Over 125 years of quality

1890

Mannerin Konepaja was founded in Hanko, Finland, in 1890 by tinsmith Juho Manner. The first products were household utensils and tin roofs. Later projects included iron structures for the Bengtskär lighthouse, water and sewer networks, ship repairs and fortifications. The first industrial products, tin cookie containers, were made with self-invented tools.

1930

In the late 1930s, when the signs of the upcoming WWII had become apparent, Manner focused on manufacturing war materials. During the Interim Peace in 1940, the operations were moved to the cities of Lohja and Lahti. The Hanko factory was re-opened in August 1942, and in 1943, Manner became a limited liability company

1910

Yrjö Manner, who was appointed the Managing Director in 1917, expanded operations in Hanko. The new foundry was completed in 1926, making it possible to introduce tall and long iron constructions, such as radio masts and bridges, to the product range. Increasingly industrialised Finland was also in dire need of mass-produced items from industrial and household appliances to various cast products such as water piping fittings, pit cover plates, bearing blocks and wheel trains

1950

The third generation took over the company in 1949 under Aarne Manner. He recognised the importance of specialisation, and decided to shift the focus from various metal and wood working machinery, foundry products and hydraulic accumulators solely to wheels and castors. The manufacturing of pressed sheet wheels began in 1951.

By 1954, wheels and castors had become the largest product group, accounting for 27 percent of the turnover.

Plastic wheels were introduced to the range in the 1950s. The first own injection moulding machines used in plastic wheel manufacturing were acquired in 1966. In 1974, the company decided to discontinue all other products and focus exclusively on castors and wheels with all Nordic countries as its market area.

2000

Product development and customer orientation have taken an even more central role — castors are designed to meet the needs of the customers. The importance of design has been recognised. Manner's long history, experience in working with both metal and plastic, active product development and excellence have made it an internationally renowned brand of high repute.

1980

In 1984, Tapio Manner became the fourth generation of the Manner family at the helm. As the Managing Director, Tapio has continued on the path set by his father, and developed the company further by introducing new machines and tools, and increasing automation. Production facilities were renewed in 1997–98 and all operations moved under one roof. This has not only increased efficiency, but also made it possible to expand to new, larger markets. Exporting outside the Nordic countries, one of the key objectives, is now a reality: Manner wheels and castors are available in almost 30 countries.

Manner success factors

Founded in 1890, Oy Mannerin Konepaja Ab is a Finnish family-owned company that has produced castors since the 1930s. The company's road to success has been paved by decades of experience in metal and plastic works. Active product development and excellence have made Manner one of the leading castor manufacturers in the Nordic countries and earned it international acclaim.

We pay particular attention to Manner's success factors that enable us to continue to offer only the best:

- **Customer:** customer needs must be clarified and identified on a continuous basis.
- **Continuity:** sensible decision-making and efficient operations will safeguard the company's profitability and its future.
- **Reliability:** by honouring contracts and keeping our promises we also help our customers to succeed.
- **Know-how and job satisfaction:** our goals can only be achieved through continuous training and occupational well-being.
- **Environment:** environmental protection and compliance with community responsibilities guide our decisions.

Business idea

Our business idea is to provide value-adding castor solutions that are tailored to customer needs. Manner's strength and success come together in two areas: quality and innovativeness.

Reliable quality

To us, quality means the reliability of operations and products. Customers can be sure that the products they have ordered are delivered as promised, when promised, and with the features promised.

All Manner products are tested and ISO-certified, and compliant with the RoHS and REACH requirements.

Manner's operations comply with the ISO 9001 quality standard and the ISO 14001 environmental standard, and have been awarded both certificates.

Innovative castor solutions

The experience acquired over the years in the various stages of castor design and manufacturing has enabled Manner to attain a high level of know-how and innovation. Developing and offering solutions that provide added value is important to us.

Manner's quality and innovativeness contribute to the competitiveness and success of our customers. This is evidenced by a number of innovative technical solutions and new products, which have brought added value to equipment manufacturers and end users alike.

