montratec

MONTRAC

Increasing productivity thanks to flexible and intelligent intralogistics

10/2011 English edition

MONTRATEC-REFERENCES

MONTRAC IN USE BY ...

Antistatic and low power consumption

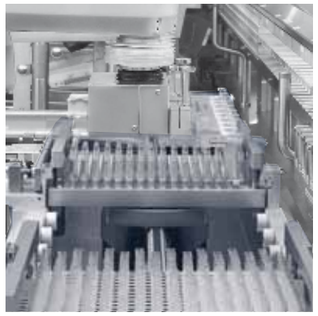
«With montratec's technology, we could customize the transport system according to our production needs, eliminating dust, reducing consumption and optimizing the entire production cycle.»

Vincenzo Lioy, Managing Director, Triom

Efficient and fully automated intralogistics

«With Montrac we have saved time, optimized production processes and the efficiency of labor, and freed up space.»

Maurizio Romagnoli, owner of Tech-Pol s.r.l.



Unattended intralogistics in the clean room

«Based on a positive result gained in a project, we know we can find a suitable solution to satisfy the requirements in terms of compact dimensions, small footprint, compatibility with aseptic environments, reliability and high availability.»

Thomas Otto, CEO of Vetter Pharma-Fertigung GmbH & Co. KG

Flexibility for the future

«We are very satisfied with the result and service of montratec. Currently we are planning the implementation of two more Montrac lines.»

Ulrich Wilke, Production Manager of SEIKO Optical Europe Laboratory

Montratec manufactures modular components used to automate demanding production and logistic processes. In addition to conventional belt conveyors, automation components, and the Quick-Set profile system, our range of products features the Montrac transport system. Montrac is an intelligent transport system for networking industrial production and logistic processes.

Montratec, headquartered in Switzerland, has been pioneering advances in industrial automation since 1963.

Montrac is an intelligent conveyor system for industrial production and logistical processes.

Montrac exemplifies total flexibility when it comes to conveyor technology, providing virtually limitless possibilities combined with user-friendly simplicity throughout the entire system. Montrac has been optimizing production processes and intralogistics in innovative companies worldwide for over a decade.

The Montrac intra-logistic solution guarantees that products are arriving at the proper destination at the right time. More importantly, it takes the most efficient path. When one wants to increase productivity, the first thought is often to increase machinery. However, this is not always necessary! The quickest and most cost-effective way to increase your productivity is to streamline and automate your material flow.

While this is not always feasible with conventional conveyors, the Montrac transport system can help you implement your productivity objectives – simply, flexibly and profitably.

«Let us be a part of your success, get on the right Trac!»

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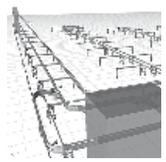


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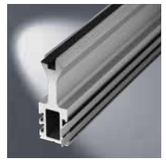

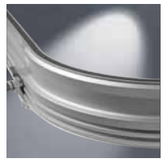

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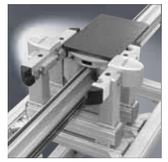

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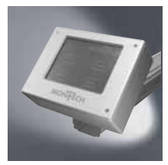

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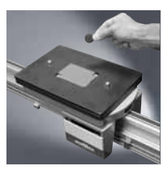


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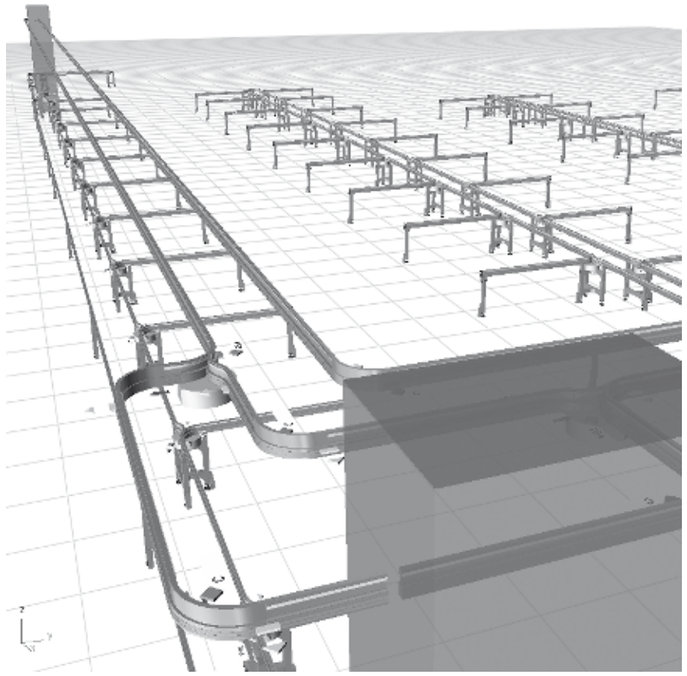
SOLUTIONS FOR YOUR PRODUCTION SYSTEM

Are you planning a new production system or expanding an existing production facility? The Montrac monorail system provides you with fast and flexible solutions. Montrac is an intelligent transport system networking industrial production and logistic processes.

Envision your production and logistics in the future – Montrac can help you realize that vision today. Montrac will revolutionize your logistic and production workflow.



APPLICATION EXAMPLES

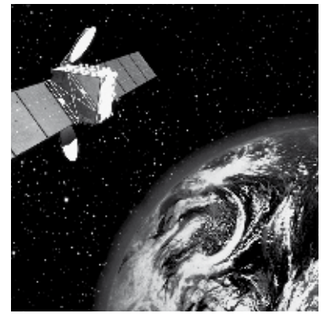
Intra-logistics and assembly line
In one of the largest engine plants in the world, production and logistics must be perfectly synchronized. Space is a premium and every square meter has to be optimized. The pistons are manufactured several hundred meters from final assembly. Montrac serves as both the transport system in the assembly line and as a fully automated delivery system to the final assembly area. For this application, Montrac was, by far, the least expensive and most effective solution.

Connecting injection molding machines and other machines
One of the most successful manufacturers of headlights uses Montrac for connecting its injection molding machines to the protective coating process. Thanks to the completely antistatic properties, cleanliness unparalleled flexibility of Montrac, the system paid for itself in less than 18 months.

Testing while traveling
A prominent manufacturer of tachometers uses Montrac in assembly. Each cluster has to go through a test station in the assembly line. Montrac makes it possible to start up the software and perform the testing during travel thanks to the additional 24 VDC electrical power supply on the Shuttle.
The manufacturer was able to cut costs by eliminating several cost-intensive test stations.

RELIABILITY

Montrac is the most reliable system available for transporting your products. Traditional conveyors' heavy-wear items like belts and chains are single points of failure. Since a Shuttle can be easily removed from the production process without stopping the system, there is no production downtime when Montrac is transporting your goods. The Trac itself is a passive element and not subject to failure. The Shuttles and switches
are the only active components in your system, and they were designed
to be virtually maintenance-free.

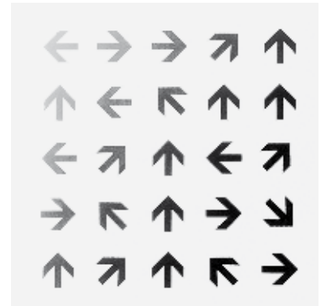


SIMPLICITY

Montrac was designed to be extraordinarily simple. It is comprised of very few components, making design and assembly very easy compared to ordinary conveyor systems. The Trac components are quick to assemble.
Other than a straight cut, there are no machining processes required. The exclusive use of electronic components eliminates the need for pneumatic connections and complicated wiring. Chaos Technology greatly reduces cabling and programming. You will benefit from this simplicity not only during assembly but also when changing or expanding your conveying system.

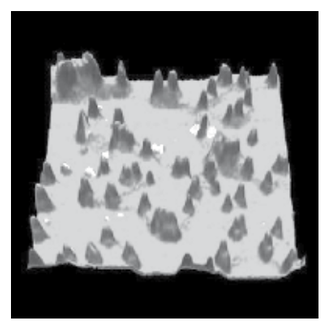
FLEXIBILITY

Your needs are our primary focus. We designed Montrac to be flexible enough to implement tomorrow's conveyance needs today! All Montrac components have the same basic design and are compatible with each other. So what you install now to meet today's needs can be reused tomorrow to meet future needs. The bypasses, switches and curves are compact to fit in tight spaces and maneuver around obstacles. Montrac is flexible
in ways that conventional conveyors could never be.



CLEANROOM

Montrac is perfectly suited for cleanrooms. The shuttles are self-propelled and therefore have no dirty belts. There is no sliding friction to create particulate. Even its form reduces air turbulence. The standard components were designed for a class 1000 cleanroom. With minor adjustments we have reached class 100 according to US Federal standard 209E.



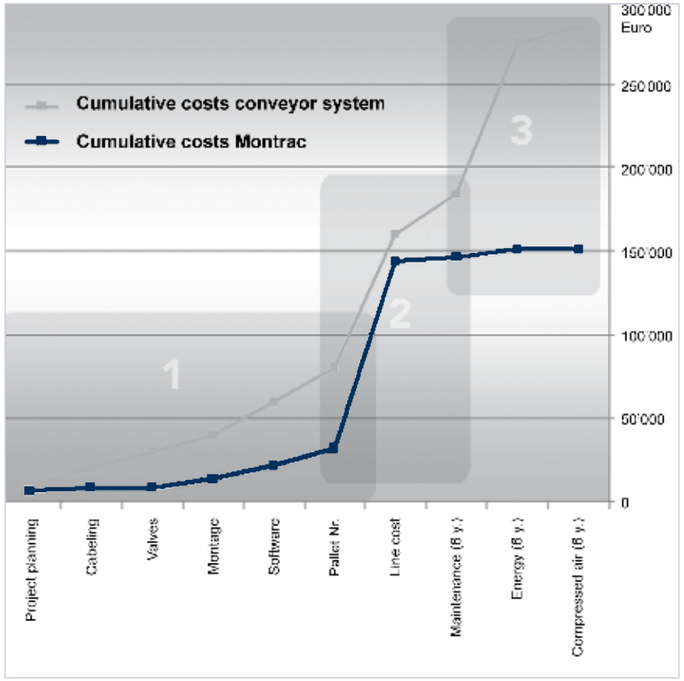
PROFITABILITY & COST EFFICIENCY

Montrac's latest developments are aimed at increasing the system's efficiency.

Montrac is driven solely by electricity – there are no costly pneumatic components or connectors.

Power is supplied directly through the conductor rails; this means there is very little to no cabling required. With Chaos Technology, programming and controls hardware is reduced or eliminated.

Cost comparison over 6 years:
Conventional conveyor system with 34 motors, 11 stations, and 48 pallets.
Montrac with 24 Shuttles and 11 process stations.



1. Implementation costs	2. Investment in the system *	3. Maintenance costs*		
– Project planning – Wiring – Valves – Assembly – Software	Conveyor belt: 100 000 Euro Montrac: 124 000 Euro		Conveyor belt	Montrac
		maintenance	4 000 Euro	400 Euro
		electricity	15 000 Euro	750 Euro
		pneumatic system	1 667 Euro	83 Euro
		total 1 year	**20 667 Euro**	**1 233 Euro**
		total 6 years	**124 000 Euro**	**7 400 Euro**

	Conveyor belt	**Montrac**	**Comparis.**
Initial investment	100 000 Euro	124 000 Euro	**+ 24 %**
Implementation	60 000 Euro	20 000 Euro	**– 66 %**
Service and maintenance over 6years	124 000 Euro	7 400 Euro	**– 94 %**
Total cost	284 000 Euro	151 000 Euro	**– 46 %**

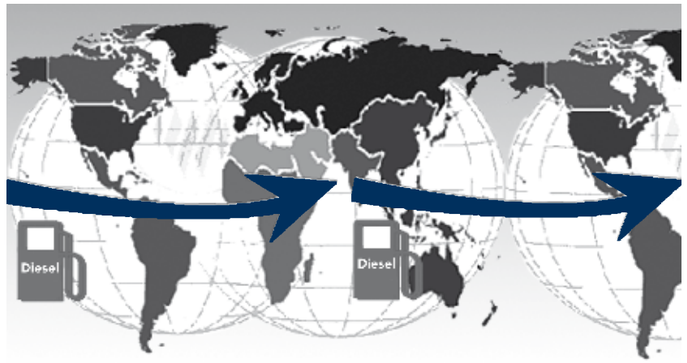
* This cost comparison was conducted by a customer

MONTRAC – FOR A CLEANER ENVIRONMENT

Montrac is not only attractively priced, it is also environmentally friendly. A conveyor belt system with 34 motors consumes $20,000 worth of electricity a year, whereas a comparable Montrac system only consumes $600. This equates to a significant reduction in environmental impact.

Conveyor belt Montrac

An analogy using automobiles illustrates this point from a different perspective: a Montrac Shuttle would be able to travel more than once around the world (estimated distance of 26,600 km) using only two tanks of fuel.

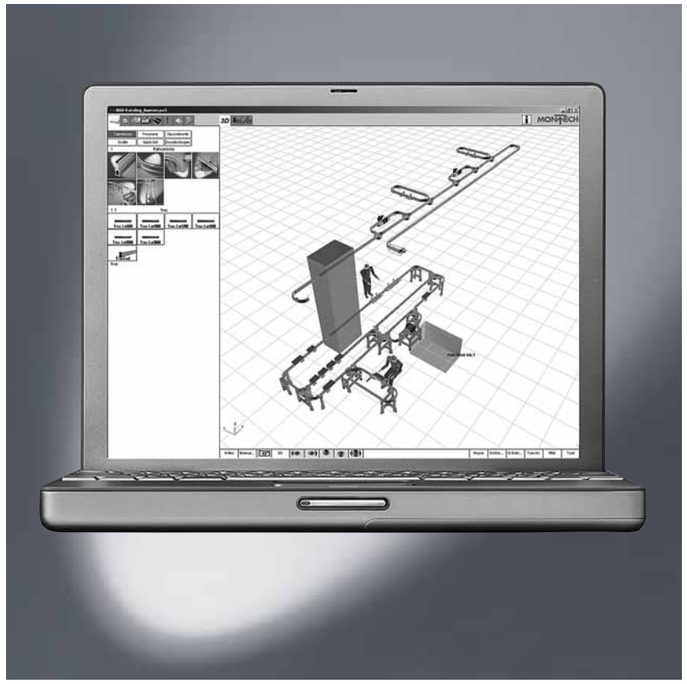


INTERACTIVE MONTRAC-CONFIGURATOR

Using our free configuration tool, you can configure Montrac systems yourself and experiment with different layouts. This tool lets you easily adapt the path of the monorail to your facility to create the perfect solution for your specific needs and spatial restrictions. Your floor plan can be imported in 2D or 3D (DWG or DXF).

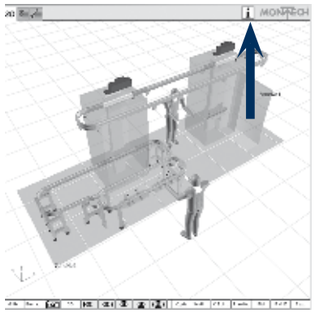
The intuitive construction handles make it easy to design systems. The required control elements (IRMs & proximity switches) can be added with the click of a mouse. You can toggle between 2D and 3D views for a choice
of layout views. There is also an integrated user's manual. Naturally, it allows you to generate a bill of materials as well.

Interested? Visit www.montratec.com for a closer look.



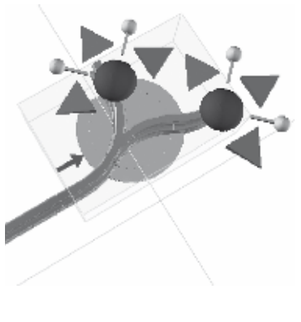
3D CONFIGURATION

The screen is divided into a vertical menu bar, a large configuration window, and a function and selection view. The configuration window is where you configure the Montrac system in real time. The resulting system is shown as a realistic 3D rendering, or as a bill of materials.
Simple spatial elements can be used to simulate an existing building element for planning purposes. Zones can be created where layouts can then be placed and referenced.
The user's manual is available in the upper toolbar.



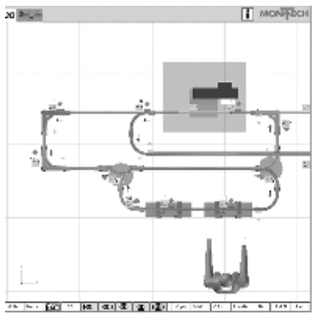
CONSTRUCTION HANDLES

The Montrac components are accessible from a hierarchical dropdown menu and can be dragged into the configuration window.
You can also double click on a piece of Trac to reveal the construction handle.
The constructions handle is comprised of several small icons that represent straight Trac, TracCurves, and TracSwitches. Clicking on one of these icons drops in the next Trac section.
Conflicts in the configuration are displayed in real time and the user is given solution options.



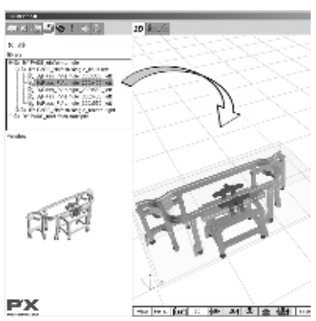
AUTOMATIC PLACEMENT OF CONTROL ELEMENTS

Intelligent Routing Modules (IRM) and the holders for proximity sensors can be positioned automatically with the click of two buttons. The offer view displays the bill of materials including item numbers.
The IRM list includes the required IRM kits and functions in the correct sequence.



LIBRARY WITH PRECONFIGURED SECTIONS

The library provides commonly used, preconfigured layout sections including Trac, peripheries, and associated framework. These elements
can be inserted into the configuration as complete assemblies by dragging & dropping them.
Custom configurations can be added to the existing library.



TRAVEL CONTROL WITH IRM & ISM

The IRM & ISM (Intelligent Routing Modules & Intelligent Shuttle Modules) are used to control the Trac and Shuttles in a Montrac system.

The IRM and ISM are infrared communication modules that exchange data allowing Shuttle, Trac, and work station to interact.

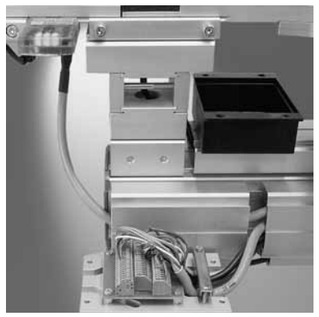
The ISM Shuttle module, and IRM Trac module, communicate with each other. In addition to communicating with the ISM, the IRM can also control TracSwitchs and Crossings when programmed to operate autonomously.

CONTROLLING THE TRAVEL SPEED

The speed of the Shuttle is controlled by IRM and control cams positioned along the Trac.
The IRM gives the start command which accelerates the Shuttle to the maximum speed of 30 m/min.
There are three control cams that can be attached to the Trac to:
– Decrease the speed to 12 m/min (AB-cam),
– Accelerate to 30 m/min (B-cam), or
– Bring the Shuttle to a stop (A-cam).

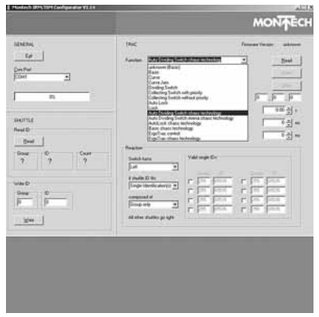
INTERFACES

There are three types of electrical connectors on the IRM:
– Voltage supply, 24 VDC.
– Digital inputs and outputs that are configured to specific functions (e. g. start Shuttle, detect Shuttle, lock Shuttle, sign off) for conventional operation with external control and/or for IRM logic functions including Chaos Technology.
– RS232 serial interface, communication interface for reading and writing Shuttle identification numbers (group and ID), Shuttle control in networked systems, status indication, visualization and more.



MONTRATEC IRM & ISM CONFIGURATION SOFTWARE

The Montrac-Configurator can automatically determine and generate a list of IRM and corresponding kits required. The «montratec IRM/ISM Configurator» software assigns and parameterizes specific functions «module types» to the IRM.
There are 14 module types that are available from a drop-down menu. The range of functions includes everything from curve monitoring to autonomous actuation of TracSwitches, TracCrossings, and ShuttleLocks.
This software can also be used to read and re-write Shuttle identification numbers.
The latest version is available at www.montratec.com.



CONNECTION BOXES AND CABLES

An IRM is needed at each stopping point in the system. At the minimum, it serves to detect and start the Shuttles.
The «IRM Basic» assembly serves this purpose. It consists of an IRM, a connection cable, an AB-cam (speed reduction), and an A-cam (stop).
Various connection kits are available for specific uses: connection box (terminal box) for a single IRM, with or without proximity switch holder; connection box for two IRMs and a proximity switch holder; and connection box for an IRM and two proximity switch holders.

CHAOS TECHNOLOGY

Chaos Technology is a means of allowing the Shuttles to navigate a Montrac system without external controls.

It originated from the concept of allowing each decision making point to operate independently and coordinating them by storing information on the Shuttle.

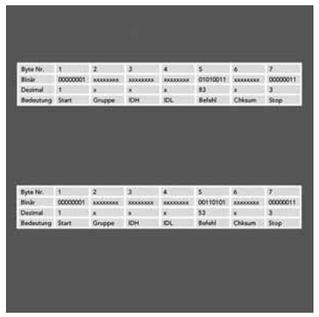
By allowing Chaos Technology to focus on logistic decisions, more attention can be given to optimizing the processes within the stations.

CHAOS TECHNOLOGY COMPONENTS

The IRM and ISM explained on page 10 are used to control the Trac and Shuttles with Chaos Technology. On the most basic level, The ISM and IRM as part presence detectors and start switches.
The ISM (residing in the Shuttle) sends an «in position» output to the IRM (attached to the Trac) each time the Shuttle comes to a stop. This is then passed along via discrete I/O to your PLC.
Once the work is complete, your controller sends a discrete signal to the IRM, and it passes the start command to the ISM.

ADDRESSING THE COMPONENTS

In addition to detect and start, IRM and ISM can send and receive identification numbers (group and ID) that are saved in the Shuttle. When the Shuttle comes to a stop, the ISM sends the «in position» output along with the stored identification numbers. The IRMs uses this information internally to autonomous control of TracSwitches. At work stations, the information can be passed on to your controller via the serial connection.



Byte Nr.	1	2	3	4	5	6	7
Binär	00000001	xxxxxxxx	xxxxxxxx	xxxxxxxx	01010011	xxxxxxxx	00000011
Dezimal	1	x	x	x	83	x	3
Bedeutung	Start	Gruppe	ID H	ID L	Befehl	Chksum	Stop

Byte Nr.	1	2	3	4	5	6	7
Binär	00000001	xxxxxxxx	xxxxxxxx	xxxxxxxx	00110101	xxxxxxxx	00000011
Dezimal	1	x	x	x	53	x	3
Bedeutung	Start	Gruppe	ID H	ID L	Befehl	Chksum	Stop

DECOUPLING TRAC AND PROCESSES

The Montrac system is the logical connection between process stations. Chaos Technology uses rules direct traffic in a way that supplies stations with goods in an optimum fashion.
With Chaos Technology, the Trac components can operate autonomously – interaction with the coordinating control system occurs exclusively in the process stations.
Upon leaving a process station, the Shuttle is assigned identification numbers based on the product's status, which, in turn, defines the next process step. The Trac is controlled autonomously using these identification numbers.

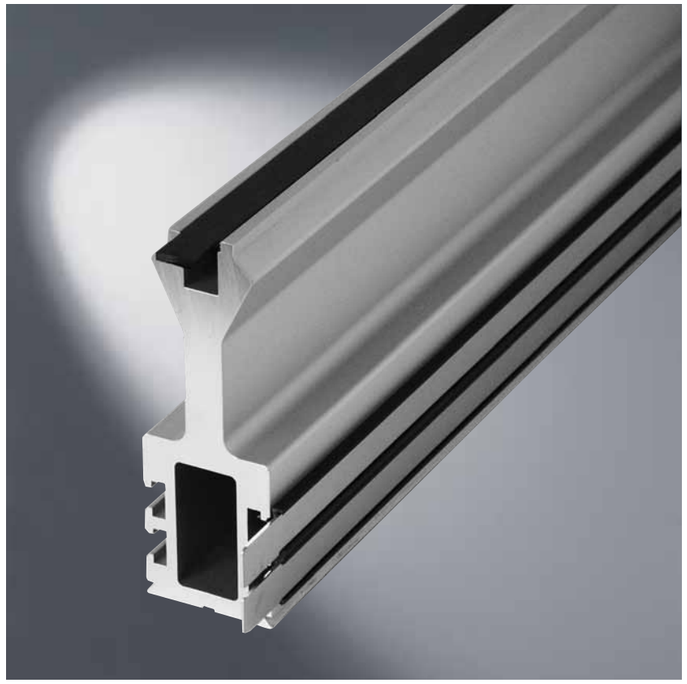
THE PRODUCT CONTROLS THE TRAC

All process stations are numbered (e.g. consecutively). These numbers are «target addresses» corresponding to the stations to which the Shuttles are traveling. The principle of Chaos Technology is that upon completion of a process the Shuttle is given the next target address. All actuators configured for Chaos Technology react to the target address directing the Shuttle to the next station.
This occurs within the IRM and does not require external controls. The address is simply the identification number. Addresses are stored in the Shuttle and can be changed as required.

