

**OPERATING INSTRUCTIONS  
MONTRAC COMPONENTS**

ErgoTrac

**BA-100057**

Starting from serial number 432699  
English, edition 06/2008



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## 1. Important Information

### 1.1. Introduction

These instructions describe the mechanical construction, load limits, assembly, maintenance and spare parts of the ErgoTrac.

### 1.2. EU - Declaration of Conformity (pursuant to MRL Appendix II A)

Directives and standards taken into account:

A Montrac conveyance system is a machine that is composed of various, precisely defined components based on the specific application. The standards and directives taken into account for the components are listed in the respective sub-sections of these operating instructions.

Montrac conveyance systems may be commissioned only...

- a) if they are operated by electrical power that has the same specifications as described in these operating instructions.
- b) if the space under switches and crossings is not accessible over an area of 1.6 m diameter.  
(Danger of falling shuttles if switches or crossings switch incorrectly.)

Manufacturer:

Montech AG, Gewerbestrasse 12 CH-4552 Derendingen, Switzerland  
Tel. +41 32 681 55 00, Fax +41 32 682 19 77

### 1.3. EMC Directives

Emission:

- interference field strength compliant with EN 55011 or EN 55022 Class A.

Immunity:

- against electromagnetic fields in compliance with IEC 801-3: 10 V/m, 1 kHz, 80% AM
- against burst in compliance with IEC 801-4: 2 kV
- against cable conducted narrow band interference in compliance with IEC 801-6: 10 VEMF
- against 50 Hz magnetic fields in compliance with EN 61000-4-8: 30 A/m
- against static electricity discharge
- against conducted interference.

### 1.4. ErgoTrac compliance to directives

The directives that are complied with pertain to all possible operating states which may occur in a Montrac transport system and to all functions which the ErgoTrac must perform according to the description.

### **1.5. Product description and application**

Montrac is a mono rail transport system with self-propelling shuttles built for loads of up to 12 kg or 24 kg (2-axel shuttle) and pallet sizes of up to 300 x 550 mm. Montrac is a modular system. Standardized basic components enable customer-specific system configurations to be set up for connection to machining stations, machines, order-picking stations, etc.

Montrac can be used wherever material has to be moved, distributed, processed stepwise (e.g. assembled) or collected together at one point from various senders.

### **1.6. Safety instructions**

The safety instructions, especially those concerning the electrical connection, must be heeded during commissioning, operation, repair work and decommissioning. Non-compliance with these instructions constitutes improper use of the transport system and its components.

The operation of a Montrac transport system in an explosive atmosphere (combustible gases, vapors or dust) may lead to ignition and is therefore not permitted.

### **1.7. Dangers**

To exclude dangers in operating conditions, the requirements specified in the EU Declaration of Conformity must be adhered to with regard to a) the electrical supply and b) the protection devices.

The payload  $m_n$  (see the Shuttle Operating Instructions, "Load limits" section) must be secured to the shuttle pallet so that the to and fro movement of the ErgoTrac does not cause the payload to slip, detach or loosen from its anchoring.

### **1.8. System logistics**

ErgoTrac makes it possible to set up an ergonomic manual workstation so that the platform is tilted 25° toward the operator. This makes the pallet ergonomically better accessible and improves visibility. We recommend having the shuttle enter the station with reduced speed.

The ErgoTrac replaces a normal Trac piece of 1160 mm in length. By means of the ShuttleLock, the shuttle is secured against movement while manual work is performed. A simple support (SupoTrac) absorbs the forces that result from an operation taking place on the shuttle.

The ErgoTrac can only be used for the Shuttle L=300mm and L=400mm.

## 1.9. Description of operation

The Trac consists of a colorless anodized aluminum extrusion. The two T-slots on the one side accommodate extruded plastic profiles through which the two conductor rails (24 V DC) are run for supplying the shuttles with power.

