

STANDARD FOR SELF LEVELING LAUNDRY TROLLEYS

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1. FOREWARD

This document has been prepared to introduce standards and standardisation in the laundry handling industry for self levelling trolley containers. This is a standardising document and aims to facilitate the use of Self Levelling Laundry Trolleys supplied by various suppliers within the same facility

2. INTRODUCTION

Self Levelling Laundry Trolleys, referred to as Trolleys from here on, are used in the Laundry and Hospitality industries to transport linen and other product. These trolleys vary in size and are required to meet certain standards in order to be safe, hygienic, reliable and assist in preventing back pain.

3. SCOPE:

This standard specifies the requirements for plastic Self Levelling Laundry Trolleys for use in the Laundry and Hospitality industries for the discharge and storage of Laundry and other products. The Trolleys will be used for the storage and transport of linen and goods which will be handled by staff.

The purpose of the standard is to define the material used, specific requirements, type tests and production quality controls.

Companies manufacturing to this standard must be certified to ISO 9001 or equivalent.

4. NORMATIVE REFERENCE

This standard incorporates dated or undated references from other publications. These 'normative' references subsequent amendments to, or revisions of, any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated reference the latest edition of the publication referred to applies.

ISO	1133	Plastics Determination of the Melt Flow Rate of Thermoplastics
ISO	1183	Plastics: Method of determining density
ISO	R527	Determination of Tensile Properties
ISO	175	Plastics: Determination of the effects of liquid chemicals, including water
ISO	1872	Plastics: Test specimen preparation
EN	45020	General terms and their definition concerning standardisation and related activities

5. DEFINITIONS

Self Levelling Laundry Trolley; A horizontal, open-top container that retains its design shape for the purpose of carrying and transporting product without any external support other than elements incorporated in its design. The floor rises and lowers with the loading or unloading of material, and returns to a suitable level to facilitate the safe loading and unloading and minimise the risk of back strain.

6. DESIGN REQUIREMENTS

- 6.1 The container shall be as light as possible (both plastic and steel content), while maximising strength and durability.
- 6.2 The floor shall become fully lowered under a 170kg load (wet linen). The floor when empty shall return to the “start height position” as defined below.
- 6.3 The trolley shall be on four castor wheels, two lockable, that withstand minimum of 70kg each. The wheel diameter to be 75mm (total height of the castor 97mm. It may be required to use stainless steel bearings if the trolley is to be steam cleaned.
- 6.4 The product shall have no sharp edges that would cause injury. All corners shall be well rounded with a minimum radius of 10mm where possible.
- 6.5 Material or linen shall not get stuck in any mechanism of the levelling system.
- 6.6 The floor shall lower and rise in a level position and be stable at every point.
- 6.7 The floor shall rise to a level within 100mm of the top of the trolley.
- 6.8 There shall be no ‘pits’ where dirt or fluid can gather and remain.
- 6.9 The complete trolley including the frame for which the levelling floor is mounted, shall be water resistant and not rust.
- 6.10 There shall be an I.D. pouch incorporated in the design, which will be A4 in size. It shall not be made from Perspex.
- 6.11 The product shall be made from compounded or natural material so as not to have any colour give-off.
- 6.12 The gap between the floor and the sides of the trolley shall be less than 10mm +/-10%.
- 6.13 The underside of the trolley shall be open to allow access to the framework for servicing and maintenance.
- 6.14 Strengthening ribs and panels shall be considered during the design.
- 6.15 There shall be panels for signage in the design.
- 6.16 Parts subject to wear and tear shall be standard off-the-shelf parts.
- 6.17 Areas for handles shall be incorporated for the option of handles to be made available.
- 6.18 The self levelling floor shall be 5mm +/- 20% HDPE plastic.
- 6.19 The levelling mechanism shall incorporate a spring or pneumatic system to raise and lower the floor, see Annex 5.

7. MATERIAL PROPERTIES

- 7.1 Raw materials (Medium Density Polyethylene)
The material must be determined in accordance with ISO 1183 method A or D. A single resin polymer shall have a density not less than 932kg/ m³ and not greater than 952kg/ m³.
- 7.2 Melt Flow Rate
The Melt Flow Rate is measured in accordance with ISO 1133 Section 4, must be a maximum of 7g/10min and a minimum 3g/10min. Test to be carried out on raw material.
- 7.3 Weather Resistance
The material and colouring used in the manufacture of the body shall be ultra violet light stabilised to a rating of 8 or greater.
- 7.4 There shall be no colour give-off from any material in contact with the product being handled.
- 7.5 Steel Frame
The main steel frame shall be manufactured from 25 x 25 x 1.5mm box section bright mild steel (to EN 10305-5).
- 7.6 Fabrication of Steel Frame
All welding of steel components to be completed by a certified welder in accordance with EN 287-1.
- 7.7 Castors
Castors shall be chosen from the specifications given in Annex 3.
- 7.8 Materials used in the levelling mechanism are shown in Annex 4. The spring properties are shown in Annex 5.