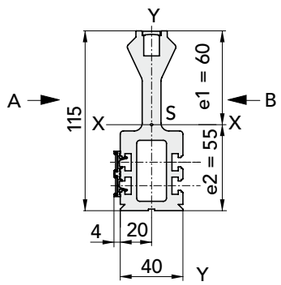
TRAC

The monorail is made of colorless anodized aluminum extrusion. Along the inside of the Trac are the conductor rails and on outside are T-slots to which control modules can be placed. The conductor rails can also be outside and the control modules inside if needed

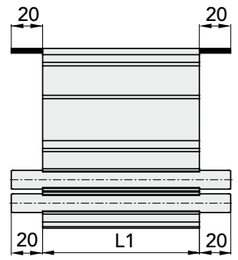
The Trac is compatible with the Quick-Set framework system.



TRAC – DIMENSIONAL DRAWING



View A



Trac	Ref. No.
L = 2960 mm	56926/2960
xxxx lengths between 60 and 2960 mm are available	56926/xxxx (1 mm step)

Guide profile, conductor rail and cover profile are included in the scope of delivery

Trac accessories	Ref. No.
Guide profile	90416/xxxx
Conductor rail	508346/xxxx
Cover profile	91257/xxxx
T-slot cover (L=3000 mm)	56973

View B

TRAC – TECHNICAL DATA

Trac weight	[kg/m]	5.3
Cross-sectional area	[mm^2]	1957
Section modulus W_x Section modulus W_y	[cm^3] [cm^3]	37.7 10.8
Moment of inertia J_x Moment of inertia J_y	[cm^4] [cm^4]	230 21.6
Length allowance	[mm]	0.5
Torsion allowance	[mm/m]	1
Straightness tolerance	[mm/m]	1
Material		aluminium, nickel-plated copper, plastic
Rated voltage	[VDC]	24
Current carrying capacity	[A]	64
Ambient conditions: temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

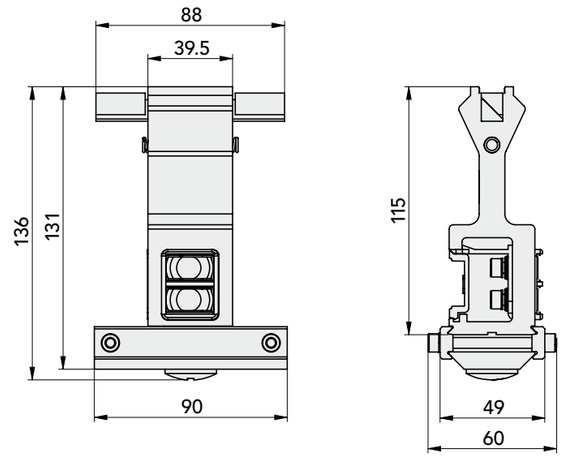
TRACLINK

The TracLink is the connecting element between two Trac sections or between Trac and active components. This element provides the electrical connection for the conductor rails and allows for thermal expansion. The TracLink also provides the electric connection between elements. An internal 100k ohm resistor is built into the circuit between the Trac components (Trac, TracLink, TracCurve, etc.) and ground (ESD).

TRACLINK – TECHNICAL DATA

TracLink weight		[kg]	0,25
Material			aluminium, nickel-plated copper, plastic
Rated voltage		[VDC]	24
Current carrying capacity		[A]	64
Ambient conditions:	temperature	[°C]	10 to 40
	rel. humidity		5%–85% (without condensation)
	air purity		normal workshop atmosphere

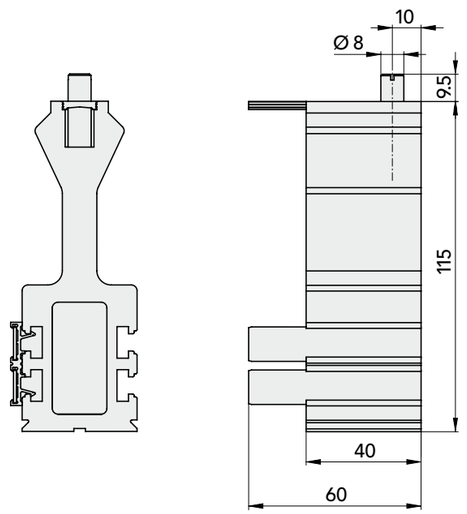
TRACLINK – DIMENSIONAL DRAWING



Optional cable and cable fastening for the power supply

	Ref. No.
TracLink L = 40 mm	57949

TRACEND – DIMENSIONAL DRAWING (Termination piece for open section)



	Ref. No.
TracEnd	56788

TRACCURVE

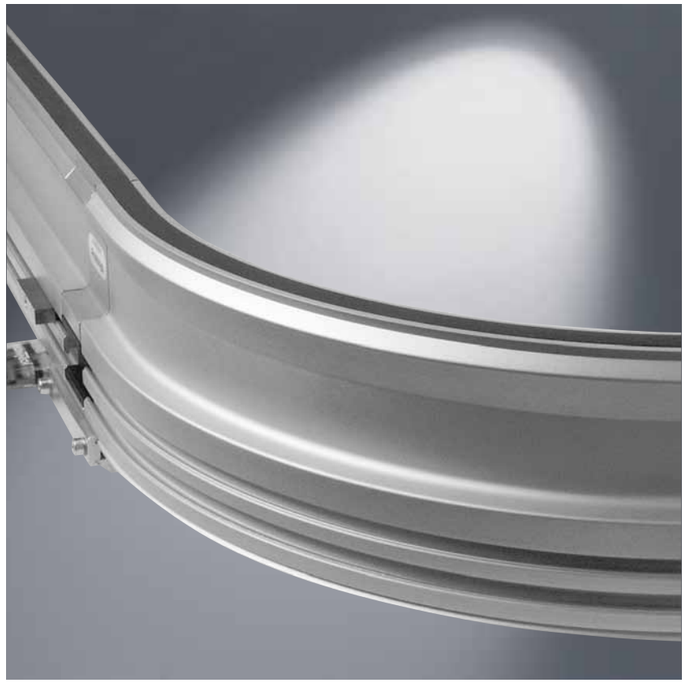
Curved Trac elements are available in 90° or 45°.

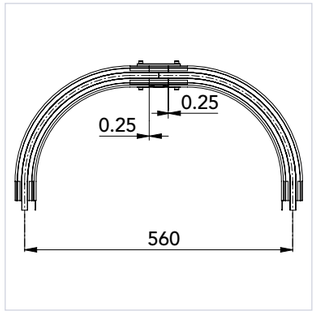
There is no impact on Shuttles when traveling through a TracCurve. The cross-section of TracCurve is identical to the Trac.

A 180° curve can be arranged using two 90° TracCurves.

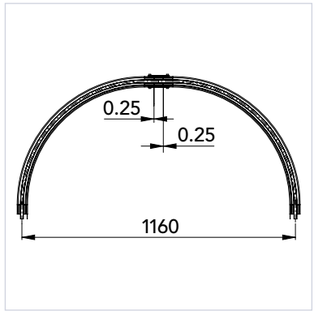
The TracCurve R500 is used under certain special conditions, e.g. heavy product weight and/or extremely high sensitivity to vibrations.

The radius of 280 mm / 580 mm, gives Montrac unparalleled flexibility.





2x TracCurve 90°

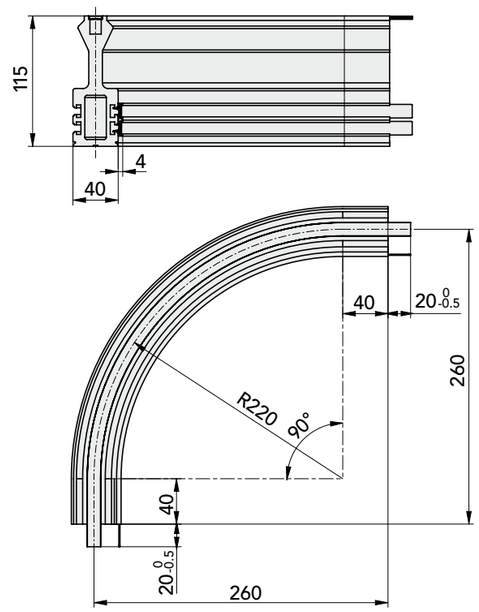


2x TracCurve 90° R500

TRACCURVE – TECHNICAL DATA

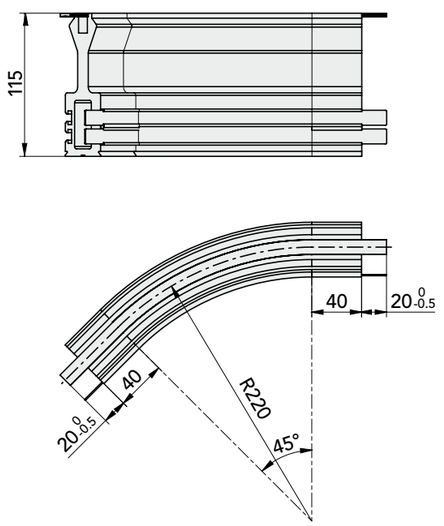
		90°	45°	90° R500	45° R500
TracCurve weight	[kg]	2.3	1.4	5.0	2.8
Material		aluminium, nickel-plated copper, plastic			
Rated voltage	[VDC]	24			
Current carrying capacity	[A]	64			
Ambient conditions: temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere			

TRACCURVE 90° – DIMENSIONAL DRAWING



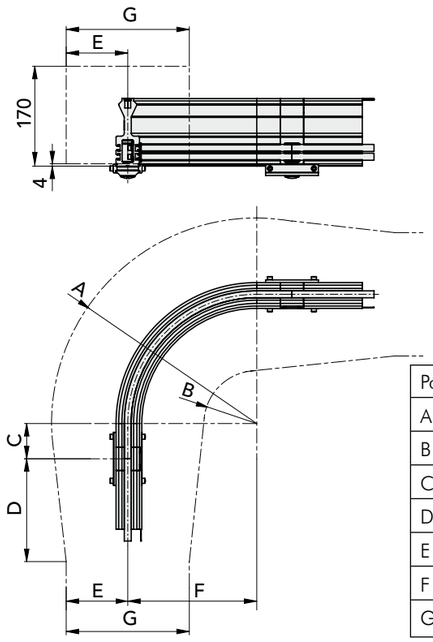
TracCurve	Ref. No.
90° inside (conductor rail)	56095
90° outside (conductor rail)	56096

TRACCURVE 45° – DIMENSIONAL DRAWING



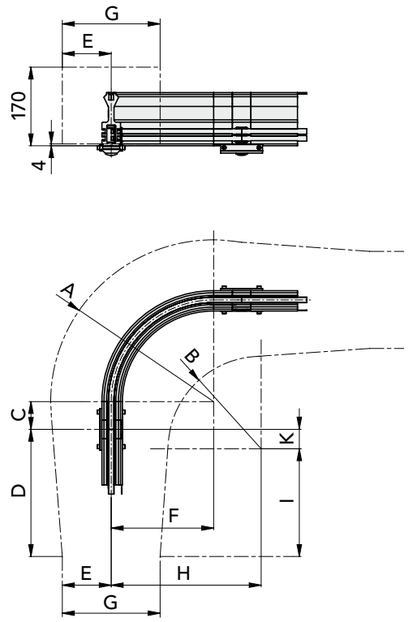
TracCurve	Ref. No.
45° inside (conductor rail)	56097
45° outside (conductor rail)	56098

FREE SPACE FOR SHUTTLE WITH PALLET SIZE OF 200x300, 300x400 IN A TRACCURVE 90°



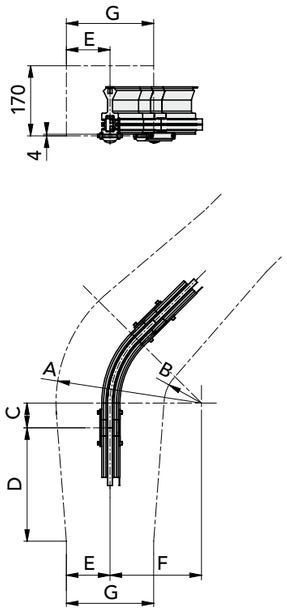
Pallet size	200x300	300x400
A	R350	R400
B	R90	R10
C	60	60
D	175	275
E	105	155
F	220	220
G	210	310

FREE SPACE FOR SHUTTLE WITH PALLET SIZE OF 200x400, 200x550, 300x550 IN A TRACCURVE 90°



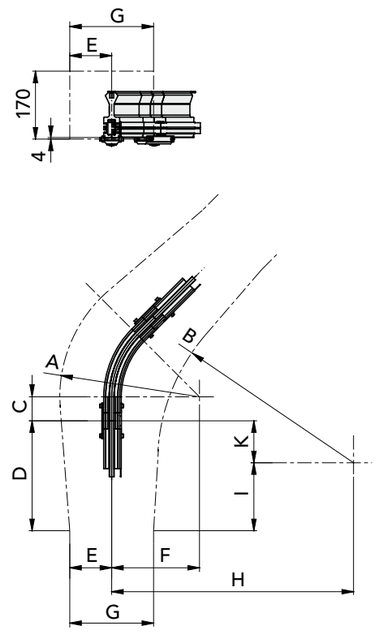
Pallet size	200x400	200x550	300x550
A	R350	R380	R410
B	R200	R300	R330
C	60	60	49
D	276	475	423
E	105	105	155
F	220	220	231
G	210	210	310
H	322	432	489
I	233	323	104
K	42	152	210

FREE SPACE FOR SHUTTLE WITH PALLET SIZE OF 200x300, 300x400 IN A TRACCURVE 45°



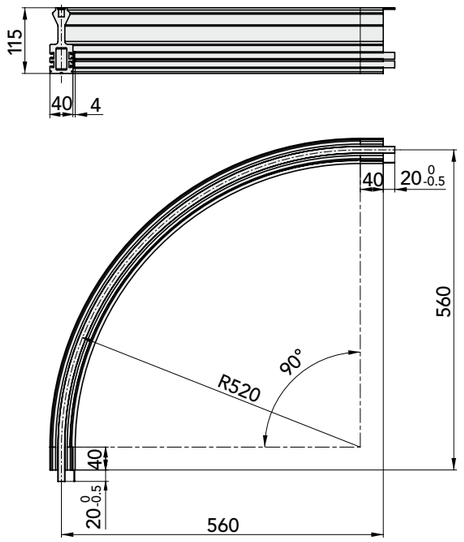
Pallet size	200x300	300x400
A	R350	R400
B	R90	R10
C	60	60
D	175	275
E	105	155
F	220	220
G	210	310

FREE SPACE FOR SHUTTLES WITH PALLET SIZE OF 200x400, 200x550, 300x550 IN A TRACCURVE 45°



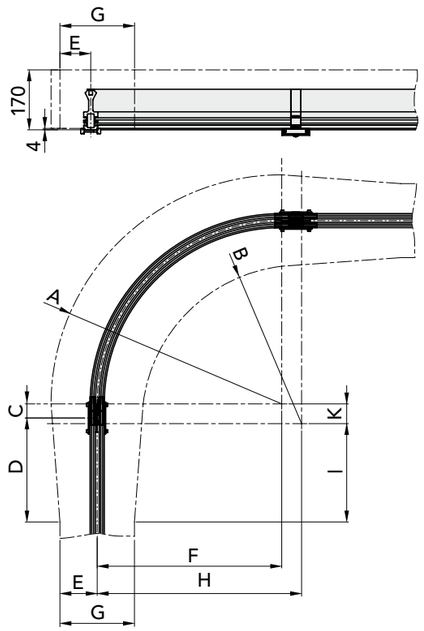
Pallet size	200x400	200x550	300x550
A	R350	R380	R410
B	R490	R800	R875
C	60	57	56
D	275	475	422
E	105	105	155
F	220	228	230
G	210	210	310
H	606	928	1031
I	170	242	38
K	105	233	276

TRACCURVE 90° R500 – DIMENSIONAL DRAWING



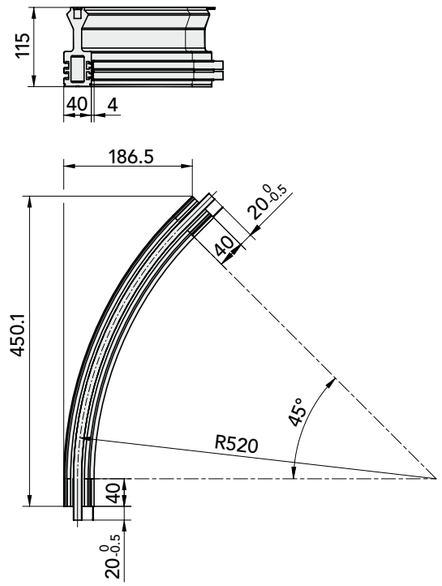
TracCurve R500	Ref. No.
90° R500 inside (conductor rail)	58201
90° R500 outside (conductor rail)	58207

FREE SPACE FOR SHUTTLE IN A TRACCURVE 90° R500



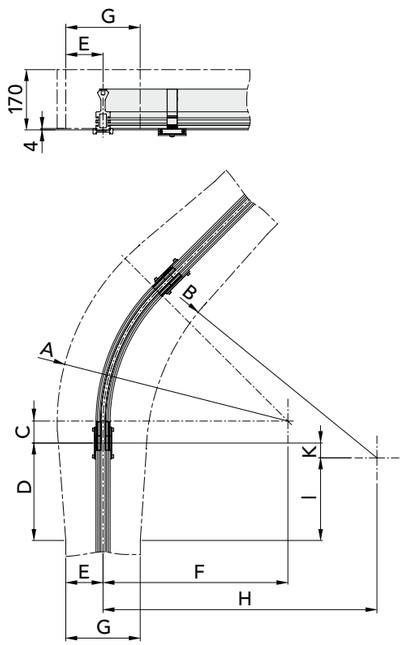
Pallet size	200x300	200x400	200x550	300x400	300x550
A	R650	R650	R650	R690	R690
B	R450	R450	R500	R400	R450
C	40	40	40	49	50
D	295	295	295	381	379
E	105	105	108	155	153
F	520	520	517	511	512
G	210	210	210	310	310
H	576	576	619	575	622
I	279	279	233	255	210
K	16	16	62	15	59

TRACCURVE 45° R500 – DIMENSIONAL DRAWING



TracCurve R500	Ref. No.
45° R500 inside (conductor rail)	58202
45° R500 outside (conductor rail)	58208

FREE SPACE FOR SHUTTLE IN A TRACCURVE 45° R500



Pallet size	200x300	200x400	200x550	300x400	300x550
A	R650	R650	R650	R700	R700
B	R650	R650	R770	R600	R850
C	62	60	60	60	60
D	275	275	275	275	275
E	105	106	105	155	155
F	521	521	521	520	520
G	210	210	210	310	310
H	772	772	891	766	1013
I	233	233	184	233	134
K	42	42	91	42	141

TRACSWITCH

The TracSwitch diverts Shuttles from one Trac to two or merges two Tracs. Thanks to the small radius, bypasses and branches can be implemented in small spaces. The TracSwitch operates electrically and is powered directly from the conductor rails.

Delivery options:

– You can order the TracSwitch pre-configured for a specific task.

– You can mount the conductor rails and configure the controller as required for your application.

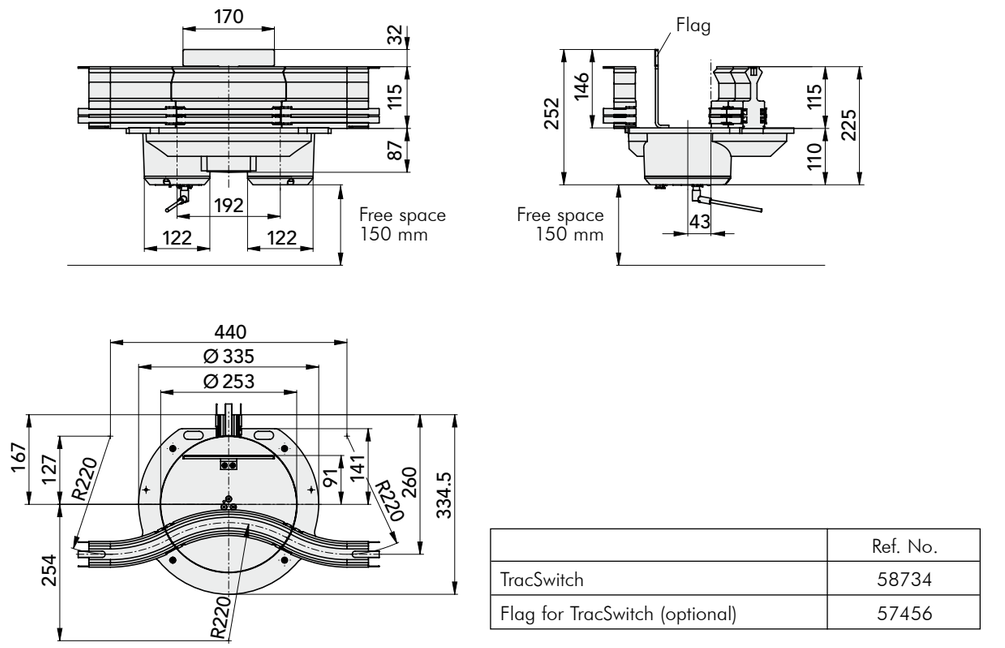
The «montratec Motor Configu rator» software is available at www.montratec.com.

TRACSWITCH – TECHNICAL DATA

TracSwitch weight	[kg]	12
Material		aluminium, nickel-plated copper, steel, brass, plastic
Rated voltage	[VDC]	24 (min. 22.8 / max. 28.8)
Connections		1 x RS232 3 x DIN (per used positions 1 x DIN) 4 x DOT (per used positions 1 x DOT + 1 x Error)
Rotation angle	[°]	3 x 120
Rotation time (120°) Rotation time (240°)	[sec] [sec]	1.2 1.7
Current carrying capacity: – between the Trac connections – on the moveable Trac section	 [A] [A]	 64 2.5
Mechanical load capacity	[N]	340*
Ambient conditions: temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

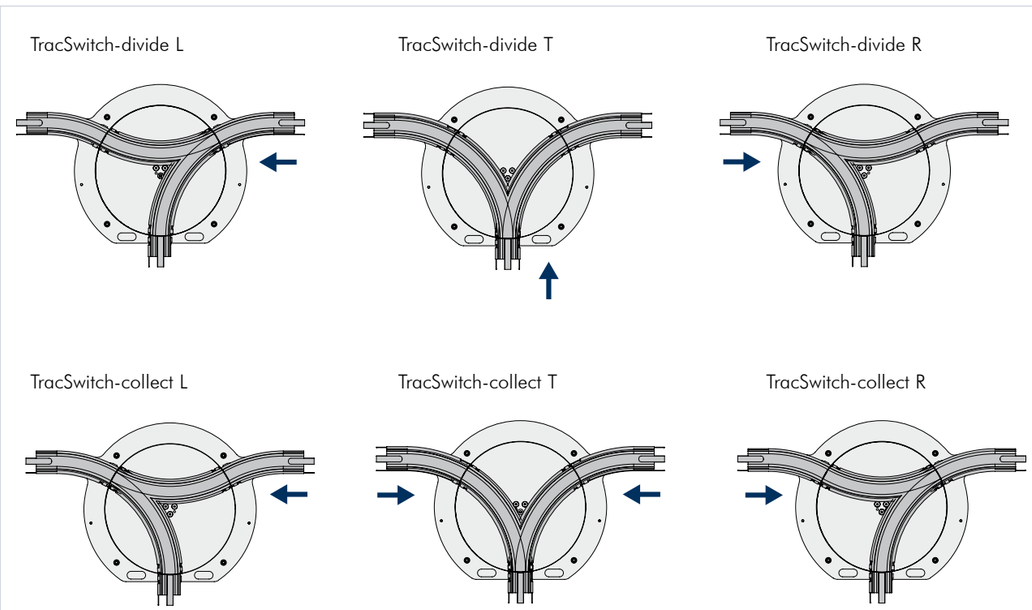
* corresponds to the weight of a fully laden 2-axel shuttle.