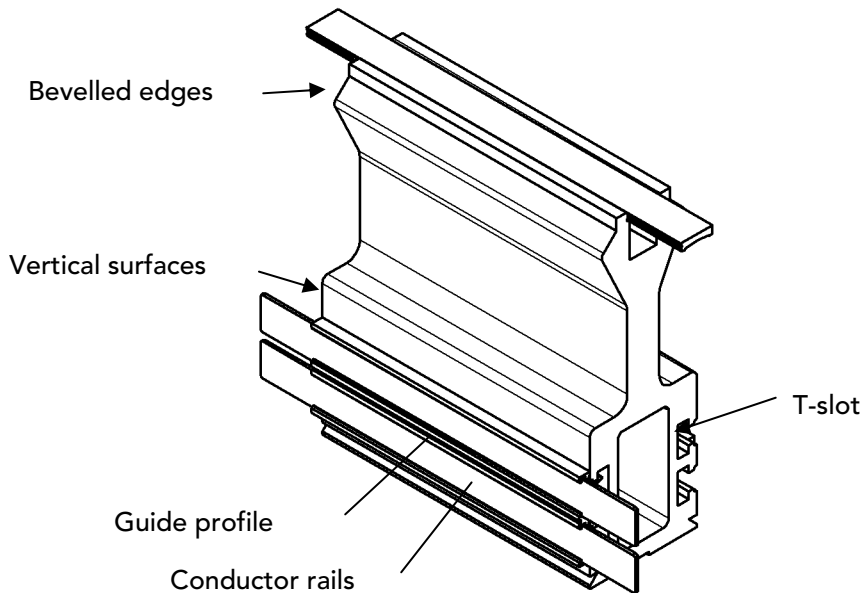
The conductor rails opposite the T-slots are used for securing cams to control the shuttles.

The Trac is compatible with Quick-Set.

The shuttle's four rollers run on the two upper beveled edges of the Trac. The shuttles are also supported by two additional rollers that run on the vertical surfaces above the T-slots.

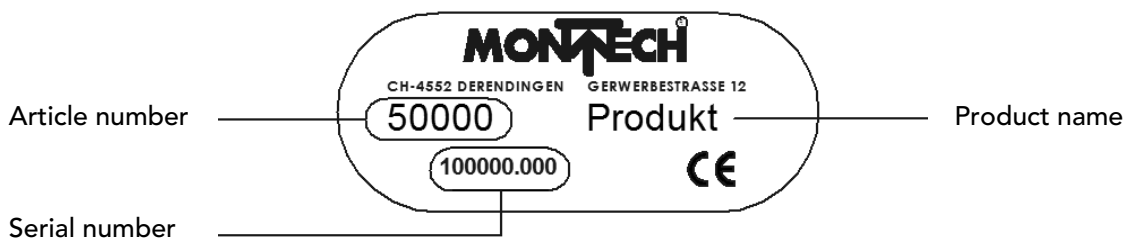
The individual Trac sections are linked by an expandable TracLink. Power can be provided to any TracLink.

### Trac



**1.10. Additional information**

These operating instructions are intended to ensure that the ErgoTrac is used properly and safely. Should any information for your particular application be lacking, please contact the manufacturer. When reordering operating instructions, please specify the serial number. This document is also available on our website at [www.montech.com](http://www.montech.com).

*Description of the type plate*

Montech AG  
Management

U. D. Wagner

C. Wullschleger

**1.11. Validity of the Operating Instructions**

Our products are continually updated to reflect the latest state of the art and practical experience. In line with product developments, our Operating Instructions are continually updated. All Operating Instructions have an article number, e.g. BA-100057. The article number and edition number are displayed on the title page.

## 2. Technical Data

Trac weight	[kg/m]	8
Tilting time		See the table in Section "Tilting time"
Tilt angle		25°
Operating pressure	[bar]	3 - 6
Nominal pressure	[bar]	5
Air consumption at 5 bar	[cm <sup>3</sup> /cycle]	144.6
Pneumatic connection		Hose ø4/6 mm, ø2.7/4 mm
Actuating medium		5 µm filtered, oiled or unoled air
End position control		Magnetically actuated cylinder switches
Service life		> 10 <sup>7</sup> operations
Material		Aluminum, nickel-plated copper, plastic, brass, steel, bronze
Rated voltage	[V DC]	24
Current carrying capacity	[A]	64
Ambient conditions:	Temperature [°C]	10-40
	Rel. humidity	5% - 85% (without condensation)
	Air purity	Atmosphere for assembly of precision mechanical products

## 2.1. Load limits

Current carrying capacity

Stationary inlet and outlet Trac sections: 64.0 A

On the tilting Trac section: 2.5 A

Mechanical load capacity

The load limits below must be complied with.

