



FRUIT GRADING EQUIPMENT

*Optical Size/Colour Sorting -  
mechanical Weight Sizers  
Bulk Bin Tippers  
Feeding Belts, Two-Speed Belts  
Packing Belts  
etc.*

**ACCURATE AND EFFICIENT GRADING OF FRUIT**



# OPTICAL SIZE/COLOUR SORTING

## STANDARD CONFIGURATION

- Available in 2-, 3-, 4- and 6-lane version.
- Brush Singulator with speed control.
- **OMS** Optical Measuring System with high resolution cameras and computer with colour screen plus keyboard with built-in tracker-ball.
- Provided with 6 size sections and drops (standard) or more (optional). Outlets covered with rubber guide flaps.
- Undersize exit at drive end of the machine.
- Transparent dust protection hood.

## EXTENSIONS

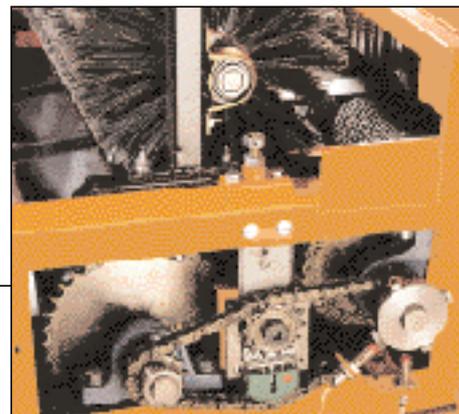
According to the requirements of individual customers, the standard machine can be extended by additional size sections and/or spacer sections of 700 mm (27 1/2")

## CAPACITY

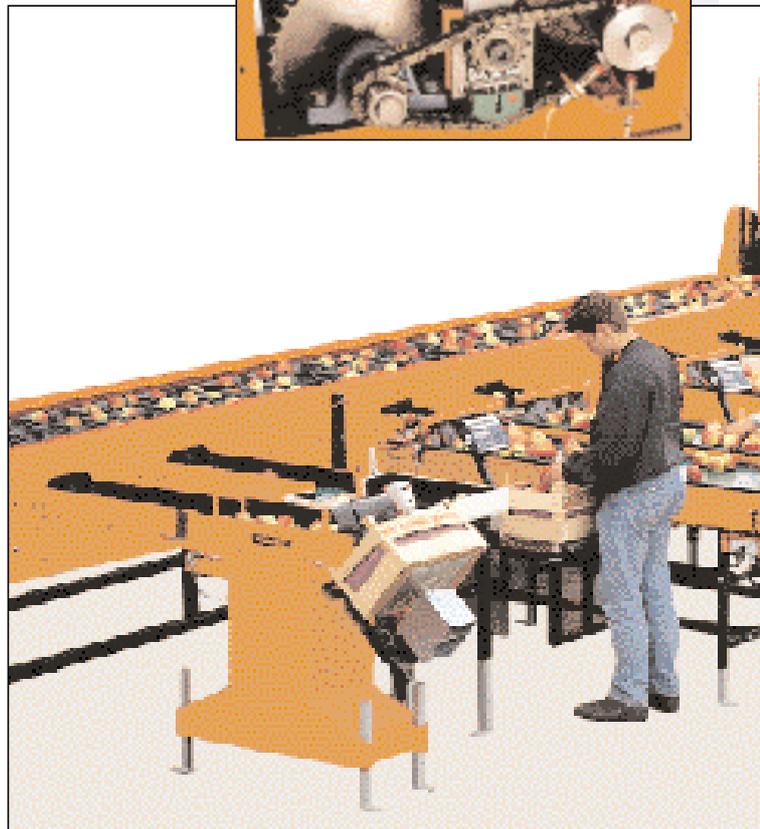
By means of frequency control the grading speed is stepless adjustable from 45 to 180 cups per minute per lane, which equals approximately 250 to 1000 kg (550 to 2200 lbs) of fruit per hour per lane (at average fruit dimensions).