TRACSWITCH – DIMENSIONAL DRAWING



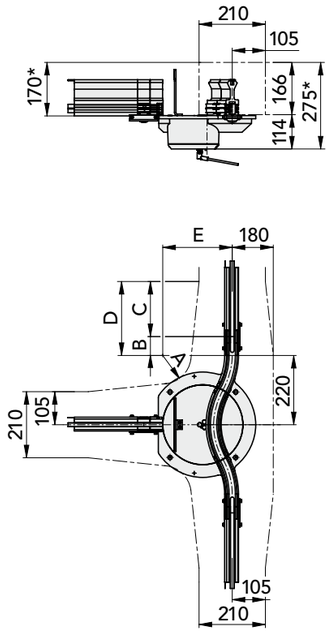
	Ref. No.
TracSwitch	58734
Flag for TracSwitch (optional)	57456

OVERVIEW OF TRACSWITCH TYPES



The desired TracSwitch type can be configured with the «montratec Motor Configurator» software.
The latest version is available at www.montratec.com

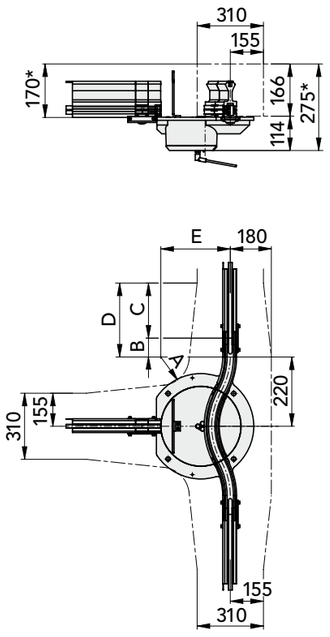
FREE SPACE FOR SHUTTLES WITH PALLET SIZE OF 200x300, 200x400, 200x550



* The clearance will need to be increased upward, depending on the load

Pallet size	200x300	200x400	200x550
A	R90	R60	R300
B	60	60	165
C	175	275	260
D	235	335	425
E	220	220	445

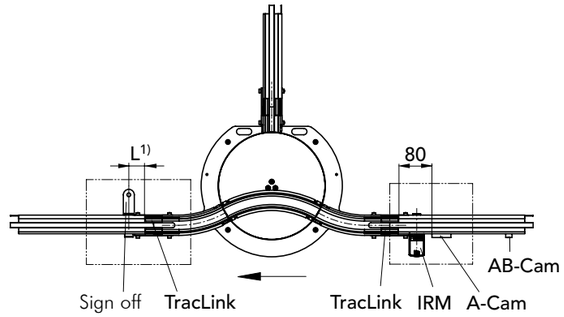
FREE SPACE FOR SHUTTLES WITH PALLET SIZE OF 300x400, 300x550



* The clearance will need to be increased upward, depending on the load

Pallet size	300x400	300x550
A	R10	R300
B	60	200
C	275	225
D	425	335
E	220	480

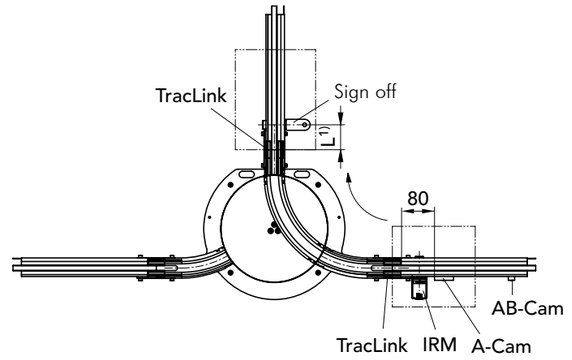
RUN TIMES TRACSWITCH STRAIGHT ON



[1] The measurements for L assume a sign off of the shuttle for a falling signal from the sign off sensor. For a sign off of the shuttle for a rising signal from the sign off sensor, the values for L will need to be increased by 70 mm in each case..

	Standard Shuttle 200x300 platform (alu) L[1] = 40 mm		Standard Shuttle 300x400 platform (alu) L[1] = 160 mm		Standard and 2-axle Shuttle (rear axle empty) 300 x 550 platform (alu) L[1] = 330 mm		2-axle Shuttle 300x550 platform (alu) L[1] = 330 mm	
	payload		payload		payload		payload	
Passage at	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]
v = 30 m/min	2.1	2.3	2.3	2.6	2.6	2.9	2.7	2.9
v = 12 m/min	4.2	4.5	4.8	5.1	5.7	5.8	5.7	5.9

RUN TIMES TRACSWITCH CURVE



[1] The measurements for L assume a sign off of the shuttle for a falling signal from the sign off sensor. For a sign off of the shuttle for a rising signal from the sign off sensor, the values for L will need to be increased by 70 mm in each case..

	Standard Shuttle 200x300 platform (alu) L[1] = 125 mm		Standard Shuttle 300x400 platform (alu) L[1] = 225 mm		Standard and 2-axle Shuttle (rear axle empty) 300 x 550 platform (alu) L[1] = 375 mm		2-axle Shuttle 300x550 platform (alu) L[1] = 375 mm	
	payload		payload		payload		payload	
Passage at	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]
v = 30 m/min	2.0	2.2	2.2	2.4	2.5	2.8	2.6	2.7
v = 12 m/min	4.0	4.2	4.4	4.6	5.2	5.4	5.4	5.5

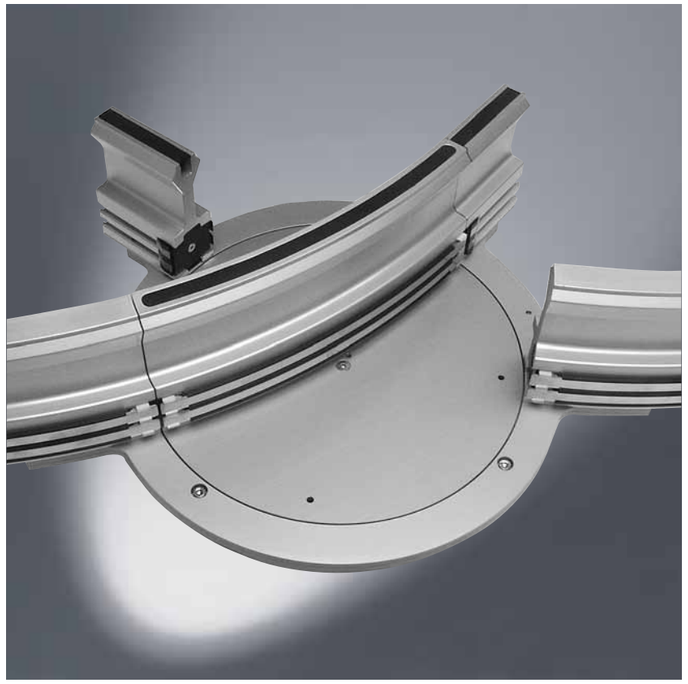
TRACSWITCH ARENA

The TracSwitch Arena either diverts Shuttles into a bypass or allows them to continue on the main Trac. The TracSwitch Arena makes it possible to perform a complete bypass with a single component. The TracSwitch Arena is electrically operated and is powered directly from the conductor rails.

Delivery options:

– You can order the TracSwitch pre-configured for a specific task.
– You can mount the conductor rails and configure the controller as required for your application.

The «montratec Motor Configu rator» software is available at www.montratec.com.

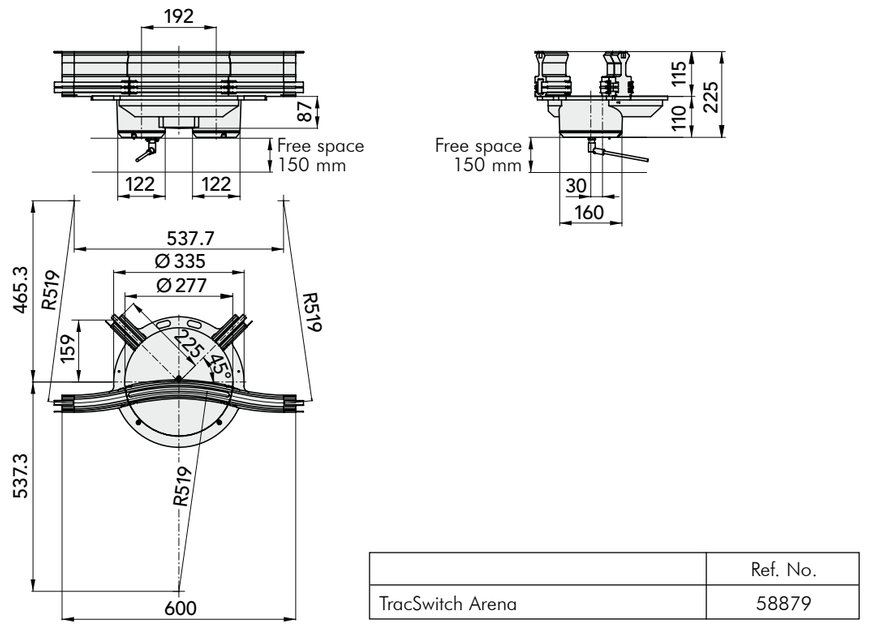


TRACSWITCH ARENA – TECHNICAL DATA

TracSwitch Arena weight	[kg]	13.5
Material		aluminium, nickel-plated copper, steel, brass, plastic
Rated voltage	[VDC]	24
Connections		1 x RS232 3 x DIN (per used positions 1 x DIN) 4 x DOT (per used positions 1 x DOT + 1 x Error)
Rotation angle	[°]	60, 150, 210
Rotation time (60°, 150°, 210°)	[sec]	60° = 0.5s, 150° = 1s, 210° = 1.5s
Current carrying capacity: – between the Trac connections – on the moveable Trac section	 [A] [A]	 64 2.5
Mechanical load capacity	[N]	340*
Ambient conditions: temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

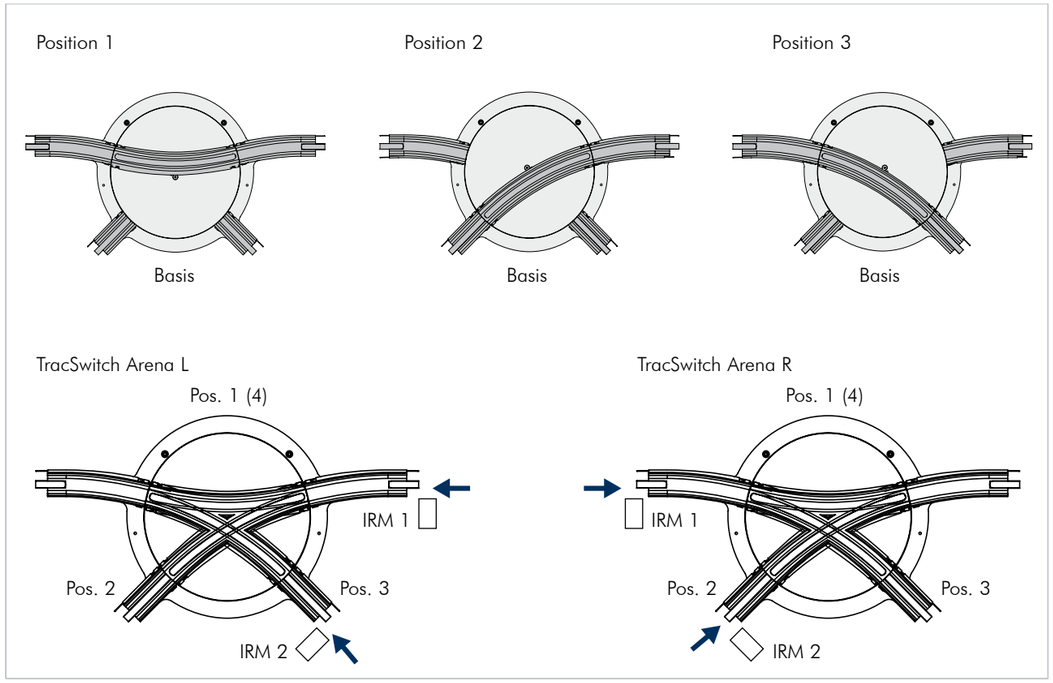
* corresponds to the weight of a fully laden two-axel shuttle

TRACSWITCH ARENA – DIMENSIONAL DRAWING



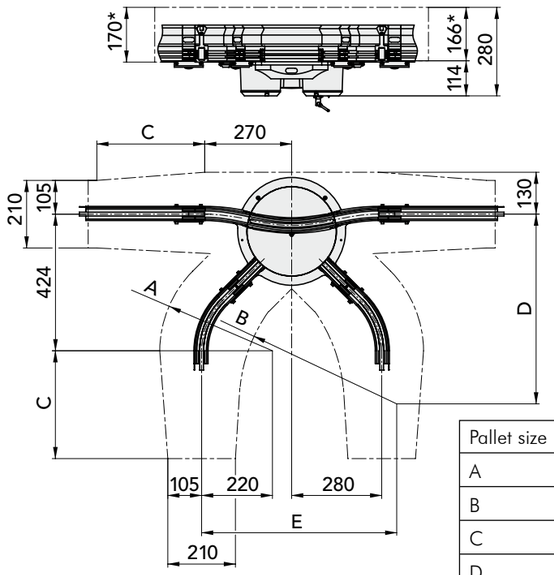
	Ref. No.
TracSwitch Arena	58879

OVERVIEW TRACSWITCH ARENA – POSITIONS AND TYPES



The desired TracSwitch Arena type can be configured with the «montratec Motor Configurator» software.
The latest version is available at www.montratec.com.
Pos. 4 is equal to Pos. 1 360° turned.

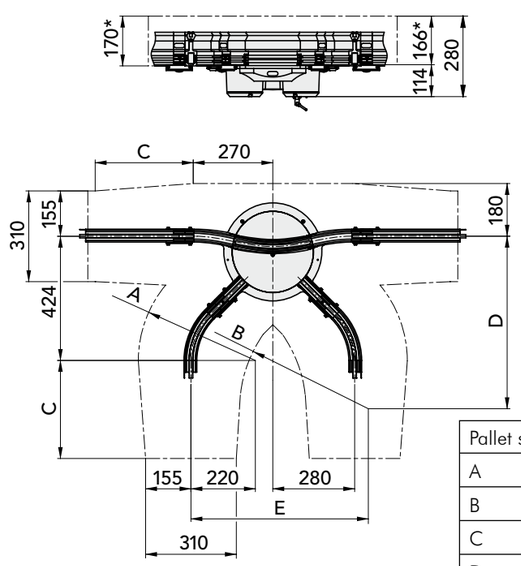
FREE SPACE FOR SHUTTLES WITH PALLET SIZE OF 200x300, 200x400, 200x550



* The clearance will need to be increased upward, depending on the load

Pallet size	200x300	200x400	200x550
A	R350	R350	R380
B	R90	R490	R800
C	235	335	475
D	424	590	715
E	220	606	928

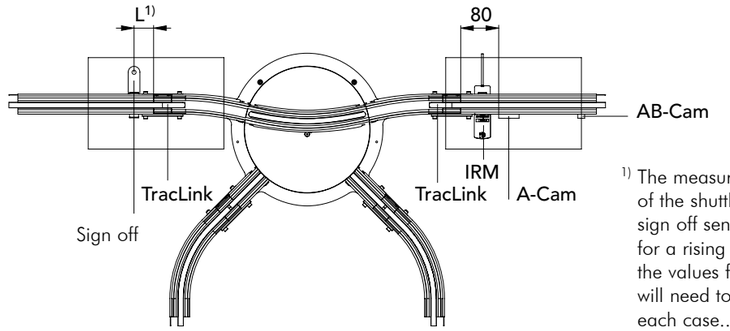
FREE SPACE FOR SHUTTLES WITH PALLET SIZE OF 300x400, 300x550



* The clearance will need to be increased upward, depending on the load

Pallet size	300x400	300x550
A	R400	R410
B	R440	R875
C	335	475
D	590	757
E	606	1031

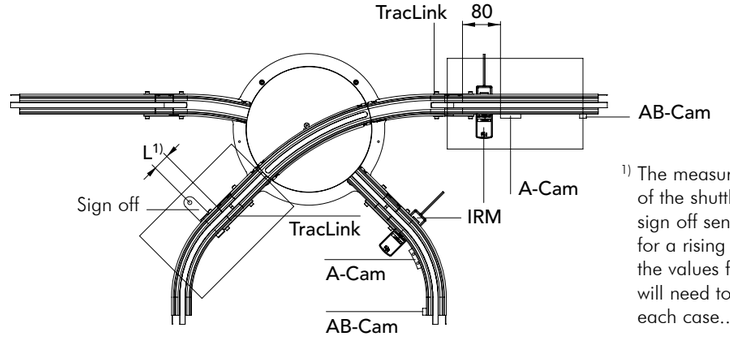
RUN TIMES TRACSWITCH ARENA STRAIGHT ON



[1] The measurements for L assume a sign off of the shuttle for a falling signal from the sign off sensor. For a sign off of the shuttle for a rising signal from the sign off sensor, the values for L will need to be increased by 70 mm in each case..

	Standard Shuttle 200x300 platform (alu) L[1] = 40 mm		Standard Shuttle 300x400 platform (alu) L[1] = 160 mm		Standard and 2-axle Shuttle (rear axle empty) 300 x 550 platform (alu) L[1] = 330 mm		2-axle Shuttle 300x550 platform (alu) L[1] = 330 mm	
	payload		payload		payload		payload	
Passage at	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]
v = 30 m/min	1.8	2.0	2.0	2.3	2.3	2.6	2.4	2.7
v = 12 m/min	3.7	4.1	4.3	4.8	5.0	5.6	5.3	5.6

RUN TIMES TRACSWITCH ARENA STRAIGHT ON



[1] The measurements for L assume a sign off of the shuttle for a falling signal from the sign off sensor. For a sign off of the shuttle for a rising signal from the sign off sensor, the values for L will need to be increased by 70 mm in each case..

	Standard Shuttle 200x300 platform (alu) L[1] = 125 mm		Standard Shuttle 300x400 platform (alu) L[1] = 225 mm		Standard and 2-axle Shuttle (rear axle empty) 300 x 550 platform (alu) L[1] = 375 mm		2-axle Shuttle 300x550 platform (alu) L[1] = 375 mm	
	payload		payload		payload		payload	
Passage at	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]
v = 30 m/min	1.7	1.9	2.0	2.2	2.3	2.6	2.4	2.7
v = 12 m/min	3.6	4.0	4.1	4.4	4.8	5.3	5.0	5.4

TRACCROSSING

The TracCrossing makes it possible for two lanes to intersect each other at a right angle and is powered directly from the conductor rails.

Delivery options:

– You can order the TracCrossing pre-configured for a specific task.

– You can mount the conductor rails and configure the controller as required for your application.

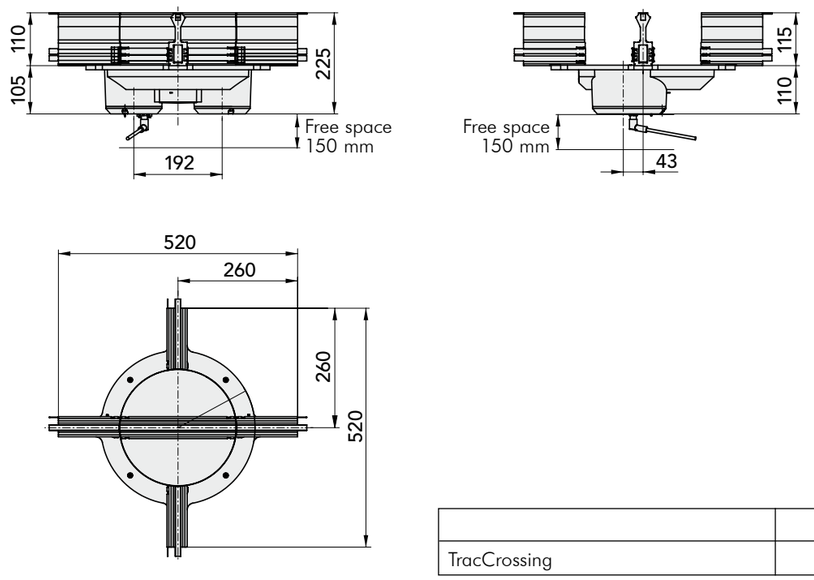
The «montratec Motor Configu rator» software is available at www.montratec.com.

TRACCROSSING – TECHNICAL DATA

TracCrossing weight	[kg]	12
Material		aluminium, nickel-plated copper, steel, brass, plastic
Rated voltage	[VDC]	24
Connections		1 x RS232 2 x DIN (per used positions 1 x DIN) 3 x DOT (per used positions 1 x DOT + 1 x Error)
Rotation angle	[°]	1,2
Rotation time (90°)[sec]	1.4	1,7
Current carrying capacity: – between the Trac connections – on the moveable Trac section	 [A] [A]	 64 2.5
Mechanical load capacity	[N]	340*
Ambient conditions: temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

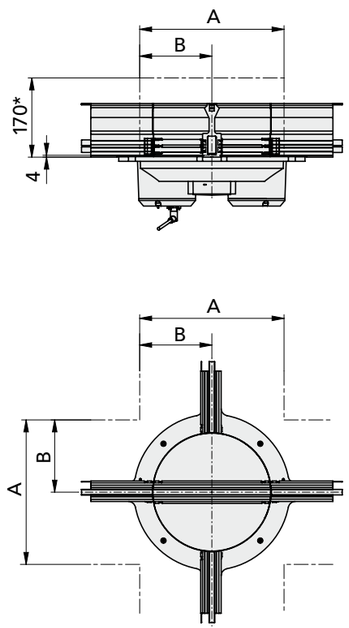
* corresponds to the weight of a fully laden two-axel shuttle

TRACCROSSING – DIMENSIONAL DRAWING



	Ref. No.
TracCrossing	58864

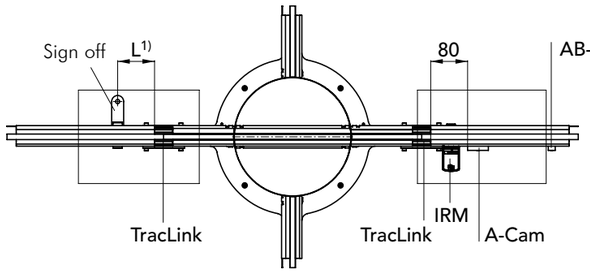
FREE SPACE FOR SHUTTLES WITH PALLET WIDTH 200, 300



* The clearance will need to be increased upward, depending on the load

Free space	200x ...	300x ...
A	210	310
B	105	155

RUN TIMES TRACCROSSING



[1)] The measurements for L assume a sign off of the shuttle for a falling signal from the sign off sensor. For a sign off of the shuttle for a rising signal from the sign off sensor, the values for L
will need to be increased by 70 mm in each case..

	Standard Shuttle 200x300 platform (alu) L[1)] = 80 mm		Standard Shuttle 300x400 platform (alu) L[1)] = 180 mm		Standard and 2-axle Shuttle (rear axle empty) 300 x 550 platform (alu) L[1)] = 350 mm		2-axle Shuttle 300x550 platform (alu) L[1)] = 350 mm	
	payload		payload		payload		payload	
Passage at	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]
v = 30 m/min	2.1	2.4	2.3	2.6	2.7	2.9	2.7	2.9
v = 12 m/min	4.3	4.5	4.8	5.1	5.7	5.8	5.7	5.9

LIFT

The lift transports Shuttles vertically for the following tasks:

– Connection of two or more systems with different working heights

– Transport of Shuttles from a station to a ceiling system and vice versa.

It is mandatory that safety guards be installed around the lift.

