

*Shanghai*

**INDEVA**  
FLEXIBLE DESIGN FOR FLEXIBLE

**LEAN**<sup>®</sup>  
**SYSTEM**  
FLEXIBLE SOLUTIONS WITH ENDLESS POSSIBILITIES

Lean Manufacturing components and applications

## Scaglia INDEVA, a worldwidenetworkat your service

Scaglia Indeva is a worldwide leader in the production of state of the art Industrial Manipulators, Automated Guided Vehicles and Lean System Components with great know-how and expertise in the design of custom Material Handling and Lean Manufacturing Solutions. Our headquarters and production unit covering an area of 15.000 square meters and employing about 150 people, are located in Val Brembilla, Italy about fifty kilometers from Milan. We are present worldwide with a network of branches, distributors and service centres.

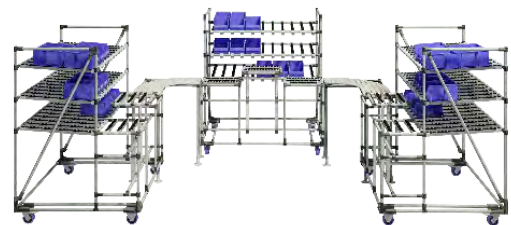
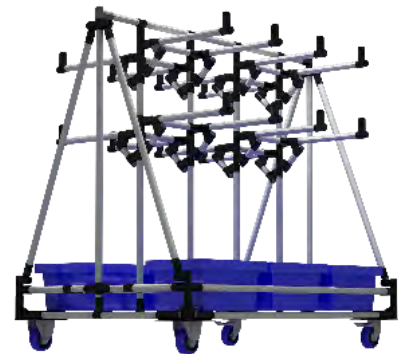


## INDEVA LEAN SYSTEM<sup>®</sup>

INDEVA Lean System<sup>®</sup> (Indeva Lean System is a registered trade mark of Scaglia Indeva S.p.A.) comprises a wide range of components including abrasion resistant plastic coated steel pipes, metal joints, roller tracks and accessories. INDEVA Lean System<sup>®</sup> enables to design and build a variety of structures to suit the Lean manufacturing philosophy.

Applications could include ergonomic workplaces, trolleys and carts, flow racks and gravity conveyors. INDEVA Lean System<sup>®</sup> structures are simple to design, assemble and are flexible and completely reusable.

INDEVA Lean System<sup>®</sup> is the ideal tool for implementation of the Lean Production concepts and help to reach the goal of the continuous improvement "Kaizen".



## Summary

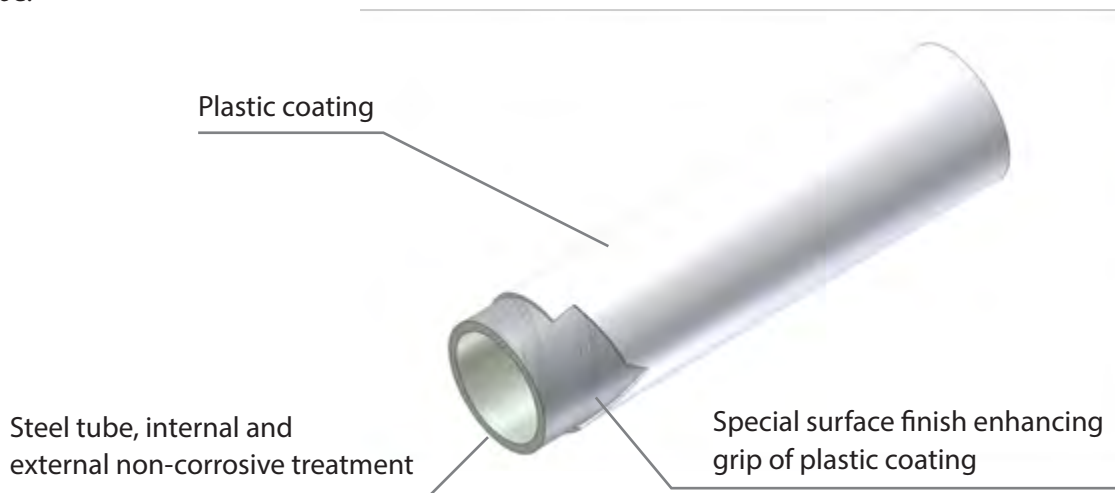
■ Tubes		
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## Technical specifications

The INDEVA Lean System® tube is a steel tube with a plastic coated outer surface. The steel tube is treated internally and externally with non-corrosive treatment.

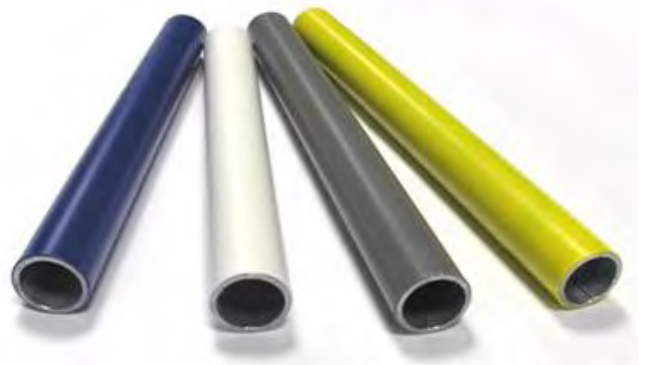
The plastic coating could be in different colors, standard colors deliverable from stock. Colors according to customer specifications can be manufactured only in quantity. A special transparent colored plastic finishing is also available.

The external surface of the tube is specially treated to ensure an enhanced grip of the plastic coating on the steel tube.



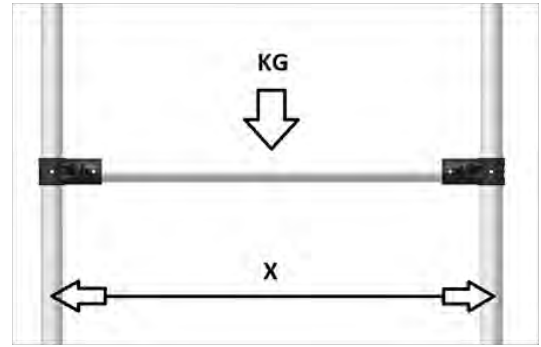
## Dimensions and specifications

- Steel tube External diameter: 27 mm  
thickness: 1 or 2 mm
- Finished tube External diameter: 28.6 (+0-0.2)
- Standard length 4 m
- Temperature range within 0°C and 40°C