8. TROLLEY

- 8.1 Capacity and Tolerance
The inner capacity shall be 0.9m³ +20% / -10%
- 8.2 Visual inspection
On visual inspection of the trolley there should be no bubbles, blisters, or other defects that could cause a hole or fracture.
- 8.3 Weight
The weight of the body of the trolley excluding all fittings shall be no less than 20kg +/-10%.
- 8.4 Wall thickness
The minimum wall thickness on any point of the sides, top or base shall not be less than 4mm + 15% -10%.
- 8.5 Load capacity
The trolley shall be designed and tested to give a minimum load capacity of 170kg.
- 8.6 The certified load capacity shall be the stated load capacity multiplied by a factor of 1.25. The max. load shall be 212kg +/- 10%.
- 8.7 The trolley shall have dimensions as per Annex 1 +/- 5%.

9. TESTING

- 9.1 The trolley, complete with all its framework and fixings shall be subject to a series of tests as follows:
- The trolley shall be loaded with weight which equates to its certified capacity well distributed.

- b) The temperature at test shall be 20°C +/- 5°C.
 - c) The trolley shall be pushed across a distance of 100m on a rough hard surface such as degraded asphalt.
 - d) Result:
 - No failure of trolley, frame or any part shall occur.
 - The trolley shall retain its shape and functionality during testing.
 - The trolley when emptied shall return to its original shape within 1 hour and be suitable for re-use.
- 9.2 Test frequency
- a) Load capacity is a type test and shall be completed once at the initial stage of the product.
 - b) Weight: The weight of the trolley shall be tested every 6 months from samples randomly picked from production to be sure the shot weight and material is consistent.
 - c) Capacity: As defined in 8.1, is a type of test that is completed once off.
 - d) Visual inspection: Every trolley.
 - e) Wall thickness: product randomly selected from production run every 3 months shall be tested, samples taken from a grid of 24 locations spread over the 6 faces of the trolley shall be tested.

10. FINISHING OF METAL PARTS

All metal parts shall be protected as follows.

Frame: Galvanised, painted or cadmium plated.

Fixings: Aluminium, Cadmium Plated, Zinc Plated, Galvanised or Stainless steel.

The main metal frame shall be made from 25 x 25 x 1.5mm mild steel box section, or heavier.

11. FITTINGS AND OPTIONAL EXTRAS

11.1 Handles shall be specified as per Annex 2.

11.2 Castors shall be matched to the specifications given in Annex 3.

12. MARKINGS:

The following information should be marked on each trolley:

- Year of Manufacture.
- Standard number.
- Load capacity.
- Name of manufacturer.
- Maximum weight when empty.
- Quality checked and signed.
- Product code.

13. PRODUCTION AND QUALITY CONTROL

The tests described in chapter 9 of this standard shall be carried out at the frequency indicated above during production, quality control, and records maintained within a quality system. This system should be audited and certified by a Certified External Authority in accordance with CEN regulator EN 45020.