LIFT – TECHNICAL DATA

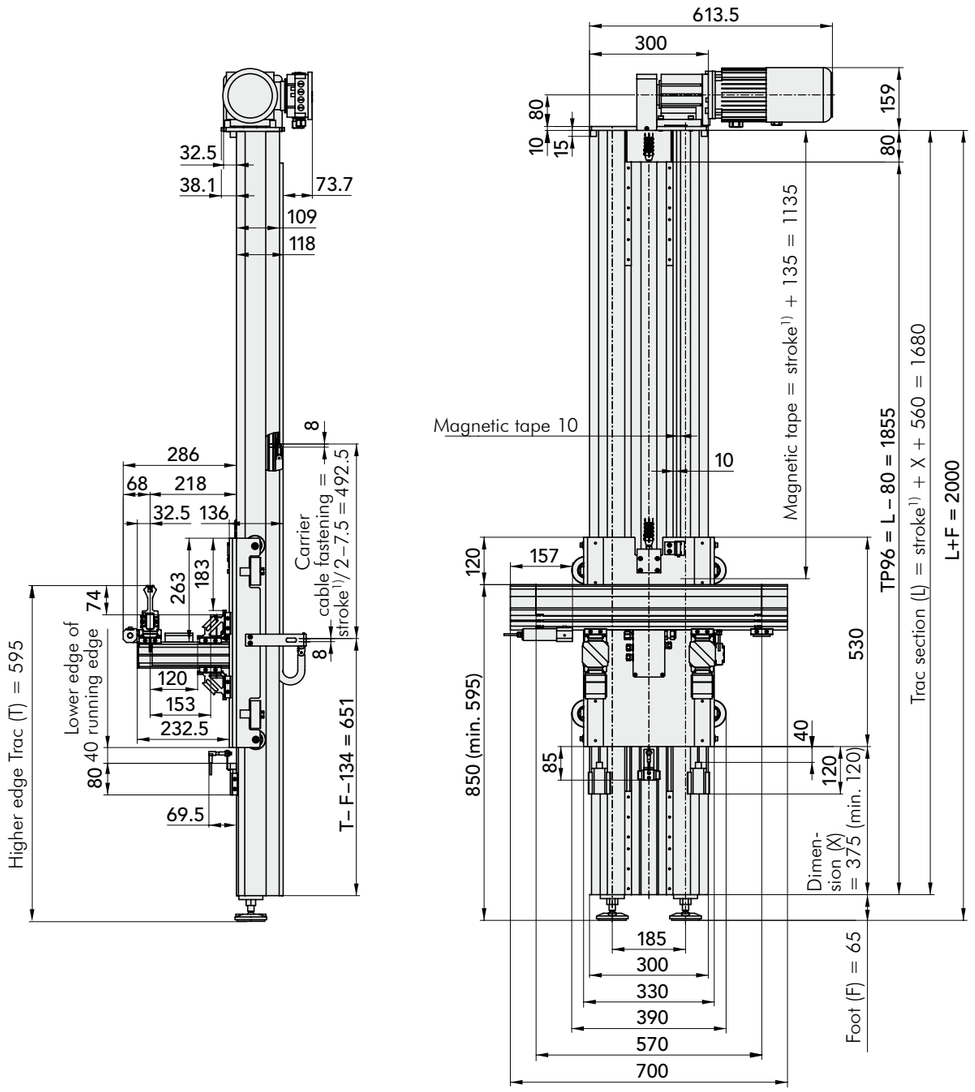
Weight	basic structure	[kg]	75
	per additional meter	[kg]	14
Min. position of the Trac from ground		[mm]	595
Max. stroke		[mm]	5330
Max. permitted load		[kg]	34
Max. speed		[m/s]	1.5
Max. acceleration with 17 kg load		[m/s^2]	5
Max. acceleration with 34 kg load		[m/s^2]	2.5
Max. positions			7
Drive			drive motor
Motor rated power		[W]	550
Protective class			IP 54
Encoder system			resolver
Return system			external measurement system
Reference point initiator			external inductive proximity switch PNP
Noise pressure level		[dBA]	< 66
Motor operating temperature		[°C]	65

CYCLE TIME OF THE SHUTTLE IN THE LIFT

Cycle time [s]	pallet length	Forwards into lift, forwards out [s]	Forwards into lift backwards out or vice verse [s]
Shuttle	300 mm	4.5	6.3
Shuttle	400 mm	4.8	6.3
Shuttle	550 mm	5.0	6.3
Two-Axle Shuttle (rear axle empty)	550 mm	5.0	6.3
Two-Axle Shuttle	550 mm	5.3	6.5
Travel time lift up to 17 kg capacity,	stroke ≤ 0.45 m	➡ $\sqrt{\frac{\text{stroke in m}}{5}} \cdot 2$ = travel time [s]	
Travel time lift up to 17 kg capacity,	stroke > 0.45 m	➡ $\frac{\text{stroke in m} - 0.45}{1.5} + 0.6$ = travel time [s]	
Travel time lift up to 34 kg capacity,	stroke ≤ 0.9 m	➡ $\sqrt{\frac{\text{stroke in m}}{2.5}} \cdot 2$ = travel time [s]	
Travel time lift up to 34 kg capacity,	stroke > 0.9 m	➡ $\frac{\text{stroke in m} - 0.9}{1.5} + 1.2$ = travel time [s]	
Travel time for cycle*	= Cycle time of the shuttle + 2 x travel time Lift = total cycle time		

* Shuttle pull into the lift, the lift moves, shuttle drives out and the lift proceeds back

LIFT – DIMENSIONAL DRAWING



[1] Stroke in the example dimensional drawing = 1000 mm.
To top edge of shuttle pallet 900 mm
When ordering, specify bottom position and maximum stroke.

	Ref. No.
Lift	56976

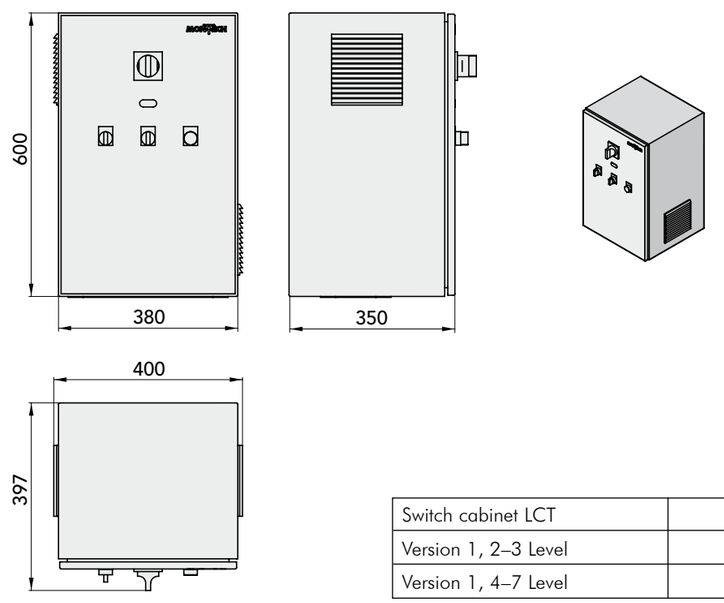
CONTROL SET FOR LIFT 58562 – TECHNICAL DATA

SERVO POSITIONING CONTROLLER (9300 type EVS9322-EP)		
Rated current Rated current with mains filter	[A]	3 x 380 ... 480V / 50 Hz / 60 Hz 2.5
Auxiliary voltage supply		24VDC (–0% +15%); 5A
Protective class		IP 20
Installation type		vertical (switch cabinet)
Weight	[kg]	3.5
BRAKE UNIT (9350 type EMB9352-E)		
Supply voltage	[VDC]	270 ... 775
Peak current for 60s	[ADC]	42
Max. continuous current	[ADC]	25
Protective class		IP 20
Installation type		vertical (switch cabinet)
Weight	[kg]	2.2
MAINS FILTER (type EZN3A1500H003)		
Rated voltage	[VDC]	500
Peak current for 60s	[ADC]	42
Max. continuous current	[ADC]	25
Protective class		IP 10
Installation type		vertical (switch cabinet)
Weight	[kg]	1.15
Ambient conditions: temperature rel. humidity air purity	[°C]	10 to 50 humidity class F without cond. (with rel. humidity of 85%) normal workshop atmosphere

SWITCH CABINET TO LIFT CHAOS TECHNOLOGY LCT – TECHNICAL DATA

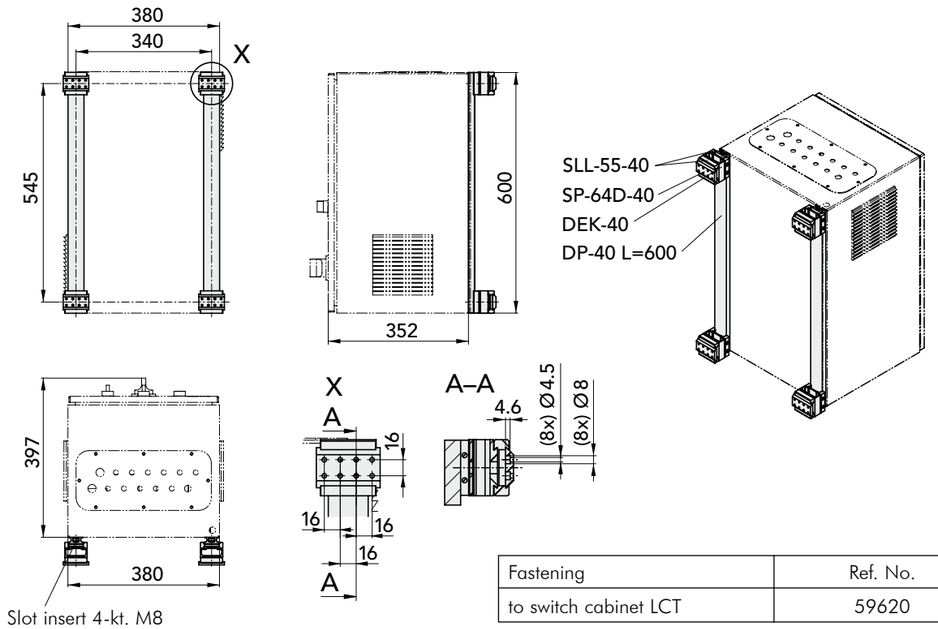
Rated current	[VAC]	3 x 400 ... 480V / 50 Hz / 60 Hz
Rated power	[W]	800
Protective class		IP 21
Installation type		vertical
Weight	[kg]	32
Measurements (H x W x D)	[mm]	600 x 380 x 350

SWITCH CABINET LCT – DIMENSIONAL DRAWING



Switch cabinet LCT	Ref. No.
Version 1, 2–3 Level	58558
Version 1, 4–7 Level	58560

FASTENING TO SWITCH CABINET LCT

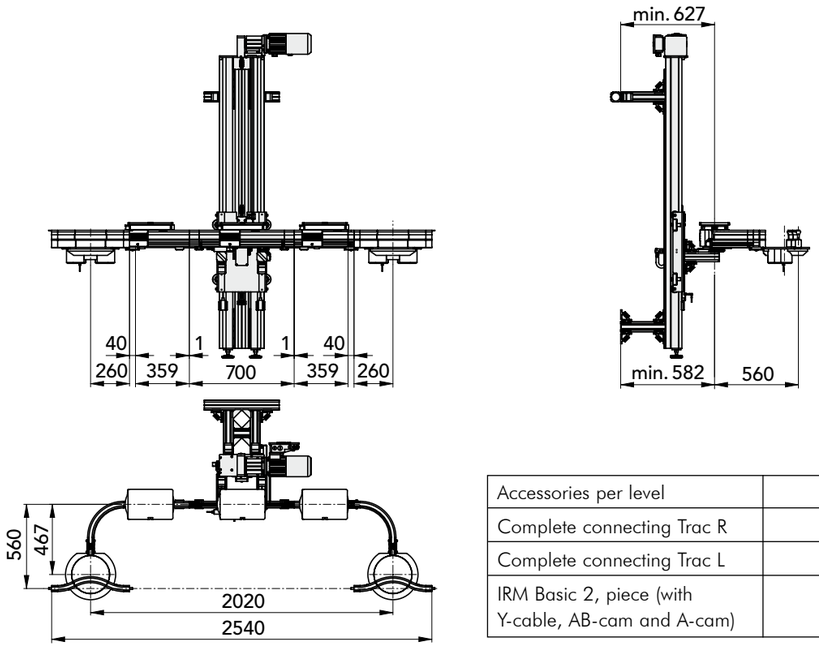


Fastening	Ref. No.
to switch cabinet LCT	59620

ACCESSORIES LIFT

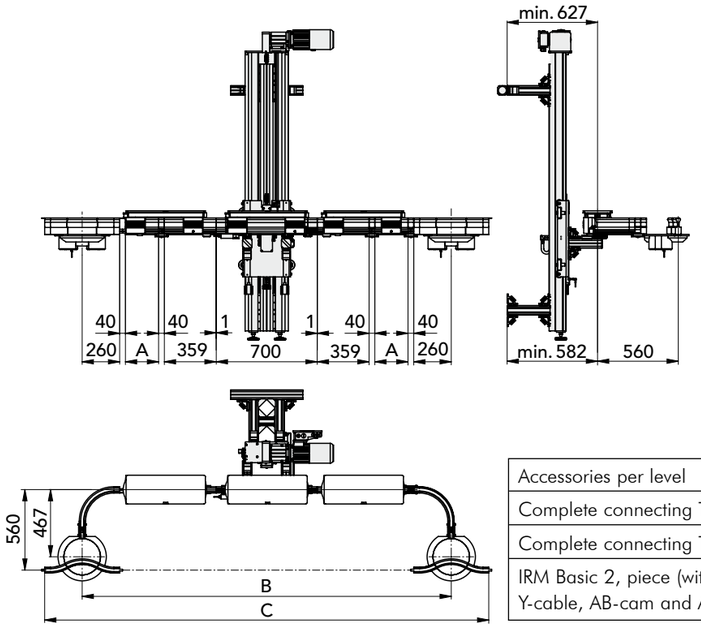
Description	Options	Ref. No.
Complete connecting Trac R		57463
Complete connecting Trac L		57457
Fall guard		59422
Box for fall guard		57644
Stop		57629
Trac with damping		57958
IRM Basic (with Y-cable, AB-cam and A-cam)		56936
A- and AB-cam set		90759
Motor line	5 meter 10 meter 20 meter	520319 520320 520321
Return system line	5 meter 10 meter 20 meter	520322 520323 520324
Cable for measurement system	10 meter 15 meter 20 meter	57470 57614 57615
7-wire supply cable (for 24 VDC) Supply voltage, servo regulator connection and external control	10 meter 15 meter 20 meter	520360/10000 520360/15000 520360/25000
2-wire supply cable (for Trac power supply)	10 meter 15 meter 20 meter	520361/10000 520361/15000 520361/25000
Control set for lift (see operating instruction: control set BA-100092)		58562
Switch cabinet (Lift LCT Chaos Technology variante 1, 2–3 level see operating instruction: switch cabinet LCT BA-100091)		58558
Switch cabinet (Lift LCT Chaos Technology variante 2, 4–7 level see operating instruction: switch cabinet LCT BA-100091)		58560
Operating module Keypad XT (min. 1 piece per lift)		520325
PC system USB bus adapter (if customer requires)		520326
Profibus Bus module (if customer requires)		520445
PC system bus adapter RS 232 (if customer requires)		520393
Mounting bracket for wall		57910
Monting bracket for QS-Frame		57911
QS-Framework for Lift		57912

DIMENSIONAL DIAGRAM OF LIFT IN A BYPASS (SHUTTLE 300)



Accessories per level	Ref. No.
Complete connecting Trac R	57463
Complete connecting Trac L	57457
IRM Basic 2, piece (with Y-cable, AB-cam and A-cam)	56936

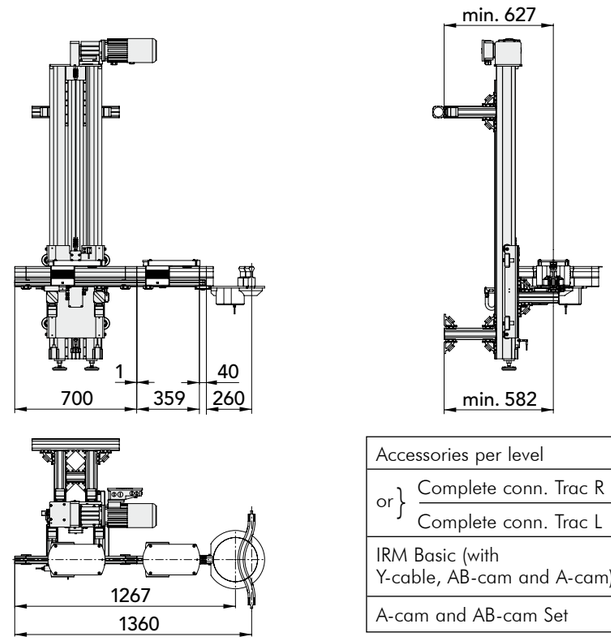
DIMENSIONAL DIAGRAM OF LIFT IN A BYPASS (SHUTTLE 400 / SHUTTLE 500)



Pallet size	400 mm	550 mm
A	100	230
B	2300	2560
C	2820	3080

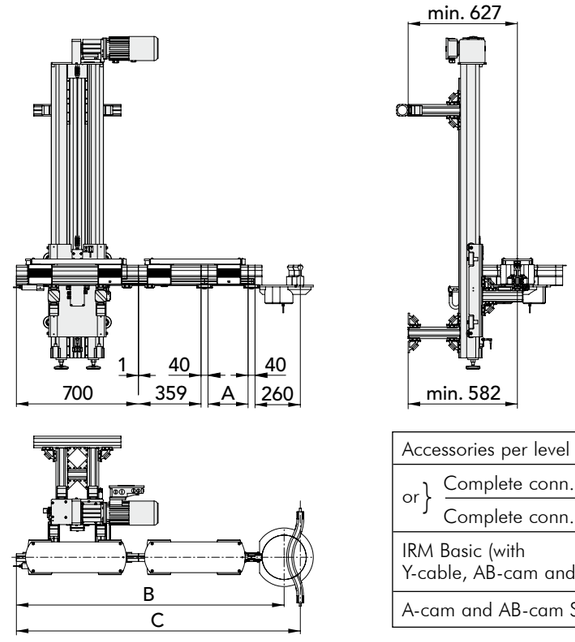
Accessories per level	Ref. No.
Complete connecting Trac R	57463
Complete connecting Trac L	57457
IRM Basic 2, piece (with Y-cable, AB-cam and A-cam)	56936

DIMENSIONAL DIAGRAM OF LIFT IN A TRACSWITCH (SHUTTLE 300)



Accessories per level	Ref. No.
or } Complete conn. Trac R	57463
or } Complete conn. Trac L	57457
IRM Basic (with Y-cable, AB-cam and A-cam)	56936
A-cam and AB-cam Set	90759

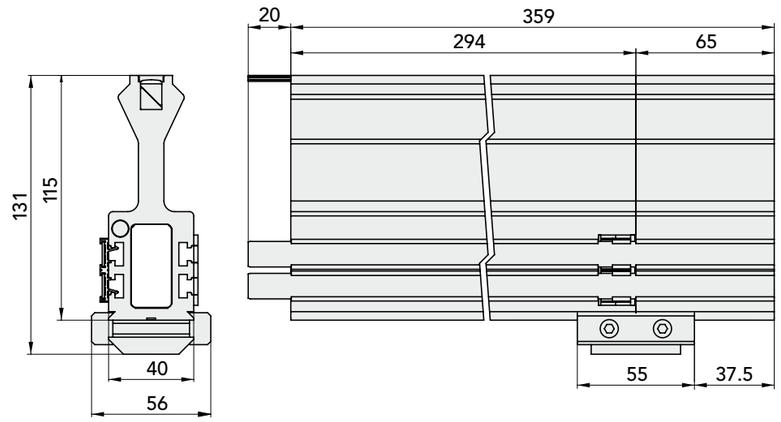
DIMENSIONAL DIAGRAM OF LIFT IN A TRACSWITCH (SHUTTLE 400 / SHUTTLE 550)



Pallet size	400 mm	550 mm
A	100	230
B	1407	1537
C	1500	1630

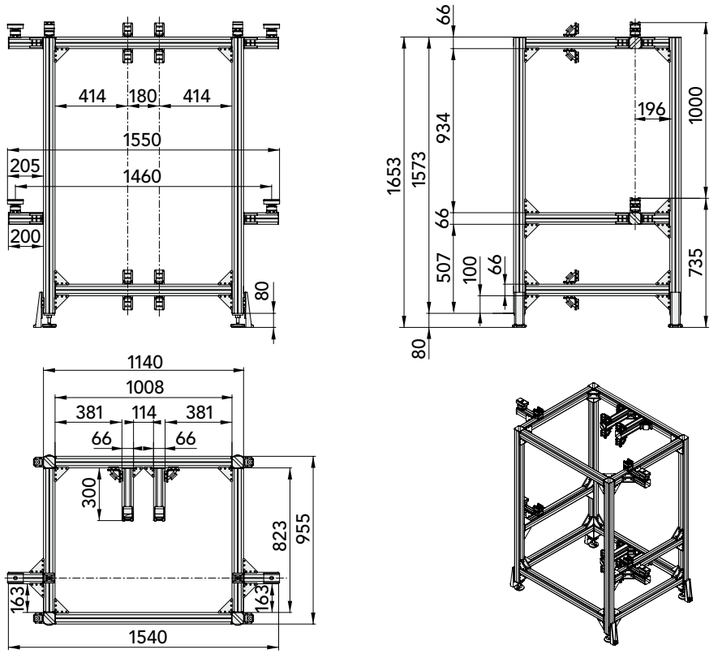
Accessories per level	Ref. No.
or } Complete conn. Trac R	57463
or } Complete conn. Trac L	57457
IRM Basic (with Y-cable, AB-cam and A-cam)	56936
A-cam and AB-cam Set	90759

COMPLETE CONNECTING TRAC L (complete connecting trac R mirror-inverted)



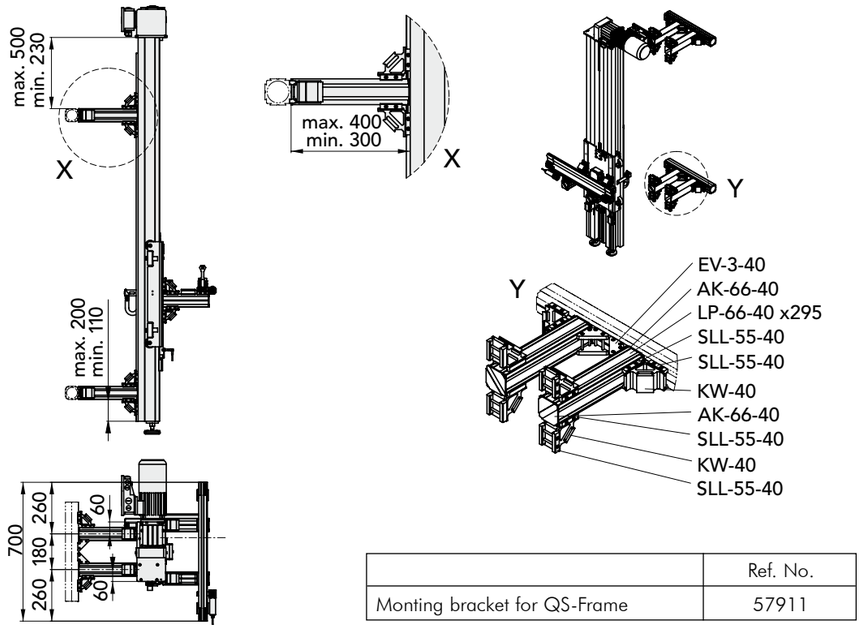
	Ref. No.
Complete connecting Trac R	57463
Complete connecting Trac L	57457

QS-FRAMEWORK FOR LIFT (without means of protection)



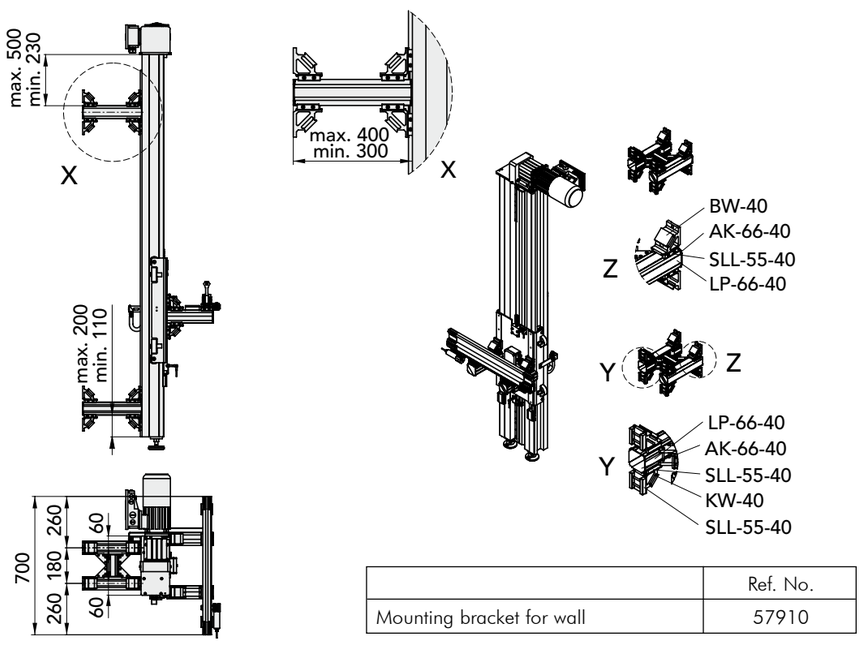
Example dimensional drawing for a lift to top edge of shuttle pallet 900 mm, stroke 1000 mm

LIFT – FASTENING TO A QUICK-SET STRUCTURE



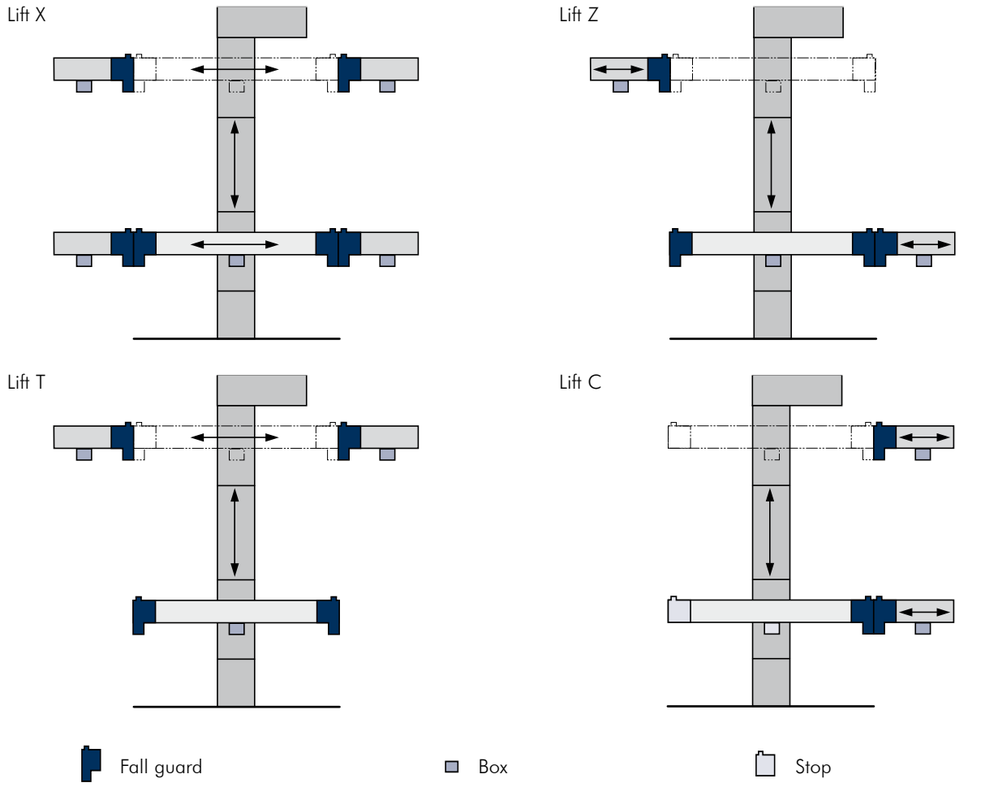
	Ref. No.
Monting bracket for QS-Frame	57911

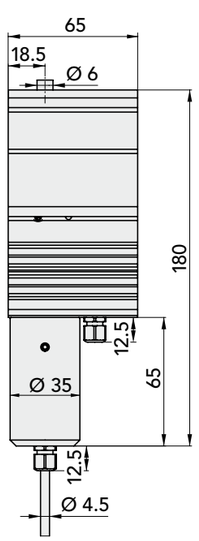
LIFT – FASTENING TO A WALL

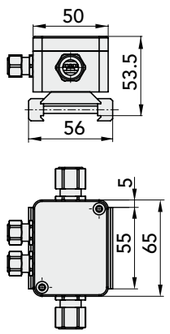


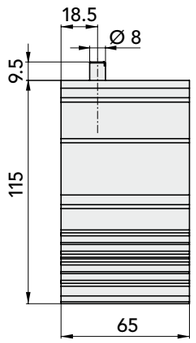
	Ref. No.
Mounting bracket for wall	57910

MOUNTING OPTIONS FOR FALL GUARD AND STOP









	Ref. No.
Fall guard	59422
Box for fall guard	57644
Stop	57629
Trac with damping	57958

SHUTTLE

Shuttles are intelligent transport vehicles. They are available with a single-axle drive or two-axle drive.