Products that made Manner famous

We have launched many innovative and technical castor solutions that have brought added value to our customers. Here are a few of them.

Injection moulding manufacturing of plastic castors

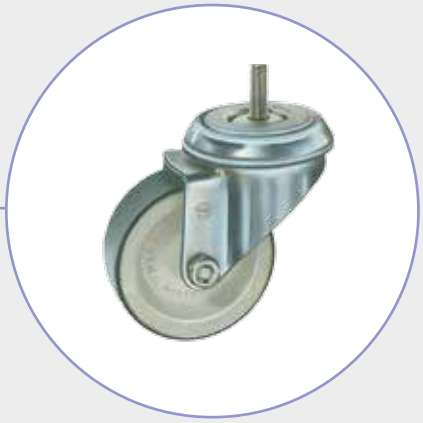
Manner's plastic castors were launched in the 1960s.

First design product

First Manner product for which the fork and the brake were designed in collaboration with industrial designers.

Roll container castor

Pioneer in roll container castors: industrial castors with ball bearing and polyurethane tread.



Sensitive, adjustable brake for industrial use

Extra soft, elastic solid rubber wheel

User's choice: ergonomic, easily manoeuvrable and quiet elastic solid rubber wheel.

Wheel 2000

Award-winning, patented polyamide wheel. Unique twin wheel structure makes the castor extra quiet and smooth to operate.

Tango

Internationally renowned and popular: design, manoeuvrability, special features.

Manner® e-SMART

reddot design award
best of the best 2010

The world's first equipment castor with electric central locking.

The Intelligent Orange RFID wheel

RFID wheel combined with the RFID reader and data system enable reliable and effective management of equipment, trolleys and products.

Special solutions

Manner is known for its many customer-oriented solutions, of which the hand brake feature in the Tango series is just one example.

How to choose the right castor for the right place

Before choosing a product, please read the guidelines below.
The tips provided will make the task that much easier and ensure that you find the most suitable castor for your needs.

1 Continuous or occasional use

If the furniture is only occasionally moved, the choice of castor mainly depends on the maximum load. The environment in which the castor is used may also pose its own restrictions.

In continuous use the situation is different. Here, selection should be made with care as the castors will greatly impact not only the working life of the furniture or equipment, but also work efficiency and safety.

Bearings 2

The quality of the bearings is of utmost importance, especially if the equipment or furniture is to be continuously moved. The better the bearing, the easier and more efficient the work.

For example, to move a load of 150 kg, wheels fitted with plain bearings require about 50% more force than those with ball bearings.

The impelling force, or starting power required to put a stationary wheel into motion, can be significantly reduced by selecting castors with ball bearings.

Manner wheels and castors are fitted with plain or ball bearings

Plain bearings are the simplest and most economic type of bearing. The wheel rotates directly on the axle or the axle bush.

Most of our wheels and castors are fitted with sealed 2RS ball bearings, which are easy to manoeuvre, maintenance-free and durable. The bearings are located either at the centre of the hub or on both sides of it.

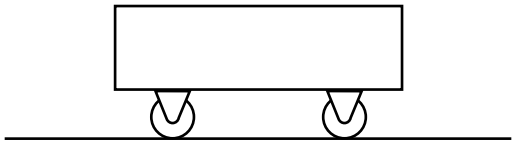
If you need more information or tips regarding our products, our importers and factory staff are happy to help.

3 Maximum load

The actual load on a castor can be calculated by dividing the total weight of a 4-wheel trolley by three. This is because the device or equipment may move only on three wheels.

All load values in this catalogue apply to non-mechanical use in normal temperatures. The speeds are 3–4 km/h depending on the castor set.

If conditions are exceptionally demanding, contact our distributors or factory for advice.



3

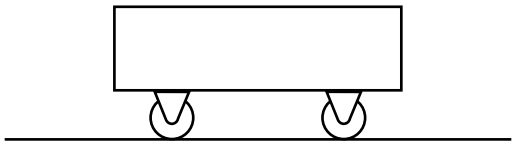
4 Shock load

Shock loads can occur, for example, when crossing thresholds or other obstacles.