Max. load (without shuttle, incl. shuttle pallet): Shuttle length L = 300 = 13.2 kg

Shuttle length L = 400 = 12.9 kg



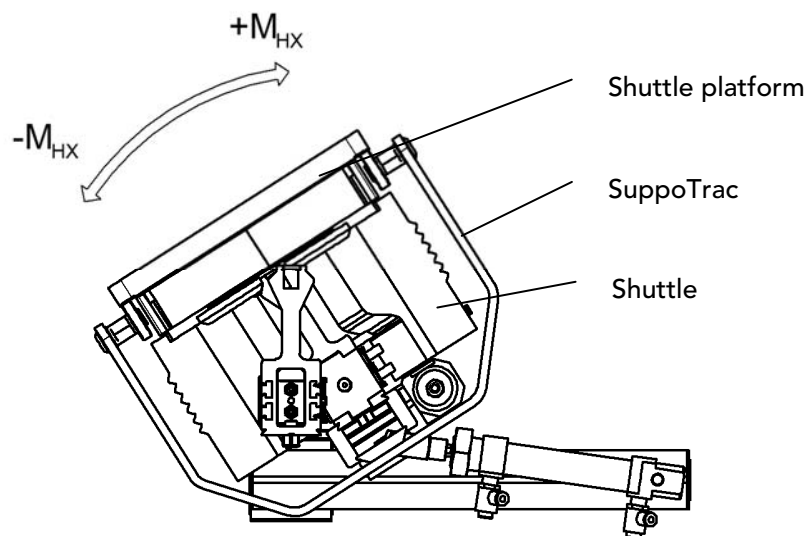
If additional external forces or moments influence the shuttle platform, the platform must be supported by individual supports.

Under no circumstances may additional forces or moments act on the shuttle!

Holding moments of the tilting movement (at 5 bar)

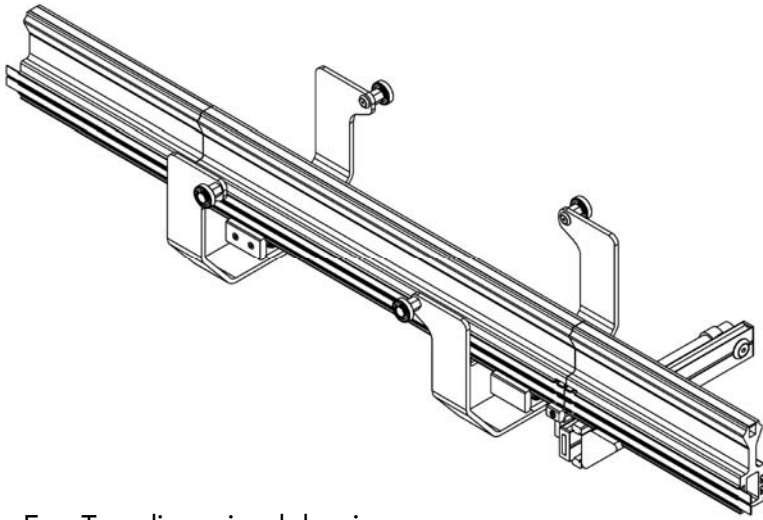
(These may be utilized only when the shuttle platform is appropriately supported.)