## SINGULATOR

The singulator is provided with flexible diabol-shaped brushes with frequency regulated control of the direction- and the speed of rotation. It has a length of 1600 mm (63") and if wanted it can be extended by 860 mm (34").



Time Adjuster



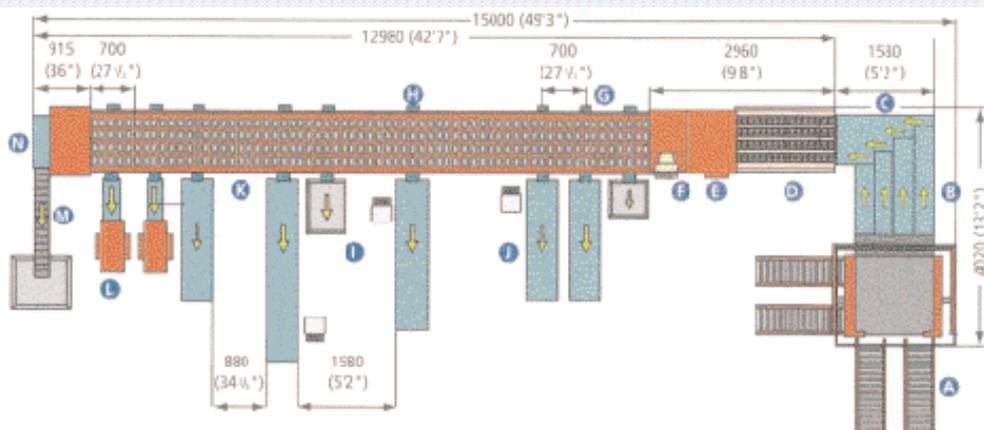
## OPTIONS / ACCESSORIES:

- Possibility to control Packing Belts via sizing computer
- Bin Tippers, Feeding Belts, Two-Speed Belts etc.
- Packing Belts and Packing Tables in different lengths
- Colour Sorting

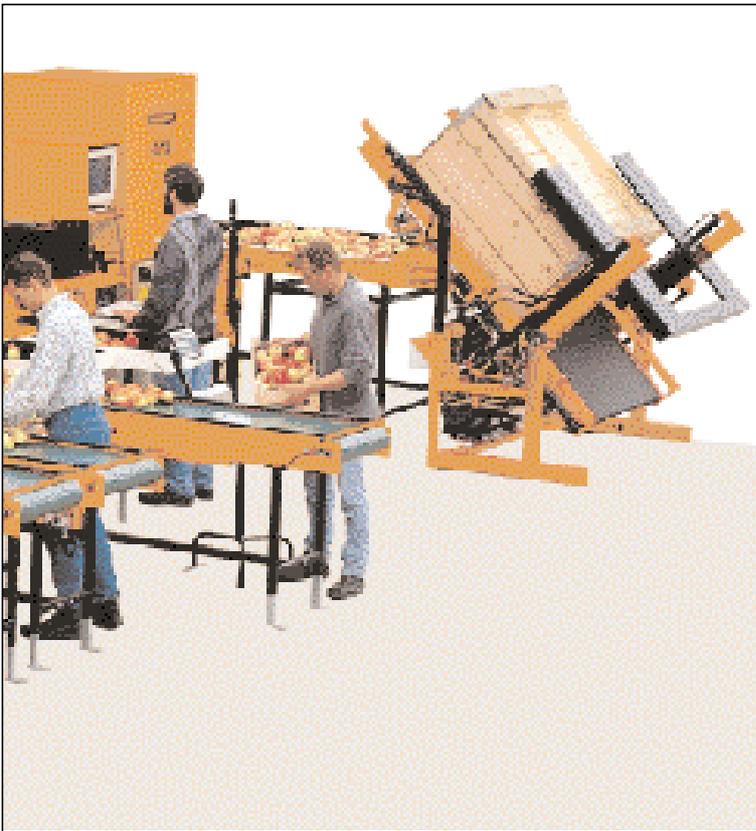
**OMS-4 3+4**

- Bin Tipper
- Stepped Two-Speed Belt
- Feeding Belt
- Singulator
- Camera Box
- Computer + Screen
- Size Section
- Delivery Belt
- Packing Table
- Packing Belt
- Spacer Section
- Box Filler
- Elevator
- Undersize Exit