If such shocks cannot be avoided, it pays to be prepared. Opt for

- elastic tread
- greater diameter
- sufficient load reserve
- shock-absorbing wheel structure

(Divide total load by max. 2



max. 2

Surface and surroundings 5

The more uneven the surface, the larger the wheel and the softer the tread should be.

For a hard surface we recommend using a soft wheel, and for a soft surface a hard wheel.

In case of a level, smooth floor and good conditions, the tread can be chosen more freely.

If there are likely to be pieces of thread or string on the floor, choose a castor with threadguards.

Also consider temperature (section 7), humidity and chemicals (section 8).

Hardness of various tread materials:

Furniture castors	
Solid rubber wheel	76 Shore A
Thermoplastic rubber	90 Shore A
Light equipment castors	
Thermoplastic rubber	80 Shore A
Soft polyurethane	85 Shore A
Conductive thermoplastic rubber	90 Shore A
Equipment castors	
Thermoplastic rubber	55-90 Shore A
Elastic solid rubber	60 Shore A
Soft polyurethane	80 Shore A
Solid rubber	85 Shore A
Conductive thermoplastic rubber	86 Shore A
Conductive soft polyurethane	90 Shore A
Industrial castors	
Elastic solid rubber	60 Shore A
Heat-resistant rubber	75-80 Shore A
Soft polyurethane	80 Shore A
Solid rubber (black)	85 Shore A
Polyurethane	98 Shore A
Conductive soft polyurethane	80 Shore A
Conductive polyurethane	98 Shore A
Heavy-duty castors	
Soft cast urethane	87 Shore A
Cast urethane	95 Shore A

The information referred to above and in the catalogue should be considered as approximate values.

For more information, please visit www.manner.fi

6 Tread material

Tread material is the third decisive factor – along with wheel diameter and bearings – in controlling rolling resistance.

Comparison of tread materials:

Features	Polyamide	Soft polyurethane	Polyurethane	Solid rubber	Soft thermo-plastic rubber	Thermoplastic rubber	Elastic rubber
Suitability indoors	3	4	4	2	3	3	5
and outdoors	4	2	4	2	2	4	3
Thermal resistance	4	5	5	2	2	3	3
Wear resistance	3	4	4	4	4	3	5
Shock load	5	3	3	4	4	4	4
Rolling and starting resistance							
– smooth and hard surface	5	3	4	2	3	4	4
– uneven surface	2	4	3	3	4	2	5
Load capacity	5	4	4	2	2	3	4
Surface compatibility	2	4	3	3	4	3	5
Traction on surface	1	4	3	4	4	3	5
Scale 1–5 (5 = very good .... 1 = poor)							

7 Temperature

The load capacities given in the catalogue are for normal temperatures (+15– +25 °C). Please note that the capacity may be considerably different if the castor is used in temperatures outside this range. If the circumstances fall outside the normal temperature range, we recommend contacting the retailer or the factory to check the suitability of the castor.

The temperature ranges for the different tread materials are shown in the table below. Minimum temperatures are not applicable to shock loads. At temperatures below zero, the shock load resistance decreases. If the castors are used in temperatures below -25 °C, even occasionally, the use of special lubricants is recommended.

NOTE!

If the wheel contains different materials (hub/tread), heat resistance is determined by the lowest temperature.

In the case of heat-resistant rubber, resistance varies depending on the type of rubber; see "Heat-resistant wheels" for more information.

Heat resistance of materials

	Continuous use	Momentary use	Minimum
Polyamide	+ 80 °C	+ 130 °C	- 40 °C
Polyurethane	+ 80 °C	+ 100 °C	- 30 °C
Aluminium	+ 280 °C	+ 300 °C	- 40 °C
Heat-resistant rubber	+ 150 °C	+ 300 °C	- 40 °C
Rubber	+ 50 °C	+ 70 °C	- 30 °C
Thermoplastic rubber	+ 130 °C	+ 150 °C	- 40 °C
Swivel bearing seals	+ 80 °C	+ 100 °C	- 30 °C
Polypropylene	+ 50 °C	+ 70 °C	- 10 °C

All Manner castors are ISO-certified!