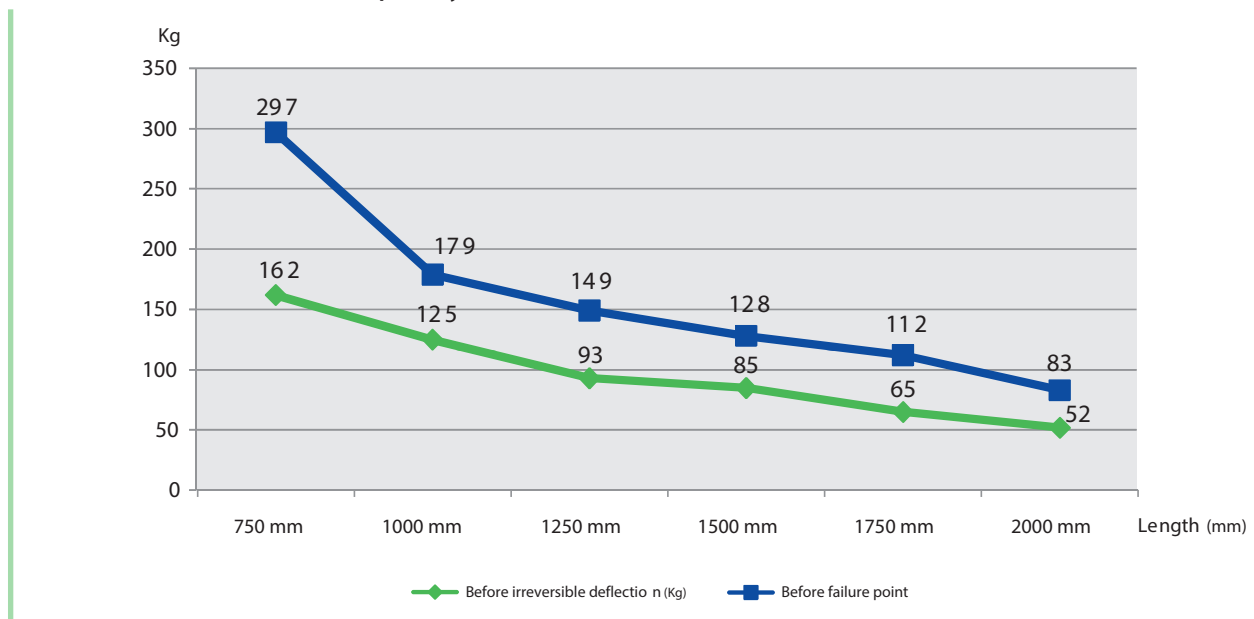
## Bending strength of tube

Load capacity tests have been run on an H shaped structure

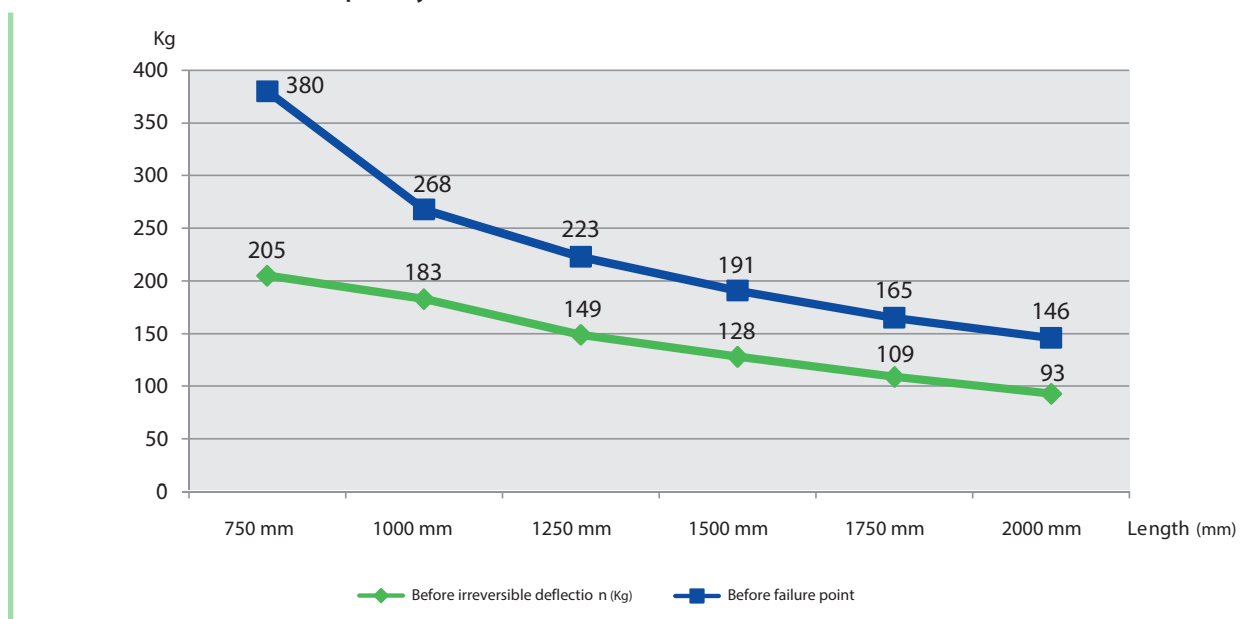


Experimental conditions – H-shaped structure

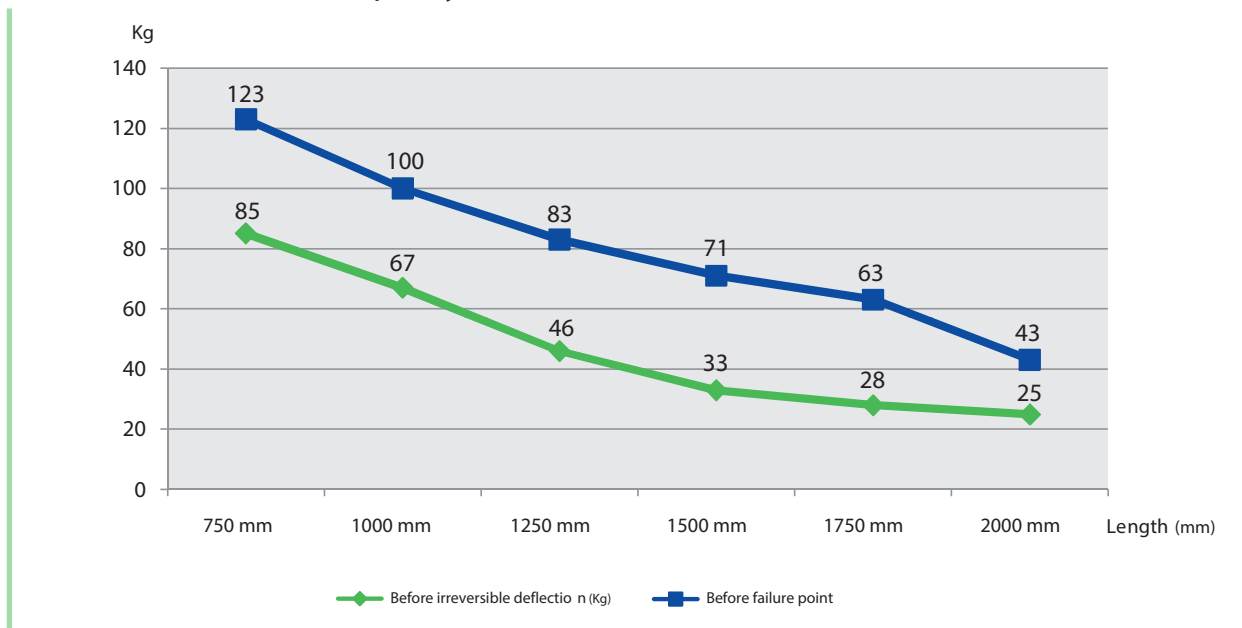
### Max concentrated load capacity of a tube with 2 mm wall thickness



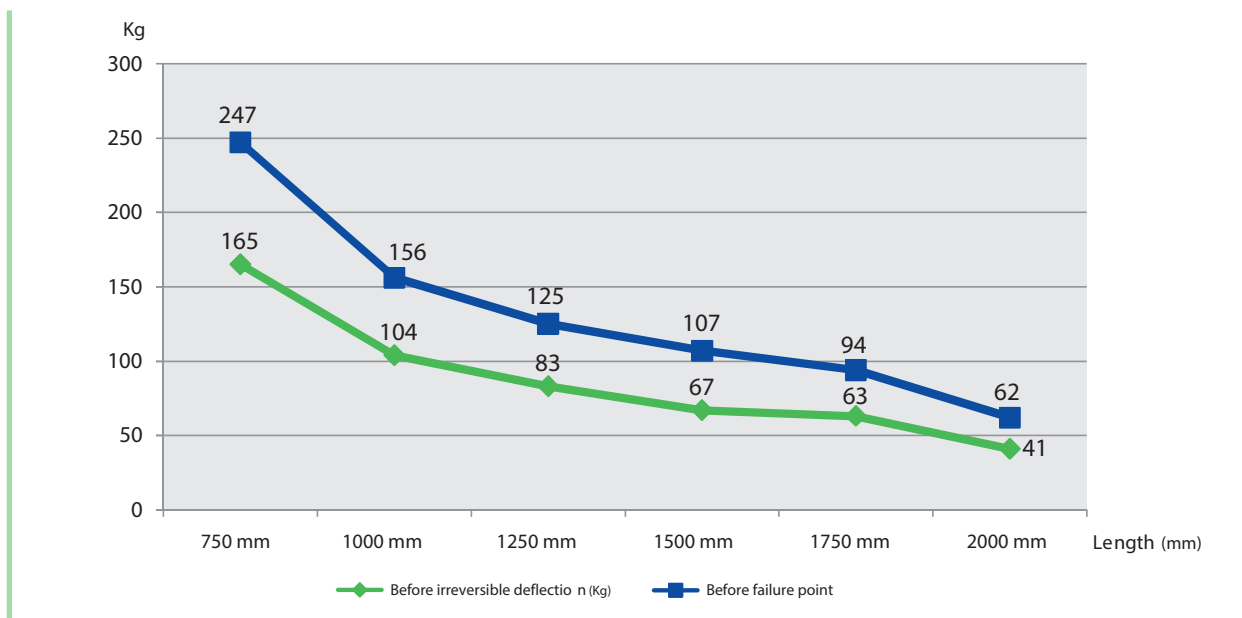
### Max distributed load capacity of a tube with 2 mm wall thickness



### Max concentrated load capacity of a tube with 1 mm wall thickness



### Max distributed load capacity of a tube with 1 mm wall thickness



## Tubes Coding system

**TP 20 W - ESD**

TP: Plastic Coated Tube

10: 1mm thickness  
20: 2mm thickness

W: White  
BK: Black  
GY: Grey RAL 9022  
LG: Grey RAL 7035  
BL: Blue  
YE: Yellow  
IV: Ivory  
RD: Red  
Special colors on request