FOUR-LANE OPTICAL SIZE GRADER with 3 size sections and 4 spacer sections



The "Perfect" Optical Size Grader is provided with a well-balanced diametrical measuring system to sort both apples and pears very accurately. Special programs have been developed for different types of fruits such as round-, oblong- and flat apples, pears, sweet peppers, tomatoes, citrus fruits etc. Each individual fruit is scanned in several positions by a high resolution camera.



The scanning results of every fruit are copied by a computer which evaluates them to determine the actual optical diameter. As every individual fruit is measured, it is possible to reach a very accurate grading result. Because of its simple and well-considered users-interface, it only takes very short time to acquire the set-up of the grading program. All functions can be selected very easily by means of the tracker-ball.

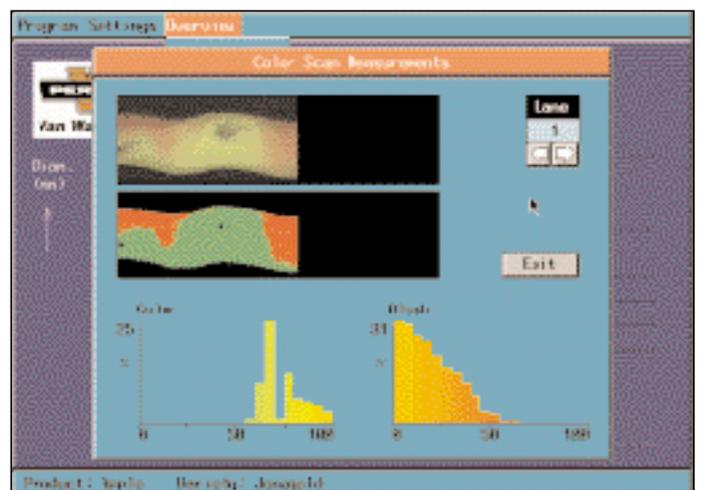


#### FEATURES OF THE OPTICAL MEASURING SYSTEM

1. The computer programs can easily be modified, re-named and re-stored by the user at his convenience.
2. All sizes are adjustable in steps of 0,1 mm (0,004"). These adjustments can be made during operation.
3. The size accuracy of the computer-calculations is 0,5 mm (0,02").
4. If wanted the same size can be distributed to more outlets or more sizes to the same outlet.
5. Diameter-length-ratio enables to separate long and short fruits of the same diameter-size (e.g. for pears).

The PERFECT OMS-Grader also includes (as optional extra) the possibility to sort fruits by colour. During rotation on the brush-singulator, the fruits are electronically scanned by colour cameras upon which a picture of the entire fruit becomes visible. The computer is programmed in such way that each section of the fruit is only scanned once.

- The system can distinguish 32000 different colours.
- The user selects only the colour range of his interest; this range is shown on a scale of 0% - 100%.
- Basic colour as well as blush range are separate adjustable; the basic colour can be adjusted by means of an average colour and the blush by means of surface percentages.
- Both basic colour and blush are adjustable in steps of 1%.