8 Chemical resistance

When choosing the tread material, any chemical components present in the working environment should also be considered. The table below shows the resistance of the different tread materials against specific chemical components.

If a chemical is present in the working environment and is not listed here, please contact the Manner factory. This table is not legally binding.

Tread material resistance to chemicals

	%	Polyamide	Polyurethane	Rubber	Thermoplastic rubber
Ammonia	10	+	+ –	+	+
Aniline		+ –	–	+	
Acetone		+	+ –	+	+
Petrol		+	+ –	–	
Diesel fuel		+	+	–	–
Acetic acid	5/10	+ –	+ –	+	+
Ethylene acetate		+	–	+ –	
Ethyl alcohol		+	+ –	+	+
Phenol		–		–	+ –
Formaldehyde	30	+		+	+
Phosphoric acid	10	–	–	+	+
Glycol		+	+	+	+
Glycerine		+		+	
Potassium hydroxide	10	+	+ –	+	
Calcium chloride	10	+	+	+	+
Chlorine		–		–	+ –
Chloroform		–	–	–	–
Milk		+	+	+	+
Lactic acid	10	+	–	+	
Mineral oil		+	+	–	+ –
Formic acid	10	–	–	+	+
Naphthalene		+		–	+ –
Sodium hydroxide	50	+	+ –	+	+
Sodium chloride	10	+	+	+	+
Ozone		+ –	+	–	
Linseed oil		+	+ –	–	+ –
Light petroleum		+	+	–	–
Edible fats		+	+	–	
Fuel oil		+		–	
Sulphuric acid	2	–	+ –	+	+
Soap solution		+	+	+	+
Saltpetre acid	2	–	+ –	+	+
Citric acid	10	+ –	+ –	+	
Hydrochloric acid		–	+ –	+	+
Trichloroethylene		+ –	–	–	–
Water		+	+	+	+
Water 80 °C		+ –	+ –	+	+
Lubricating greases		+	+	–	

good +
limited + –
poor –
not known

9 Fixing

Choose the most suitable fixing method for the furniture or equipment in question. Manner castors can be fixed e.g. as follows:

Threaded stem
Can be mounted above or from underneath.

Top plate

Stem fitting

Expander
Round or square.

Tightening torques
Fixings should follow the recommended tightening torques.
If necessary, ask us for instructions.

10 With or without brakes

In Manner castors, the brake is usually fitted on the swivel fork trailing the direction of movement. In some models, the brake is on the front of the fork.

Single action brake locks the wheel from revolving.

Total-stop brake prevents the wheel from revolving and the fork from turning.

Brake at the back.

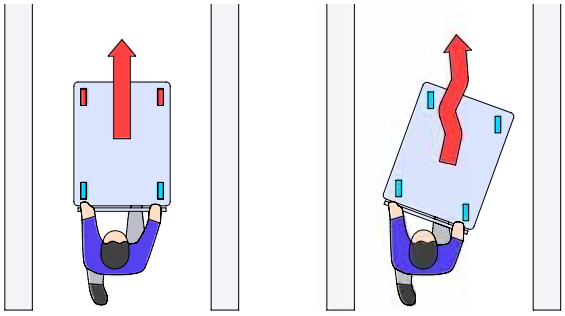
Brake at the front.

11 Direction locking

The directional lock locks the fork in the direction of travel.

Directional lock facilitates the handling of furniture or equipment, and is often the simplest and most economical way to optimise its manoeuvrability.

Even one castor with directional locking improves the control of the equipment when travelling down long corridors, for example. Once the lock is released, all castors can again be turned for easy manoeuvring in confined spaces.



Combinations 12

The characteristics of the equipment can be tailored to suit different conditions and uses by selecting different combinations of swivel and fixed castors and axles.

