

# Ball Transfer Units

## Technical Instructions

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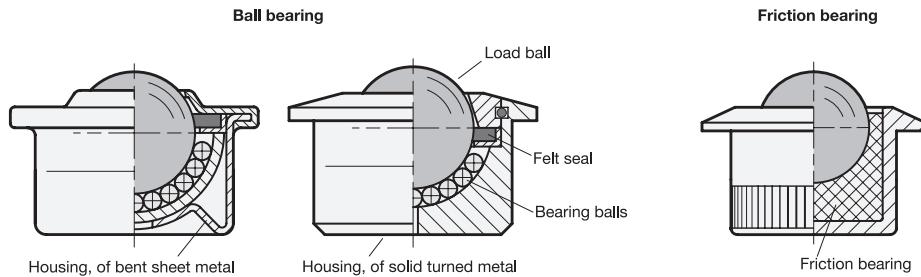
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### Structure of Ball Transfer Units

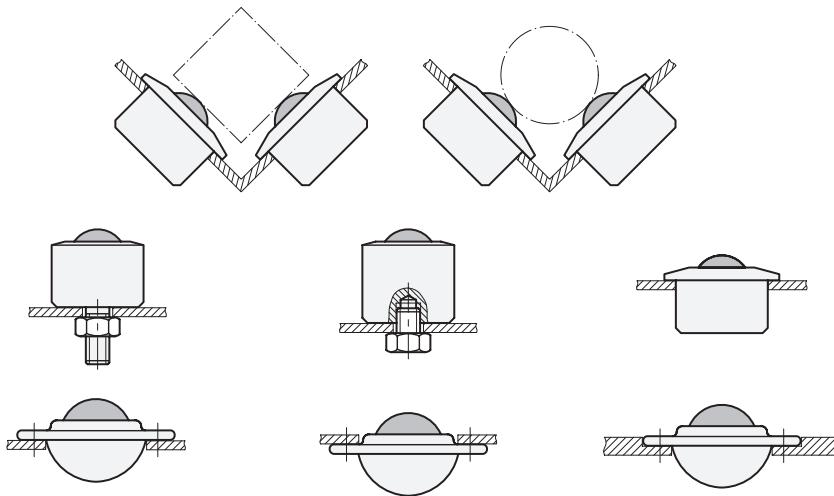
Ball transfer units consist of a housing containing a load ball sitting atop bearing balls or a friction bearing. This arrangement allows the load ball to rotate in any direction. Depending on the design and the nominal size, felt rings protect the inside of the housing from dirt ingress. Ball transfer units with solid housing offer a higher load capacity due to their rigidity.



### Assembly and Mounting Options

Various assembly and mounting options are available to simplify installation.

For housings without additional mounting options, the ball transfer units can simply be inserted into the mounting hole, either with or without a collar. In this case, the ball transfer units can be secured with retaining rings available as accessories. Ball transfer units with flange holes or thread can be fastened with nuts and screws.



# Ball Transfer Units

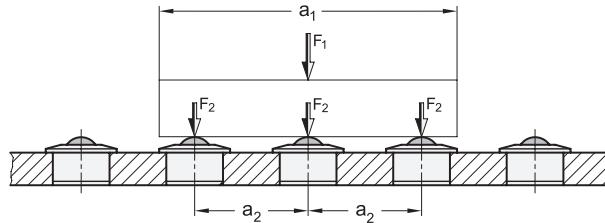
## Technical Instructions

### Arrangement and Choice of Ball Size

The size and weight of the load to be moved must be considered when selecting the ball transfer units.

To ensure that the load reliably remains on the ball transfer units and cannot tip into the intervening spaces, the maximum ball transfer unit spacing of  $a_2$  must not be exceeded. The spacing depends on the smallest edge length of the load. If the contact surface of the load is uneven, it may be necessary to reduce the spacing even further.

The required load capacity of the individual ball transfer units corresponds to 1/3 of the load, since this generally rests on only 3 ball transfer units at a time due to factors such as unevenness and dimensional tolerances. The values apply only to installation in an upright orientation.



$a_1$  = Smallest edge length of the load

$F_1$  = Load weight

$a_2$  = Max. ball transfer unit spacing

$F_2$  = Load per ball transfer unit

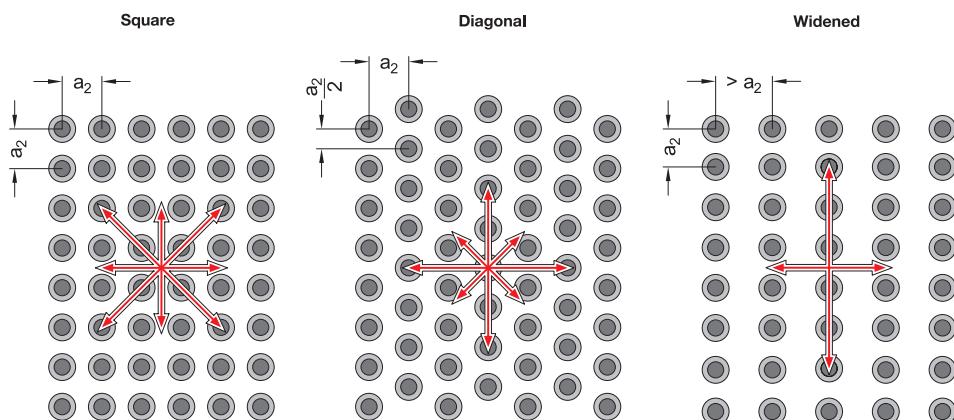
$$a_2 = \frac{a_1}{2.5}$$

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

### Example Arrangements

Depending on the direction of movement, the contact of the load can be determined and adapted by adjusting the spacing and arrangement of the ball transfer units. Within a conveyor system, a significantly greater number of different movement directions arise e.g. at intersections and branch points than along straight sections.

The arrows in the image show favorable arrangements. Note: The longer the arrow, the better the respective arrangement for the indicated direction of movement.



Conveyor Components

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### Conveying Speed and Friction

The maximum permissible conveying speed is 2 m/s. With larger ball transfer units, the temperature of the ball transfer units could be raised by frictional heat already at a speed of 1 m/s, depending on the load.

The friction value of the ball transfer units at a speed of 1 m/s is roughly  $0.005 \mu$ . Depending on the usage conditions, however, the actual value may differ from this significantly. If necessary, the friction can be reduced by lubrication, which also confers protection against corrosion.

### Operating temperature

Ball transfer units with plastic load balls or plastic friction bearings can be used at operating temperatures up to 60 °C. Versions with steel or stainless steel balls and a felt seal are suitable for operating temperatures up to 100 °C.

Ball transfer units without a felt seal can be used at even higher temperatures; however, the load capacity decreases as the temperature rises, as shown in the diagram.

