



Assembly instruction
Handling axis iLE20/20
Handling axis, total length L=5580mm.
Item number: 238xxx xxxx

Manufacturer:

isel Germany GmbH

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Registergericht Fulda, Registernummer: 8643

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1.2	07.02.2024	Standards changed	Christian Bley
1.1	13.02.2020	correction version	Christian Bley
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1 General

Dear Customer,
dear operator,

with this Assembly instruction we would like to support you in your work on the Handling axis iLE 20/20, hereinafter referred to as the machine. It contains information and everything you need to know about the machine and will be a helpful companion for you.

NOTE	
	<p>Before commissioning the machine, working with the machine or making additions or changes to the electrical installation of the machine/in the control cabinet of the machine, be sure to read carefully:</p> <ul style="list-style-type: none"> > the safety instructions in this Assembly instruction as well as > the safety instructions for the attachment parts in the applicable documents.

If you still have questions, please contact us. Despite all due care, we cannot rule out printing errors and mistakes. If you notice any printing errors or mistakes or if you see any possibilities for improving our technical documentation, we would be grateful for any information or suggestions!

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1.1 Importance of the documentation

These Assembly instruction and the associated documentation are an integral part of the linear unit. The operator is obliged to keep the Assembly instruction for the entire service life of the linear unit and to grant access to the personnel working with the machine.

If the linear unit is modified, the Assembly instruction and the associated documentation must be revised accordingly. If the linear unit is dismantled and reassembled at a new location, the owner is obliged to pass on the Assembly instruction and the associated documentation to the new owner.

The Assembly instruction in German language is the original Assembly instruction. All other language versions are translations of the original Assembly instruction.

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1.2 Scope of delivery

The scope of delivery of the Handling axis iLE 20/20 238xxx xxxx includes:

- Assembly instructions with installation declaration according to Machinery directive 2006/42/EC

1.3 Co-Applicable Documents

Apart from the Assembly instruction the following documents for the use of the machine are necessary. These documents are partially submitted in annexe in the printed form of the machine or are contained as PDF document on the data medium (USB data medium) for the installation data of the provided control software / . The number specified in /<number>/ can be found as the leading number in the file name of the document.

Applicable documents isel Germany GmbH

No.	Document
/1/	Dimensional drawing
/3/	Operating Instructions Positioning module IMD20/ IMD40 with CANopen interface: isel Germany AG, 12/2018

Applicable documents from other manufacturers

1.4 EU-Declaration of incorporation acc. to Machinery directive 2006/42/EC Annex II B

The manufacturer

isel Germany GmbH
Bürgermeister-Ebert-Str., 40
D-36124, Eichenzell

hereby declares that the following product

product description:	Handling axis, total length L=5580mm iLE 20/20
model name:	iLE 20/20
item number:	238xxx xxxx

meets the essential health and safety requirements of Machinery directive 2006/42/EC Annex II.

The following harmonized norms were applied:

DIN EN ISO 12100:2011-03	Safety of machinery - General principles for design - Risk assessment and risk reduction.
DIN EN 60204-1:2019-06; VDE 0113-1:2019-06	Safety of machinery - Electrical equipment of machines - Part 1: General requirements

The technical documentation for this machine has been prepared in accordance with Annex VII, part B. The manufacturer undertakes to electronically transmit these specific technical documentations to national authorities on request.

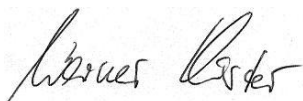
The authorized representative for the compilation of the special technical documentation is:

name:	Christian Bley	capacity:	CE Beauftragter
company:	isel Germany GmbH	address:	Bürgermeister-Ebert-Str., 40, D-36124, Eichenzell

The product (incomplete machine) is intended for incorporation into a machine or for assembly with other incomplete machines into a machine within the meaning of MRL, 2006/42/EC, Article 1, Section (1), letter a.

The commissioning of the incomplete machine (product) is prohibited until the machine in which this product has been incorporated or of which it is a component complies with the requirements of all relevant directives and this complete machine has a CE marking.

Eichenzell, 07.02.2024



Werner Kister, Chairperson isel Germany GmbH

1.5 General data, contact persons

Manufacturer	isel Germany GmbH Bürgermeister-Ebert-Str., 40 D-36124, Eichenzell +49 6659 981 800 +49 6659 981 782 info@isel.com
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You can reach our contact persons for technical advice and sales as well as service using the contact details listed here.

Technical advice and sales	+49 6659 981 800 +49 6659 981 800
Service and support	+49 6659 981 800 support@isel.com



1.6 User requirements




User groups

Capacity	Training, qualification
Operator/skilled worker	Instruction in the operation of the machine
Machine setter	Instruction in the operation of the machine Instruction in the safety functions of the machine
Electrical maintenance engineer	Electrician Instruction in the operation of the machine Instruction in the safety functions of the machine
Mechanical maintenance engineer	Specialist in pneumatics Instruction in the operation of the machine Instruction in the safety functions of the machine

1.7 Explanation of symbols and instructions

Notes on hazards that occur in connection with work on the machine are marked as follows in these Assembly instruction. They warn you of possible personal injury or property damage or give you work aids.

NOTE	
	If, when a dangerous situation occurs, the consequence of an accident is at most damage to property, the notice bears the mark "NOTE".
⚠ CAUTION	
	If, when a dangerous situation occurs, the result of an accident is at most a minor injury, the notice bears the marking "CAUTION".









⚠ WARNING	
	If an accident resulting in serious or fatal injury is possible when a hazardous situation occurs, the notice carries the label "WARNING".
Information	
	Indicates important information, application tips and useful hints for proper work.
Environment	
	Information concerning environmental protection is marked in this way.
/ Number /	
Refers to a document in the list of applicable documents. See chapter 1.3	

1.8 List of abbreviations

	Declaration	
EN	European Norm	Harmonised European Standard
ISO	International Organization for Standardization	International Organization for Standardization
LES	Linear unit with spindle drive (LES4, LES5 and LES6)	Components used in the machine.
Gantry	also called gantry mode or gantry axis	Two synchronously running linear or rotary units with separate drives which can be mechanically connected to each other are considered as one drive axis. Both drives are operated angle-synchronously via the controller and the control software.
PSA	Personal protective equipment	e.g. gloves, work shoes, safety goggles, hearing protection

1.9 Symbols used in the Assembly instruction and on the machine

The use of the symbols is in accordance with the valid regulations of the country of operation.

warning symbol	description
	General warning sign
	Warning against hand injuries
	Warning of danger of pulling in
	Warning against hot surfaces
mandatory sign	description
	Use eye protection!
	Use hand protection!
	Use foot protection!
	Request to read instructions and regulations

2 Overview

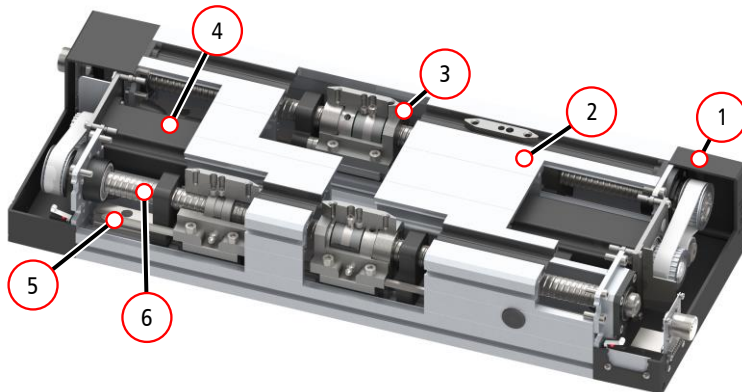
2.1 General information

In this chapter you will first get an overview of the mechanical design, the installation or assembly of the linear units as well as a description of the mode of operation. Then the various linear units are explained in detail.