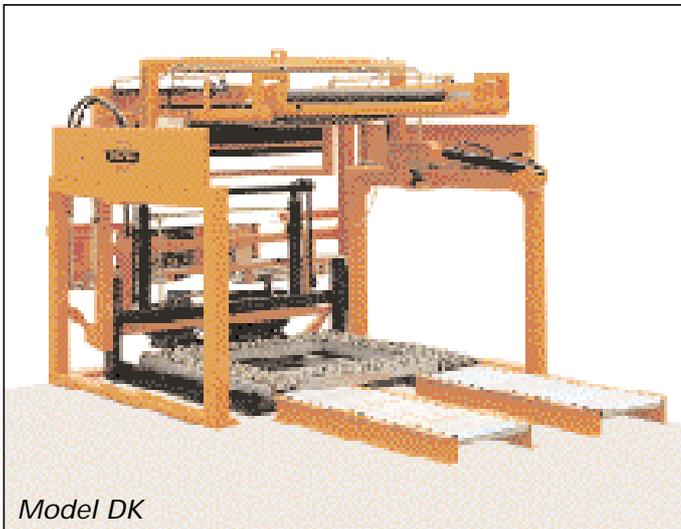
Our Bulk Bin Tipper is compact and heavily constructed, and offers the following features as standard:

### **CUSHIONED HOLDING LID**

Comes automatically over the top of the bulk bin as soon as the machine is put into operation. This prevents the fruit from roll damage, even if the bin is not completely filled. The cushioned lid also allows for a generous emptying angle of 45° to improve the fruit flow.

### **DOSAGE SYSTEM**

A transmitter-receiver unit controls the unloading speed continuously to provide a constant flow of fruit out of the bin. For an optimal effect this control unit is located right at the outlet position of the bin.



Model DK

### **CONFIGURATIONS:**

**MODEL SK:** Standard Tipper with one insert (from the back)

**MODEL DK:** Carry-through Tipper with three inserts (from both sides and from the back)

### **SINGLE SWITCH CONTROL**

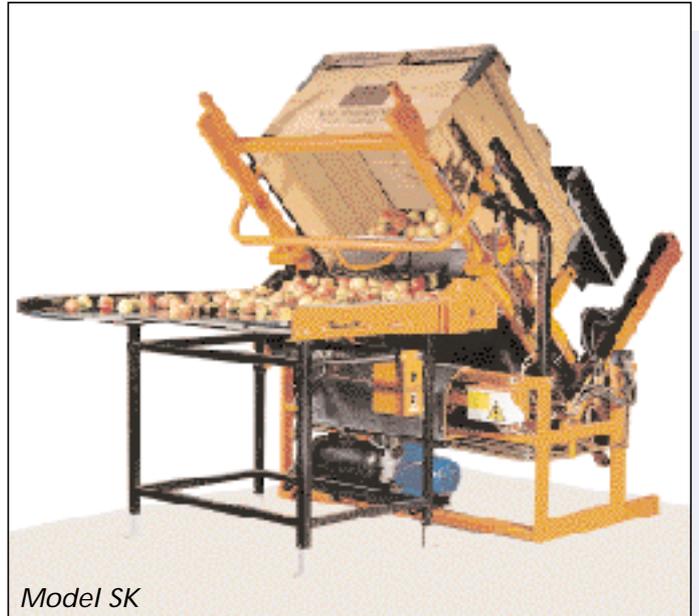
Assures easy and simple operation. One switch on the control panel activates the automatic lifting, tipping and emptying cycle.

### **END SIGNAL**

The machines produces a sound signal to indicate that a bin is empty. A single switch operation brings the Bulk Bin Tipper back into its starting position, so that the empty bin can be replaced by a full one.

### **END SWITCH**

As soon as the bulk bin has come back into its starting position the oil pump is automatically switched off to prevent unnecessary noise.



