16910314	Stålsætskrue M10x20	8,8 Elforz. HFC 473



NO.	QTY.	PART NO.	DESCRIPTION	MATERIAL
1	4	17095068	Skive M10 Facet	HFC 9167 8.8 Elforz.
2	1	20002175	L/B Monteringsplade til føler	1,5mm Galv.plade
3	1	10024101	Fotocelle m.d. RXL/OT-3B m. timer	Indkøbt
4	2	60000573	Specialmøtrik f. fotocelle	Comp.stål ø20x25
5	1	60000571	Arm bukket f. fotocelle	6mm. stålplade Domex 240 el. tilsv.
6	2	16910320	Stålsætskrue M10x35	8,8 Elforz. HFC 473
7	1	16910318	Stålsætskrue M10x30	8,8 Elforz. HFC 473
8	2	17160010	SKIVE Ø10 Centerfjeder STÅL Z DIN 128	
9	1	17000064	Låsemøtrik M10	HFC 840 ELFORZ.
10	2	60000572	Arm f. fotocelle	6mm. stålplade Domex 240 el. tilsv.
11	1	10024102	M.D.KABEL CD12M/0B-050-A1-5M	



NO.	Default/QUANTITY	PART NO.	DESCRIPTION	MATERIAL
1	1	15570534	Transportrulle 1700 PVC Ø50	
2	4	20001040	DISKORING 90X50X25	Gummi
3	2	20001817	L/B Plade for retrulle	3mm. varmgalvaniseret stålplade
4	2	60000394	L/B Montagebeslag m. M8. Galv.	3mm Galv. plade
5	4	16910260	Stålsætskrue M8x25	8,8 Elforz. HFC 473
6	4	17095066	Skive M8 Facet	HFC 9167 8.8 Elforz.
7	4	17000062	Låsemøtrik M8	HFC 840 ELFORZ.





Declaration of conformity with EU

<b>Manufacturer</b>	
Firm:	A/S Skals Maskinfabrik
Address:	Hovedgaden 56 8832 Skals, Denmark
Telephone:	87 25 62 00

declares herewith, that

<b>Machine:</b>	<b>Conveyer/elevator</b>
Brand:	<b>TG/TM11</b>
Type, serial no., year:	

Is manufactured in accordance with the decisions of the Councils Directives:

- 1 Machinery Safety – Directive 98/37/EC
- 2 Low Voltage Equipment Directive (LVD) 2006/95/EEC
- 3 Electromagnetic Compatibility (EMC) Directive 89/336/EEC and 93/68/EEC as amended.

<b>Title:</b>	Productions Manager
Name:	Søren Lund Madsen
Firm:	A/S Skals Maskinfabrik

Date: \_\_\_\_\_

Signed: Søren Lund Madsen