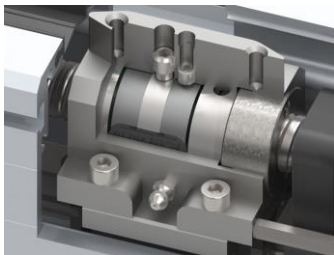
The instructions for commissioning / parameterization and user programming of the axis system depend on the motors used, the corresponding controllers with output stages and their documentation.

General structure of the linear units of the iLE series

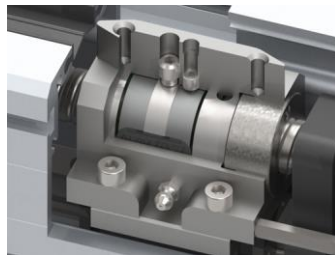
The structure of the linear units is shown in the following pictures, drawings and parts lists.



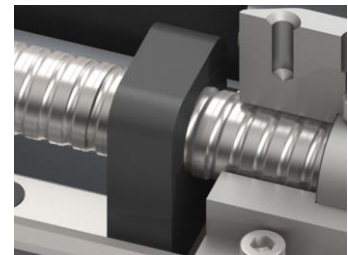
1. Plastic cap electromagnetically shielded
2. Clamping surface face milled
3. Shuttle with KG nut 20x10
4. Motor integrated in profile
5. Rail guide CPC20
6. KG-Spindle \varnothing 20mm



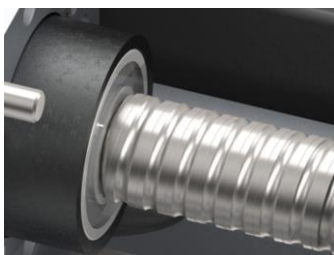
- Ball circulation in steel slide
- Glass fibre reinforced deflection parts with wipers



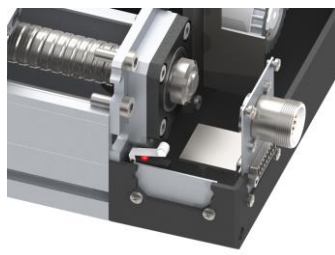
- Backlash-free pre-set KG nut with wipers
- Central lubrication device for KG nut and slide



- Spindle support from profile length L=1500



- End position buffering on both sides
- Counter bearing with needle bearing



- Integrated overrun limit switches
- Spindle bearing arrangement with angular contact ball bearings
- Axially backlash-free due to self-locking locknut



- Belt deflection and connection electronics covered by protective cap

2.2 Functionality of the linear unit

The linear units of the iLE series (spindle drive) have a modular design.

These linear units are based on steel shaft guides (CPC) with the corresponding shaft slides (WS), a ball screw drive and the optional motor drive module. The shaft slides are based on the rolling of steel balls on steel inserts guided in aluminum profiles and the precision steel shafts.

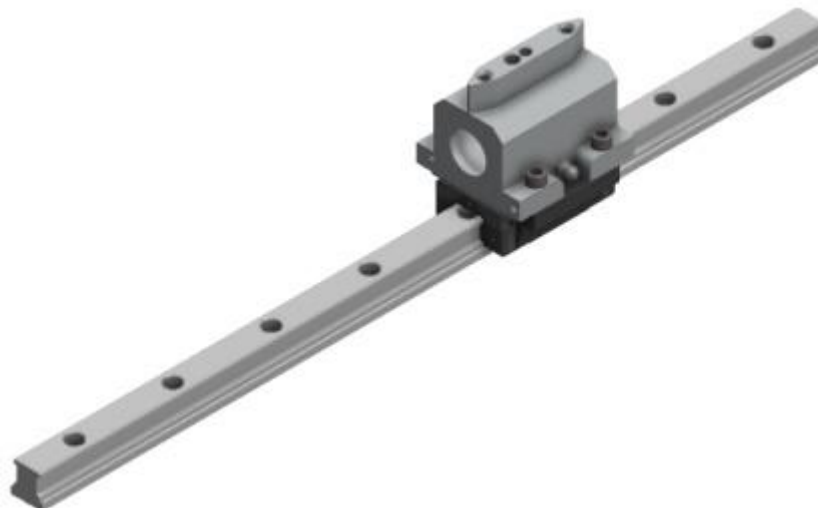


Fig. 1 - Steel shaft guide CPC20 with guide carriage

Ball screws convert a rotary motion into a linear motion. They consist of the ball screw spindle (6), the ball screw nut (7) with ball return system (1) and the balls (4) as rolling elements. The balls form the connection between spindle and nut by rolling in the raceways of the ball screw spindle and the ball screw nut. Ball screw nuts from isel Germany GmbH have several ball circuits with internal ball returns. The backlash-free adjustment of the barrel on the spindles is made possible by adjusting screws (3).



2.3 Versions of the linear units of the iLE series

2.3.1 Linear unit iLE 20/20

Usually the Handling axis iLE 20/20 are delivered without drive module. They are either prepared for mounting flange-mounted direct drive modules or integrated belt drive modules. However, the respective drive modules can also be mounted on request.

Ordering key iLE 20/20

ORDERING KEY

238 **XXX** **XXXX**

iLE20/20

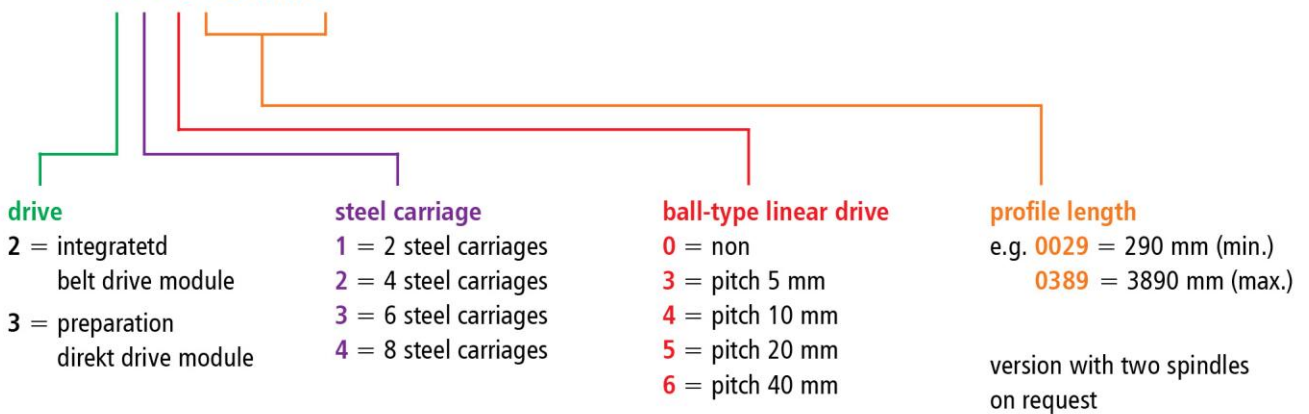


Fig. 2 - Ordering key iLE20/20

2.4 Technical data

2.4.1 Mechanical data and dimensions

2.4.1.1 Linear unit iLE 20/20

Aluminium profile iLE

Moment of inertia I_x	705 cm ⁴
Moment of inertia I_y	2807 cm ⁴
Center of gravity	39,5 mm
Cross-sectional area	54,22 cm ²
Material	EN AW-6060 T66
Anodizing	E6/EV1
Weight with steel rail guide and KG spindle	22,5 kg/m
Carriage weight (2x WS / 4x WS)	2,2 / 4,4 kg
Dimensions (W x H x L)	225 x 100 x 490... 3.890 mm