*Holding moment of the tilting movement*

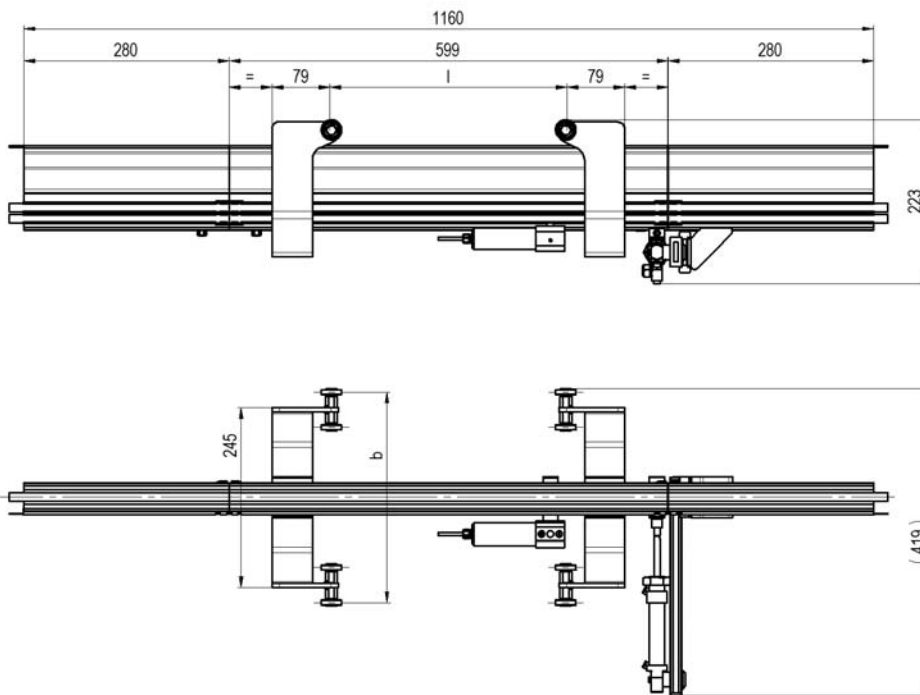


Holding moments	In horizontal position	In inclined position
+ $M_{HX}$	13 Nm	13 Nm
- $M_{HX}$	13 Nm	10 Nm

## ErgoTrac



ErgoTrac dimensional drawing



## 2.2. Tilting times

Direction of movement	Shuttle load	Tilting time	Throttle position on piston rod side	Throttle position on drive cylinder on piston rod side
From horizontal to inclined position	Empty	1.1 sec.	-	1 revolution open
	Full	1.1 sec.	-	1 revolution open
From inclined to horizontal position	Empty	1.1 sec.	1 revolution open	-
	Full	1.1 sec.	1 revolution open	-

### 3. Assembly and Commissioning

#### 3.1. Installation

The ErgoTrac has to be connected to its system components in three ways:

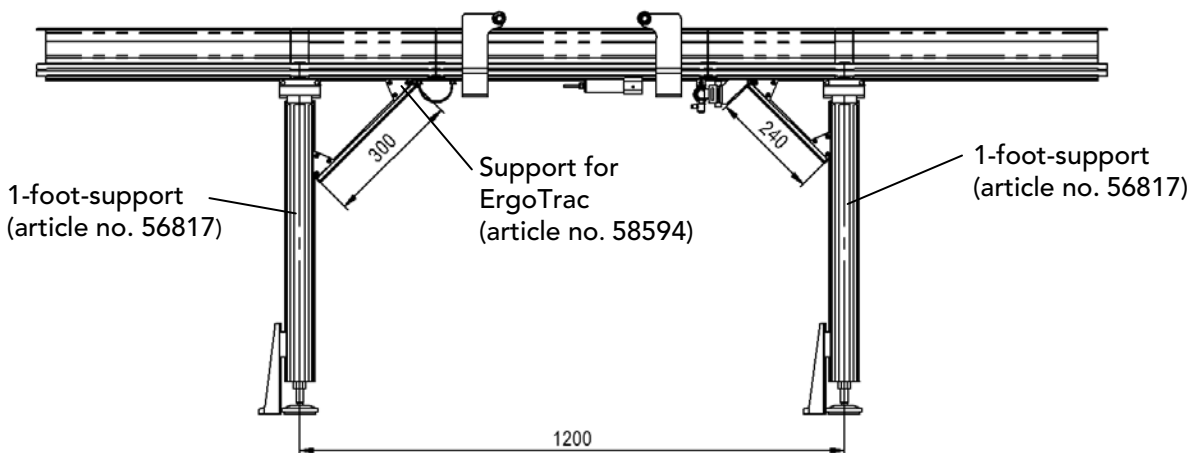
- Mechanical connection
- Electrical connection
- Discharge of electrostatic charge