Shuttles are propelled by a 24 volt brushless DC motor.

Maximum speed is 30 m/min. Maximum permissible load is 25 kg.

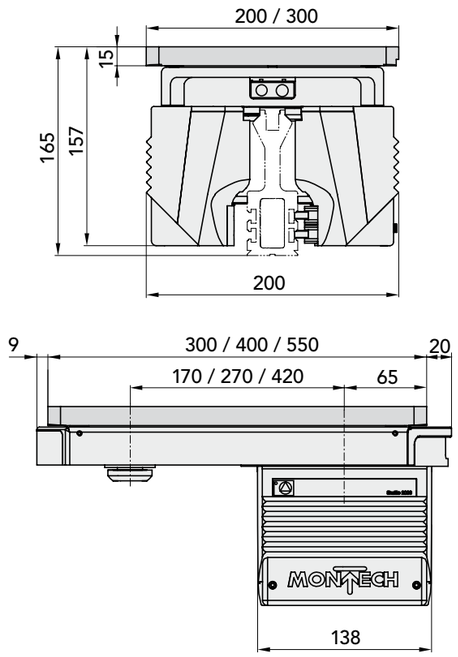
Each Shuttle is equipped with a sensor that prevents collisions with obstacles or other Shuttles.

SHUTTLE – TECHNICAL DATA

Shuttle			Shuttle 3	Two-Axle Shuttle 3 (rear axle empty)	Two-Axle Shuttle 3
Length		[mm]	300/400/500	550	550
Stop precision		[mm]	± 1.0	± 1.0	± 1.0
Maximum running speed V_{max}		[m/min]	30	30	30
Reduced running speed V_{min}		[m/min]	12	12	12
Total weight[1]		[kg]	17	17	34
Shuttle weight without pallet		[kg]	3.8/4.1/4.6	6.2	9.0
Longitudinal axis static moment		[Nm]	<=2	<=4	<=4
Supply voltage		[VDC]	24	24	24
Current consumption:	when at standstill at V_{max} when accelerating	[A] [A] [A]	0.08 0.80 2.24	0.08 0.80 2.24	0.16 1.16 4.48
Acceleration time:	without load[2] with max load[2]	[sec] [sec]	0.85 1.40	0.85 1.40	0.80 1.10
Noise pressure level		[dBA]	< 59		
Ambient conditions:	temperature rel. humidity air purity	[°C]	10 to 40 5% – 85% (without condensation) normal workshop atmosphere		

[1] Weight of Shuttle + pallet + payload, see load limits on page 53.
[2] Until 0.95 x V_{max} is reached.

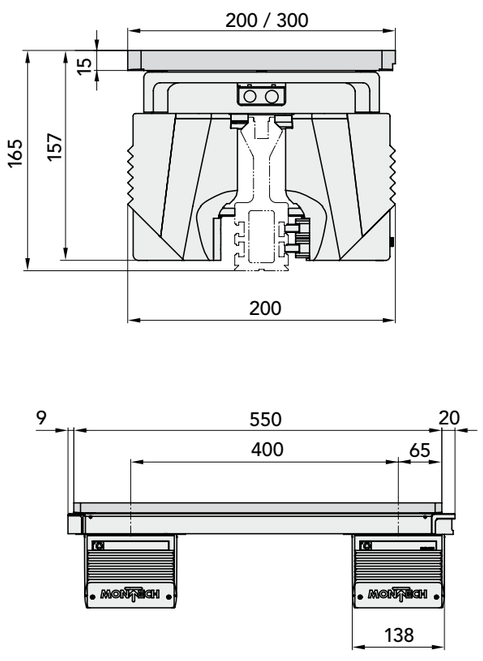
SHUTTLE 3 – DIMENSIONAL DRAWING



Shuttle 3	Ref. No.
U for pallet length 300 mm	54793
GU for pallet length 300 mm	54794
U for pallet length 400 mm	54795
GU for pallet length 400 mm	54796
U for pallet length 550 mm	54797
GU for pallet length 550 mm	54798

Other Shuttle length on request

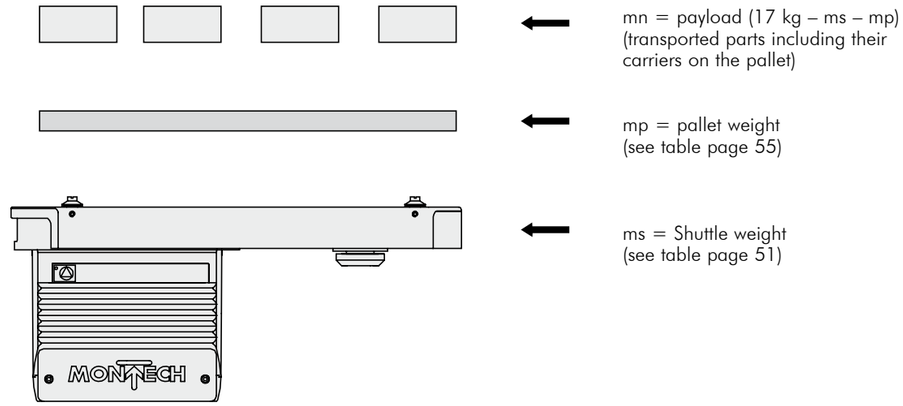
TWO-AXLE SHUTTLE 3 – DIMENSIONAL DRAWING



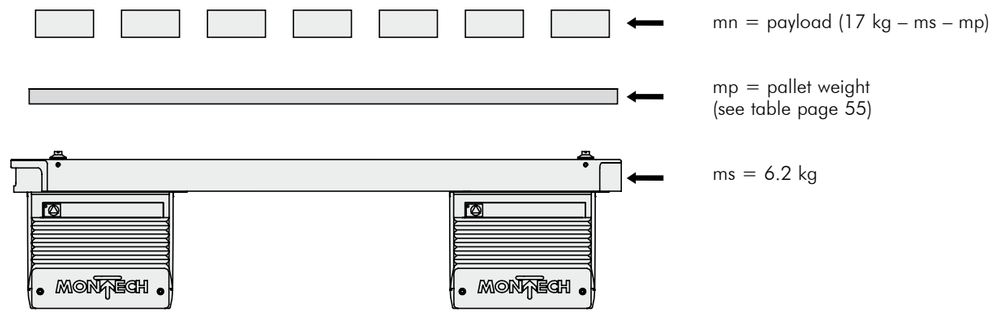
Two-Axle Shuttle 3	Ref. No.
U	54799
GU	54800
U (rear axle empty)	54801
GU (rear axle empty)	54802

Other Shuttle length on request

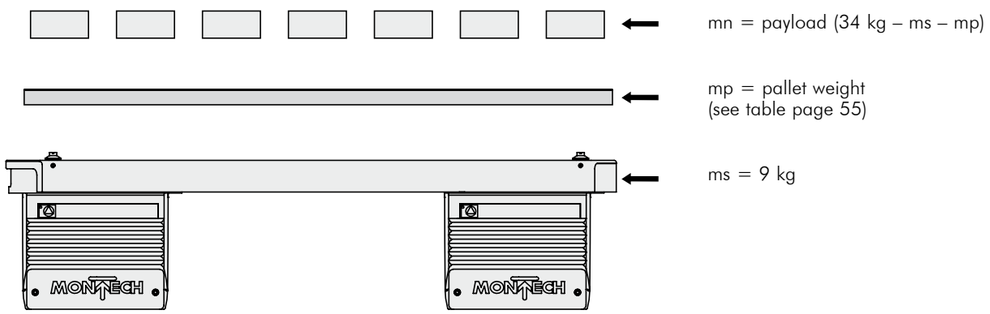
SHUTTLE 3 – LOAD LIMITS



TWO-AXLE SHUTTLE 3 (REAR AXLE EMPTY) – LOAD LIMITS



TWO-AXLE SHUTTLE 3 – LOAD LIMITS



PALLET

The pallets fit on top of the Shuttle and are the platform on which your parts rest. The pallets are available in various sizes between 200 x 300 mm and 300 x 550 mm. The number and location of the positioning prisms is a customer-specific choice.

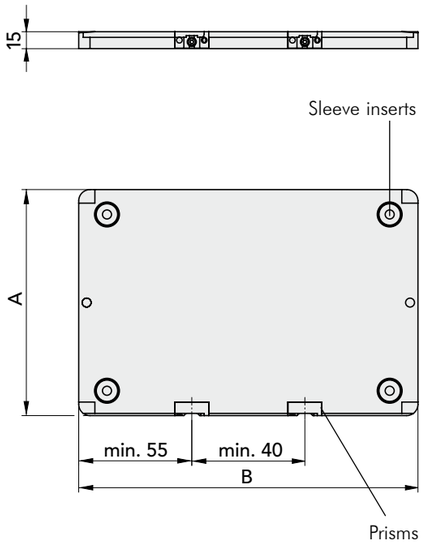
Scope of delivery:
– Includes the 4 inserts that mate to the Shuttle
– The milling for positioning prisms and special tooling should be done by the customer.

The production drawing for milling the pallets for the prisms can be found on our website at www.montratec.com/support/ service forms. If requested, the prisms can also be set by montratec AG.

PALLET – TECHNICAL DATA

Pallet weight	200 mm x 300 mm	[kg]	2.5
	200 mm x 400 mm	[kg]	3.3
	300 mm x 400 mm	[kg]	5.0
	200 mm x 550 mm	[kg]	4.6
	300 mm x 550 mm	[kg]	6.9

PALLET – DIMENSIONAL DRAWING

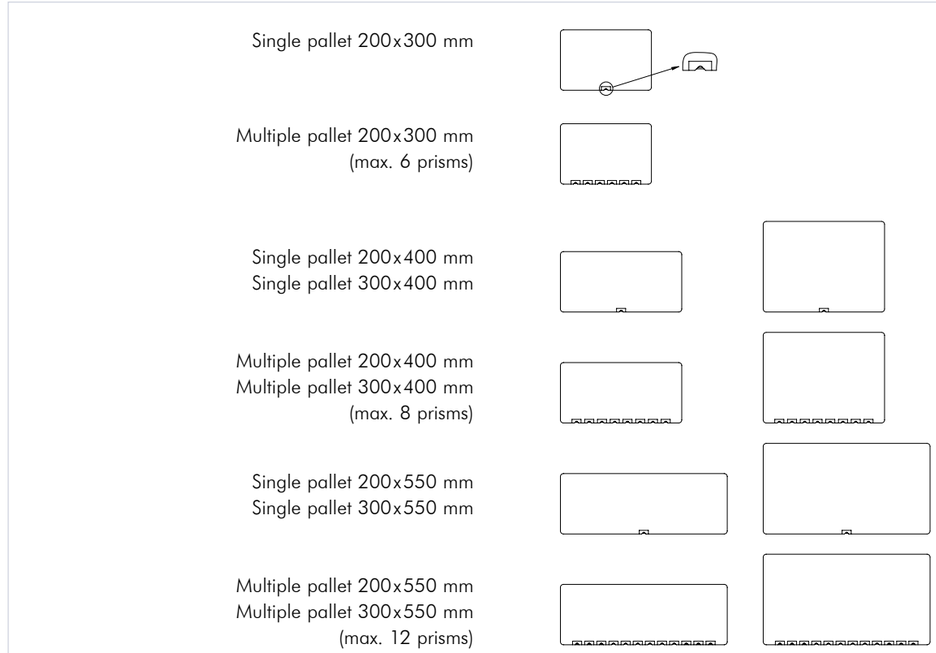


Pallet (4 sleeve inserts)	max. number prisms	Ref. No.
200x300x15 mm	5	91677
200x400x15 mm	8	56947
300x400x15 mm	8	91683
200x550x15 mm	12	56948
300x550x15 mm	12	56949

Special sizes on request

Accessories for pallets	Ref. No.
Prism for pallets	46300
Sleeve insert set	91811

STANDARD DIMENSIONS



SUPOTRAC/ERGOTRAC

The SupoTrac serves as a product support at machining stations to prevent the shuttle from being influenced by outside forces. It is not suitable for stations with press operations.

The SupoTrac makes no claims concerning ergonomics or safety regulations for manual workstations.

SupoTrac is fastened to an existing Trac.

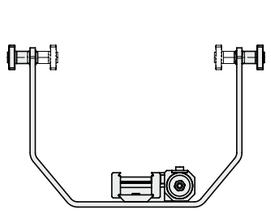
ErgoTracs replace a normal Trac piece of 1160 mm in length.

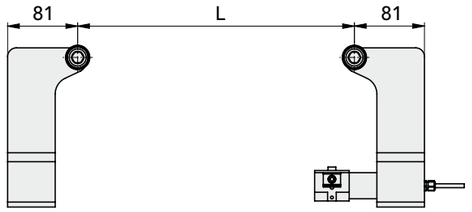
The ShuttleLock prevents the Shuttle from moving during manual operations. The ShuttleLock can be powered directly from the conductor rails and is the included in the delivery of the SupoTrac and ErgoTrac.

SUPOTRAC/ERGOTRAC – TECHNICAL DATA

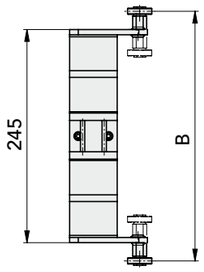
			SupoTrac	ErgoTrac
Weight		[kg]	3.4	8
Tilt angle		[°]	–	25
Ambient conditions:	temperature rel. humidity air purity	[°C]	10 to 40 5% – 85% (without condensation) normal workshop atmosphere	

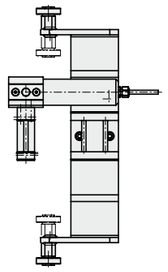
SUPOTRAC – DIMENSIONAL DRAWING





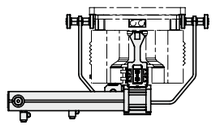
Pallet size	B	L
200x300	191	220
200x400	191	320
300x400	287	320
200x550	191	500
300x550	287	500

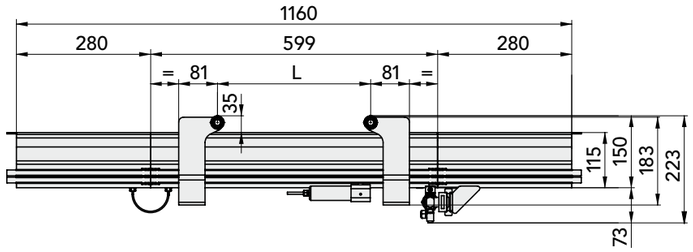




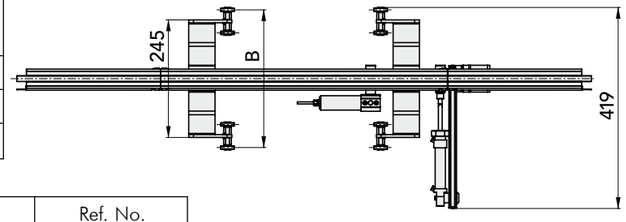
SupoTrac (with ShuttleLock)	Ref. No.
for pallet width 200 and 300	56933

ERGOTRAC – DIMENSIONAL DRAWING



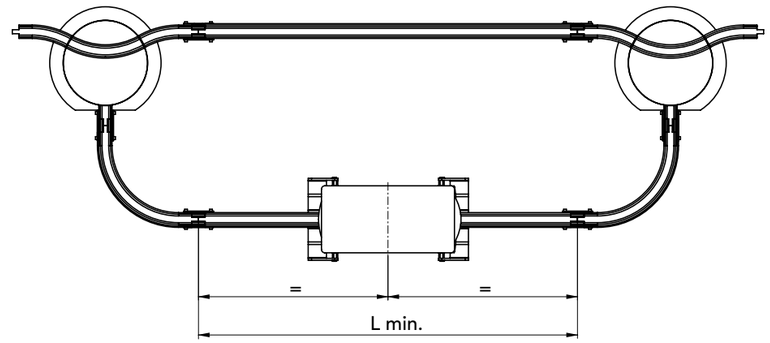


Pallet size	B	L
200x300	191	220
200x400	191	320
300x400	287	320



ErgoTrac (with ShuttleLock)	Ref. No.
for pallet width 300 and 400	56952

MINIMAL TRAC LENGTH SUPOTRAC

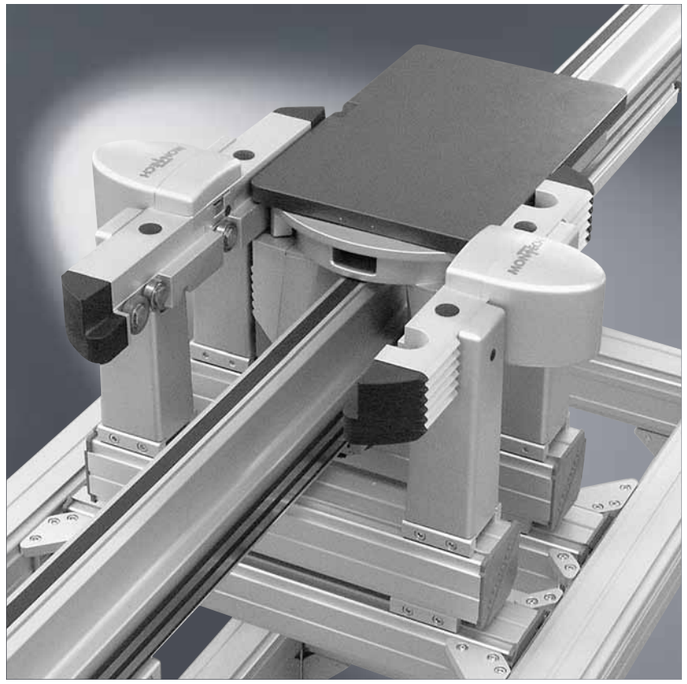


Pallet length	L min.
300	550
400	850
550	1300

POSITIONING UNIT 2/3

The Positioning Unit positions pallets precisely (± .02 mm) and/or provides additional support for processes.

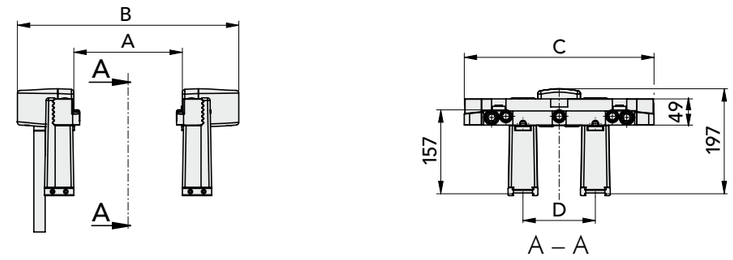
There are versions for single and multiple positioning. Both versions are available in various sizes corresponding to the standard platform dimensions.



POSITIONING UNIT 2/3 – TECHNICAL DATA (pneumatic)

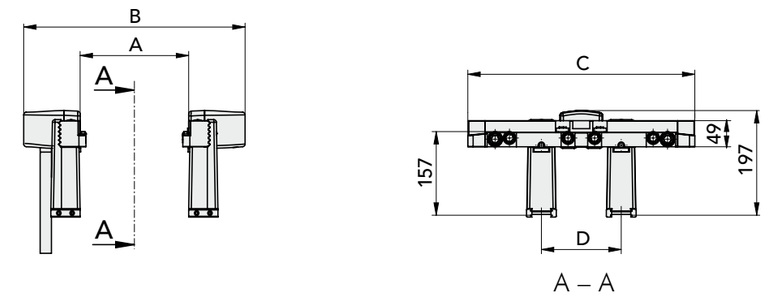
Positioning Unit for pallet length		300 mm single	300 mm multiple	400 mm single	400 mm multiple	550 mm single	550 mm multiple
Weight	[kg]	11.6	12.6	12.8	14.7	14.6	16.8
Positioning – horizontal plane (x- and y-direction) – vertical plane (z-direction)	[mm] [mm]	± 0.02 ± 0.2	± 0.03 ± 0.2	± 0.02 ± 0.2	± 0.03 ± 0.2	± 0.02 ± 0.2	± 0.03 ± 0.2
Drive medium		5 µm filtered, oiled or unoiled					
Ambient conditions: temperature rel. humidity air purity	[°C]	10 to 40 5% – 85% (without condensation) normal workshop atmosphere					

POSITIONING UNIT SINGLE EPV – DIMENSIONAL DRAWING



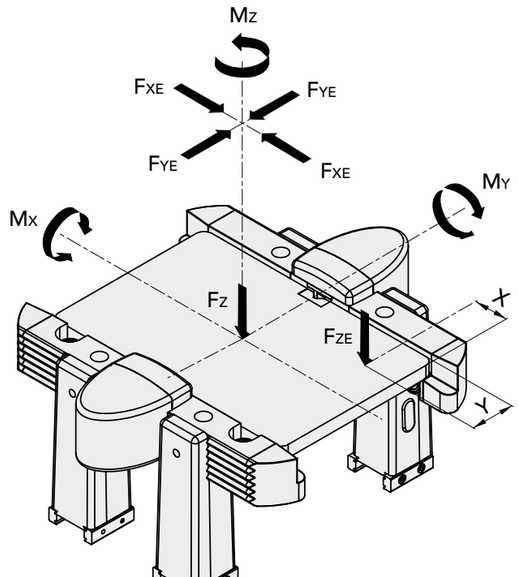
Pallet length	300 mm	400 mm	550 mm
A	204	304	204
B	416	516	416
C	357	457	607
D	136	150	180
E	314	414	314
F	227	327	350
Ref. No.	55290	55292	55294

POSITIONING UNIT MULTIPLE MPV – DIMENSIONAL DRAWING



Pallet length	300 mm	400 mm	550 mm
A	204	304	204
B	416	516	416
C	427	607	807
D	150	180	300
E	314	414	314
Ref. No.	55291	55293	55295

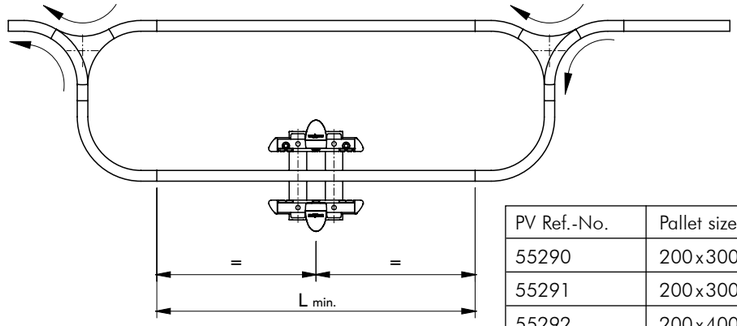
PERMITTED FORCES AND TORQUES ON THE SHUTTLE PALLET IN THE POSITIONING UNIT



Rated pressure 5 bar (aluminum pallet sealed in PV)			Pallet dimensions in mm 200 x 300	200 x 400	300 x 400	200 x 550	300 x 550
$M_{Xadm.}$	single positioning	[Nm]	5	6	10.5	7	13
	multiple positioning	[Nm]	5	6	10.5	7	13
$M_{Yadm.}$	single positioning	[Nm]	5	9	11	13.5	18
	multiple positioning	[Nm]	3	4.5	6.5	8	11
$M_{Zadm.}$	single positioning	[Nm]	15.5	22	22	23.5	23.5
	multiple positioning	[Nm]	5	5	5	5	5
$F_{XEadm.}$	single positioning	[N]	135	135	135	135	135
	multiple positioning	[N]	135	135	135	135	135
$-F_{XEadm.}$	single positioning	[N]	135	135	135	135	135
	multiple positioning	[N]	135	135	135	135	135
$F_{YEadm.}$	single positioning	[N]	400	400	400	400	400
	multiple positioning	[N]	400	400	400	400	400
$-F_{YEadm.}$	single positioning	[N]	400	400	400	400	400
	multiple positioning	[N]	400	400	400	400	400
$F_{Zadm.}$	single positioning	[N]	3000	3000	2000	3000	2000
	multiple positioning	[N]	3000	3000	2000	3000	2000
$F_{ZEadm.}$	single positioning	[N]	1000	1000	500	1000	500
	multiple positioning	[N]	400	400	150	400	150

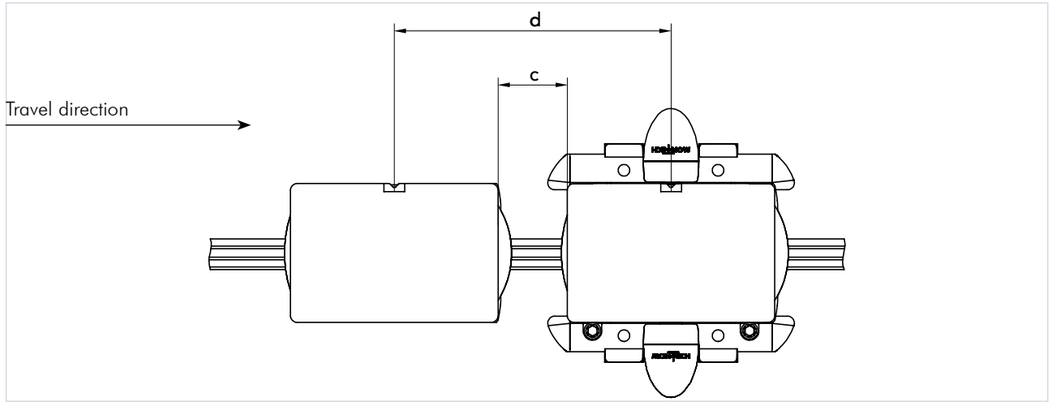
x_{min} = 55 mm / y_{min} = 25 mm
The specified values cause the Shuttle pallet to shift max. 0.3 mm toward the force vector.