14. HANDLING AND USE

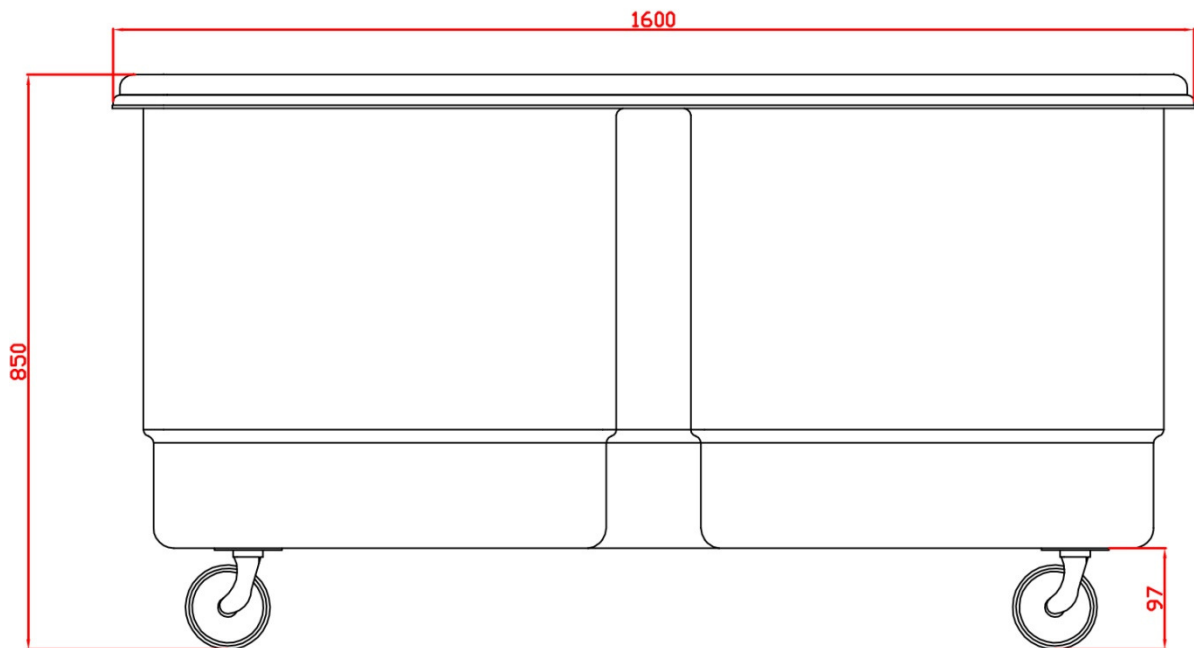
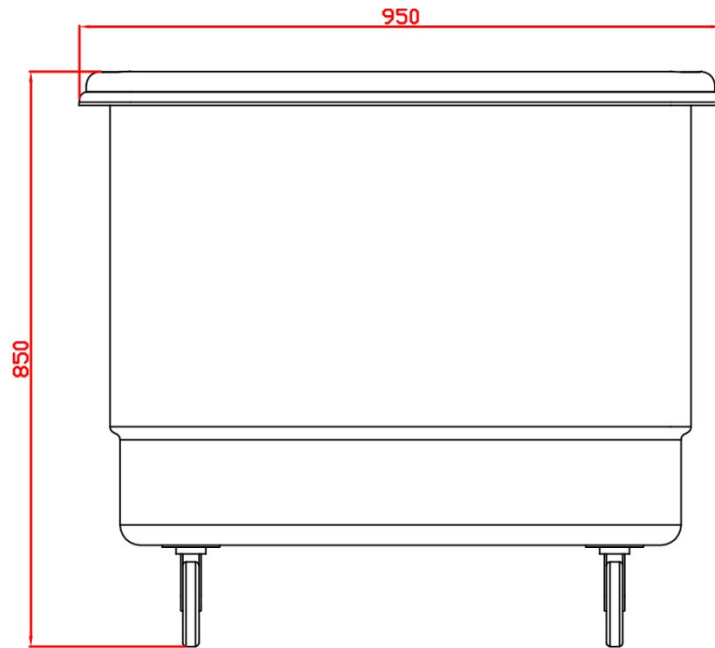
The manufacturer shall supply instructions for the handling and use of the trolley.

15. RECYCLING/ REPAIR

It shall be a condition of supply that the supplier offers the facility to take back for recycling, end of life product.
The supplier shall furthermore offer the facility to repair product which may suffer minor damage.