ESD: ESD certified



**TA 15 BK**

TA: Alluminium Tube

15: 1,5mm thickness  
25: 2,5mm thickness

BK: Black  
SI: Silver

Classification			Coated Tube		Alluminium Tube		Lenght
Item	Color		Ø 28,6 X 1	Ø 28,6 X 2	Ø 28 X 1,5	Ø 28 X 2,5	
			620 g/m	1239 g/m	340 g/m	540 g/m	
Coated Tubes	White						4 m
	Grey						
	Light Grey						
	Blue						
	Ivory						
	Yellow						
	Red						
	Black						
	Black anodized						
	Silver anodized						
	RAL color on request						
ESD Tubes	Black						
	Light Grey						



# Metal Joints

## Technical specifications

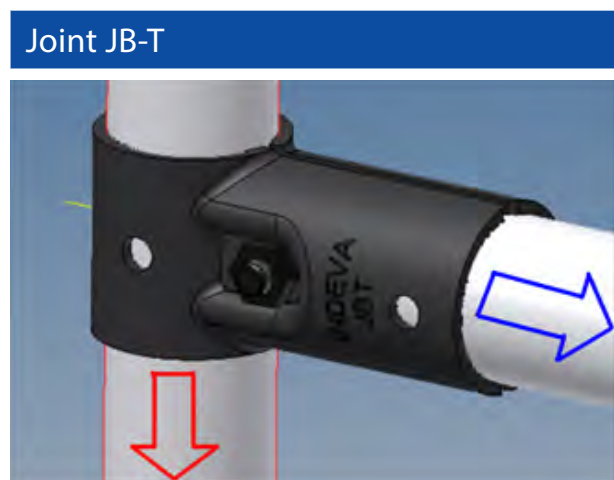
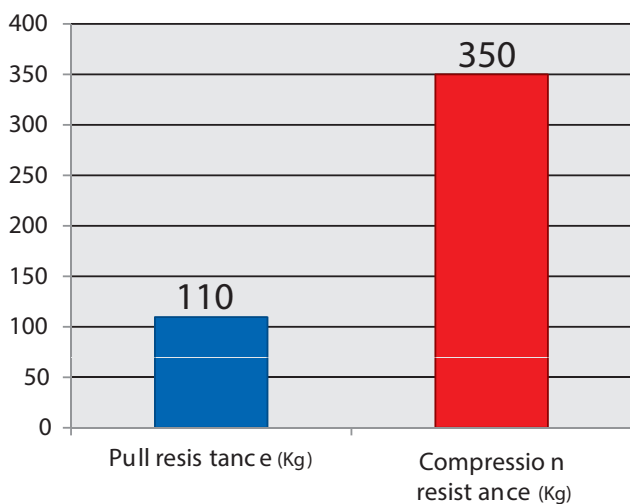
INDEVA Lean System® metal joints are made of steel 2.5 mm thickness. Non-corrosive coating (standard black color) is applied. To ensure maximum holding strength, the joints are shaped with a special gripping profile.

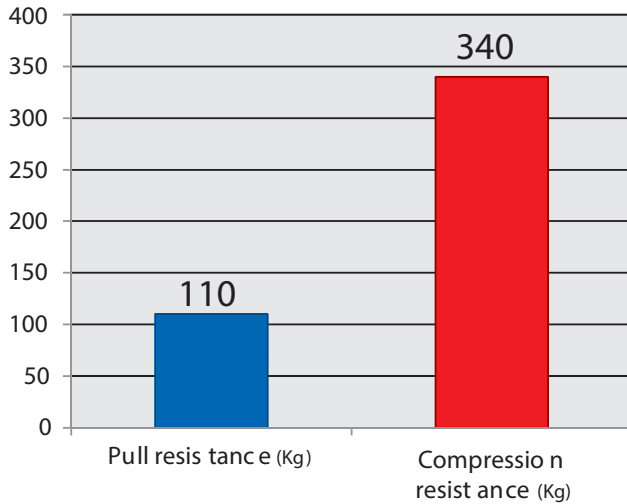
A hole facilitates the possible application of holding screws.



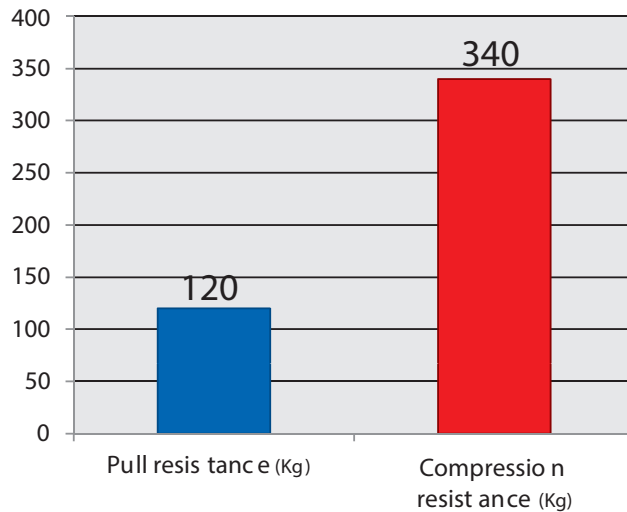
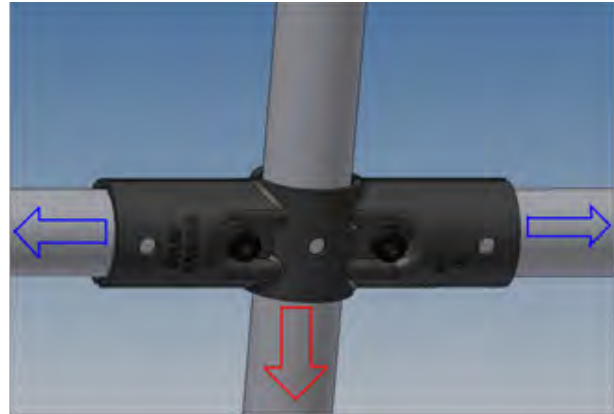
## Joints holding strength

Test have been run using a special traction/compression testing machine in our factory. Joints are routinely tested to ensure constant quality and results.

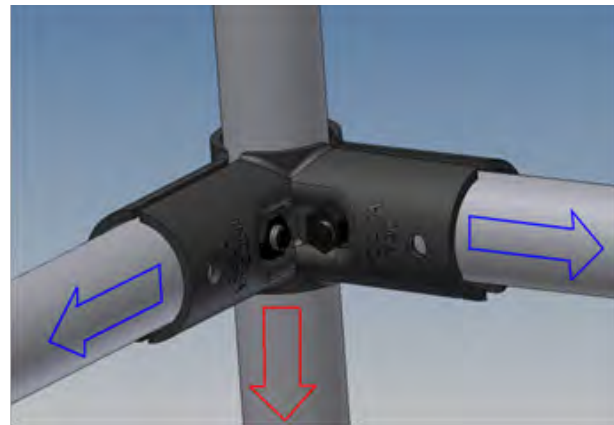




Joint JB-180



Joint JB-90 + JB-270



Assuming a safety factor equal to 2, use of INDEVA Lean System® Joints is recommended with a maximum load of 150 kg (compression). The use of joints with a load applied as traction is improper and not recommended.

## Reusability of metal joints

### Experimental conditions

A compression force has been applied until when the joints slide along the tube. The same couple of joints have been reused on a new tube and with new screw and bolt. Again a force has been applied until sliding. The test has been conducted for different typology of joints.

### Result

Until 10 times no significant changes of the holding strength has been registered. After 10 trials the test has been stopped. It can be said that INDEVA Lean System® joints can be reutilized at least 10 times without changes in the holding strength.

## Standard joints

All metal joints are available in black color (JBxxx) and ESD (JWxxx)



JB90	Inner joint 90 deg	50 pcs.
		
JB180	Flat joint 180 deg	50 pcs.
		
JB270	Outer joint 270 deg	50 pcs.
		
JBT	T joint	50 pcs.
		
JBX	Cross over joint	50 pcs.
		

# Metal Joints

JBA1

Swivel head T joint

50 pcs.



JBA3

Swivel tail joint

50 pcs.



JBH

Multipurpose joint

50 pcs.



JB1

Dual pipe joint

50 pcs.



JBA2

Swivel head double joint

50 pcs.



**JB45**

45 deg joint

50 pcs.



**JB30**

30 deg joint

50 pcs.



**JB60**

60 deg joint

50 pcs.



**JB90R**

90 deg joint round shaped

50 pcs.



**JBS1**

T shaped sliding joint

50 pcs.



JBS3

Parallel joint, 2 slide

50 pcs.



JBS4

Parallel joint, 1 slide

50 pcs.



JBT2

33mm T shaped joint

50 pcs.



JB12

Parallel joint 33mm

50 pcs.



JB13

Parallel joint 28mm/33mm

50 pcs.