Permissible spindle speeds

iLE20/20Profile length L [mm]	Spindle pitch p [mm]	5	10	20	40
	max. permissible spindle speed n permissible [1/min]	max. permissible feed speed v permissible [mm/s]			
490	6000	500	1000	2000	4000
990	4000	333	667	1333	2667
1390	2000	167	333	667	1333
1490 ¹	4000	167	667	1333	2667
1990	2000	167	333	667	1333
2490	1500	125	250	500	1000
2990	1000	83	167	333	667
3490	700	58	117	233	467
3890	500	42	83	167	333

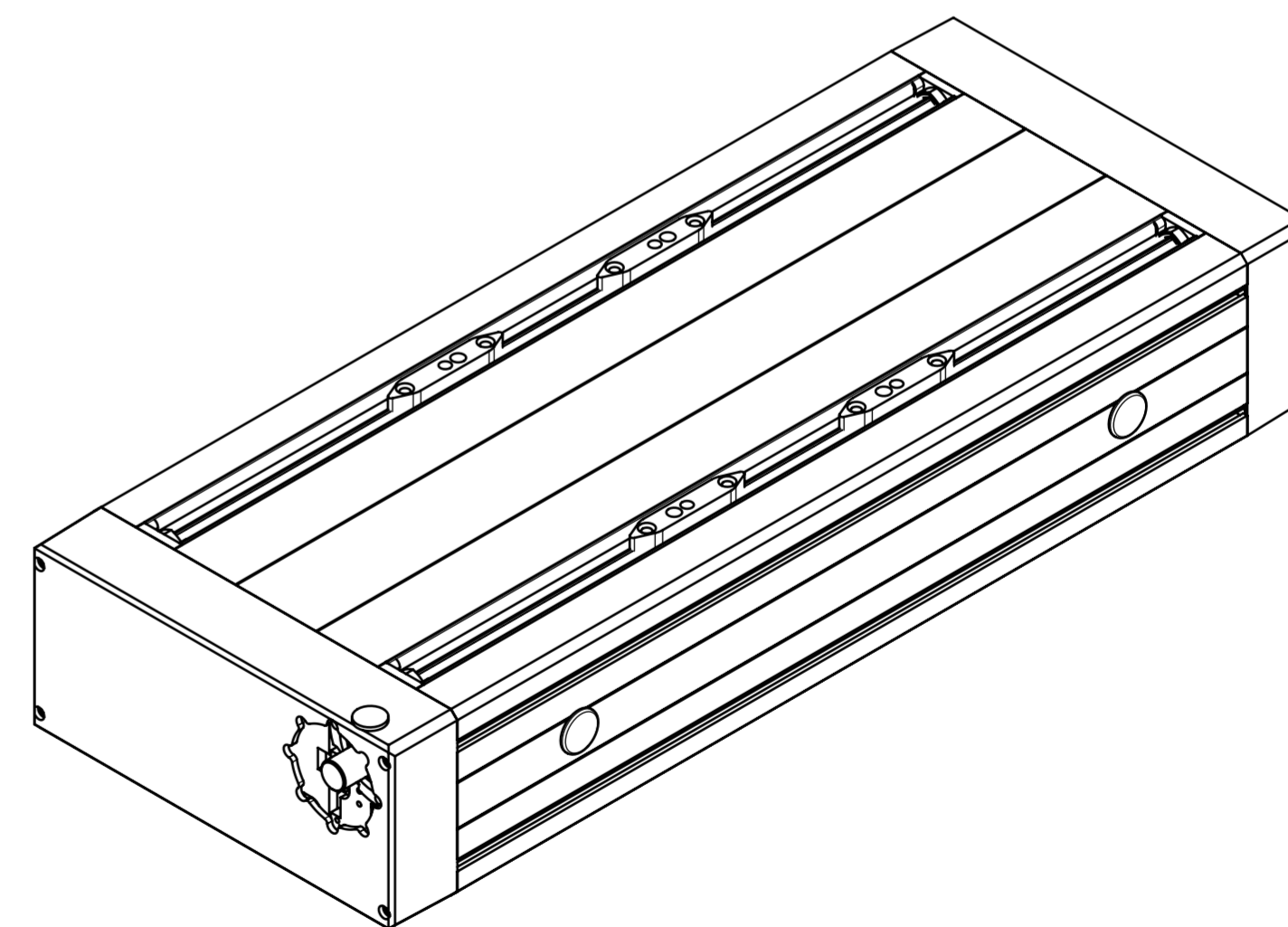
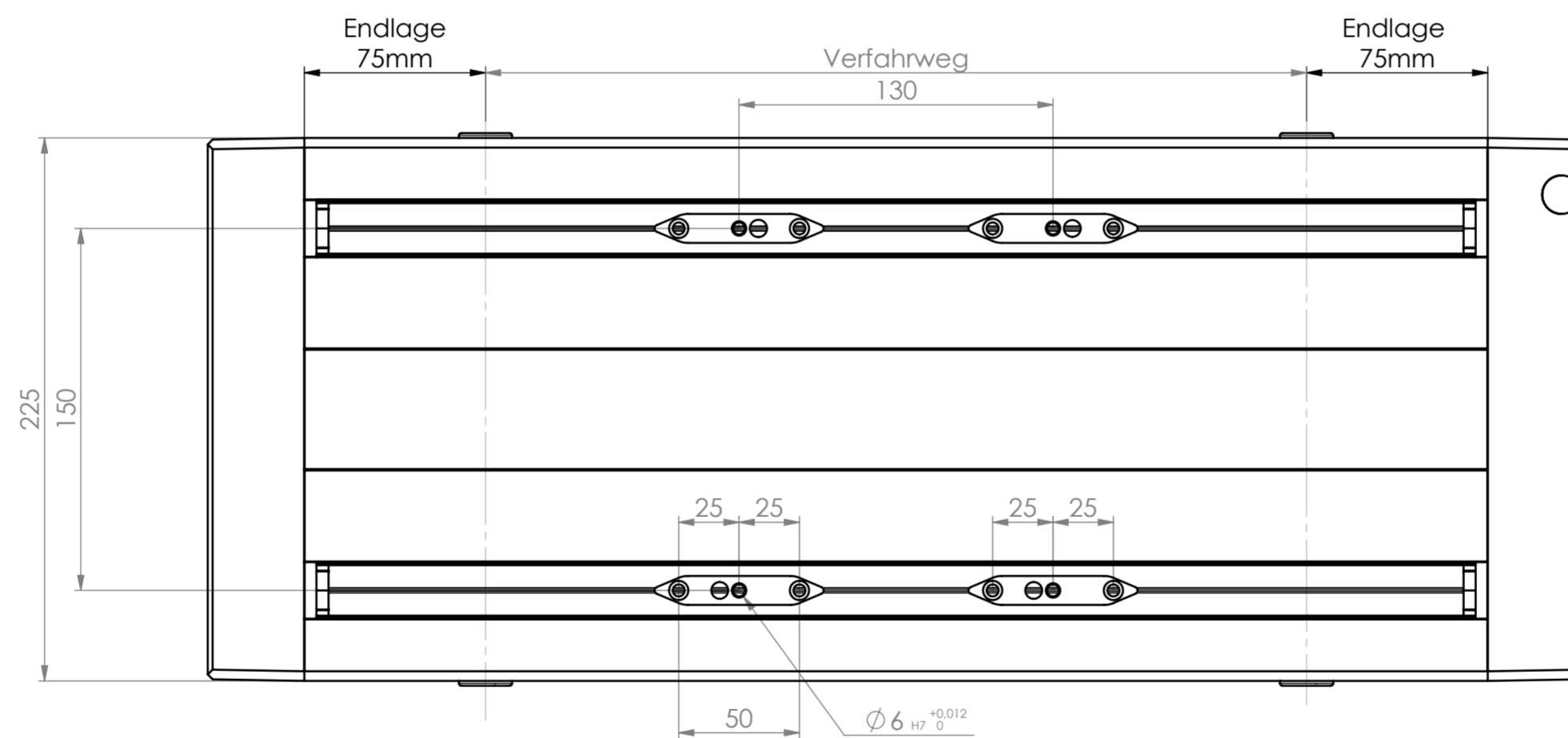
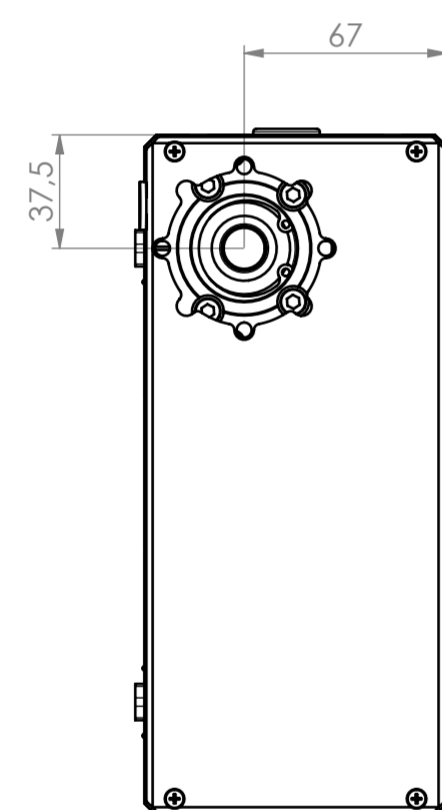
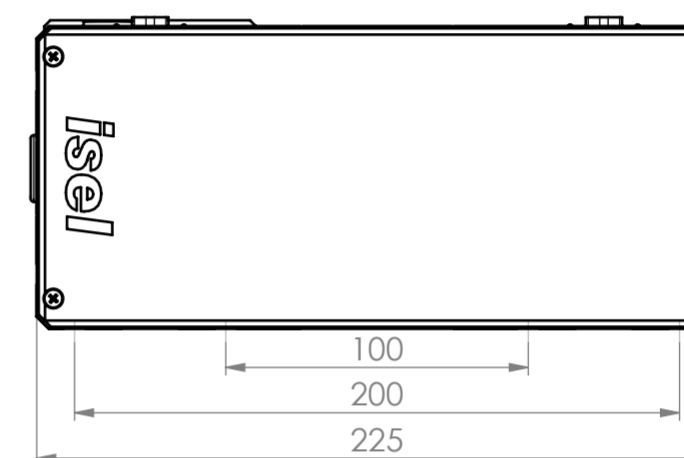
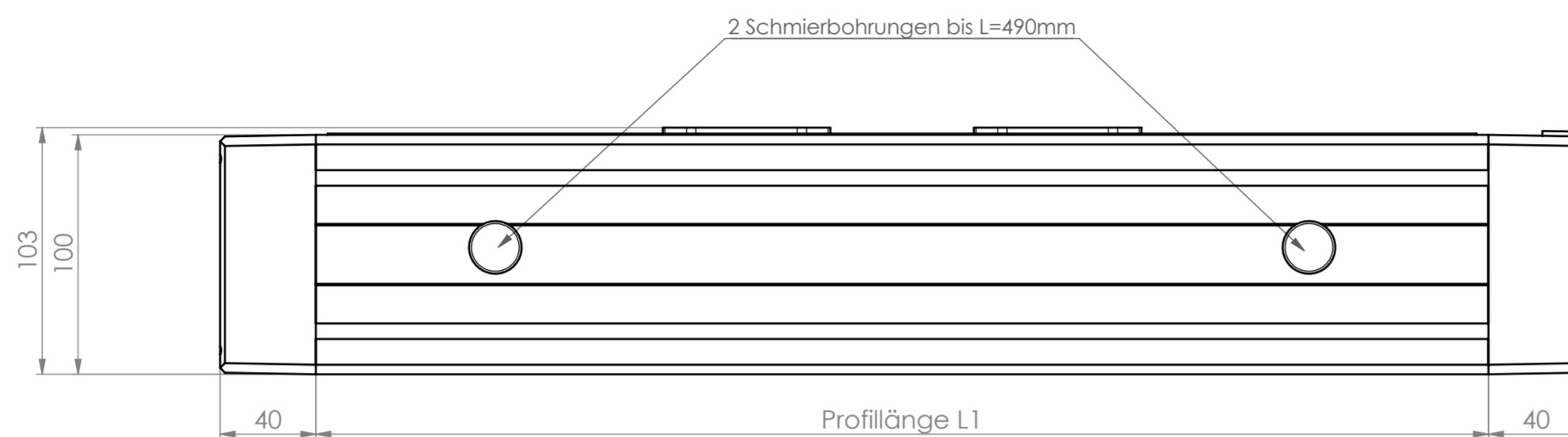