Model SK

DIMENSIONS & WEIGHTS	MODEL SK	MODEL DK
Length	1900 mm (75")	2000 mm (79")
Width	1900 mm (75")	2090 mm (82")
Height (closed)	1350 mm (53")	1720 mm (68")
Weight	615 kg (1355 lbs)	920 kg (2025 lbs)
OPTIONAL EXTRAS		
Electronical bin height meter instead of standard ruler	X	X
Anti-Rolling Flap	X	X
Roller conveyors in bin carrier		X
Roller conveyor to feed and discharge Bulk Bin Tipper		X

**Required electrical connections:** 3 phases 220V positive; 1 x earth; 1 x negative

**Electrical (power) motor:** 2,2 KW / 3 HP

**Bulk Bin dimensions:** Minimum/Maximum:  
Width 1000 - 1200 mm (39"-47")  
Length 500 - 1150 mm (20"-45")  
Height 500 - 850 mm (20"-34")

**Unloading height:** 1170 mm (46")

**Min. working height needed:** 2600 mm (103")

**Tipping angle:** 45°

**Time from starting signal to emptying position:** 19 - 24 sec.

**Time from end signal to end position:** 26 - 31 sec.

**Anti-Rolling Flap:** Can be inserted in bin (manually or automatically) for additional roll prevention

## STANDARD CONFIGURATION

- Available in 2, 3, 4 and 6-lane configuration.
- Extended singulator with inspection section.
- Unique weighing system determines weight of each individual fruit with consistent accuracy. Easily adjustable with clock-type indicator.
- Provided with 6 weight sections and drops (standard) or more (optional). Outlets covered with rubber guide flaps.
- Undersize exit at drive end of the machine.
- Transparent dust protection hood.

## SINGULATOR

The singulator belt deposits the fruits one by one in the weighing cups. Its inspection section allows for continuous product quality control. It is 1600 mm (63") long and is provided with biconical rubber rollers. The continuous rotation of these rollers assures separation and prevents doubling and consequent damages to the fruit.

## DROPS

Via a special outlet and a right angled delivery belt the sized fruit is conveyed from the weight section to the exit. The outlet is covered with rubber flaps to prevent the fruits from touching.

The exits can be provided with optional equipment such as Packing Belts and Packing tables as required.

## CAPACITY

The "Perfect" Mechanical Weight Sizers has a stepless speed control from 70 to 140 cups per minute per lane. A filling rate of 90% gives every lane a maximum capacity of approximately 750 kg (1650 lbs) of fruit per hour.

