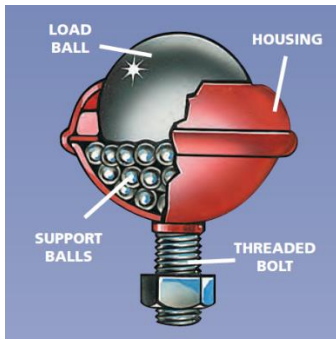


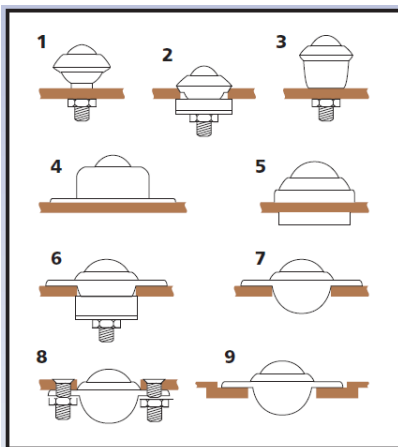
DESIGN & CONSTRUCTION



ALWAYS ball units are a multidirectional, material handling system, manufactured from high quality materials in our Birmingham factory. They consist of a large load-bearing ball which sits upon many small balls encapsulated in a hemispherical cup. The housing can contain a seal to clean the load ball as it rotates. The design greatly reduces friction and allows heavy loads to be moved with a minimum of effort. Our ball units may be used at any orientation but deviation from the vertical may result in a reduction in the stated load ratings quoted in this catalogue.

FIXING METHODS

There are various methods of fixing Always ball units. A wide range of fittings enable them to be used with



various different materials. Fixing clips are available for most designs - see pages 30 & 31.

MATERIALS

Type	Load Ball	Support Balls	Housing
13	Carbon Steel 60-66RC	Carbon Steel 60-66RC	Carbon Steel Bright Zinc Plated
14	Nylon 66	Stainless Steel AISI 1420 52-58HRC	Carbon Steel Bright Zinc Plated
15	Stainless Steel AISI 420 52-58HRC	Stainless Steel AISI 420 52-58RC	Stainless Steel AISI 304 SelfColour
16	Stainless Steel AISI420 52-58HRC	Stainless Steel AISI 420 52-58RC	Carbon Steel Bright Zinc Plated

ALWAYS ball units are available in various materials. The material

required for your ball units should be quoted when ordering - see page 3 for ordering details.

Lubrication

Each unit is pre-lubricated during manufacture and normally does not require further attention. In certain instances we will advise on lubrication. Greasing or oil points can be incorporated in some units.

Cleaning

For cleaning use a suitable agent such as AC90 or WD40. Please consult Technical Support for advice. Most designs have dirt exit holes incorporated in the bearing cup, or these can be added on request.

Shock Loads

When calculating loads, consider the possibility of impact caused by incorrect levels. Spring loaded units will reduce wear and tear if there are regular shock impacts. Shock loading can also be reduced by fitting compressible pads. Ball units can also be made retractable by other means, such as pneumatic or hydraulic cylinders, cams or levers. They can be programmed to operate in sequence. All stated loads in the catalogue are dynamic loads.

Self Levelling

Can be achieved by fitting rubber pads. This reduces excessive loads on just a few units. Details on request.

Temperature Range

Min. -30°C to max. +70°C continuous, or +100°C intermittent. Special seals may need to be fitted to suit extreme conditions. In clean conditions and without seals +150°C to +200°C are possible, using Type 15 units at reduced loads.

Conveying Speed

Maximum recommended conveying speed is 1 metre per second for steel load balls and 0.25 metres per second for nylon.

Seals

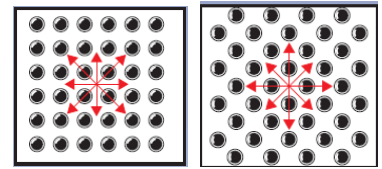
These help resist ingress of dirt and swarf. They can be omitted on request. Woollen felt seals fitted as standard.

Breakaway Coefficient of Friction

The average breakaway friction for new ball units containing steel balls in a good working environment is 0.01 to 0.015 (1% to 1.5% of the load) and 0.02 to 0.025 (2% to 2.5%) for units with felt seals.

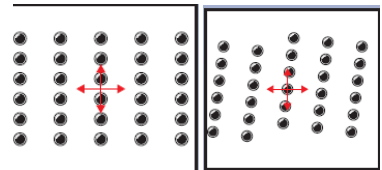
BALL TABLES

Red arrows indicate ideal movement.



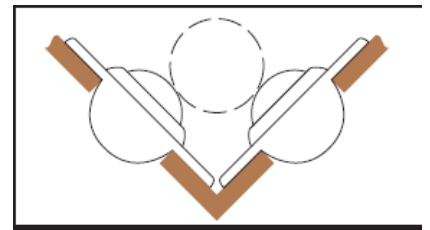
Square Pitch

Diamond Pitch



Elongated Pitch

Elongated Diagonal Pitch



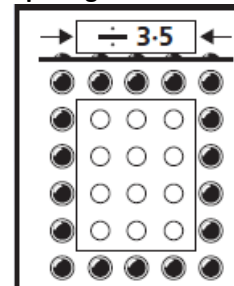
Vee location

QUANTITY CALCULATION

The weight of the article to be conveyed should be divided by 3. The result will give the maximum load any single ball will bear.

On any accurately levelled or flexible surface, a number greater than 3 may be used. The surface hardness and condition of the article should be considered to avoid ball unit enetration.

Spacing



The pitch is calculated by dividing the narrowest dimension by 3.5, i.e. if the narrowest dimension is 350mm divided by 3.5=100mm pitch between ball centres. This ensures 3 ball units are always beneath the narrowest dimension of the load at any one time.