MINIMUM POSITIONING UNIT TRAC LENGTH



PV Ref.-No.	Pallet size	L_{min}
55290	200 x 300 mm single	650 mm
55291	200 x 300 mm multiple	720 mm
55292	200 x 400 mm single	950 mm
55293	200 x 400 mm multiple	1100 mm
55292	300 x 400 mm single	950 mm
55293	300 x 400 mm multiple	1100 mm
55294	200 x 550 mm single	1400 mm
55294	200 x 550 mm multiple	1600 mm
55294	300 x 550 mm single	1400 mm
55294	300 x 550 mm multiple	1600 mm

CYCLE TIME OF THE SHUTTLE IN THE POSITIONING UNIT SINGLE EPV

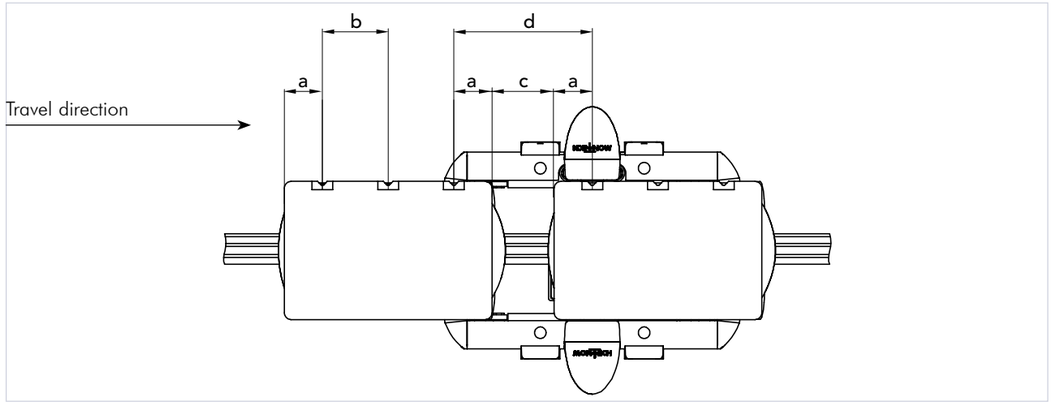


CYCLE TIME d IN THE POSITIONING UNIT SINGLE EPV

	cycle time with pallet aluminium	
	unloaded	with max. load
Pallets 200 x 300 mm		
c adhered by distance sensor[s] c = 180 mm adhered by Stop/Start Device[s]	2.85 2.88	2.90 2.92
Pallets 300 x 400 mm		
c adhered by distance sensor [s] c = 180 mm adhered by Stop/Start Device [s]	3.07 3.09	3.12 3.11
Pallets 200 x 550 mm		
c adhered by distance sensor [s] c = 180 mm adhered by Stop/Start Device [s]	3.32 3.31	3.34 3.32
Pallets 200 x 550 mm (Two-Axle Shuttle 3 rear axle empty)		
c adhered by distance sensor [s] c = 180 mm adhered by Stop/Start Device [s]	3.39 3.36	3.44 3.40
Pallets 200 x 550 mm (Two-Axle Shuttle 3)		
c adhered by distance sensor [s] c = 180 mm adhered by Stop/Start Device [s]	3.49 3.44	3.55 3.51

Time measurement: From the start command of the control device up to the presence signal of the control device in the positioning unit (without locking time and unlocking time)

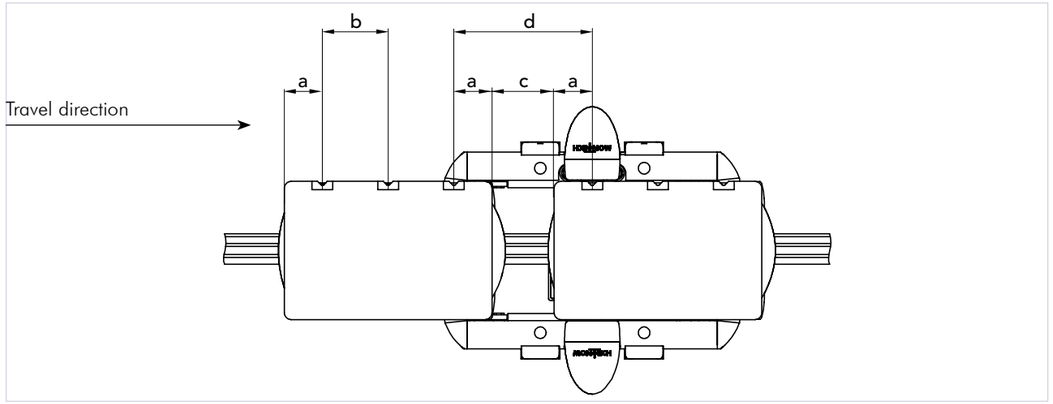
CYCLE TIME OF THE SHUTTLE IN THE POSITIONING UNIT MULTIPLE MPV



CYCLE TIME b IN THE POSITIONING UNIT MULTIPLE MPV

	Shuttle 3 cycle time with pallet alum. payload		Two-Axle-Shuttle 3 (rear axle empty) cycle time with pallet alum. payload		Two-Axle-Shuttle 3 cycle time with pallet alum. payload	
step size b [mm]	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]
44	0.80	0.82	0.81	0.85	0.78	0.82
46	0.81	0.83	0.83	0.86	0.80	0.84
48	0.82	0.85	0.84	0.88	0.81	0.85
50	0.84	0.86	0.86	0.90	0.82	0.87
52	0.85	0.88	0.87	0.91	0.84	0.88
54	0.86	0.89	0.89	0.93	0.85	0.90
56	0.88	0.90	0.90	0.94	0.86	0.91
58	0.89	0.92	0.92	0.96	0.88	0.93
60	0.90	0.93	0.93	0.97	0.89	0.94
62	0.92	0.95	0.95	0.99	0.90	0.95
64	0.93	0.96	0.96	1.01	0.92	0.97
66	0.94	0.98	0.98	1.02	0.93	0.98
68	0.96	0.99	0.99	1.04	0.94	1.00
70	0.97	1.00	1.01	1.05	0.96	1.01
72	0.98	1.02	1.02	1.07	0.97	1.03
74	1.00	1.03	1.04	1.09	0.98	1.04
76	1.01	1.05	1.05	1.10	1.00	1.06
78	1.02	1.06	1.07	1.12	1.01	1.07
80	1.03	1.07	1.08	1.13	1.02	1.09
82	1.05	1.09	1.10	1.15	1.04	1.10
84	1.06	1.10	1.11	1.16	1.05	1.12
86	1.07	1.12	1.13	1.18	1.06	1.13
88	1.09	1.13	1.14	1.20	1.08	1.15
90	1.10	1.15	1.16	1.21	1.09	1.16
95	1.43	1.45	1.42	1.42	1.47	1.49

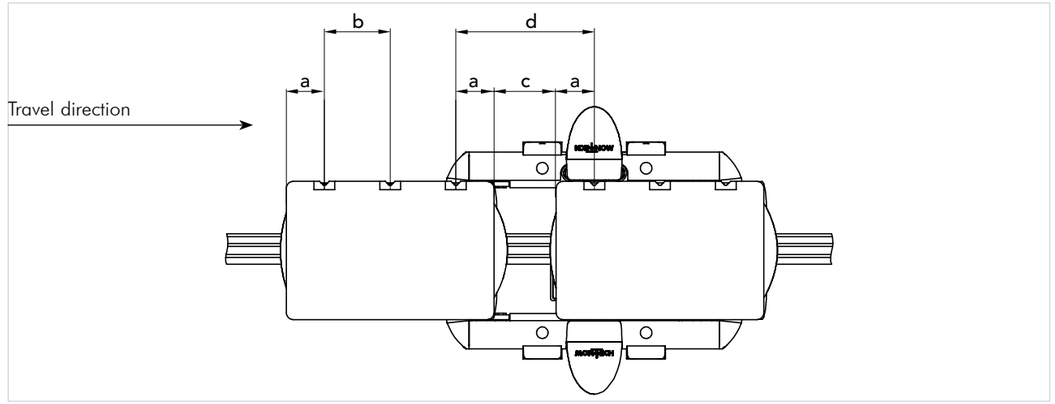
Time measurement: From the start command of the control device up to the presence signal of the control device in the positioning unit (without locking time and unlocking time)



CYCLE TIME b IN THE POSITIONING UNIT MULTIPLE MPV (continuation)

	Shuttle 3 cycle time with pallet alum. payload		Two-Axle-Shuttle 3 (rear axle empty) cycle time with pallet alum. payload		Two-Axle-Shuttle 3 cycle time with pallet alum. payload	
step size b [mm]	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]
100	1.44	1.45	1.43	1.43	1.47	1.49
105	1.44	1.46	1.44	1.44	1.47	1.50
110	1.44	1.47	1.45	1.46	1.47	1.50
115	1.45	1.48	1.46	1.47	1.47	1.50
120	1.45	1.49	1.47	1.48	1.47	1.51
130	1.46	1.51	1.49	1.51	1.48	1.51
140	1.47	1.52	1.51	1.53	1.48	1.52
150	1.48	1.54	1.54	1.56	1.48	1.52
160	1.48	1.56	1.56	1.58	1.49	1.53
170	1.50	1.57	1.58	1.61	1.49	1.54
180	1.51	1.59	1.60	1.63	1.49	1.54
190	1.52	1.61	1.62	1.66	1.50	1.55
200	1.53	1.62	1.65	1.68	1.50	1.55
210	1.59	1.67	1.70	1.74	1.58	1.61
220	1.62	1.70	1.74	1.77	1.60	1.65
230	1.65	1.73	1.77	1.79	1.63	1.69
240	1.69	1.76	1.80	1.82	1.66	1.73
250	1.72	1.79	1.83	1.85	1.69	1.77
260	1.76	1.83	1.86	1.88	1.72	1.81
270	1.79	1.86	1.86	1.91	1.75	1.84
280	1.82	1.89	1.92	1.93	1.78	1.88
290	1.86	1.92	1.95	1.96	1.81	1.92
300	1.89	1.95	1.98	1.99	1.84	1.96

Time measurement: From the start command of the control device up to the presence signal of the control device in the positioning unit (without locking time and unlocking time)



CYCLE TIME d IN THE POSITIONING UNIT MULTIPLE MPV

	Shuttle 3 (200 x 300) cycle time with pallet alum. payload		Shuttle 3 (300 x 400) cycle time with pallet alum. payload		Shuttle 3 (200 x 550) cycle time with pallet alum. payload		Two-Axle-Shuttle 3 (rear axle empty) cycle time with pallet alum. payload		Two-Axle-Shuttle 3 cycle time with pallet alum. payload	
distance a [mm]	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]	without [s]	max. [s]
55	2.3	2.3	2.4	2.4	2.4	2.5	2.4	2.5	2.4	2.5
60	2.3	2.4	2.4	2.4	2.5	2.5	2.4	2.5	2.4	2.5
65	2.3	2.4	2.4	2.4	2.5	2.5	2.5	2.6	2.5	2.6
70	2.4	2.5	2.4	2.5	2.5	2.5	2.5	2.6	2.5	2.6
75	2.4	2.5	2.5	2.5	2.5	2.6	2.5	2.6	2.5	2.6
80	2.5	2.5	2.5	2.6	2.5	2.6	2.6	2.7	2.6	2.7
85	2.5	2.6	2.5	2.6	2.6	2.6	2.6	2.7	2.6	2.7
90	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.7
95	2.6	2.6	2.6	2.7	2.6	2.7	2.7	2.8	2.7	2.8
100	2.6	2.7	2.6	2.7	2.6	2.7	2.7	2.8	2.7	2.8
105			2.6	2.7	2.6	2.7	2.7	2.8	2.7	2.8
110			2.7	2.7	2.6	2.7	2.8	2.8	2.7	2.8
115			2.7	2.8	2.7	2.7	2.8	2.9	2.8	2.9
120			2.7	2.8	2.7	2.8	2.8	2.9	2.8	2.9
125			2.7	2.8	2.7	2.8	2.8	2.9	2.8	2.9
130			2.7	2.8	2.7	2.8	2.8	2.9	2.8	2.9
135					2.7	2.9	2.9	3.0	2.9	3.0
140					2.8	2.9	2.9	3.0	2.9	3.0
145					2.8	2.9	2.9	3.0	2.9	3.0
150					2.8	3.0	3.0	3.1	2.9	3.0
155					2.9	3.0	3.0	3.1	2.9	3.0
160					2.9	3.0	3.0	3.1	3.0	3.1
165					2.9	3.0	3.0	3.1	3.0	3.1
170					2.9	3.0	3.1	3.1	3.0	3.1
175					2.9	3.0	3.1	3.1	3.0	3.1
180					3.0	3.0	3.1	3.2	3.0	3.1

Time measurement: From the start command of the control device up to the presence signal of the control device in the positioning unit (without locking time and unlocking time)

TRACDOOR

The TracDoor makes it possible to pass through a Montrac line or access workstations within the line. It has its own frameworks; these have to be ordered separately. They are available in various sizes (single- and dual-sided) for a person or a small forklift. The TracDoor opens horizontally like a gate, and can be locked, unlocked, and opened manually.

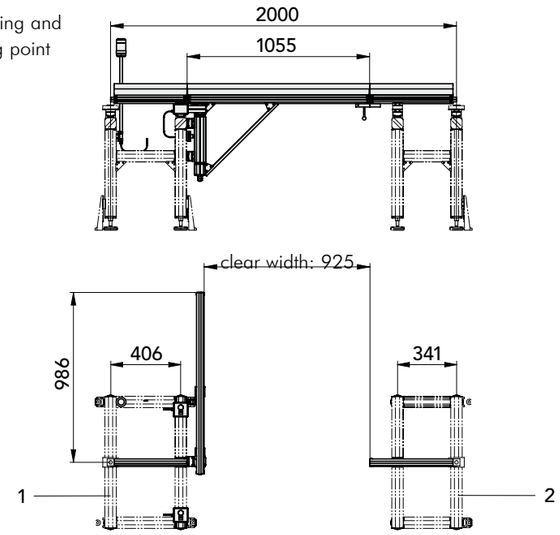
Included in the scope of delivery are two sign-on and sign-off sensors and a green warning lamp.

TRACDOOR – TECHNICAL DATA

Length tolerance of the TracDoor	[mm]	± 2.0
Material		aluminium, nickel-plated copper, plastic
Rated voltage	[VDC]	24
Current carrying capacity: – between the Trac connections – on the moveable Trac section	 [A] [A]	 64 2.5
Ambient conditions: temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

TRACDOOR – TYPE OVERVIEW

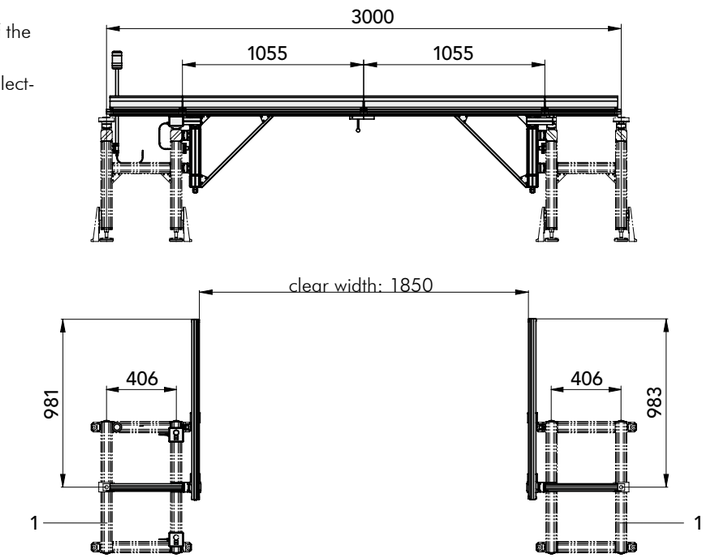
The direction of the opening and the position of the turning point can be freely selected.



	Ref. No.
TracDoor single L = 2000 mm	56953

Framework 1 (page 81)	92064
Framework 2 (page 81)	92066

The direction of the opening can be freely selected.



	Ref. No.
TracDoor double L = 3000 mm	56954

Framework 1 (page 81)	92064

QUICK-SET FRAMEWORKS

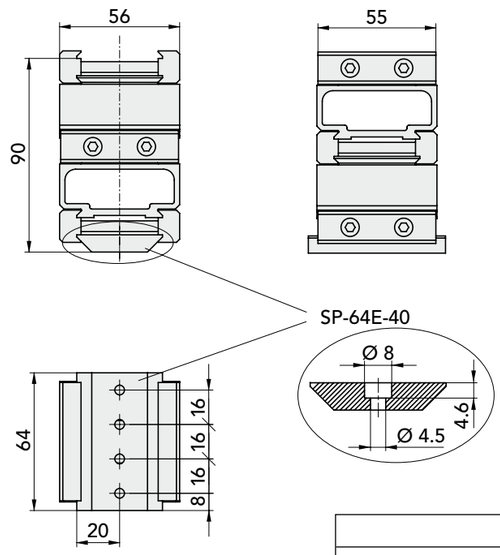
Quick-Set is a specially designed framework system that easily attaches to all montratec components including Montrac.

The frameworks are modular designed the same as the travel section.

QUICK-SET FRAMEWORKS – TECHNICAL DATA

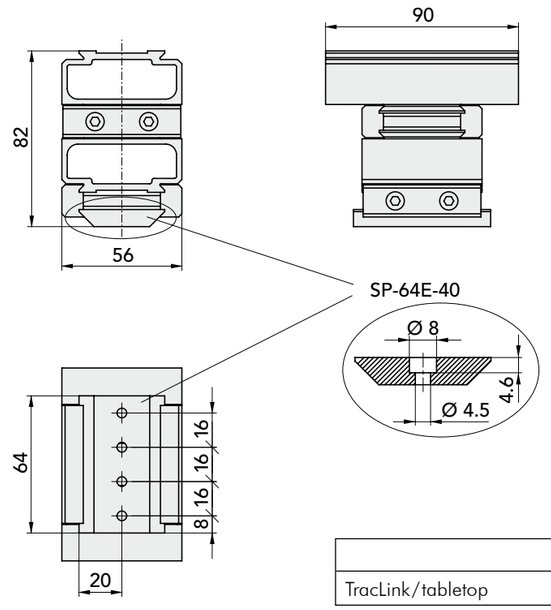
Material			aluminium, nickel-plated copper, steel, brass, plastic
Ambient conditions:	temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

QS FRAMEWORK FOR TRAC/TABLETOP



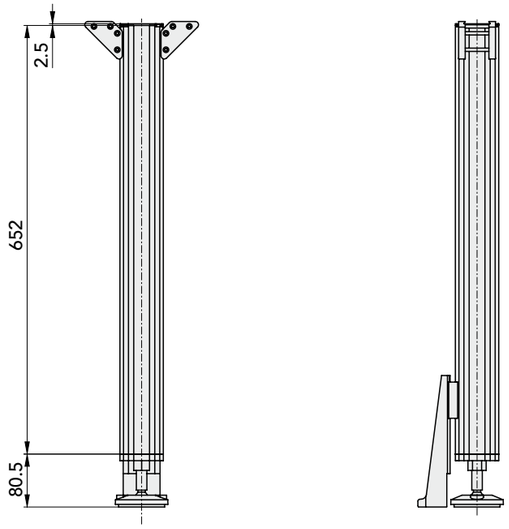
	Ref. No.
Trac/tabletop	54819

QS FRAMEWORK FOR TRACLINK/TABLETOP



	Ref. No.
TracLink/tabletop	57431

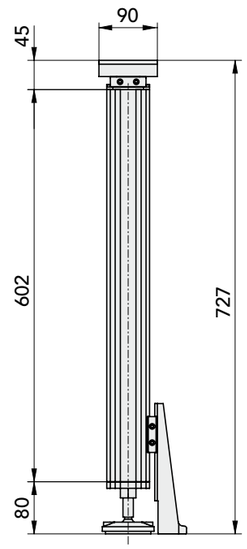
QS FRAMEWORK 1-FOOT SUPPORT TRAC



900 mm to top edge
of shuttle pallet

	Ref. No.
1-foot support with floor anchor bracket (FW)	91565

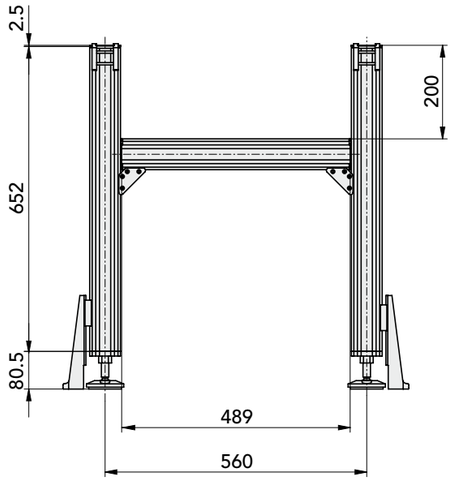
QS FRAMEWORK 1-FOOT SUPPORT TRACLINK

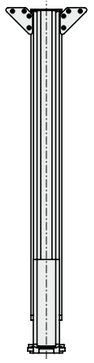


900 mm to top edge
of shuttle pallet

	Ref. No.
1-foot support with FW for TracLink	56817

QS FRAMEWORK 2-FOOT SUPPORT TRAC–TRAC

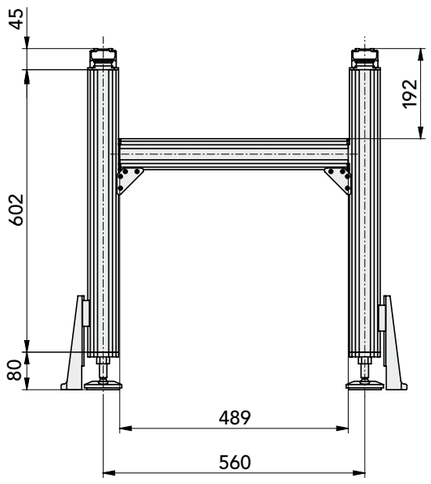


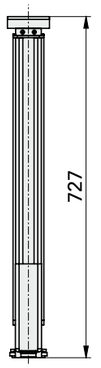


900 mm to top edge
of shuttle pallet

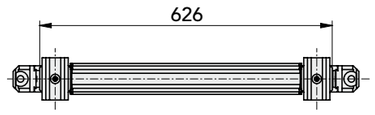
	Ref. No.
2-foot support with FW Trac–Trac	91569