## WEIGHING SECTIONS

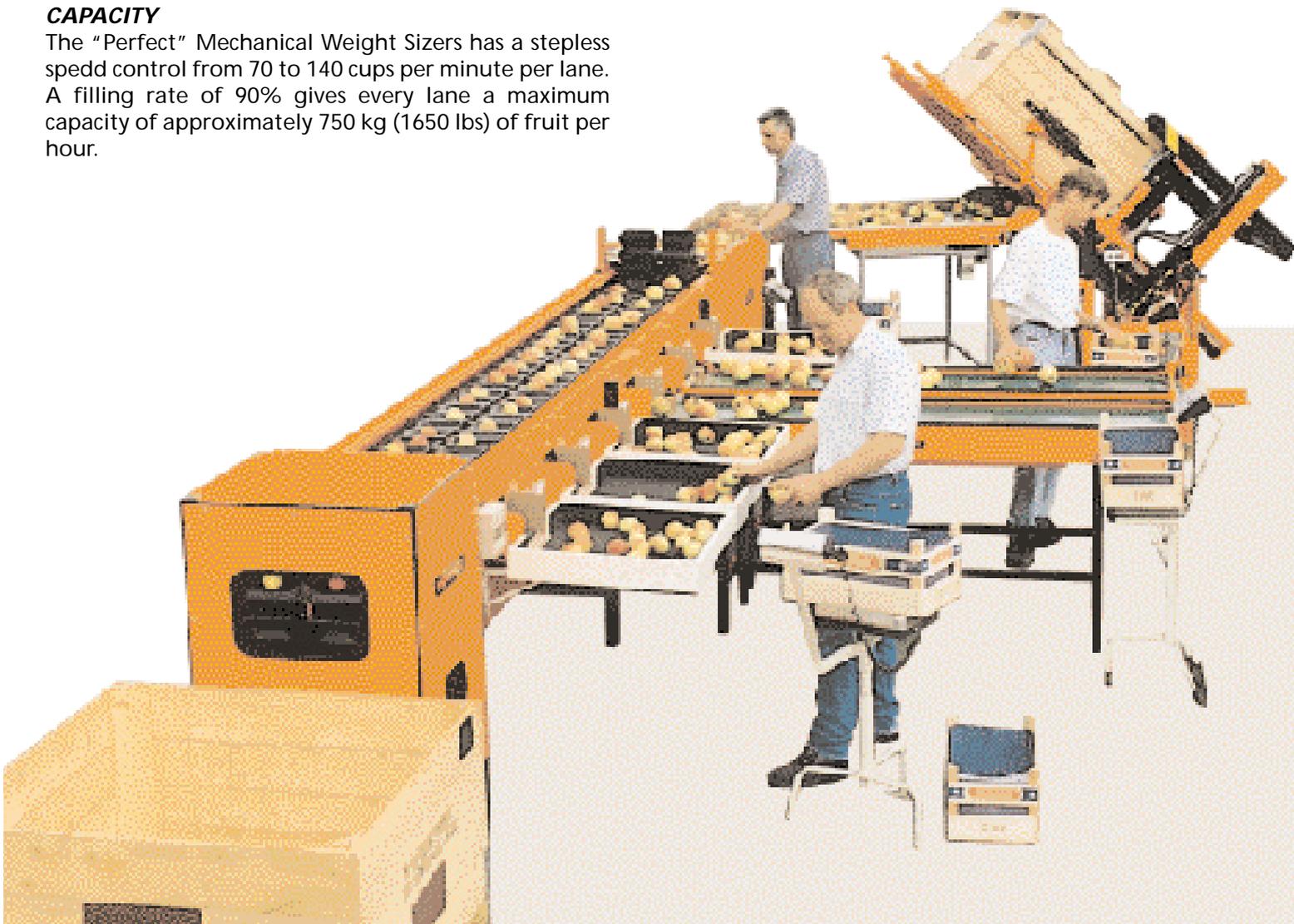
The weighing sections select the heavier (bigger) fruits first, followed by the lighter ones. A unique weighing system determines the weight of each individual fruit with consistent accuracy. This also allows for size grading. The weighing sections are equipped with eccentric counter weights which can not drift. Once adjusted, they give the same weight consistently.



*Every weight section is provided with an indicator clock (adjustable from 1 to 24). This allows for an immediate change of the weight (size) to be selected.*

Weighing elements can be blocked separately for every lane, so that the same size fruit can be distributed to multiple drops. The distance between the weight section exit centres is 700 mm (27½").

A modular set up allows for an easy extension of the number of drops, as well as for insertion of spacer sections of the same width.





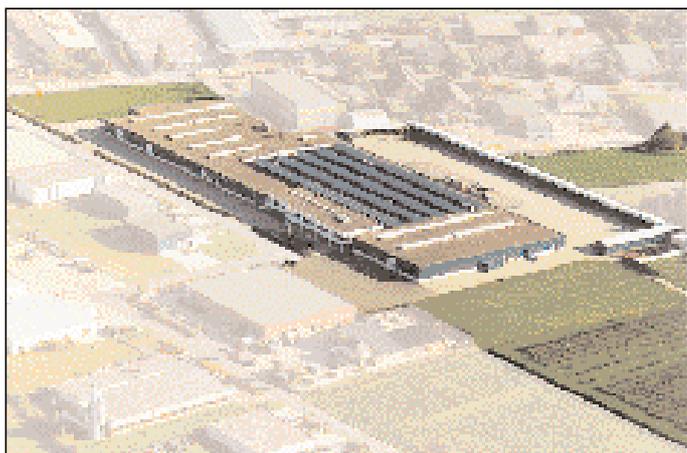
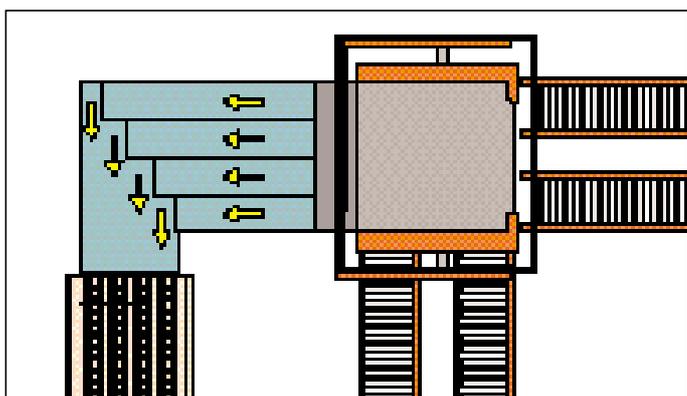
## TWO-SPEED BELTS



