

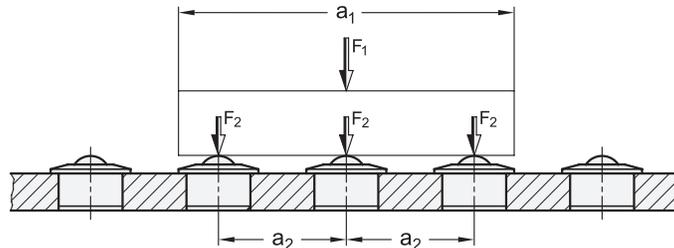
Ball transfer units are machine elements for which a large ball is located in a socket, resting on a number of smaller support balls. The shape of the socket allows the large ball to roll in any direction.

Arrangement and size selection

When determining the size of the ball transfer units, it is necessary to consider not only the weight but also the size and nature of the base area of the load.

The maximum **distance between the ball transfer units „a₂“** (assuming a flat base area) is calculated by dividing the shortest edge length of the load by 2.5. This ensures that the load always rests on the ball transfer units, preventing it from tipping over into the spaces between them.

The required **load capacity** of the ball transfer units is calculated by dividing the weight of the load by 3. This results from the assumption that, due to tolerances of the load base area and the ball transfer units, only three ball transfer units are normally used.



a_1 = Shortest edge length of the load

F_1 = Load weight

a_2 = Max. distance between ball transfer units

F_2 = Load per ball transfer unit

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

$$F_2 = \frac{F_1}{3}$$

Speed and friction

The permissible conveying speed is up to 2 m / sec. With larger ball transfer units at speeds exceeding 1 m / sec., depending on the load weight, an increase in temperature must be expected.

The **friction values** of the ball transfer units are about 0.005 μ at a speed of 1 m / sec. However, this value is subject to large variations depending on the operating conditions.

Compared to ball transfer units with steel sheet housing (GN 509), those with solid steel housing (GN 509.1) have a higher rigidity. In this case, the static values of steel balls can be applied.

Lubrication is recommended as protection against corrosion. The general rolling bearing regulations can be applied. In most applications, lubrication can be dispensed with.

Temperature resistance

Ball transfer units from size 36 upwards are fitted with a felt seal as protection against ingress of dust and dirt. With this version, the max. operating temperature is 212 °F (100 °C) for balls made of steel.

Ball transfer units without felt seal can also be used at higher temperatures. However, this will lead to a reduced load rating (C). The following guide values apply:

257 °F (125 °C) ./ 10 %

302 °F (150 °C) ./ 20 %

338 °F (170 °C) ./ 30 %

392 °F (200 °C) ./ 50 %

The max. operating temperature for ball transfer units with plastic ball is 140 °F (60 °C).