JBHA

Multipurpose joint A

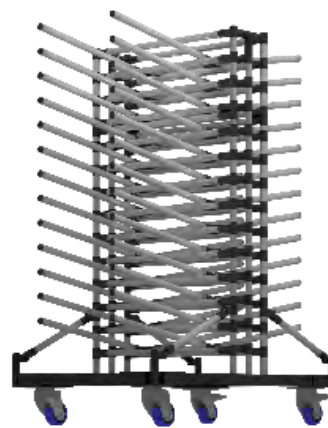
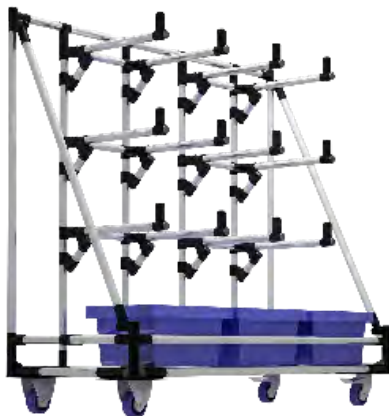
50 pcs.



JBHB

Multipurpose joint B

50 pcs.



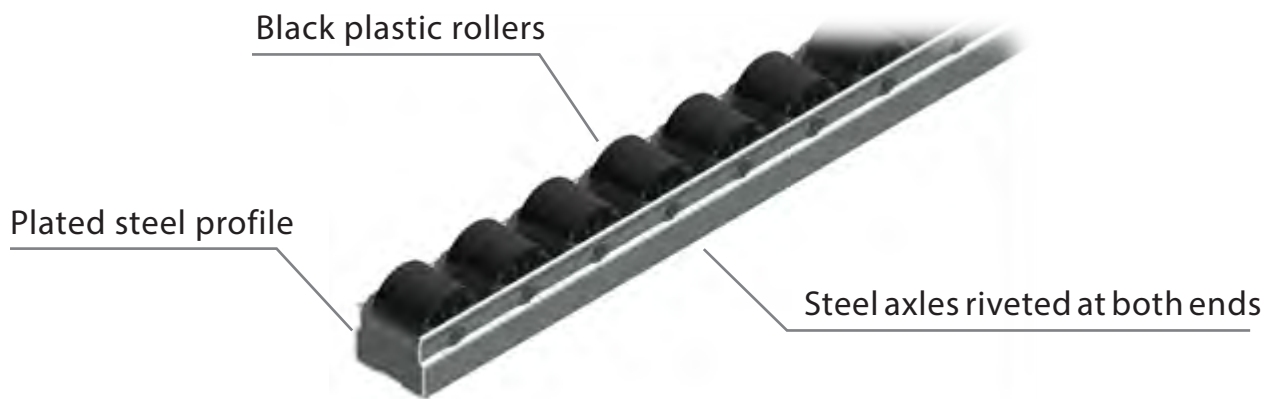




# Roller Tracks

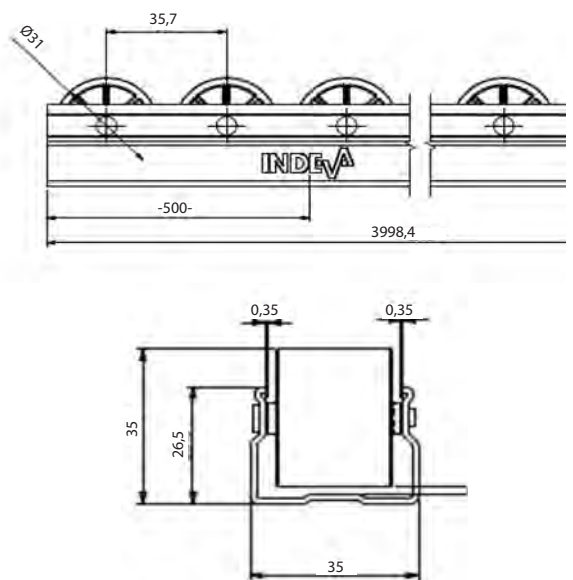
## Technical specifications

The INDEVA conveyor track is used for the assembly of flow racks and gravity conveyors for the handling of boxes and packages in a reliable and maintenance-free way. The INDEVA conveyor track is made of a plated steel profile with rollers mounted by means of steel axles riveted at both ends for higher resistance.



## Dimensions and specifications

- Plated steel profile thickness 1.25 mm, height 26.5 mm, width 35 mm
- Total height 35 mm
- Roller diameter 31 mm, high load capacity (max. 150 kg.)
- Centre of Rollers distance 35.7 mm
- Steel axle diameter 3.75 mm
- Track length 4 meters
- Use within the temperature range 0°C and 40°C

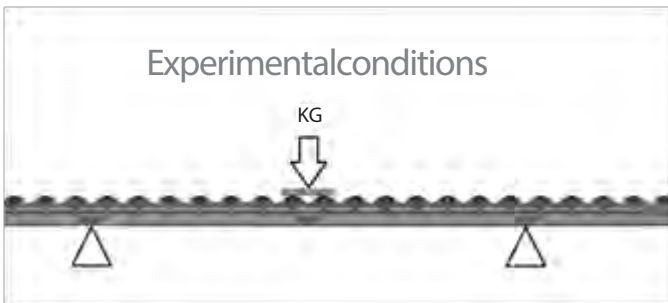


## Roller Load capacity

The test has been run applying a load on the roller until permanent deformation of the roller itself. Permanent deformation has been experienced at 150 kg. The sliding smoothness has no changes up until a load of 30 kg.

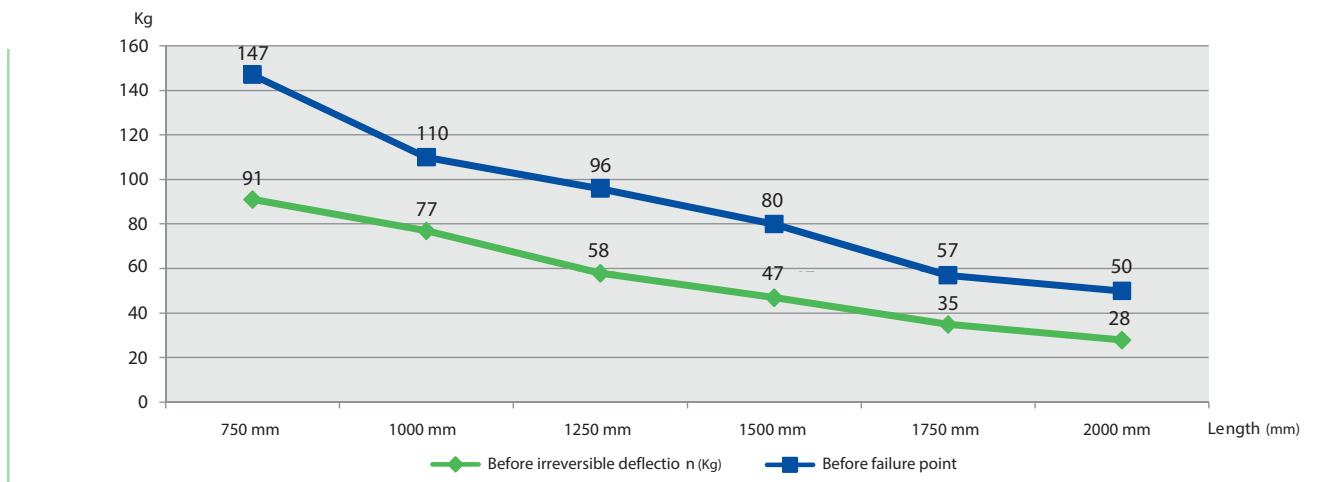


## Bending strength of roller track



A force has been centrally applied on two rollers of a track resting on two supports positioned at different distance. The value of the load that would permanently deform the track and that would break the track has been measured. Results are in following table.

### Max load capacity on two rollers centrally applied



## Sliding smoothness

### Experimental conditions

Test has been run measuring the minimum angle at which a box (weight 1 kg) with rigid bottom (dimensions 40x40mm) starts sliding on a roller track. From the horizontal position the roller track has been progressively inclined up until when the box starts moving.



### Result

The box starts moving at  $\alpha=1.5^\circ$ , high speed is reached at  $\alpha=2.5^\circ$  inclined up until when the box starts moving.