### STEPPED TWO-SPEED BELT

This special version of the Two-Speed Belt has been created for an optimal spread out and cup filling in case of 3- and 4-lane configurations. The long, faster moving section of the Stepped Two-Speed Belt consists of three or four individual belts of the same width, each feeding one lane of the Grading Machine. The fruits are spreaded over the different lanes without any separation- or guiding strips to prevent scour- or dent-damages.

Contrary to the standard Two-Speed Belt, the Stepped Two-Speed Belt can be positioned square to the Feeding Belt, which reduces the total length of a 3-lane installation by approximately 600 mm (24") and of a 4-lane installation by approximately 1000 mm (39").

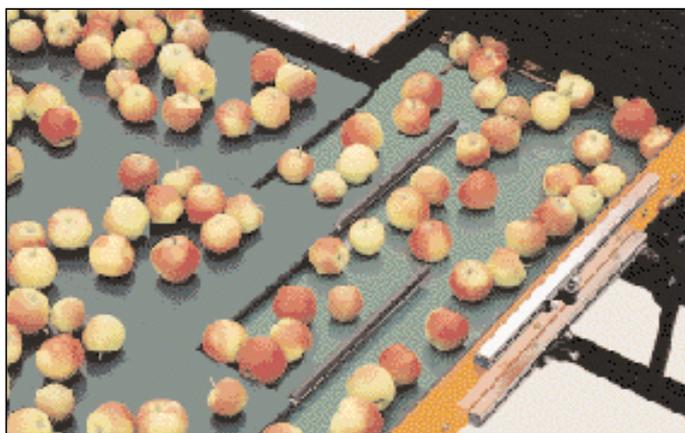


### TWO-SPEED BELT

The Two-Speed Belt is set up in between the Bin Tipper and Sizer. It consists of a short, slow moving section of 300 mm ( $\pm 12''$ ) at the Bin Tipper end, which prevents the fruit from rolling upon being discharged. A long, 6 x faster moving section of 1500 mm ( $\pm 59''$ ) at the Sizer end spreads the fruit out and assures a gradual feed to the Sizer. Both belts have a width of 1200 mm ( $\pm 47''$ ). Speed control is electronically adjustable.

An (optional extra) photocell on the long belt reduces idling.

As the end shaft diameter of the long belt is only 20 mm ( $3/4''$ ), there is only a minimal height difference at the junction. The ultimate 400 mm ( $\pm 16''$ ) at the Sizer end are "floating" to go over the sizer feeding belt and distribute the fruit over the full width.



#### SPECIFICATIONS:

**Electrical connections:** 1 x 220V, nil and earth

**Motor power:** 0,37 KW / 0,5 HP

**Long belt speed:** 0,02 - 0,06  $\text{ms}^{-1}$

**Outlet height:** 1000 - 1250 mm (39" - 49")

**Dimensions:**  
Width 1350 mm (53")  
Length 1900 mm (75")  
Height 1150-1400 mm (45"-55")

**Weight:** 145 kg (320 lbs)

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