QS FRAMEWORK 2-FOOT SUPPORT TRACLINK–TRACLINK



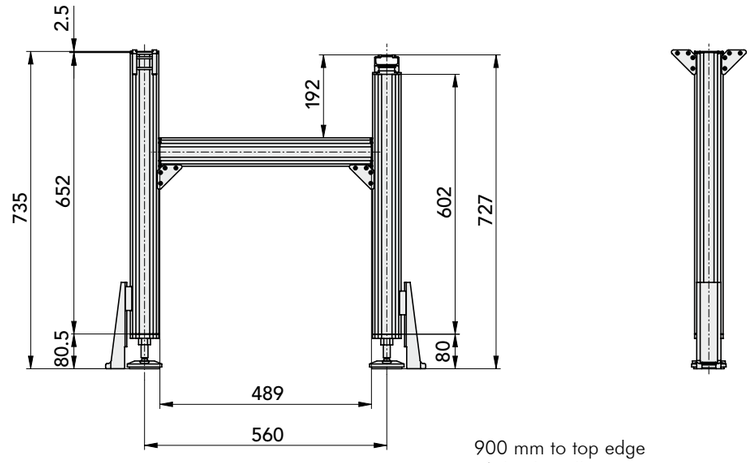


900 mm to top edge
of shuttle pallet



	Ref. No.
2-foot support with FW	58298

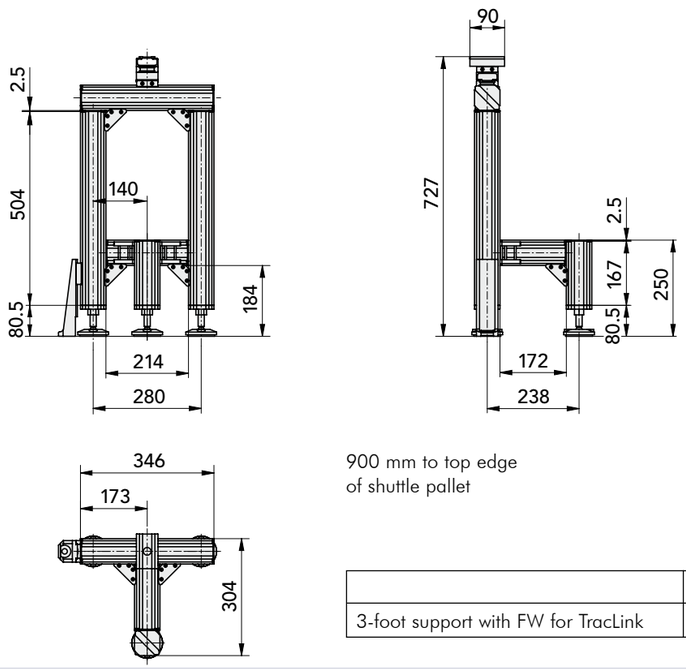
QS FRAMEWORK 2-FOOT SUPPORT TRACLINK–TRAC



900 mm to top edge
of shuttle pallet

	Ref. No.
2-foot support with FW TracLink to Trac	58299

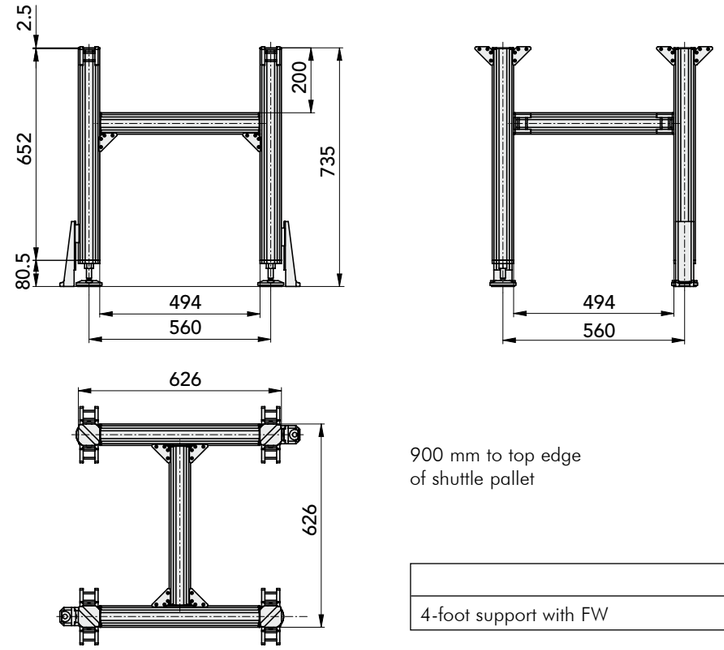
QS FRAMEWORK 3-FOOT SUPPORT TO TRACLINK (for long sections)



900 mm to top edge
of shuttle pallet

	Ref. No.
3-foot support with FW for TracLink	57948

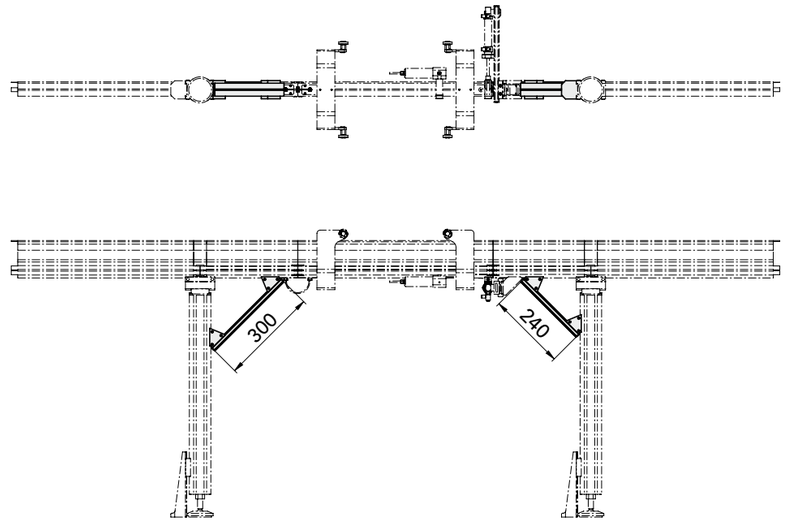
QS FRAMEWORK 4-FOOT SUPPORT



900 mm to top edge
of shuttle pallet

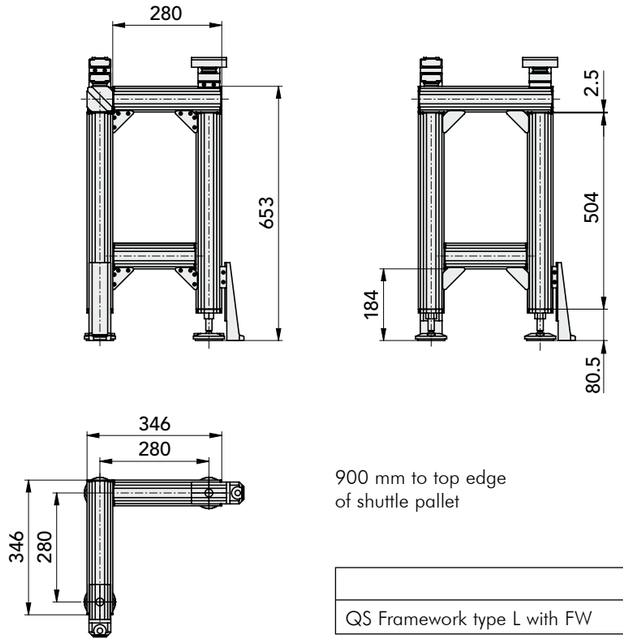
	Ref. No.
4-foot support with FW	58301

QS FRAMEWORK SUPPORT FOR ERGOTRAC



	Ref. No.
Support for ErgoTrac	58594

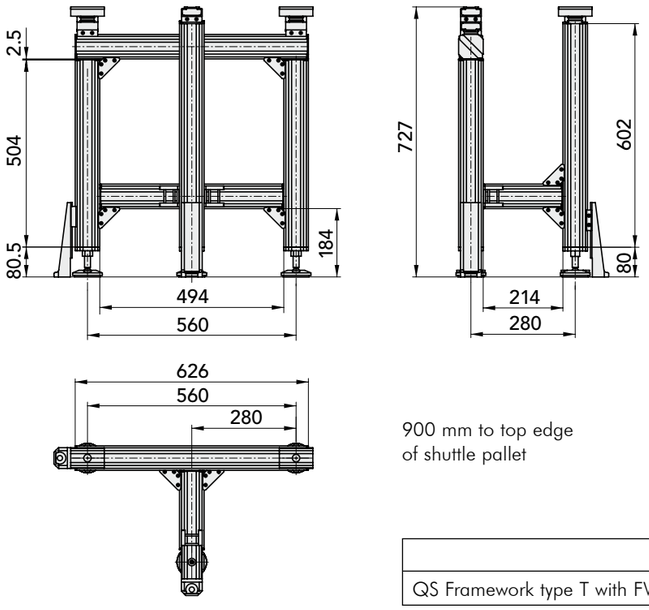
QS FRAMEWORK TYPE L (e.g. support for a TracCurve 90°)



900 mm to top edge
of shuttle pallet

	Ref. No.
QS Framework type L with FW	56818

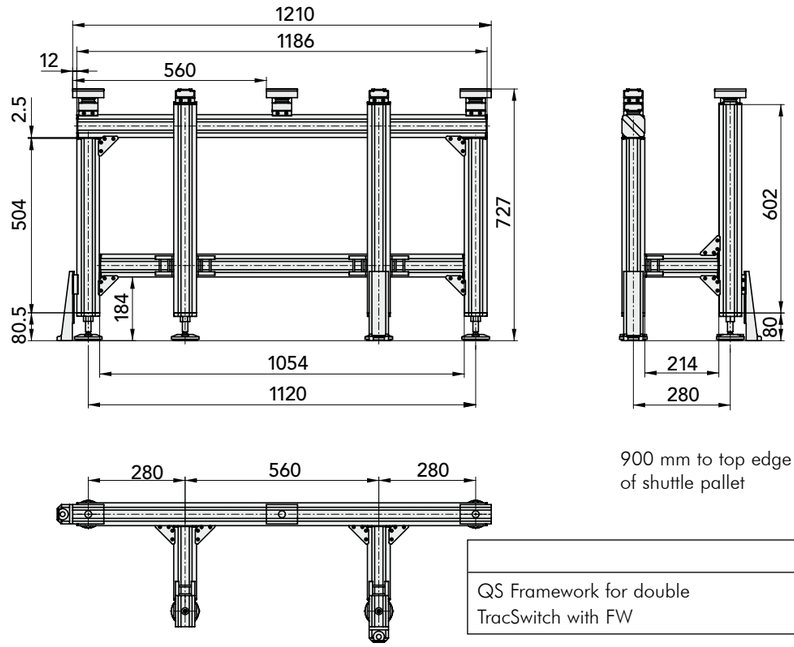
QS FRAMEWORK TYPE T (e.g. 2x TracCurve 90°/TracSwitch/TracCrossing)



900 mm to top edge
of shuttle pallet

	Ref. No.
QS Framework type T with FW	56584

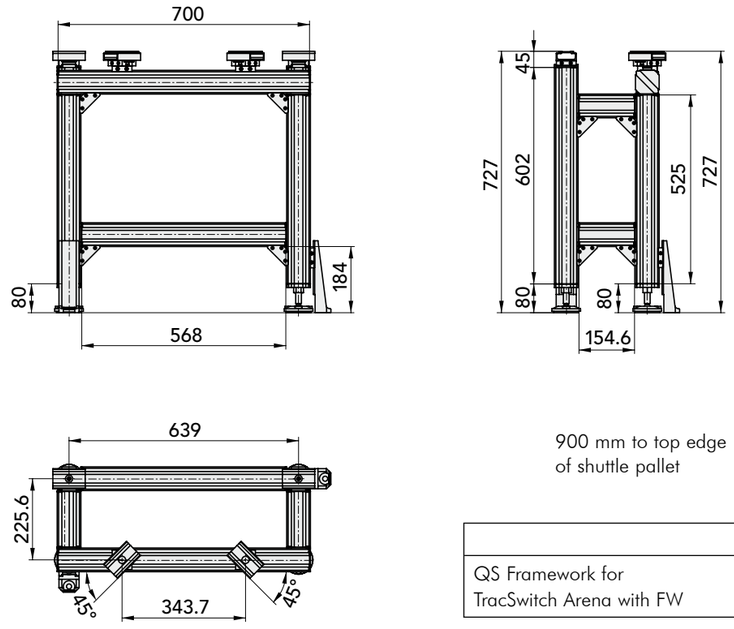
QS FRAMEWORK FOR DOUBLE TRACSWITCH



900 mm to top edge
of shuttle pallet

	Ref. No.
QS Framework for double TracSwitch with FW	56826

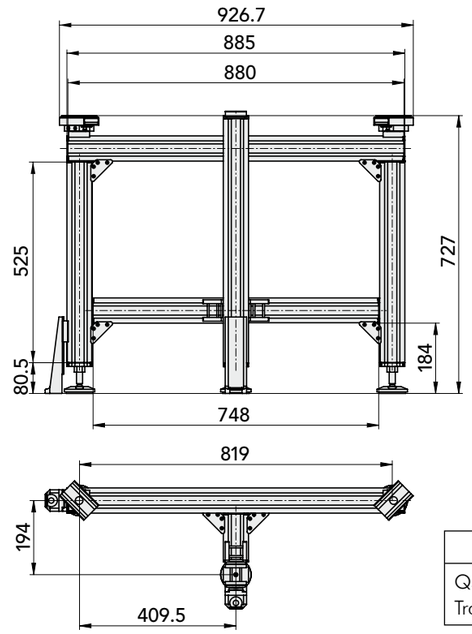
QS FRAMEWORK FOR TRACSWITCH ARENA

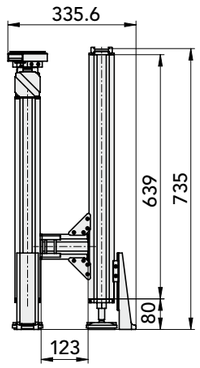


900 mm to top edge
of shuttle pallet

	Ref. No.
QS Framework for TracSwitch Arena with FW	57671

QS FRAMEWORK FOR TRACCURVE 90° R500

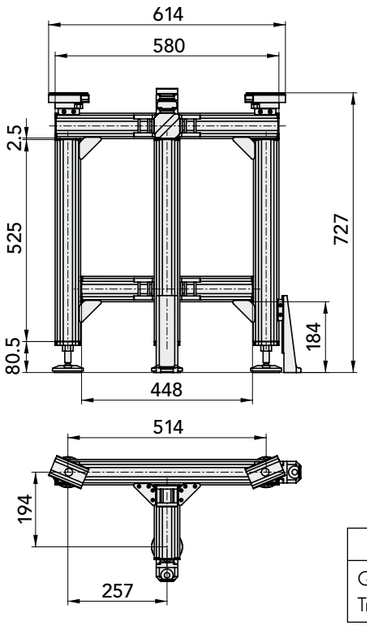


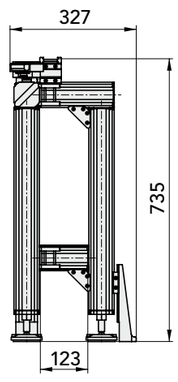


900 mm to top edge
of shuttle pallet

	Ref. No.
QS Framework for TracCurve 90° R500 mit FW	58580

QS FRAMEWORK FOR TRACCURVE 45° R500

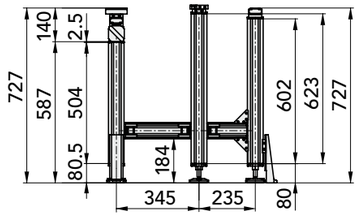


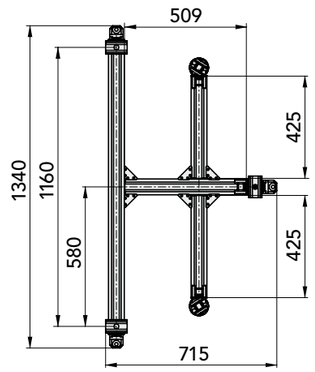


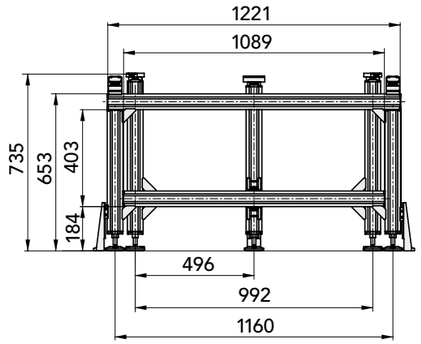
900 mm to top edge
of shuttle pallet

	Ref. No.
QS Framework for TracCurve 45° R500 mit FW	58589

QS FRAMEWORK FOR TRACCURVE 180° R500



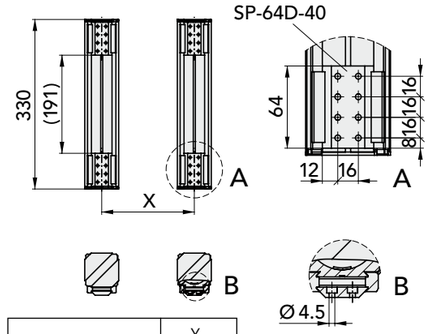




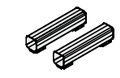
900 mm to top edge
of shuttle pallet

	Ref. No.
QS Framework for TracCurve 180° R500 with FW	58642

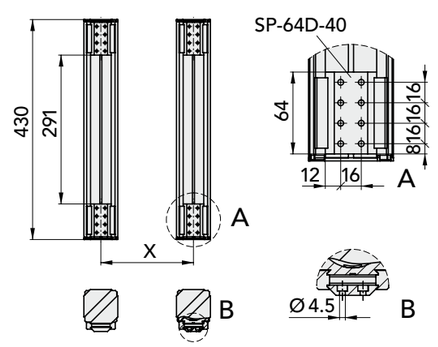
SET TO FASTEN FOR PV 2/3



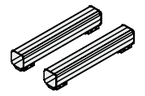
	X
EPV 200x300	136
EPV 200x400	150
EPV 200x550	180
MPV 200x300	150
MPV 200x400	180
MPV 200x550	300



	Ref. No.
Pallet size 200	56846

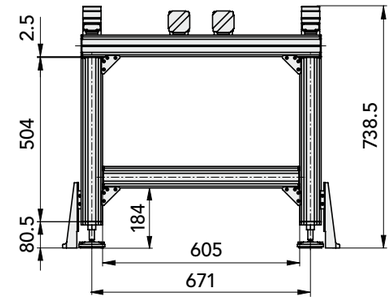


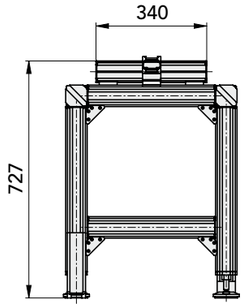
	X
EPV 300x400	150
EPV 300x550	180
MPV 300x400	180
MPV 300x550	300

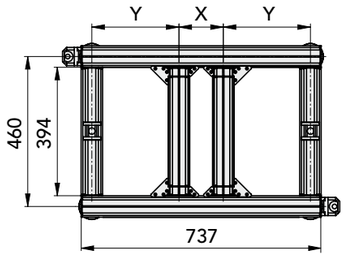


	Ref. No.
Pallet size 300	56847

QS FRAMEWORK FOR PV-2/3, PALLET WIDTH 200 MM







EPV = single positioning

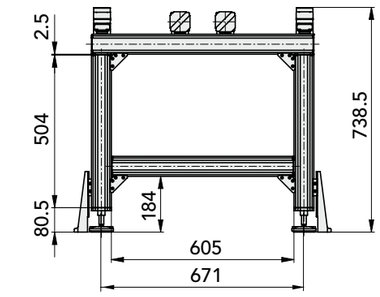
MPV = multiple positioning

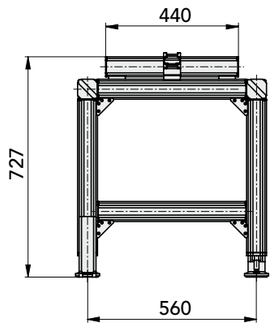
900 mm to top edge of shuttle pallet

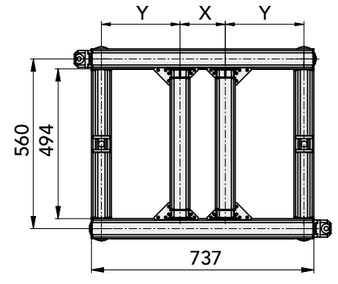
	X	Y
EPV 200x300	136	267.5
EPV 200x400	150	260.5
EPV 200x550	180	245.5
MPV 200x300	150	260.5
MPV 200x400	180	245.5
MPV 200x550	300	185.5

	Ref. No.
Pallet width 200 mm with FW	91586

QS FRAMEWORK FOR PV-2/3, PALLET WIDTH 300 MM







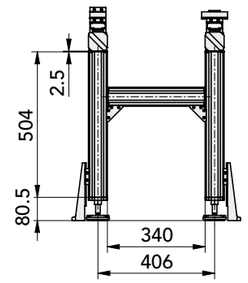
EPV = single positioning
MPV = multiple positioning

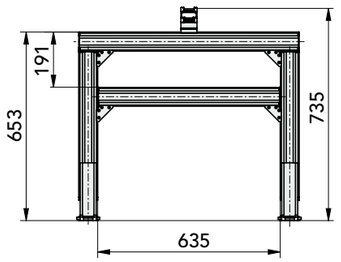
900 mm to top edge of shuttle pallet

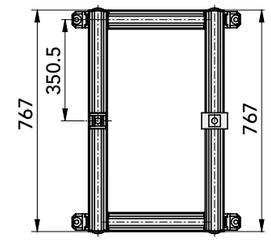
	X	Y
EPV 300x400	150	260.5
EPV 300x550	180	245.5
MPV 300x400	180	245.5
MPV 300x550	300	185.5

	Ref. No.
Pallet width 300 mm with FW	91588

QS FRAMEWORK 1 FOR TRACDOOR



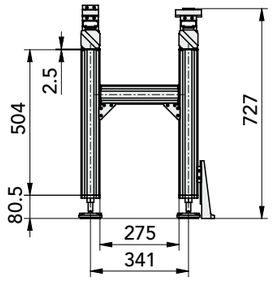


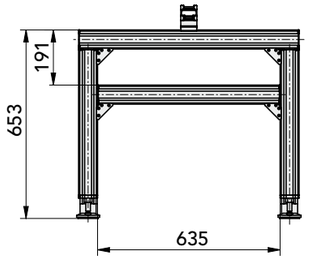


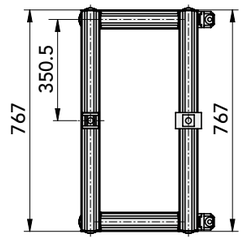
900 mm to top edge of shuttle pallet

	Ref. No.
QS Framework 1 for TracDoor (2000/3000) with FW	92064

QS FRAMEWORK 2 FOR TRACDOOR







900 mm to top edge of shuttle pallet

	Ref. No.
QS Framework 2 for TracDoor (2000) with FW	92066

INTELLIGENT ROUTING MODULE IRM / INTELLIGENT SHUTTLE MODULE ISM

The IRM (Intelligent Routing Module) and ISM (Intelligent Shuttle Module) are communication modules for exchanging data between Shuttles, Trac elements, and the control system.

The ISM is included with the Shuttle and communicates between Shuttle and Trac.

The ISM Shuttle module communicates with various IRM Trac modules via infrared signals.

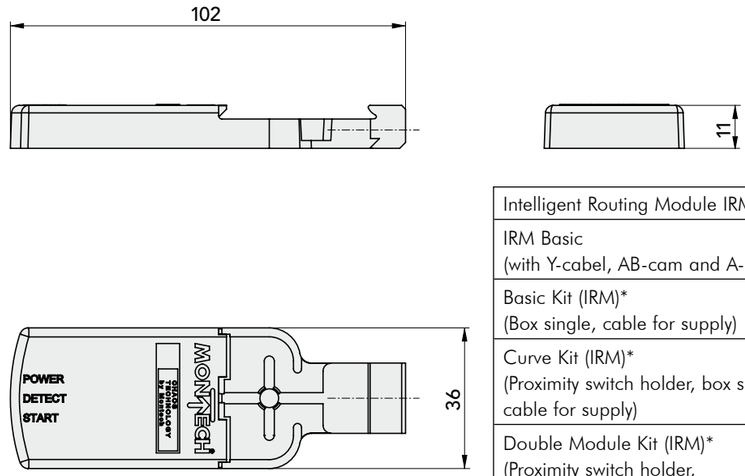
The IRM Trac module can autonomously control a TracSwitch, TracCrossing, or TracCurve. It also provides a communication interface between the Trac and your control system.

The communication between your control system and an IRM takes place either via pre-defined connector pins or by means of the serial interface on the IRM.