## Roller tracks & Plastic Guides

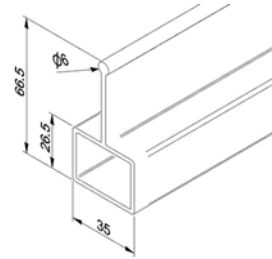
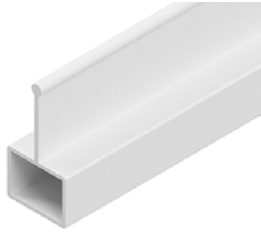
<p><b>R400</b></p>	<p>Roller track-Heavy duty-400cm</p>	<p>L = 4 m.</p>
		
<p><b>R400-ESD</b></p>	<p>Roller track-Heavy duty-400cm ESD</p>	<p>L = 4 m.</p>
		
<p><b>R400D</b></p>	<p>Roller track-Double-400cm</p>	<p>L = 4 m.</p>
		
<p><b>RS400</b></p>	<p>Roller track-Sided rollers-400cm</p>	<p>L = 4 m.</p>
		
<p><b>U400</b></p>	<p>U-profile for board support</p>	<p>L = 4 m.</p>
		

# Roller Tracks

**RGC40W**

Central guide white (400)

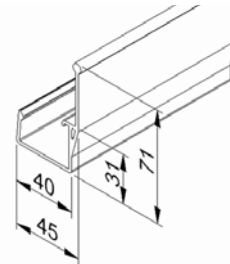
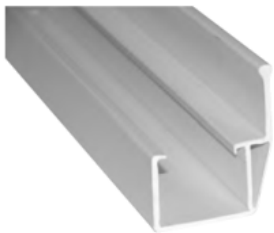
L = 4 m.



**RGL1040W**

Lateral side guide white (400x10x40). Shoulder 10 mm

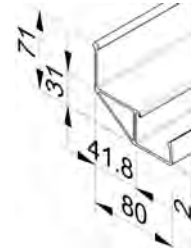
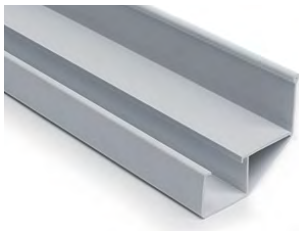
L = 4 m.



**RGL4040W**

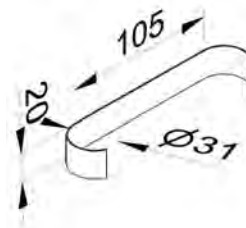
Lateral side guide white (400x40x10). Shoulder 40mm

L = 4 m.



**RBK**

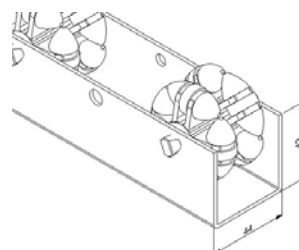
Roller track brake strip mod. R400



**RD50**

Multi directional roller track (roll diameter mm. 50)-100cm

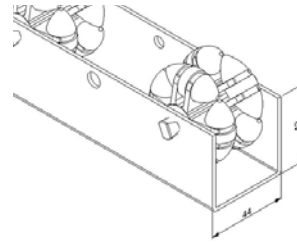
L = 1 m.



RD60

Multi directional roller track (roll diameter mm. 60)-100cm

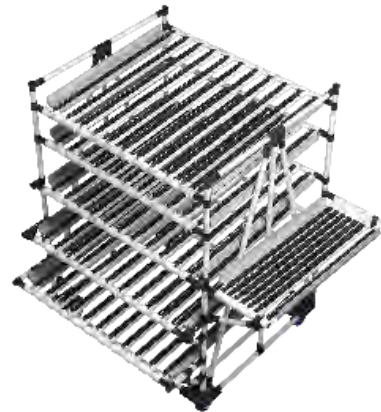
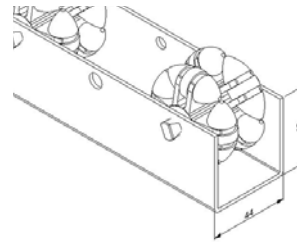
L = 1 m.



RD80

Multi directional roller track (roll diameter mm. 80)-100cm

L = 1 m.

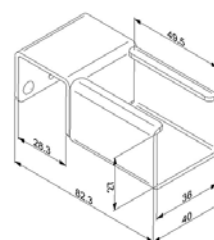


# Support Accessories

JR

Roller track bracket

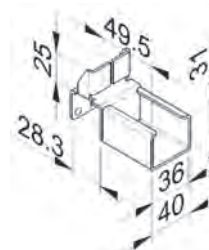
50 pcs.



JRS

Roller track bracket with straight stop

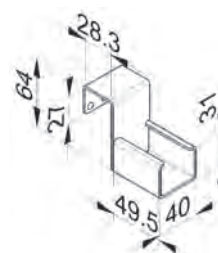
50 pcs.



JRL

Roller track bracket with drop stop

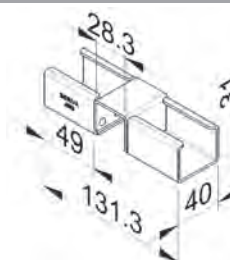
50 pcs.


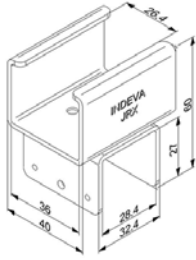

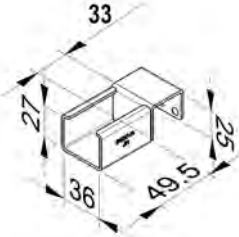

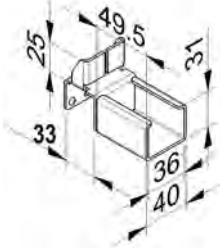

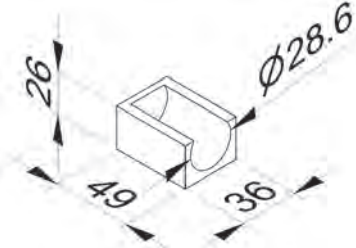
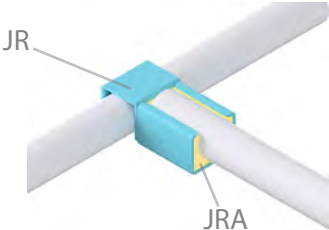
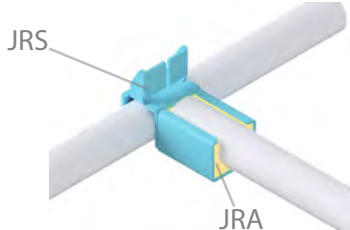


JRD

Roller track union bracket

50 pcs.



<b>JRX</b>	Cross over roller track bracket	50 pcs.
		
<b>JR33</b>	Roller track bracket 33mm	50 pcs.
		
<b>JRS33</b>	Roller track bracket with stop 33mm	50 pcs.
		
<b>JRA</b>	Adpter for tube support (to be used with JR-JRS-JRL-JRD-JRX)	50 pcs.
		
<b>JR + JRA</b>	Example	<b>JRS + JRA</b>
		

# Plastic Accessories

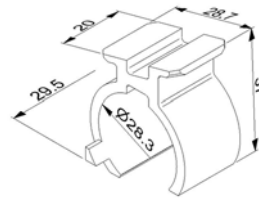
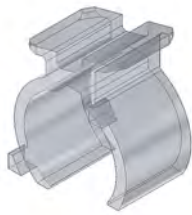
CP

Inner cap



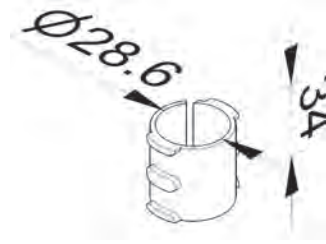
LB2H

Label holder support (for LB2S model)