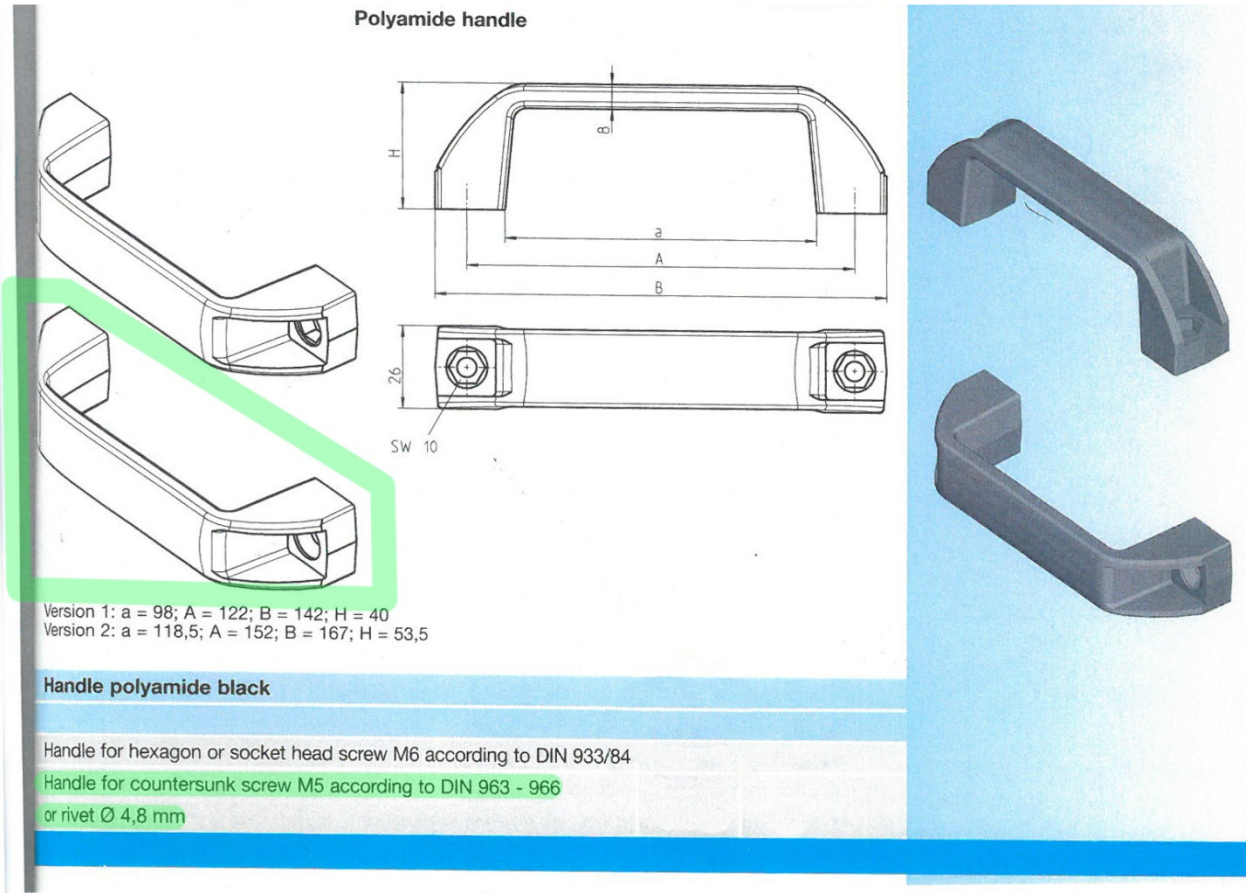
Annex 1

Trolley Sizes



Annex 2


Handle Specifications



Annex 3

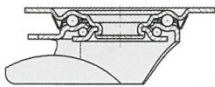
Castor Specifications.

Pressed steel swivel and fixed castors

 150 - 300 kg



Swivel castors	Fixed castors	Swivel castors with "stop-fix" brake	Wheel Ø [mm]	Wheel width [mm]	Load capacity [kg]	Bearing version	Total height [mm]	Plate size [mm]	Bolt hole spacing [mm]	Bolt hole Ø [mm]	Offset swivl castor [mm]
			60	20	150	Plain bearing	80	100 x 85	80 x 60	9	35
			75	32	150	Plain bearing	100	100 x 85	80 x 60	9	38
			75	32	150	Roller bearing	100	100 x 85	80 x 60	9	38
			80	33	150	Plain bearing	102	100 x 85	80 x 60	9	38
			80	33	150	Roller bearing	102	100 x 85	80 x 60	9	38
			100	37	150	Plain bearing	125	100 x 85	80 x 60	9	36
			100	37	150	Roller bearing	125	100 x 85	80 x 60	9	36
			100	37	150	Ball bearing	125	100 x 85	80 x 60	9	36
			125	40	150	Plain bearing	150	100 x 85	80 x 60	9	40
			125	40	150	Roller bearing	150	100 x 85	80 x 60	9	40
			125	40	150	Ball bearing	150	100 x 85	80 x 60	9	40
			150	50	300	Plain bearing	190	140 x 110	105 x 75-80	11	54
			150	50	300	Roller bearing	190	140 x 110	105 x 75-80	11	54
			160	50	300	Plain bearing	195	140 x 110	105 x 75-80	11	54
			160	50	300	Roller bearing	195	140 x 110	105 x 75-80	11	54
			175	50	300	Plain bearing	213	140 x 110	105 x 75-80	11	54
			175	50	300	Roller bearing	213	140 x 110	105 x 75-80	11	54
			200	50	300	Plain bearing	235	140 x 110	105 x 75-80	11	54
			200	50	300	Roller bearing	235	140 x 110	105 x 75-80	11	54