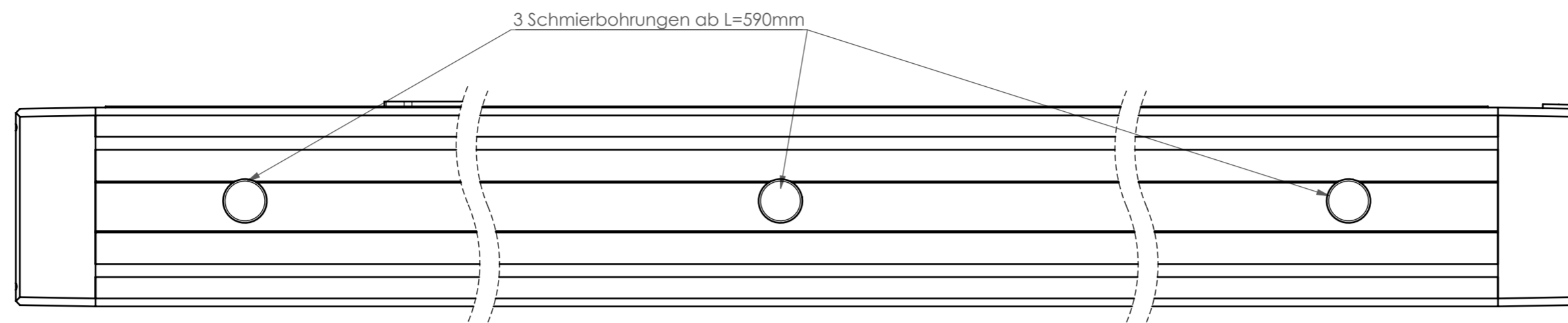
Carriage load

	iLE with 2 slides	iLE with 4 slides
C_0	40,020 N	60,000 N
C	22,811 N	34,200 N
F_1 stat.	40,020 N	60,000 N
F_1 dyn.	22,811 N	34,200 N

¹ 1490 - 3490 mm with spindle support

F ₂ stat.	40,020 N	60,000 N
F ₂ dyn.	22,811 N	34,200 N
M _{0x}	3,002 Nm	4,500 Nm
M _{0y}	800 Nm	3,900 Nm
M _{0z}	800 Nm	3,900 Nm
M _x	1,711 Nm	3,422 Nm
M _y	456 Nm	2,223 Nm
M _z	456 Nm	2,223 Nm

2.4.1.1.1 **Dimension sheet** iLE - Preparation direct drive according to DU4475



Bestellschlüssel

238 3XX XXXX

Profillänge

z.B. 0290 = 290mm (min.)
3890 = 3890mm (max.)