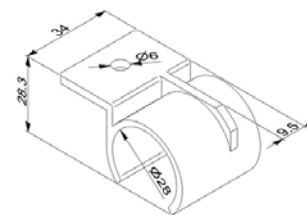
SLB

Sleeve for JBS joints


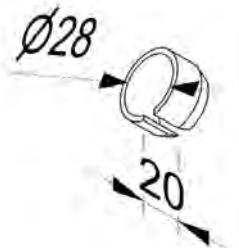

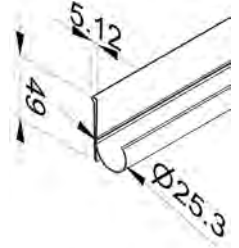

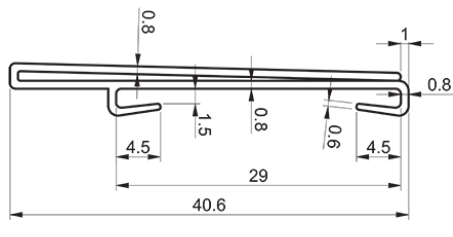

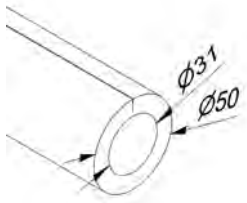

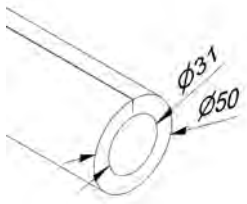


PLH

Plastic ring for plates

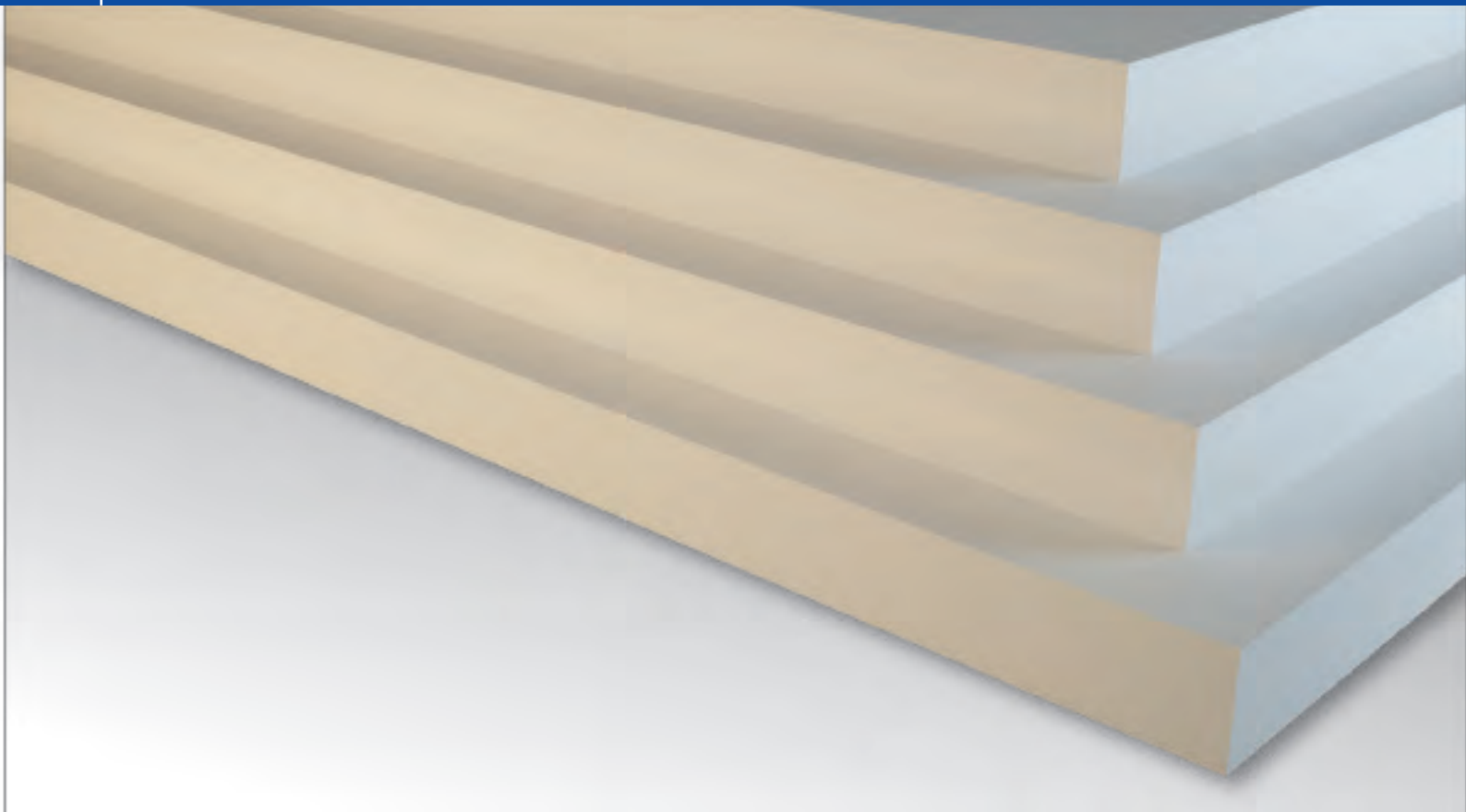




CV	Plastic taper edge		
LB1	Name case		
LB2S40	Label stripe H mm. 40 (to be used with LB2H)		
P200RBK	Rubber tube protection		
P100GY	Foam tube protection		



# Plates



Item	Thickness	Dimensions	Color
PVC	10	1500 X 1200	Black 
	19		RAL color on request 
PEHD	6	1500 x 1000	Black 
	8		RAL color on request 
	10		
MDF	10	1400 X 1000	Black 
RS	8	3050 X 1300	White 
M	3	2400 X 2100	Grey 
	10		





# Screws & Bolts

SC1

Socket head bolt and T-shaped nut (M6x28) for metal joints



Application:

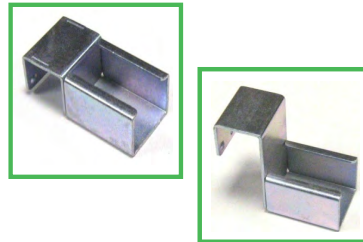


SC2

Bolt (M4x6) for JR-JRL-JRS-JR33-JRS33 brackets



Application:



SC3

Bolt and nut (M8 x 40) for use with WB and plate casters



Application:



SC4

Socket head bolt with pre-applied threadlock function and T-shape



Application:

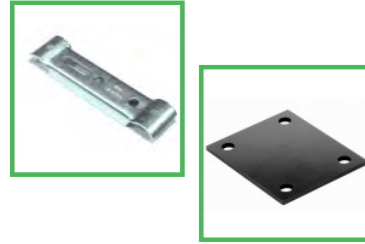


SC5

(M8x45) Bolt and nut to use with WB bracket and WP plate casters



Application:



SC7

Bolt and nut (M8 x 25) for use with PTR/PTL/BQ



Application:



SC8

Socket head bolt (M6x12) for pipe clamping on PTR/PTL



Application:



SC9

(M10x70) Bolt and nut for TMF



Application:

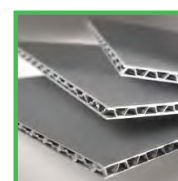


SC10

(M6x25) Bolt and nut for panels



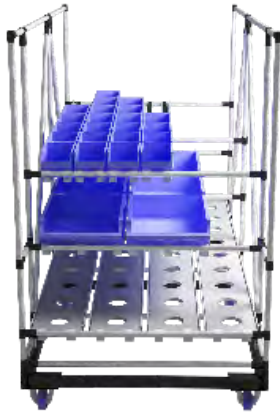
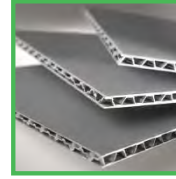
Application:



SC11

(M6x30) Bolt and nut for panels

Application:



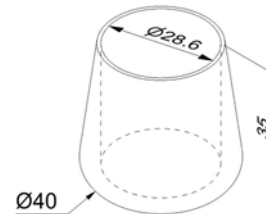




# Wheels & Support

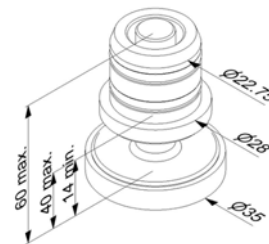
FT1

Rubber foot



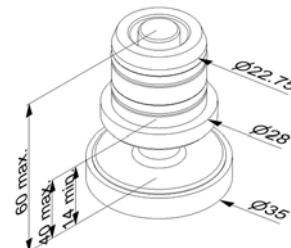
FT2

Levelling foot - threaded plastic expander



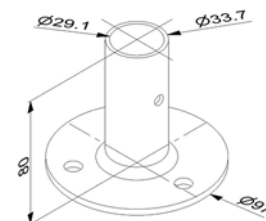
FT2H

Levelling foot - threaded aluminum expander



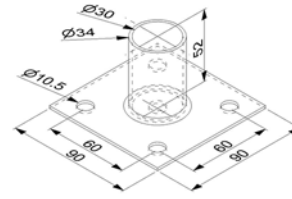
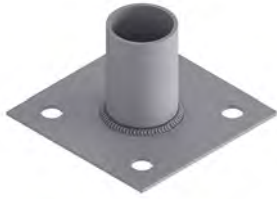
FT3