#### 3.2. Mechanical connection

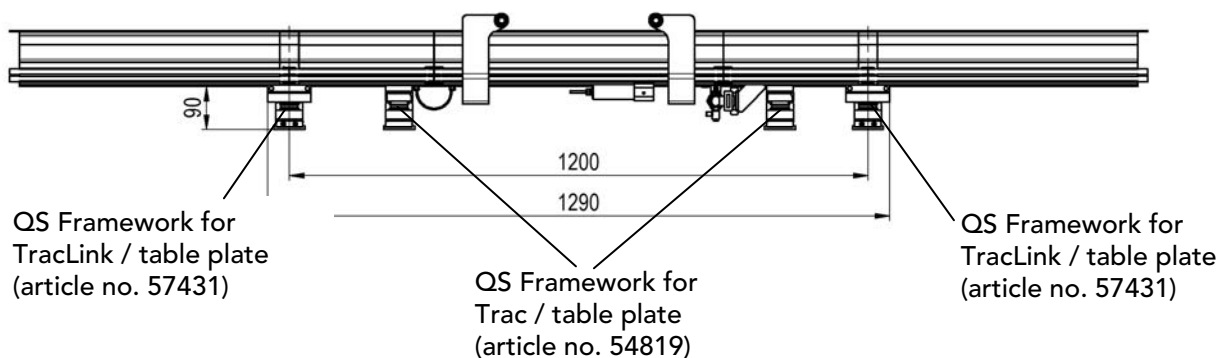
This is achieved on both outer rail sections using TracLink (see TracLink Operating Instructions). To guarantee functionality, it is important to pay attention to the orientation of the individual rail sections to each other during installation. The support must be adjusted accordingly. After installation, check to ensure that the moveable rail section can be easily moved by hand through the entire tilt angle (25°).

#### 3.3. Support on a framework of Quick-Set® profiles

Support using 1-foot-support (article no. 56817) and support for ErgoTrac (article no. 58594).



Support on the table plate using QS Framework for Trac / table plate (article no. 54819) and QS Framework for TracLink / table plate (article no. 57431).