Kugelgewindetrieb

0 = ohne
3 = Steigung 5,0mm
4 = Steigung 10mm
5 = Steigung 20mm
6 = Steigung 40mm

Stahlschlitzen

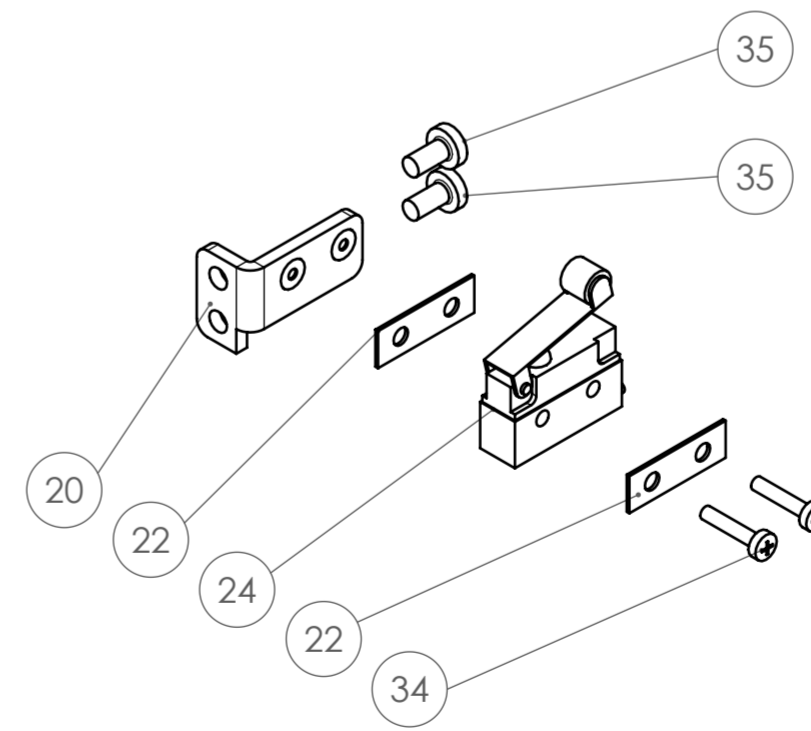
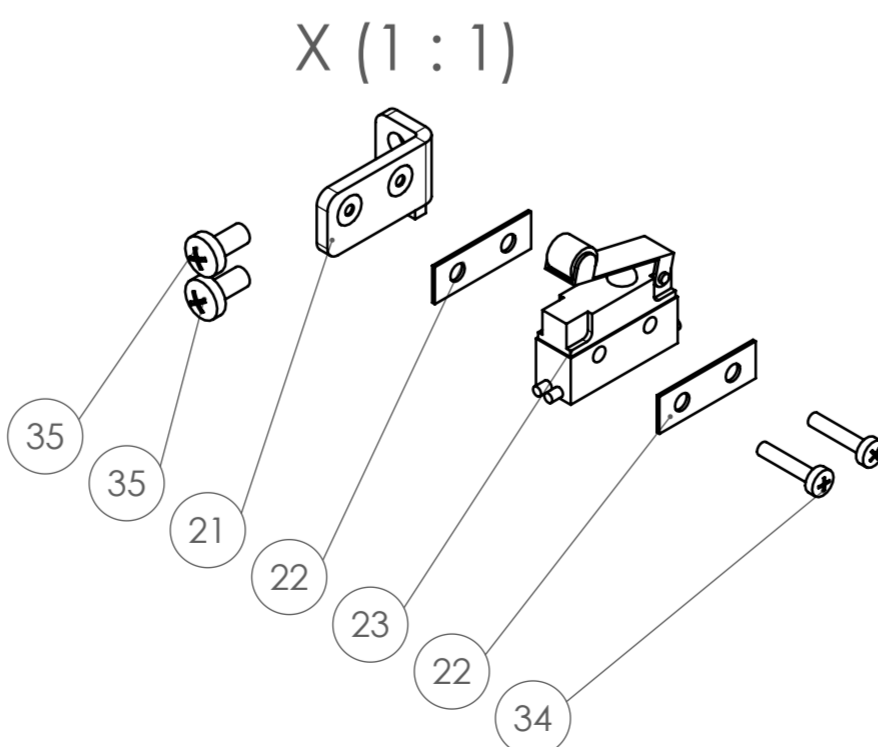
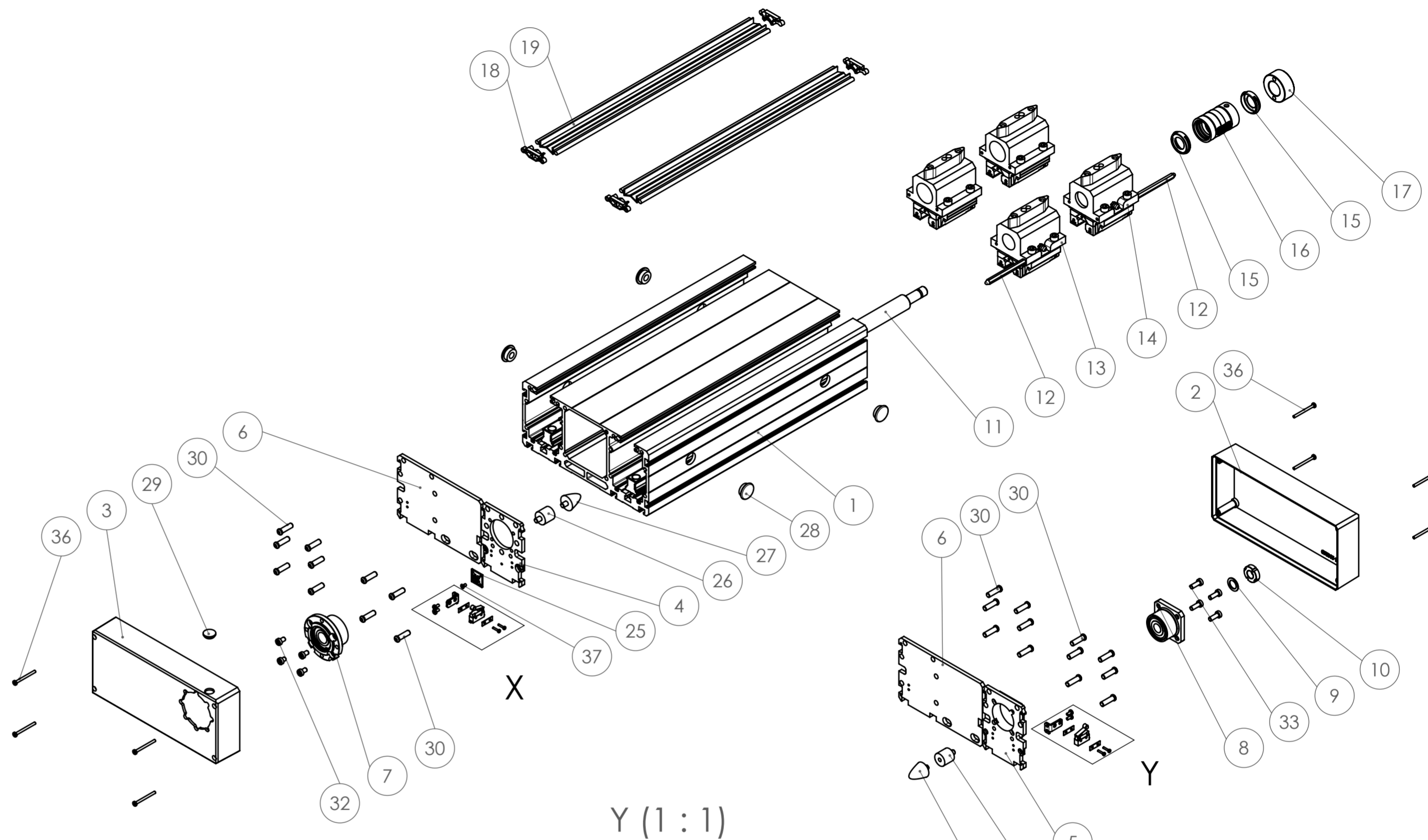
1 = 2 HRC 20
2 = 4 HRC 20