Stanchion mount foot reinforced



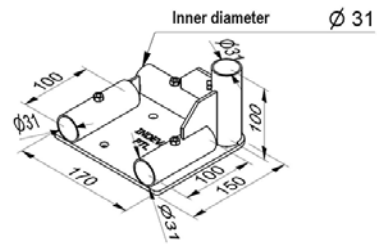
FT4

Stanchion mount foot light



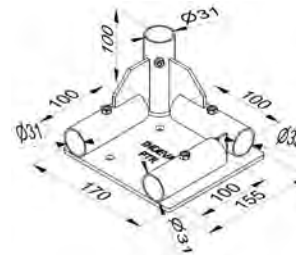
PTL

Corner mount plate left



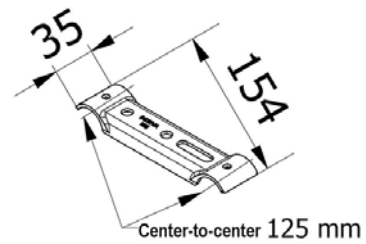
PTR

Corner mount plate right



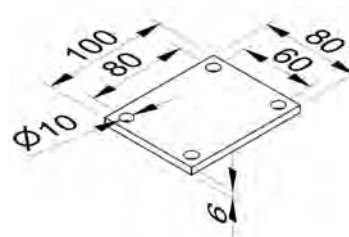
WB

Castor mount bracket



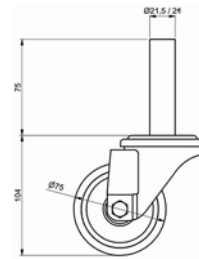
WP

Castor plate



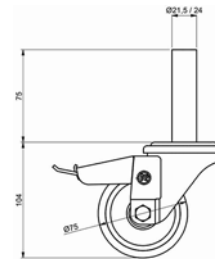
**T75**

Insert swivel caster - capacity max. 75 kg. Diam 75mm



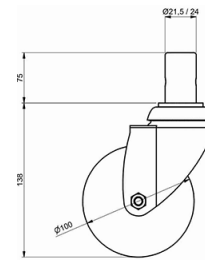
**T75B**

Insert swivel castor with brake - max. capacity 75 kg. Diam 75mm



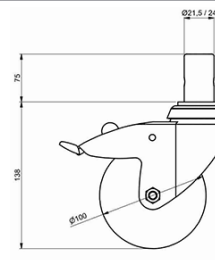
**T100**

Insert swivel castor - capacity max. 125 kg. Diam 100mm



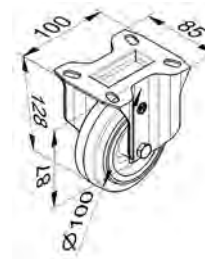
**T100B**

Insert swivel castor with brake - capacity max. 125 kg. Diam 100mm



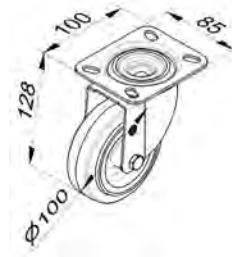
**P100**

Castor - capacity max. 150 kg. Diam 100mm



**P100S**

Swivel castor - capacity max. 150 kg. Diam 100mm



**P100SB**

Swivel castor with brake - capacity max. 150 kg. Diam 100mm



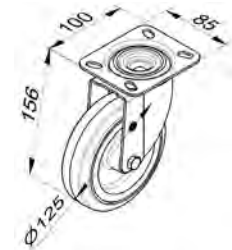
**P125**

Castor - capacity max. 200 kg. Diam 125mm



**P125S**

Swivel castor - capacity max. 200 kg. Diam 125mm



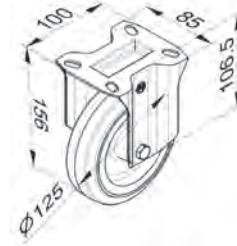
**P125SB**

Swivel castor with brake - capacity max. 200 kg. Diam 125mm / pcs.



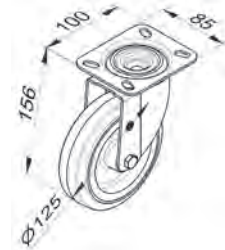
P125YF

Castor - capacity max. 220 kg. flat Profile. Diam 125mm



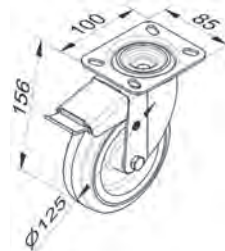
P125SYF

Swivel castor - capacity max. 220 kg. Flat profile. Diam 125mm



P125SBYF

Swivel castor with brake - capacity max. 220 kg. Flat profile. Diam 125mm



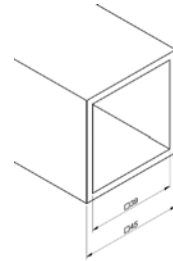
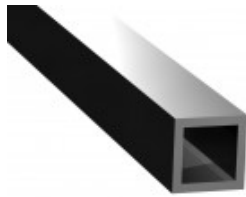


# Steel Square Base

BQ400

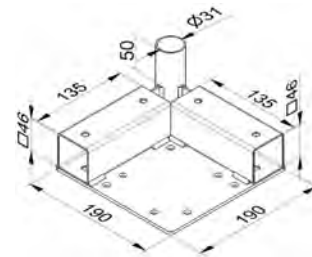
Tubular profile for Square Base

L= 4 m.



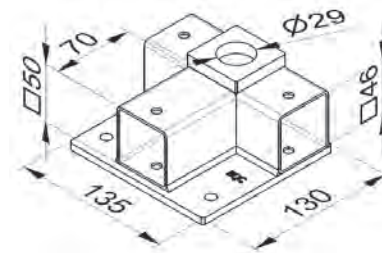
BQ

Corner plate for Square Base



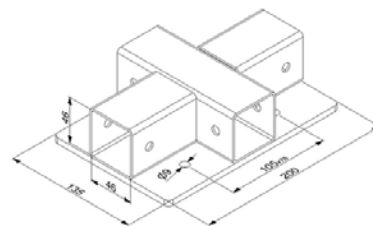
BQC

Intermediate plate Square Base



BQX

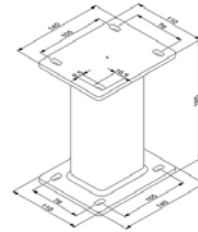
Square Base intersection plate



# Steel Square Base

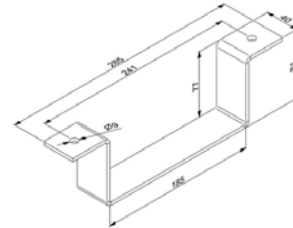
BQFT

Square Base foot



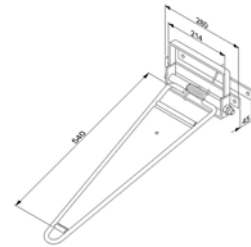
BQFK

Forklift bracket



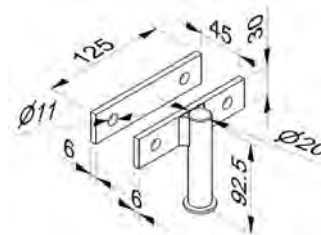
TMF

Tow bar



TMR

Tow hitch



ADS1

Tow bar label



SPR

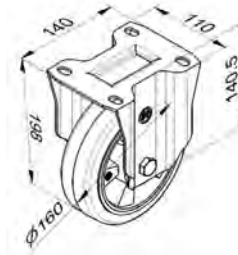
Spring





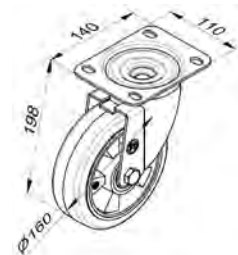
**BQ160**

Castor for Square Base - diam-160- load cap. 300kg.



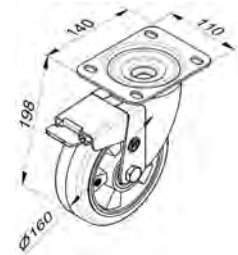
**BQ160S**

Swivel castor for Square Base - diam-160-load cap 300kg.



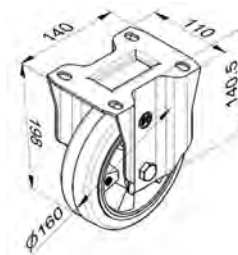
**BQ160SB**

Swivel castor for Square Base with brake - diam-160- load cap. 300kg.



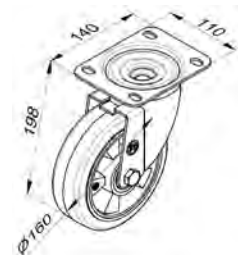
**BQ160YR**

Ergo-Castor low friction round profile for Square Base - diam-160-load cap.500kgcap.500kg



**BQ160SYR**

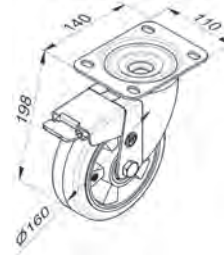
Swivel Ergo-Castor for Square Base - diam-160-load cap. 500kg.



# Steel Square Base

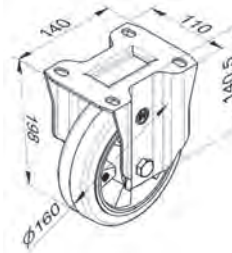
**BQ160SBYR**

SwivelErgo-Castor low friction round profile for Square Base with brake - diam-160-load cap. 500kg.



