GN 509

Ball transfer units

Stainless Steel / Steel housing

SPECIFICATION

Housing sheet steel **SBL**

- zinc plated, blue passivated
- Ball Steel, blank

Housing sheet steel **SKU**

- zinc plated, blue passivated
- Ball Plastic (Polyacetal POM)

Housing sheet steel **SNI**

- zinc plated, blue passivated
- Ball Stainless Steel AISI 420C

Housing sheet steel **NNI**

- Stainless Steel AISI 304
- Ball Stainless Steel AISI 420C

INFORMATION

Ball transfer units GN 509 are used on conveyer tracks. They assist a linear or rotary movement of heavy loads on conveyer track.

ACCESSORY

- Spring rings GN 509.3 (Retainers for ball transfer units) (see page 1099)

TECHNICAL INFORMATION

All ball operated conveyers are made up of a number of balls each located in a socket resting on a number of smaller support balls thus allowing the larger ball to rotate in any direction.

Arrangement and choice of ball size

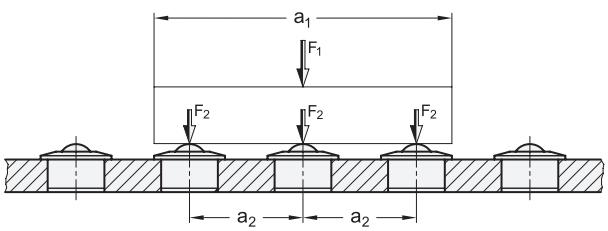
When deciding on the size of the conveyer the following factors have to be taken into account: Weight, size, base material as well as the load to be carried.

The **max. distance between the roller balls „a2“** (on a plane surface) is arrived at by dividing the shortest edge length of the load to be conveyed by 2.5. This ensures that a load will always be supported by carrier balls thus preventing it from tipping over into an empty space.

The required **load carrying capacity** of the balls is determined by the weight of the actual load divided by three. This is arrived at from the assumption that, due to tolerances on the load carrying face and the spacing of the balls in general, only three balls will be under load at any one time.

a_1 = shortest edge length of the load
a_2 = max. distance between roller balls
$a_2 = a_1/2.5$

F_1 = Load weight
F_2 = Load per roller ball
$F_2 = F_1/3$



Speed and friction

The permissible conveying speed is 2 m/sec. With larger roller balls at speeds exceeding 1 m/sec., depending on the weight being conveyed, an increased temperature would be expected.

The **friction values** of the balls at a speed of 1 m/sec. will be in the region of 0.005 µ. This value is, however, dependent on application of usage and could be subject to large variations.

In comparison of balls with sheet metal housings (GN 509) with balls in heavy duty steel housing GN 509.1 (see page 1102), the latter have a higher rigidity. Hence the static values of balls in steel housing can be applied.

Lubrication to prevent corrosion is recommended. The general recommendations applicable to ordinary roller bearings will be sufficient. In most applications lubrication can be ignored.

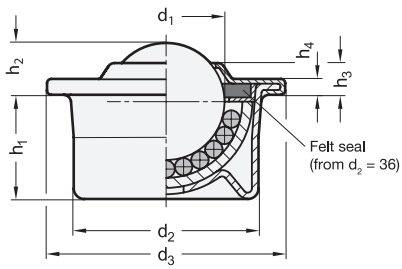
Resistance to temperature

Balls from size 36 upwards are fitted with a felt seal as protection against ingress of dirt and dust. The latter have a max temperature of 100 °C only.

Balls without the felt seal can also be used at higher operating temperatures. This, however, will lead to a reduced conveying capacity (c). The following table gives indicative values:

125 °C ./. 10 %
150 °C ./. 20 %
170 °C ./. 30 %
200 °C ./. 50 %

The max. operating temperatur for ball transfer units with plastic ball is 60 °C.



GN 509

STAINLESS STEEL

Description	Size	d1	d2	d3	h1 ±0.3	h2 ±0.3	h3 ±0.3	h4	Load C in N	⚖
GN 509-15-SBL	15	15.8	24 ±0.065	31	21	9.5	5	2.9	500	40
GN 509-22-SBL	22	22.2	36 ±0.08	45	29.5	9.8	6	2.9	1200	129
GN 509-30-SBL	30	30.1	45 ±0.1	55	37.8	13.8	7	3.7	2000	208
GN 509-15-SKU	15	15.8	24 ±0.065	31	21	9.5	5	2.9	70	20
GN 509-22-SKU	22	22.2	36 ±0.08	45	29.5	9.8	6	2.9	100	40
GN 509-30-SKU	30	30.1	45 ±0.1	55	37.8	13.8	7	3.7	150	80
GN 509-15-SNI	15	15.8	24 ±0.065	31	21	9.5	5	2.9	300	40
GN 509-22-SNI	22	22.2	36 ±0.08	45	29.5	9.8	6	2.9	900	130
GN 509-30-SNI	30	30.1	45 ±0.1	55	37.8	13.8	7	3.7	1500	265
GN 509-15-NNI	15	15.8	24 ±0.065	31	21	9.5	5	2.9	300	40
GN 509-22-NNI	22	22.2	36 ±0.08	45	29.5	9.8	6	2.9	900	110