Verfahrweg
bei 2x HRC 20 - L1 - 150mm
bei 4x HRC 20 - L1 - 280mm

Schutzvermerk DIN ISO 18016 beachten observe protection note DIN ISO 18016		Toleranz tolerance DIN ISO 2768- mK		Maßstab scale 1:2,5		Oberfläche surface Werkstoff material		Gewicht weight Halbzeug raw material	
Datum date		Name		Benennung/description					
Bearb. 14.05.19		Arnold		Lineareinheit iLE 20/20 Direktantrieb - Loslager					
Gepr. 14.05.19		Ulrich T.		Blattgröße sheet size		DIN A2		Zeichnungsnummer drawing No. DU4475	
								Blatt von 1 4	
								Artikelnummer article No. 2383xx xxxx	
								Baugruppe assembly	
								Projektbezeichnung project name iLE 20/20	



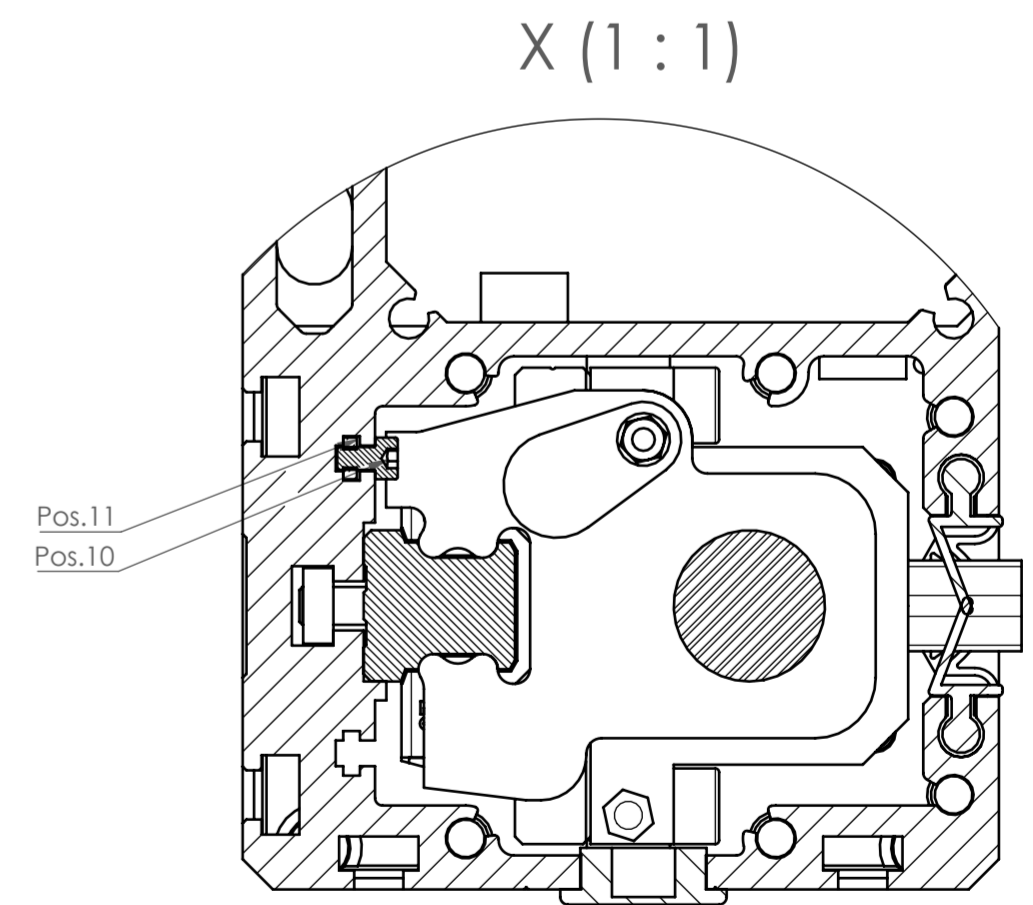
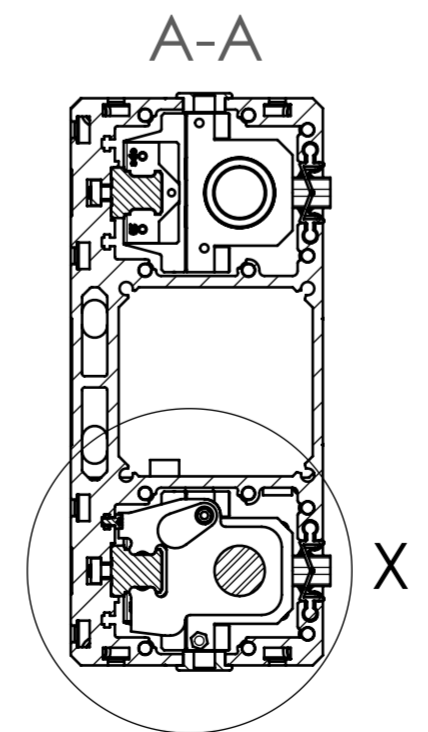
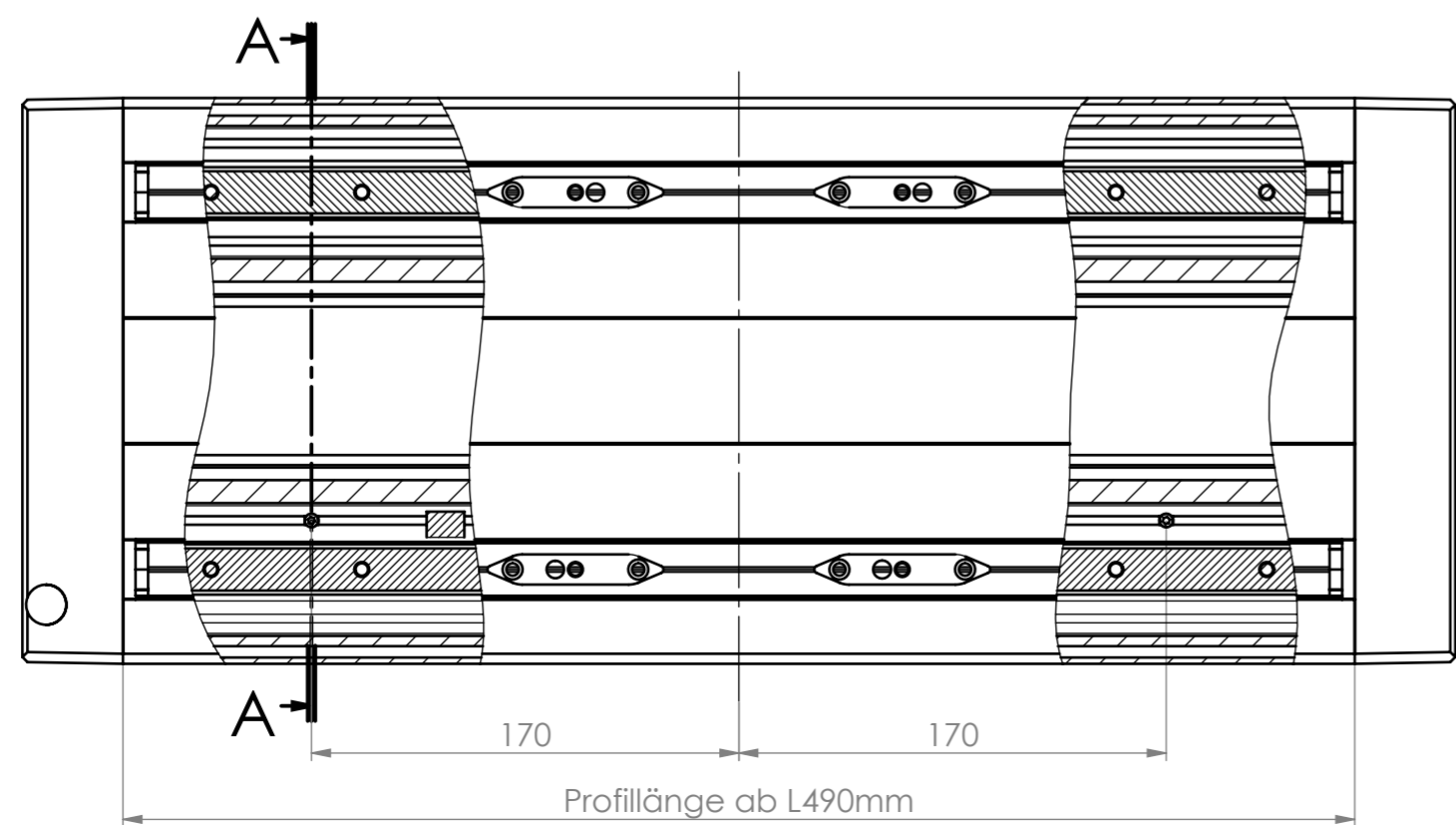
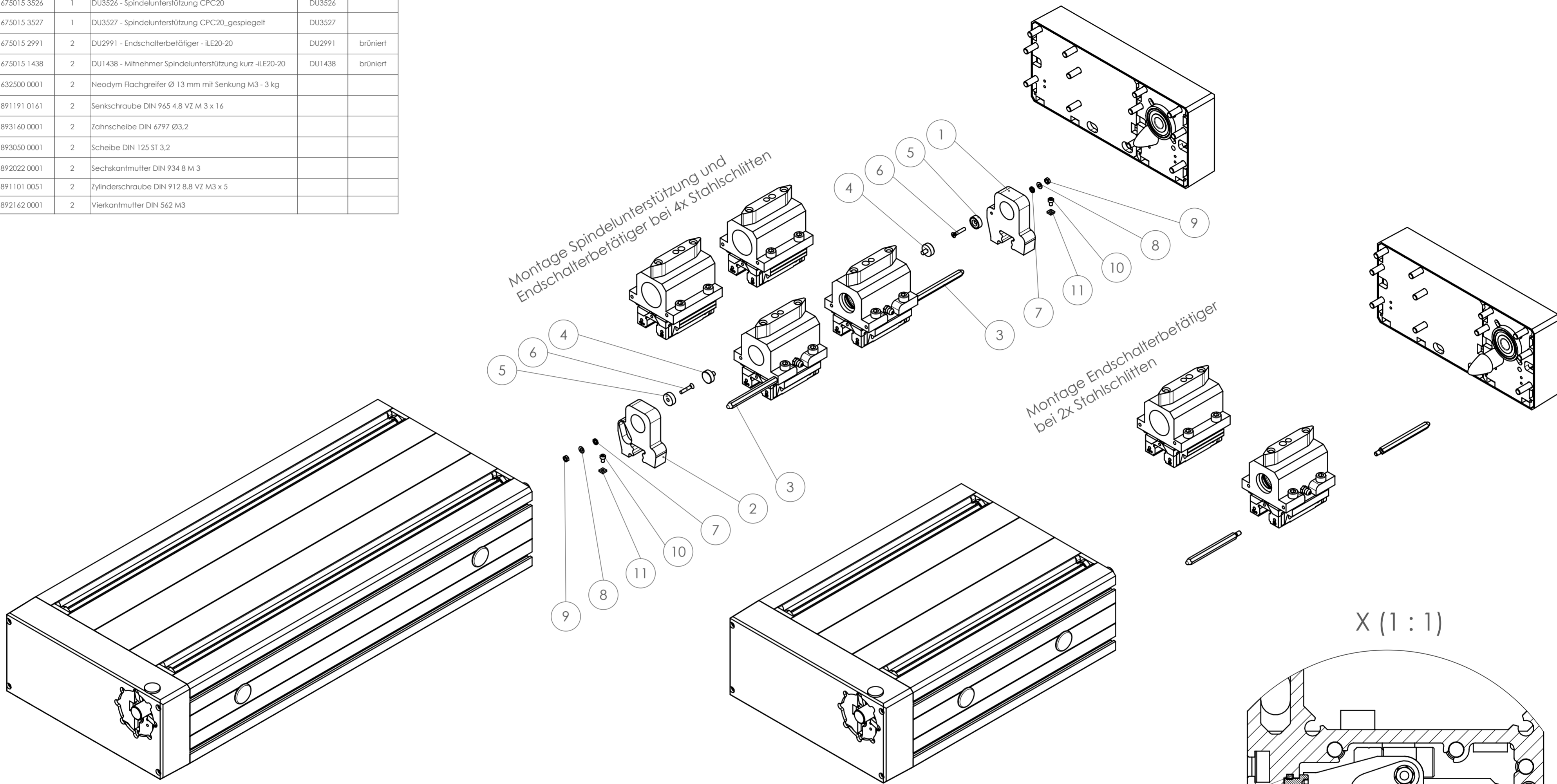
Pos.-Nr.	Artikelnummer	Menge	Benennung	Zeich.-Nr	Bemerkung
1	601030 xxxx	1	DU1431 - Achsprofil - iLE20-20	DU1431	
2	675015 1439	1	DU1439 - Abdeckhaube 225x100x40 - iLE20-20	DU1439	VDI3400 [24] - 27
3	675015 38161	1	DU3816 - Abdeckhaube 225x100x40 - Direktantrieb - iLE20-20	DU3816	VDI3400 [24] - 27
4	675015 4477	1	DU4477 - Endplatte - Gegenlager-Loslager - iLE20-20	DU4477	trowalisieren
5	675015 1445	1	DU1445 - Endplatte Direktantrieb und Gegenlagerseite - iLE20-20	DU1445	
6	675015 1444	2	DU1444 - Endplatte - Gegenlager - 150x97 - iLE20-20	DU1444	trowalisieren
7	623065 4479	1	DU4479 - Flansch für Direktantrieb Loslager	DU4479	
8	623065 1441	1	DU1441 - Lagerflansch Antriebsseite - iLE20-20	DU1441	
9	893310 0000	1	Scheibe DIN 988 ST 12 x 1		
10	890258 0011	1	Nutmutter DIN 981 M12x1		
11	21115x 3xxxx	1	DU4478 - KG-Spindel ø20 - L=460	DU4478	