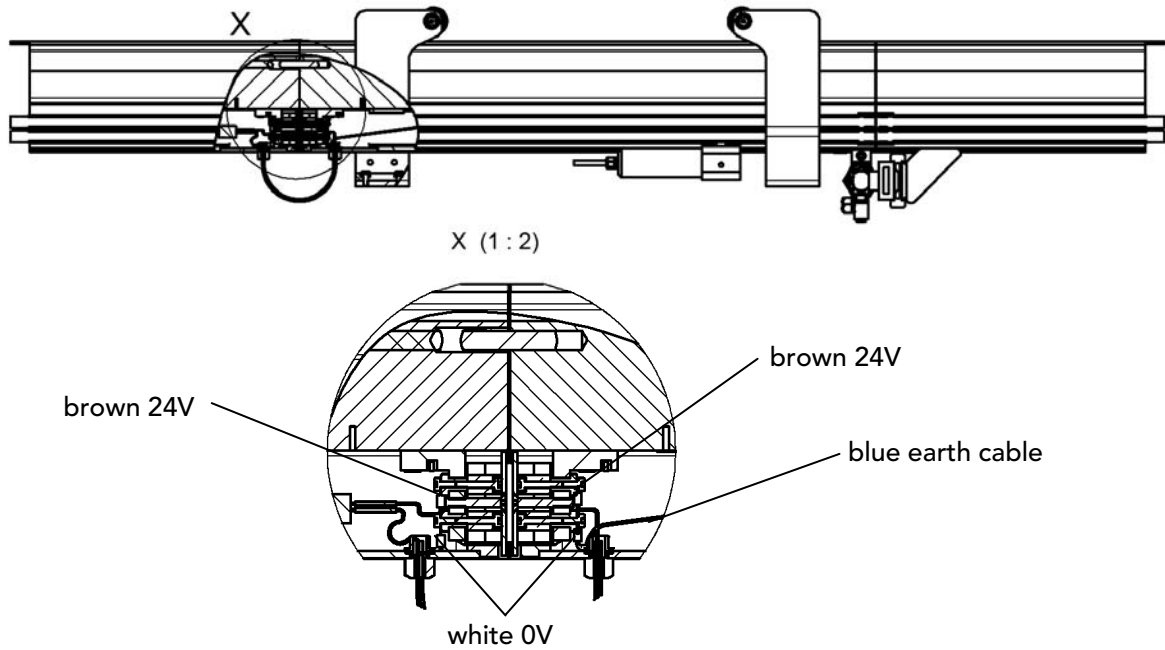


### 3.4. Electrical connection

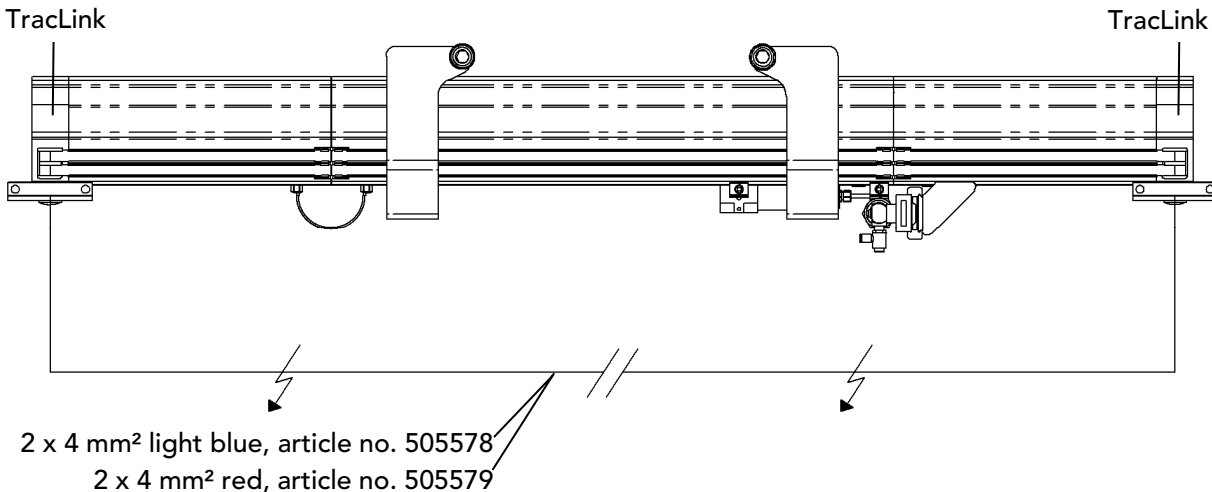
The ErgoTrac is supplied with power via the two TracLinks on the outer rail sections (see TracLink Operating Instructions).

The movable middle rail section is electrically connected to the outer rail section by means of a cable. The built-in thermostat fuse on the cable ensures that the power supply to the middle rail section is interrupted in the event of prolonged electrical load of more than 2.5 A and is automatically switched on when the overload disappears (difference between switch off and switch on point = 1-2 min.).

Wiring and function variants for the ShuttleLock und the IRM can be found in the operating instructions of the ShuttleLock and IRM.



Since the ErgoTrac represents an opening in the system (also in the electrical circuit), an electrical bridge must be produced between the ends of the connection tracs. The connections of this bridge are connected to the two TracLinks (art. no. 56056, see the Trac Link Operating Instructions) at the ends of the connection Tracs.



**3.5 Discharge of electrostatic charge**

When the ErgoTrac is connected to the incoming and outgoing Trac by means of the TracLink (see TracLink Operating Instructions), an earth cable with screw must be connected to at least one of two outer rail sections (see TracLink Operating Instructions).

**3.6 Setting the tilting end positions**

The end positions of the tilting movement are determined by the cylinder stroke. The vertical position of the middle Trac section must be exactly flush with the two outer Trac sections. This is done by loosening the two M5 screws of the clamping element SLL-55/N and moving the holder.

**3.7 Layout of the stop/start control element**

Procedure in accordance with IRM Operating Instructions.

**3.8 Adjusting the support rollers**

Procedure in accordance with the SupoTrac Operating Instructions.

## 4. Maintenance and Inspection

Every 6 months when the system is switched off:

Check electrical Trac connection:

By lightly pressing the conductor rails at the transition points you can determine whether the electrical connection is Ok. If the conductor rails can be deflected or are springy, the contact elements on the inner side have to be tightened.

Check all electrical connection screws and tighten loose ones.

Check the distance:

The distance between the two Trac sections should be checked and adjusted if necessary as described in the TraLink Operating Instructions in the Installation section.

Check conductor rails:

The conductor rails should be checked for signs of burning, grease spots and excessive soiling. Use a dry cloth to remove coarse dirt and dust.



– Do not remove the black coat (graphite film). It is electrically conductive and serves to prevent rapid oxidation of the copper!