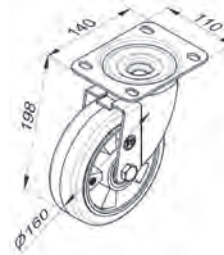
**BQ160YF**

Castor - capacity max. 300 kg. flat Profile. Diam 160mm



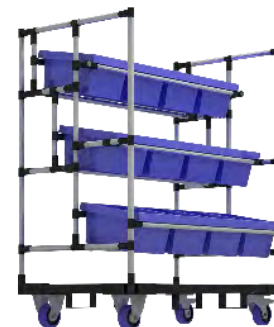
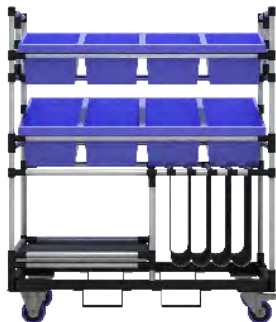
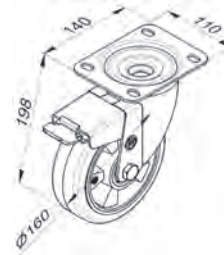
**BQ160SYF**

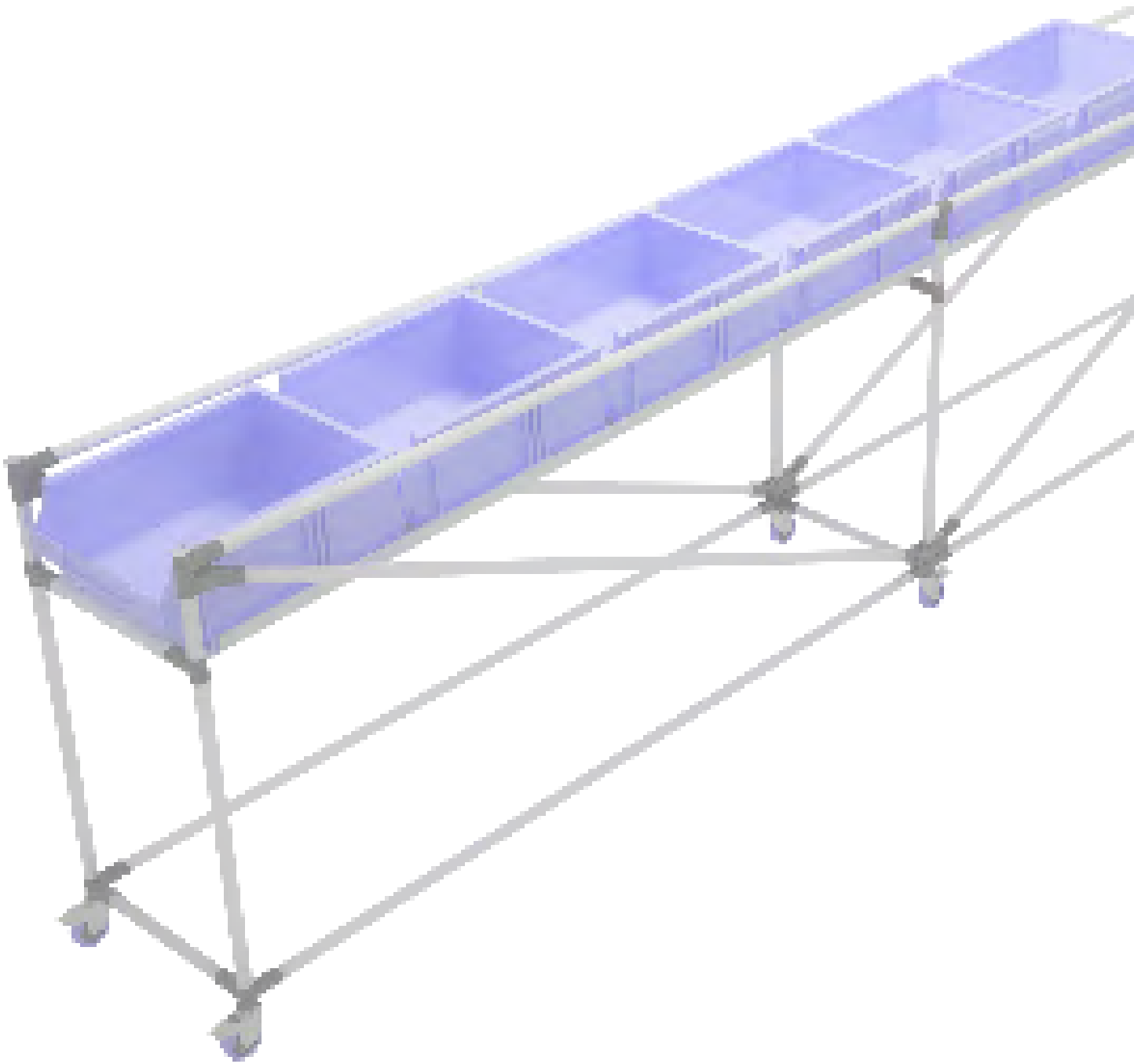
Swivel castor - capacity max. 300 kg. Flat profile. Diam 160mm



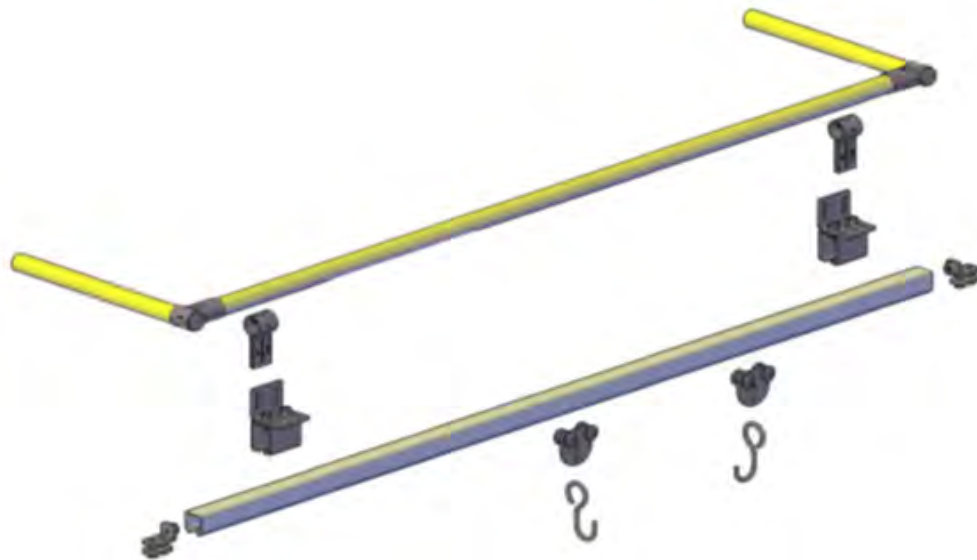
**BQ160SBYF**

Swivel castor with brake - capacity max. 300 kg. Flat profile. Diam 160mm



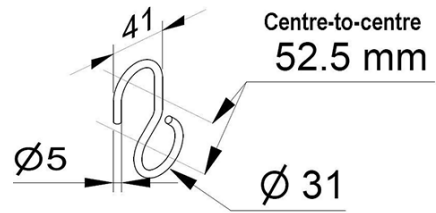


# ■ Monorail & Shooter



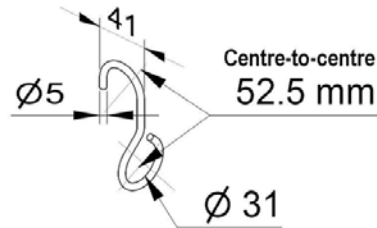
HK1

Hanger-Flat



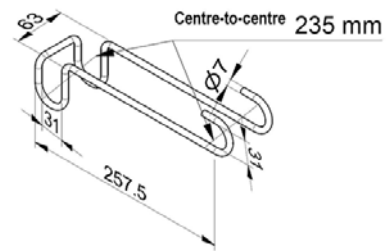
HK2

Hanger-90 deg



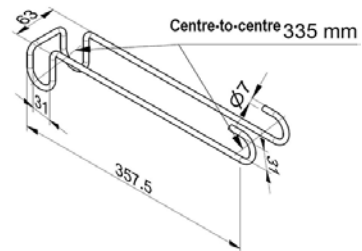
SL200

Presentation bridge for boxes L = 200 mm



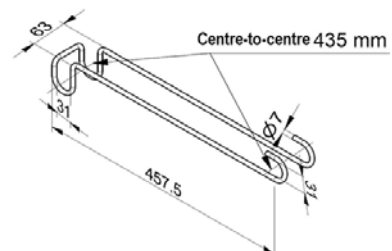
SL300

Presentation bridge for boxes L = 300 mm



SL400

Presentation bridge for boxes L = 400 mm









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