

## A quick guide to Castors & Wheels

### Mountings

**Top plate** – commonest fixing with four boltholes to spread the load over the swivel head.

**Single bolthole** – limited to loads of up to 320kg having a fastener through the centre of the swivel head. Can be fitted with either threaded stems or round/square expanding sockets to fit in tubes.

**Loadings** -The effect of uneven floors due to cracking, joints or gullies must be allowed for when accessing the required load or rating of the castor. The degree of such defects will determine the extra shock loads acting in the castors...

**Castor Configurations** – these will also effect load calculations, as when moving, one or other castors may float on uneven floors removing its share from the loading. An allowance for this must be made, and so the castor load capacities are listed below, along with the uses and characteristics for each configuration.

**Two swivel + two fixed** – when pushed with the two fixed castors leading, this offers the best load control with good steering on straight runs and cambers. Suitable for most loads. Castor capacity at least 33% of total gross load.

**Four swivel** – for maximum manoeuvrability. Difficult to control on straight runs, cambers and uneven surfaces, particularly heavy loads – to overcome this fit directional locks. Castor capacity at least 33% of total gross load.

**One swivel & two fixed** – for easy manoeuvrability. Suitable only for small trolleys with light loads. Stability can be a problem so loads must be distributed evenly. Castor capacity at least 40% of total gross load.

**Three swivel** – for maximum manoeuvrability. Can be difficult to control on straight runs, cambers and uneven surfaces. Suitable only for small trolleys with light loads. Castor capacity at least 40% of total gross load.

**Four swivel & two fixed, centrally pivoting** - usually used on long trolleys to optimise control and manoeuvrability. The two central fixed castors are usually one size larger or the same size as the swivel and fitted with 25mm packing under the top plate. Castor capacity for the fixed castors at least 50% of total gross load. Swivel castor loads will vary.

**Two swivel & two fixed, centrally pivoting** - similar to the above but less stable if the load is not evenly distributed. The two central fixed castors are usually one size larger or the same size as the swivel and fitted with 25mm packing under the top plate. Castor capacity for the fixed castors at least 50% of the total gross load. Swivel castor loads will vary.

## **Wheels**

Castor wheels are designed to be supported on both sides and intended for use on units with manual propulsion of up to 4mph. The extra stresses of powered towing should only be considered with specialist advice. Wheels are categorised into two groups – hard tread and soft tread:

**Hard Tread Wheels** – the easiest to push as they have the least tractive resistance. The main disadvantage is that they are noisy and can wear floors excessively. The main types of hard wheels are as follows:

**Cast iron & steel** – combine shock resistance with long life and economy. Temperature range -40c to +300c.

**Nylon** - has high loaded capacity, is light and clean and causes little floor damage. Temperature range -40c to +80c.

**Polypropylene** – has a good load capacity but not the abrasion or fracture resistance of nylon. Operational temperature range up to 350c.

**Phenolic** – very hard, abrasion and fracture resistant but liable to wear and chipping. High operational temperature range up to 350c.

**Soft Tread Wheels** – are resilient generally resulting in less noise, marking and floor wear. Tractive resistance is however much higher. New development grades of polyurethane and increased load capacities while reducing tractive resistance:

**Solid Rubber** – the basic wheel, although new thermoplastic grades are harder wearing and low cost. Temperature range -20c to +60c.

**Elastic Rubber** – has high load capacity and wear resistance with smooth soft-cushioned ride. Temperature range -20c to + 60c.

**Polyurethane** – has very high load capacity with abrasion, tear and chemical resistance and a soft ride. Temperature range -30c to +90c.

**Pneumatic** – has an excellent shock absorption working well on rough, uneven surfaces like grass or gravel. Temperature range -20c to +60c.

**High temperature** - wheels are now available with rubber tyres suitable for use in temperature range -30c to +250c.

## **Bearings**

The choice of bearing is determined by the application, working environment and loading levels...

**Plain bearings** – are mainly used in low load, intermittent applications. Disadvantages include axle wear and squeaking in dusty or wet conditions.

**Roller bearings** – are simple in construction, robust and excellent for regular use with light to medium loads working at low speeds.

**Ball journal** – precision construction bearings for higher loadings with moderate to high radial forces. Suitable for manual low speed powered towing.

**Taper roller bearings** – are mainly used with larger diameter castors for the highest loads and most arduous applications including towing.

**Sintered bronze** – or other metals, are a type of plain bearing used for high temperature applications to minimise friction and wear.

**Teflon sleeve** – are another type of plain bearing used to reduce friction but generally used on lighter loads than sintered bronze.

NB: Please note the above information is for guidance only. Always check & confirm the required specification with one of our technical sales staff before ordering. For specific technical information and further advice please call our technical sales team on 01634 245999 or email [sales@component-force.co.uk](mailto:sales@component-force.co.uk)