Clean Trac:

Remove excessive soiling, oils and grease from the Trac. Use a dry cloth to remove coarse dirt and dust. Dirt on the Trac can be best removed with aluminum rubber. Remove the rubber abrasion particles from the Trac.

Check throttling:

Check the throttling of the pneumatic cylinder.

Oil pivot joint:

Oil both pivot joints of the ErgoTrac with Paraliq P460.

Check platform support:

Check the effectiveness of the platform support and adjust where necessary.

General inspection:

Inspect the Trac for damage. In the event of damage, please contact MONTECH.



Pos.	Sym.	Designation	Article no.	Material
	■	ErgoTrac	56952	Various
10	◇	Outer rail section	57202	Aluminum
20	◇	Middle rail section	57204	Aluminum
30	◇	Cover profile	91257	TPR
40	◇	Outer guide profile	57452	ABS
50	◇	Middle guide profile	57453	ABS
60	◇	Outer conductor rail	57455	Copper
70	◇	Middle conductor rail	57454	Copper
80	◇	Holder	45821	Aluminum
90	◇	Bolt	45822	Steel
100	◇	Lever	45823	Aluminum
110	■	Corner connector EV-3-40N	54220N	Various
120	■	Cross element KE-40-N	40779N	Aluminum
130	■	Clamping element lengthwise-lengthwise SLL-55-40-N	40201N	Various
140	■	Cover cap AK-16-40	44871	ABS
150	■	Clamping element lengthwise-lengthwise SLL-20-40-N	41190N	Various
160	◇	SupoTrac	56933	Various
170	◇	Power cable	57153	Various
190	◇	Angled holder	57292	POM
200	◇	Insulation plate	57283	POM
210	◇	Double bracket	57282	Brass
220	◇	Clamping piece	57296	Aluminum / PTFE
230	◇	Insulation cover	57293	POM
240	◇	Cover plate	57278	POM
250	◇	Contact sleeve	57291	Aluminum
260	◇	Cover	57459	Aluminum
270	◇	Screwed cable gland	505828	Various
280	◇	Cylinder screw M8x8	520267	Steel
290	◇	Countersunk screw, M4x25	506370	Steel
300	◇	Countersunk screw, M4x10	506393	Steel
310	◇	Countersunk screw, M3x8	520285	Steel
320	◇	Cylinder screw, M3x16	505541	Steel
330	◇	Cylinder screw, M4x12	502506	Steel
340	◇	Cylinder screw, M3x6	520043	Steel
350	◇	Ribbed washer, M3	505385	Steel

360	◇	Ribbed washer, M4	502606	Steel
370	■	Cylinder DSNU-20-50-P-A	505477	Various
380	◇	Fork head	504457	Steel
390	◇	Throttle non-return valve	505889	Various
400	◇	Journal bearing	505542	Bronze
410	◇	Circlip	502446	Steel
420	◇	Washer for countersunk screw M8	507068	Steel
430	◇	Shim disk	505484	Steel
440	◇	Cylinder pin Ø8	502080	Steel
450	◇	Countersunk screw, M8x16	504346	Steel
460	◇	Earth cable	46018	Various
470	◇	Thread grooved oval-head screw, M3x6	506341	Steel

- These are wearing parts and available ex stock.
- ◇ Not available ex stock individually (upon request).
- Price list articles deliverable ex stock.



Operating Instructions  
Montrac ErgoTrac Components

## 6. General Information

Environmental compatibility and disposal

Materials used:

- Aluminum
- Steel
- Brass
- Bronze
- Nickel-plated copper
- ABS (acrylonitrile butadiene styrene)
- PTFE (polytetrafluorethylene)
- POM (polyoxymethylene)
- TPR (thermoplastic, pre-vulcanized rubber)

Surface finishing:

- Anodization, aluminum
- Steel nickelization
- Galvanizing, steel

Shaping processes:

- Aluminum extrusion
- Plastic injection molding
- Machining of metals and plastics
- ABS extrusion
- Metal bending
- Laser cutting of steel

Emissions during operation:

- See EMC emissions

Disposal:

ErgoTracs which are no longer useable must be disassembled into single parts and recycled according to the type of material. The type of material of each individual part is included in the replacement parts lists. Non-recyclable material should be disposed of appropriately.