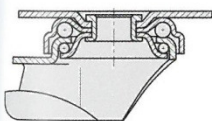


Light duty swivel and fixed castors

 75 kg

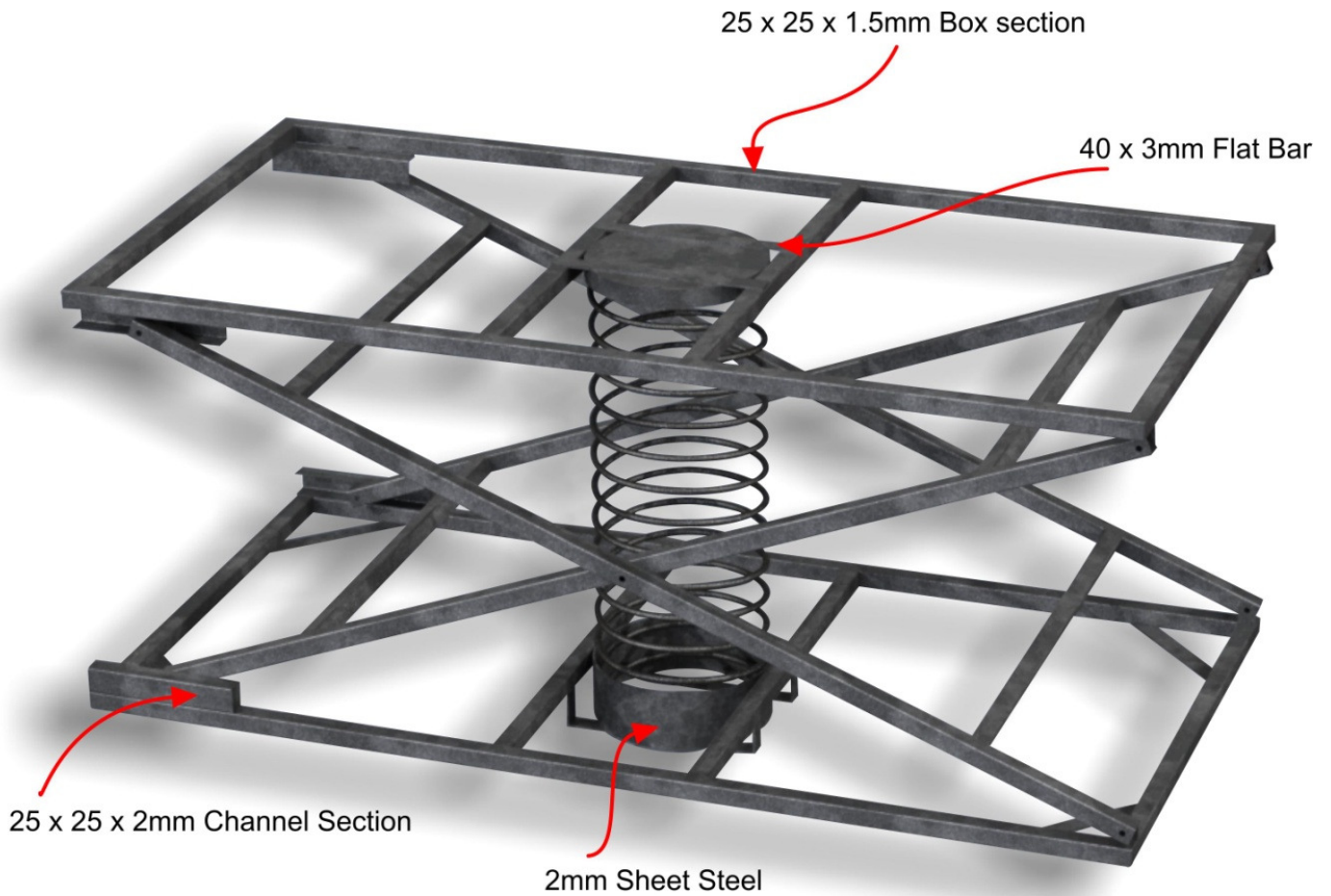


Swivel castors	Fixed castors	Swivel castors with "stop-fix" brake	Wheel Ø [mm]	Wheel width [mm]	Load capacity [kg]	Bearing version	Total height [mm]	Plate size [mm]	Bolt hole spacing [mm]	Bolt hole Ø [mm]	Offset swivl castor [mm]
			35	25	75	Plain bearing	52	60 x 60	38x38/48x48	6,2	15
			50	18	75	Plain bearing	71	60 x 60	38x38/48x48	6,2	25
			75	23	75	Plain bearing	100	60 x 60	38x38/48x48	6,2	28



Annex 4

Frame



Annex 5

Spring Specifications

Compression Spring

Wire Diameter	12mm
Outside Diameter	228mm
Total Coils	17
Free Length	800
Solid Length	162
End Type	Flat Ground
Coating	Corrosion resistant paint