INTELLIGENT ROUTING MODULE – TECHNICAL DATA

Voltage supply		[VDC]	rated voltage 24 (18–30 VDC)
Current consumption		[mA]	25 (at 24 VDC)
Max. load current		[A]	1 (at 24 VDC), outputs short-circuit proof
Connections			2 identical proved 10-wire JST plugs 1 x RS232 3 x DIN 3 x DOT
Temperature:	operation storage, transport	[°C] [°C]	–10 to +70 –30 to +80
Dimensions		[mm]	102 x 36 x 11 (length x width x height)
Weight		[g]	33

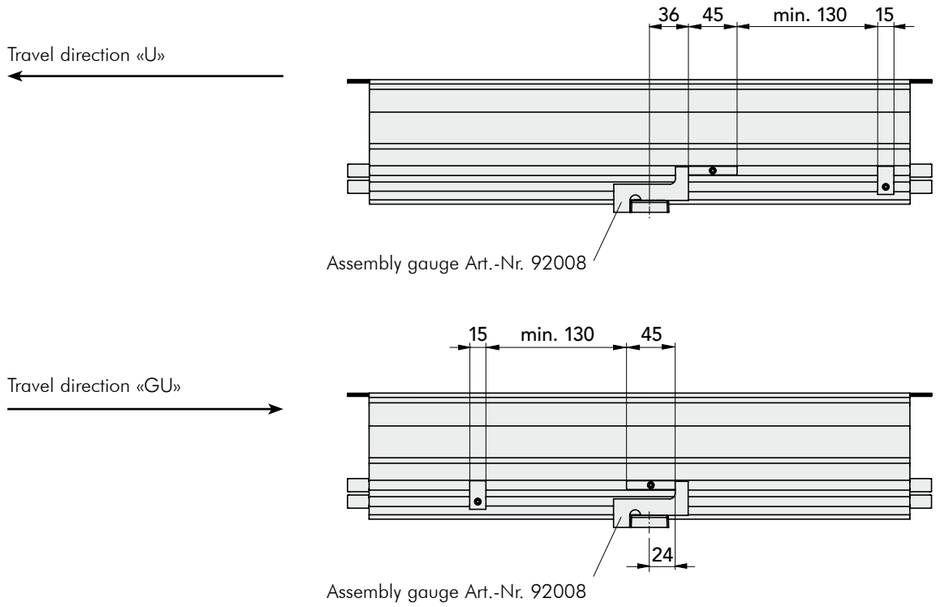
INTELLIGENT ROUTING MODULE – DIMENSIONAL DRAWING



Intelligent Routing Module IRM	Ref. No.
IRM Basic (with Y-cabel, AB-cam and A-cam)*	56936
Basic Kit (IRM)* (Box single, cable for supply)	56937
Curve Kit (IRM)* (Proximity switch holder, box single, cable for supply)	56938
Double Module Kit (IRM)* (Proximity switch holder, box double, cable for supply)	56939
Double Sensor Kit (IRM)* (2x Proximity switch holder, box double, cable for supply)	56940

* explanations see page 15

CONTROL CAMS DIMENSIONAL DRAWING



TOUCHPANEL

The TouchPanel is an input device used to equip manual workstations. The operator uses the intuitive touch-screen to enter the next station to be approached. The principle is based on chaos technology.

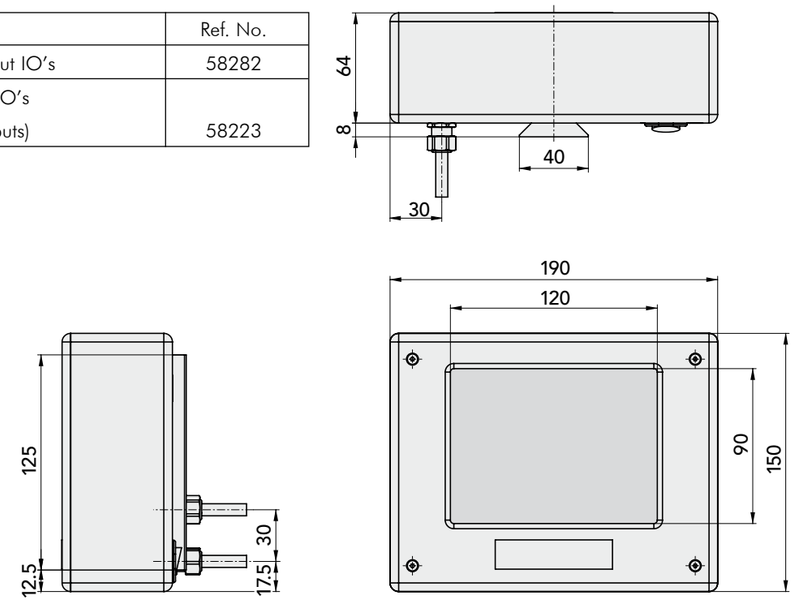
The TouchPanel with digital IOs can also be used as a small control unit.

TOUCHPANEL – TECHNICAL DATA

		TouchPanel without IO's	TouchPanel with IO's
Weight	[kg]	1.7	1.7
Input voltage	[VDC]	24	24
Current consumption (at 24 VDC)	[mA]	165	165
Min. input voltage Inputs	[VDC]	–	20
Max. input voltage Inputs	[VDC]	–	28
Current consumption per Input	[mA]	–	5
Output voltage Outputs	[VDC]	–	input voltage
Max. output voltage per Output	[mA]	–	500
Material		aluminium, nickel-plated copper, steel, plastic, rubber	
Protective class		IP 40	
Ambient conditions: temperature rel. humidity air purity	[°C]	10 to 40 5% – 85 % (without condesation) normal workshop atmosphere	

TOUCHPANEL – DIMENSIONAL DRAWING

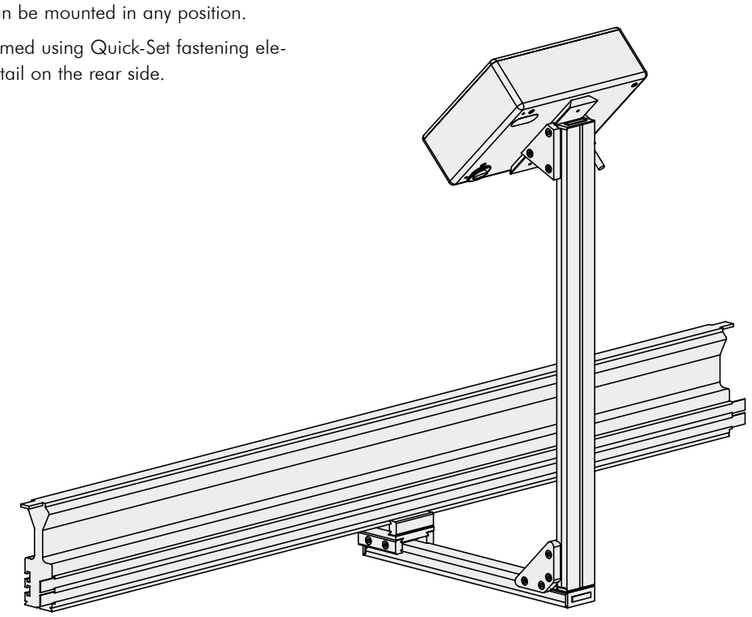
	Ref. No.
TouchPanel without IO's	58282
TouchPanel with IO's (8 Inputs, 8 Outputs)	58223



FASTENING SUGGESTION FOR TOUCHPANEL

The TouchPanel can be mounted in any position.

Mounting is performed using Quick-Set fastening elements on the dovetail on the rear side.



LOGIBOX

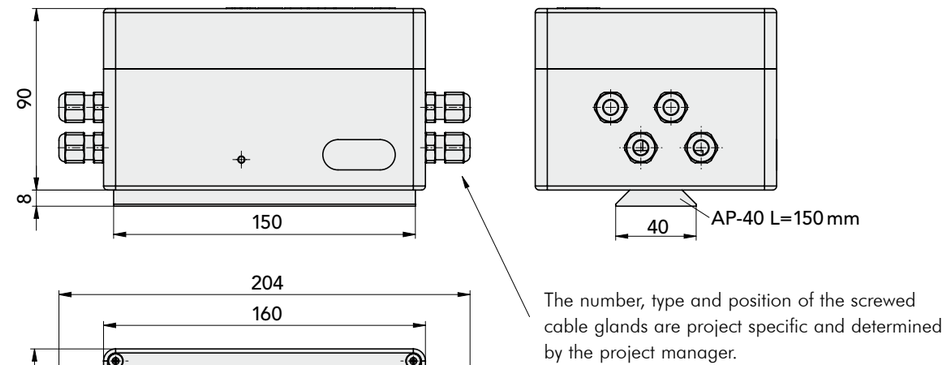
The LogiBox is a small control unit with eight digital inputs and eight digital outputs. In addition, two IRMs can be read and written via the RS-232 interfaces.

The LogiBox continues with the idea of chaos technology. For example, the LogiBox can control a dual switch. Other project-specific solutions can also be realized.

LOGIBOX – TECHNICAL DATA

Weight	[kg]	0.6
Input voltage	[VDC]	24
Current consumption (at 24 VDC)	[mA]	50 (without Outputs)
Min. input voltage Inputs	[VDC]	20
Max. input voltage Inputs	[VDC]	28
Current consumption per Input	[mA]	5
Output voltage Outputs	[VDC]	input voltage
Max. output voltage per Output	[mA]	500
Material		aluminium, nickel-plated copper, steel, brass, plastic
Protective class		IP 20
Ambient conditions: temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

LOGIBOX – DIMENSIONAL DRAWING



The number, type and position of the screwed cable glands are project specific and determined by the project manager.

	Ref. No.
LogiBox	59172

FASTENING SUGGESTION FOR LOGIBOX

The LogiBox can be mounted in any position. Mounting is by means of Quick-Set fastening elements on the dovetail on the rear side.

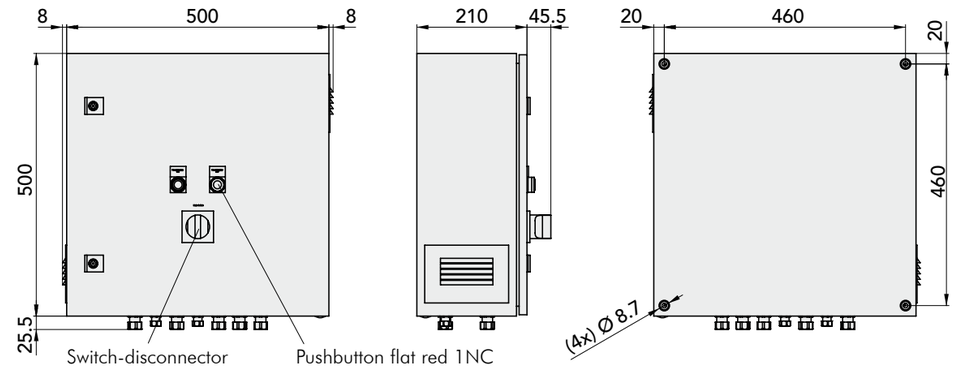
POWER SUPPLY

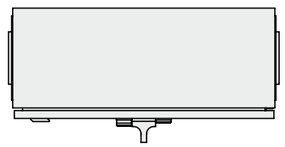
The electrical power supply unit mainly consists of a 24 VDC power supply, short-circuit protection, and an emergency stop. It is connected to the conductor rails on the Trac to power the Shuttles, TracSwitches, TracCrossings, TracLocks, IRMs, and proximity switches.

POWER SUPPLY – TECHNICAL DATA

		40 A supply (24 axles)	60 A supply (36 axles)	2 x 40 A supply (48 axles)
Input voltage	[VAC]	3 x 400		
Mains frequency	[Hz]	50 ... 60		
Operating range		380 ... 500V / 47 ... 63Hz		
Switch-on current	[A]	25	2 x 25	2 x 25
Input power at rated load	[kW]	1.25	1.9	2.5
Harmonic wave filter		integrated passive filter according to EN/IEC 61000-3-2		
DC output voltage		24V ... 28.8V adjustable		
Control accuracy of output voltage		± 1–3% of set value		
DC output voltage at	[A]	40	60	2 x 40
Output voltage ripple	[mV]	< 200	< 200	< 200
Current limitation adjustable 10–110%	[A]	max. 44	max. 66	max. 2 x 44
Temperature: operation storage, transport	[°C] [°C]	0 to 50 -25 to 85		
Humidity class according to DIN 40040		F (no condensation)		
Cooling		natural air cooling		

POWER SUPPLY UNIT WITH WALL CABINET

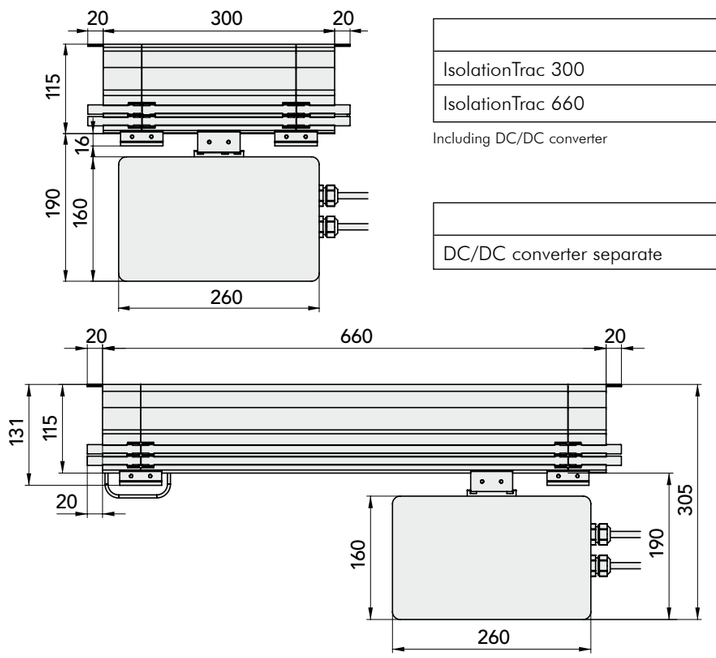




	Ref. No.
Power supply unit 40A	60506
Power supply unit 60A	60507
Power supply unit 2x40A*	60508

* Use always with IsolationTrac

ISOLATIONTRAC – DIMENSIONAL DRAWING

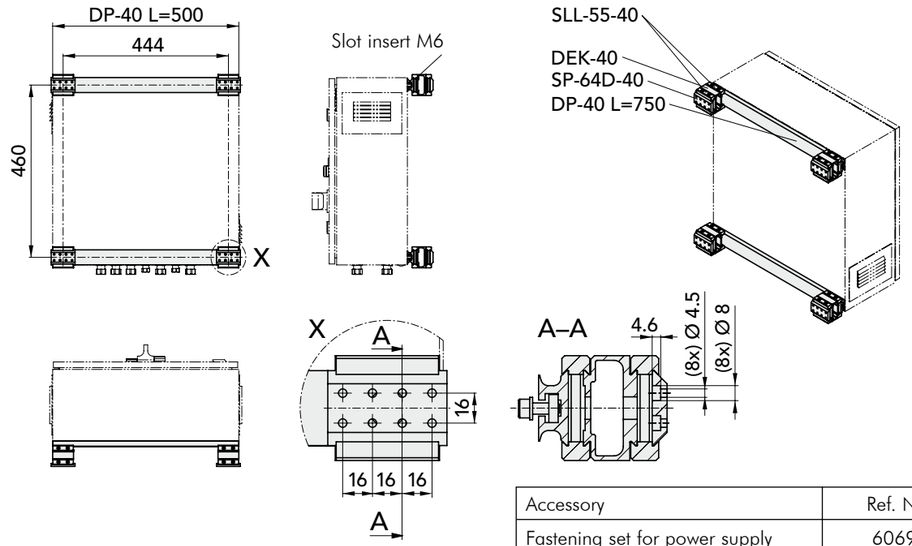


	Ref. No.
IsolationTrac 300	56945
IsolationTrac 660	56946

Including DC/DC converter

	Ref. No.
DC/DC converter separate	506859

FASTENING TO POWER SUPPLY



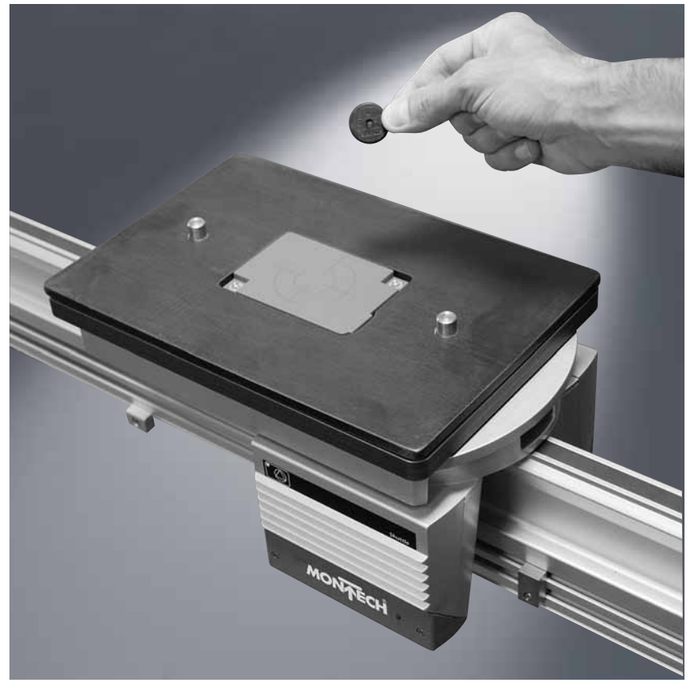
Accessory	Ref. No.
Fastening set for power supply	60692
Cable for Supply 10 m	57577
Cable for Supply 30 m	57578

SPECIAL ACCESSORY – RFID-SHUTTLE

With the RFID shuttle, the transported product (not the shuttle as before) determines the route through the transport system.

Attached to the product on the shuttle is a tag or transponder containing an identification with the route through the Montrac system.

The RFID shuttle provides added automation streamlining of the material flow.



RFID-SHUTTLE – TECHNICAL DATA

Transponder			labels of standard ISO 15693
Ambient conditions:	temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

SPECIAL ACCESSORY – SHUTTLE WITH ADDITIONAL POWER SUPPLY

24V/3A can be available on the shuttle. The 2-axle shuttle with empty rear axle serves as the basis.

By means of an added power collector built into the rear axle, the power can be used for the components on the shuttle.

The shuttle with power supply has many applications in various sectors: for example for autonomous loading and unloading of the shuttle with conveyor belt.

SHUTTLE WITH ADDITIONAL POWER SUPPLY – TECHNICAL DATA

Rated voltage		[VDC]	24
Rated current		[A]	3
Ambient conditions:	temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

SPECIAL ACCESSORY – SHUTTLE WITH CONVEYOR BELT

A conveyor belt adapted to requirements is permanently mounted to the shuttle.

This means that each shuttle travels with a loader and unloader and that some handling stations are no longer needed.

The power supply of the conveyor belt is provided directly by the shuttle (24V/3A).

SHUTTLE WITH CONVEYOR BELT – TECHNICAL DATA

Rated voltage		[VDC]	24
Ambient conditions:	temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

SPECIAL ACCESSORY – FLEXTRAC

With the FlexTrac, Montrac can manage certain height differences (e.g. between machines and processing stations) without having to use an elevator.

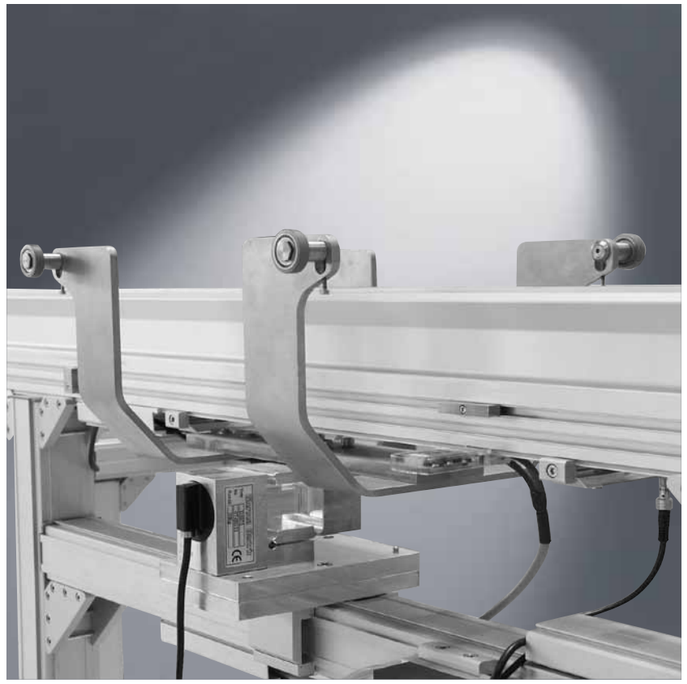
Depending on the application, different incline angles are possible.

FLEXTRAC – TECHNICAL DATA

Rated voltage		[VDC]	24
Ambient conditions:	temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

SPECIAL ACCESSORY – SCALE MODULE

montratec AG has developed a SupoTrac with a built-in high-precision scale from the Eilersen company. As the Shuttle drives in the SupoTrac, the pallets are lifted and weighed with accuracy to within 1/10 gram – no impact or vibration. This module is used in intralogistic applications as well as to verify processes in assembly systems.



SCALES MODULE – TECHNICAL DATA

Rated voltage		[VDC]	24
Ambient conditions:	temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

SPECIAL ACCESSORY – SHUTTLE FOR HEAVY LOADS

For loads up to 50 kg, a so-called heavy-weight shuttle has been developed. The new shuttle has reinforced carriage and profiles and runs at controlled speed.

SHUTTLE FOR HEAVY LOADS – TECHNICAL DATA

Rated voltage		[VDC]	24
Ambient conditions:	temperature rel. humidity air purity	[°C]	10 to 40 5%–85% (without condensation) normal workshop atmosphere

ACCESSORIES

ACCESSORIES FOR TRACSWITCH AND TRACCROSSING

	Ref. No.
Configuration by montratec	**56935**
CPC connection cable	**506157**
Flag for TracSwitch	**57456**

The latest «montratec Motor Configurator» software version is available at www.montratec.com.

ACCESSORIES FOR POSITIONING UNIT PV 2/3

	Ref. No.
Adjustment gauge B = 200 mm	**55386**
Adjustment gauge B = 300 mm	**55387**
Precision spirit level L = 200 mm	**506339**

ACCESSORY – STOP/START CONTROL ELEMENT

	Ref. No.
Holder for signal transmitter	**45428**
Straight A-cam	**47200**
Curved A-cam (for outside T-groove)	**47201**
Curved A-cam (for inside T-groove)	**90822**
Curved A-cam R500 (for outside T-groove)	**58646**
Curved A-cam R500 (for inside T-groove	**58644**
Complete A-cam L = 21…44 mm	**90730/21…44**
B-cam	**45314**
AB-cam	**45315**
A- and AB-cam set	**90759**
Curved A- and AB-cam set (for outside T-groove)	**91516**
Curved A- and AB-cam set (for inside T-groove)	**91517**
Curved A- and AB-cam set R500 (for outside T-groove)	**58647**
Curved A- and AB-cam set R500 (for inside T-groove)	**58648**
Complete AB-cam for TracCurve	**91045**
Electric switchable cam «off» (currentless retracded for Shuttle visible)	**57023**
Electric switchable cam «on» (currentless extended for Shuttle invisible)	**57024**
AB and A-cam flag	**57020**
AB-cam flag	**58183**
B-cam flag	**58184**
A-cam flag for PV «U»	**57008**
A-cam flag for PV «GU»	**57442**

ACCESSORIES FOR IRM

	Ref. No.
IRM Configuration by montratec	**56944**
Configuration device IRM	**58693**
Assembly gauge	**92008**

The latest «IRM / ISM Configurator» software version is available at www.montratec.com

	Ref. No.
Cable for IRM box power supply	**57184**
Box Single	**56984**
Box Double	**56985**
PC connection cable	**57579**

The IRM can be configured using the 57579 PC connection cable via the box.
The latest «IRM / ISM Configurator» software version is available at www.montratec.com

SHUTTLELOCK

	Ref. No.
ShuttleLock	**56925**
Proximity switch M4, PNP with cable and plug S8	**520292**

ACCESSORIES FOR QUICK-SET FRAMEWORK

	Ref. No.
Segment anchor M 12x80/5	**507557**
Cable guide KFM-40, L=2000 mm	**45229N2000**
Cable guide KFM-40, L=0025 mm	**45229N0025**

ACCESSORIES

	Ref. No.
Proximity switch Ø6.5 mm, PNP, pluggable	**508843**
Proximity switch M8, PNP, pluggable	**508845**
Proximity switch Ø6.5 mm, PNP, with cable	**508842**
5m connecting cable with straight plug, M8x1	**504610**
5m connecting cable with angled plug, M8x1	**504929**
SMC cylinder switch including fastening, pluggable	**505509**
Festo cylinder switch including fastening, pluggable	**506885**
D-M9PZ, cylinder switch with cable 5m (PV-2/3)	**506879**
Cable for Supply 10 m	**57577**
Cable for Supply 30 m	**57578**

PROXIMITY SWITCH COMPATIBILITY, CONNECTION CABLE, CYLINDER SWITCH

Components	proximity switch Ref. No.			connecting cable Ref. No.		cylinder switch Ref. No.	
	508842	**508845**	**520292**	**504610**	**504929**	**506879**	**506885**
Holder for signal transmitter	–	1x	–	–	1x	–	–
PV 2/3	1x	–	–	–	–	2x	–
SupoTrac	–	–	1x	–	–	–	–
ErgoTrac	–	–	1x	2x	–	–	2x
TracDoor	–	1x	–	1x	–	–	–
ShuttleLock	–	–	1x	–	–	–	–

FLEXIBILITY FOR INNOVATORS ONLY

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