Light load, confined spaces

Four swivel castors make light loads easy to manoeuvre even in tight places (Fig. 1).

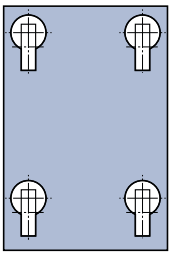


Fig. *1*

Heavy load, open spaces

Two swivel and two fixed castors for manoeuvring heavy loads in open spaces (Fig. 2).

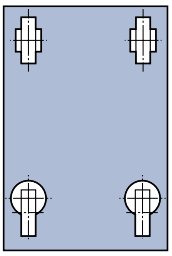


Fig. *2*

Heavy load, confined spaces

Here, two swivel castors and an axle is the most suitable solution. Wheels in the centre are somewhat bigger and carry most of the load (Fig. 3).

For even heavier loads, a combination of four swivel castors and an axle is recommended (Fig. 4)

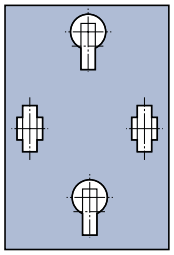


Fig. *3*

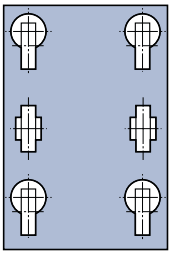


Fig. *4*

Product title system

Below you will find examples of the product title system used at Manner. More detailed descriptions of fixings and wheel materials, for example, are provided later under each product group.

Furniture castors (p. 18-21)

HPL J 50 NK /K

- HPL: Titles beginning with "HP" = furniture castors; HPI = wheel
- J: Top plate
- 50: Brake
- NK: Wheel diameter. If 50/2 = twin wheel
- /K: Wheel material
- Ball bearing

Light equipment castors — E-series (p. 22-24)

EL J 75 PTE

- EL: Titles beginning with "E" = light equipment castors; EI = wheel
- J: Top plate
- 75: Brake
- PTE: Wheel diameter
- Wheel material

Light equipment castors — Wheel 2000 -series (p. 25-26)

EMR J 125/2 NP /K

- EMR: Titles beginning with "EM" = Wheel 2000 series
- J: Threaded stem
- 125/2: Brake
- NP: Wheel diameter
- /K: Wheel material
- Ball bearing

Equipment castors — ES-series (p. 27-37)

ESL JN S 125 NP /K

- ESL: Titles beginning with "ES" = ES series; ESI = wheel
- JN: Top plate
- S: Brake
- 125: Threadguard
- NP: Wheel diameter
- /K: Wheel material
- Ball bearing

Product title system

Equipment castors — Tango-series (p. 38-47)

GKR JM S 125 PTE /K 80 M M12

- GKR: Titles beginning with "G" = Tango series 100 and 125 mm; Titles beginning with "M" = Tango series 75 mm; Threaded stem
- JM: Brake, black
- S: Threadguard
- 125: Wheel diameter
- PTE: Wheel material
- /K: Ball bearing
- 80: Hardness of the tread: 80 Shore
- M: Fork colour
- M12: M12 = 12 mm screw

Industrial castors (p. 53-67)

LKE J 125 ND /K

- LKE: Titles beginning with "L" = industrial castors; LI = wheel
- J: Top plate
- 125: Brake
- ND: Wheel diameter
- /K: Wheel material
- Ball bearing

Heavy-duty castors (p. 71-76)

SKLP J 100 ALV /K L

- SKLP: Titles beginning with "LHP", "LPH" or "S" = heavy-duty castors; SK = heavy-duty castors; SI = wheel; PV = wheel for through axle; YNV = wheel for through axle
- J: Top plate
- 100: Brake
- ALV: Wheel diameter
- /K: Wheel material
- L: Ball bearing; Indicates that wheel is manufactured by our partner company LAG

Conductive castors (p. 80-88)

LPPE 100 N /K A

- LPPE: Titles beginning with "L" = industrial castors
- 100: Top plate
- N: Wheel diameter
- /K: Wheel material
- A: Ball bearing; Conductive