



**MATERIAL**

Turned and zinc-plated steel.

**RETAINING COMPONENTS**

Zinc-plated steel.

**BALLS**

Steel.

**SPECIAL EXECUTIONS ON REQUEST**

Stainless steel body and balls.

**FEATURES AND APPLICATIONS**

GN 509.4 ball transfer units are particularly suitable on conveyor tracks. They make linear or rotary movements easier even with heavy loads (see Technical Data page 975).

**Technical data  
for ball transfer units  
GN 509 and GN 509.1**

**Ball transfer units consist of a metal body inside which a ball, supported by smaller balls, helps in conveying loads applied on a plane surface in every direction (for example conveyor belts).**

**Choice of the ball transfer unit**

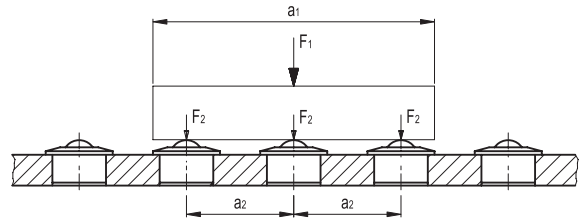
To choose the proper ball transfer unit for a conveyor track, both weight and dimension of the load to be carried must be taken into consideration.

The max distance "a<sub>2</sub>" between the ball transfer units (on a plane surface) is obtained by dividing the smaller load dimension to be conveyed (a<sub>1</sub>) by 2.5.

This calculation (based on an elementary geometry principle) guarantees that a load is always supported by at least 3 ball transfer units, thus preventing it from tipping over.

As far as the weight is concerned, as the load is supported by at least three different ball transfer units, each of them would bear a third of the total weight (the total weight divided by three).

It may be equal or lower than the max load capacity values shown in the table for every unit.



a<sub>1</sub> = smaller dimension of the load to be conveyed

a<sub>2</sub> = max distance between ball transfer units

$$a_2 = \frac{a_1}{2.5}$$

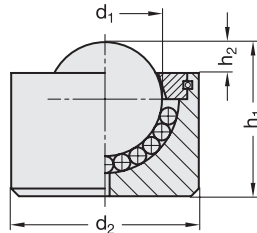
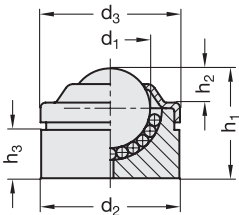
F<sub>1</sub> = load weight

F<sub>2</sub> = load supported by each ball transfer unit

$$F_2 = \frac{F_1}{3} \leq \text{max load capacity of each ball transfer unit}$$

GN 509.4-8 / 12

GN 509.4-15 / 22 / 30 / 45



Code	Description	d1	d2 ±0.08	d3	h1 ±0.3	h2 ±0.3	h3	Max load capacity [N]	Δ
GN.23083	GN 509.4-8-SBL	7.9	18	18	12	2	5.1	120	18
GN.23084	GN 509.4-12-SBL	12.7	22	22.2	17.5	5.5	7.7	200	34
GN.23085	GN 509.4-15-SBL	15.8	24	-	20	5	-	500	49
GN.23086	GN 509.4-22-SBL	22.2	36.5	-	30	6	-	1300	175
GN.23087	GN 509.4-30-SBL	30.1	44.4	-	36.8	7.5	-	2500	324
GN.23088	GN 509.4-45-SBL	44.4	62.6	-	53.5	13	-	6000	410

**Speed and friction**

The permissible conveying speed is 2 m/sec. With speeds higher than 1 m/sec., according to the dimensions of the ball transfer units, a rise in temperature, in proportion to the dimensions of them, could occur owing to the increase of the rotation speed of the support balls.

The friction value of the ball transfer units, at a speed of 1 m/sec., is 0.005 μ. This value depends, however, on the application and it could be subject to several variables.

Ball transfer units in turned and zinc-plated steel (GN 509.1) offer a higher rigidity in comparison with the zinc-plated drawn sheet steel ones (GN 509).

Lubrication of the balls is recommended to prevent corrosion, even though some applications may not require it.