12	675015 2991	2	DU2991 - Endschalterbetätiger - iLE20-20	DU2991	brüniert
13	623010 4170	3	DU4170 - Stahschliffen - ø20 - ohne KG-Mutter - iLE20-20	DU4170	
14	623010 1434	1	DU1434 - Stahschliffen - ø20 - für KG-Mutter - iLE20-20	DU1434	
15	699114 8248	2	EZ8248 - P0299 - Abstreifer für KG-Mutter 20 x 5_10_20	EZ8248	
16	613703 xxxx	1	EZ8253 - KG 20x10 - Fertigteil	EZ8253	
17	613500 3748	1	DU3748 - Feststellmutter für KG-Mutter ø20 - H17mm	DU3748	brüniert
18	693001	4	TE0398 - Endeinfassung für Dichtlippe	TE0398	
19	630900	4	Dichtlippe L - 380	TE2951	
20	675015 1448	1	DU1448 - Endschalterbefestigung - iLE20-20	DU1448	verzinkt
21	675015 1449	1	DU1449 - Endschalterbefestigung gespiegelt - iLE20-20	DU1449	verzinkt
22	610110 3745	4	SZ3745 P05xx - Montageblech Mirco-Schalter	SZ3745	
23	3970xx 1012	1	Endlagenschalter mit Rollenhebel		
24	397030 1012	1	Endlagenschalter mit Rollenhebel - 2pol. - L=400		
25	582009	1	Halter für Kabelbinder		
26	675015 3747	2	DU3747 - Abstandshalter Parabelfeder - iLE20-20	DU3747	trowalisieren
27	632126 2816	2	TE2816 - Schwingmetall Parabelfeder - ArtNr632126 2816	TE2816	
28	610019 0009	4	Kapsto-Abdeckung GPN 300 F-Type - D=22 d=16,7 H=7,5		
29	610006	1	Art.-Nr. 610006 Kapsto-Abdeckung GPN 910		
30	890584 0205	22	EZ9793 - Sonderschraube M6	EZ9793	
31	891123 0061	1	Zylinderschraube DIN 6912 8.8 M 5 x 6		
32	891123 0081	3	Zylinderschraube DIN 6912 8.8 M 5 x 8		
33	891123 0141	4	Zylinderschraube DIN 6912 8.8 M 5 x 14		
34	891181 0101	4	Linsenschraube DIN 7985 4.8 VZ M 2 x 10		
35	891181 0061	4	Linsenschraube DIN 7985 4.8 VZ M 3 x 6		
36	891181 0350	8	Linsenschraube DIN 7985 4.8 VZ M 3 x 35		
37	891191 0061	1	Senkschraube DIN 965 4.8 VZ M 3 x 6		



Schutzvermerk DIN ISO 18016 beachten observe protection note DIN ISO 18016		Toleranz tolerance DIN ISO 2768-mK		Maßstab scale 1:5		Oberfläche surface Werkstoff material		Gewicht weight Halbzeug raw material	
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Bearb. 14.05.19		Arnold		Lineareinheit iLE 20/20 Direktantrieb - Loslager		DU4475			
Gepr. 14.05.19		Ulrich T.		Artikelnummer article No.		2383xx xxxx			
Blattgröße sheet size		DIN A2		Baugruppe assembly		iLE 20/20			
Zust. Änderung/modifikation		Datum/date Name		Projektbezeichnung project name					



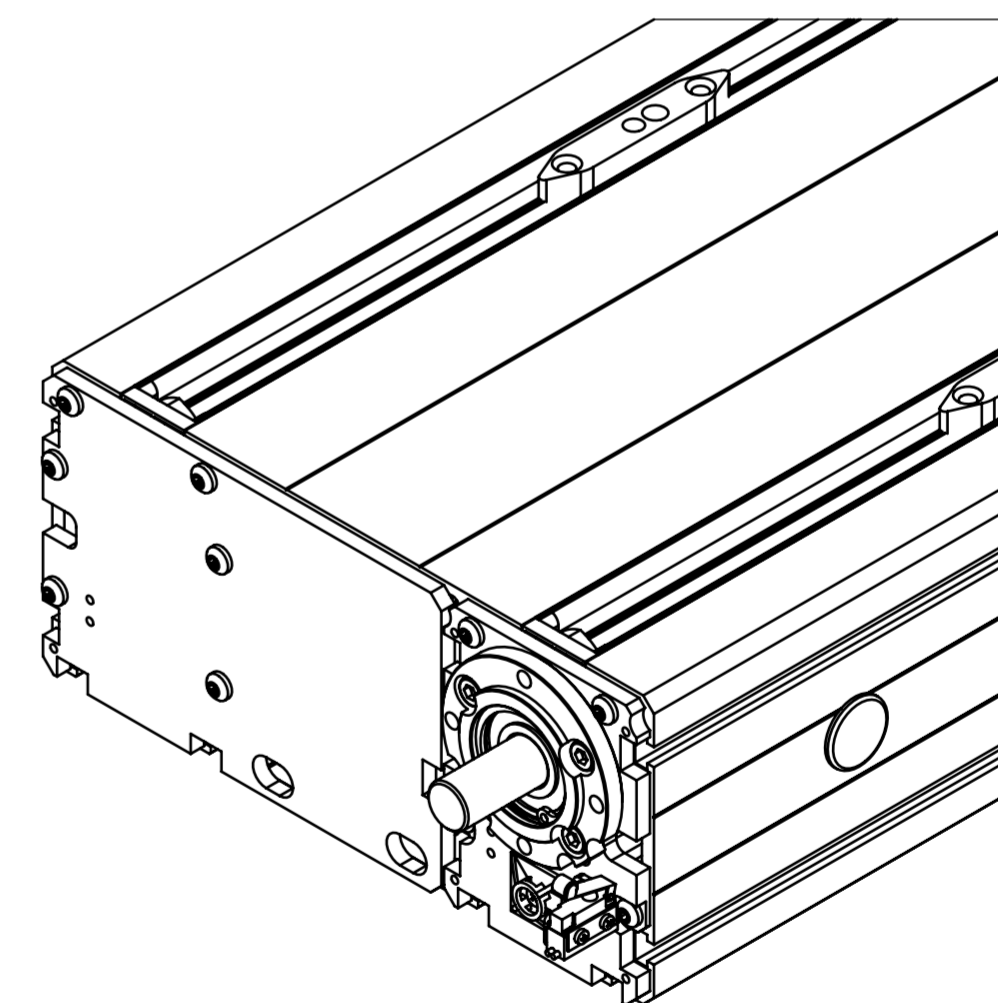
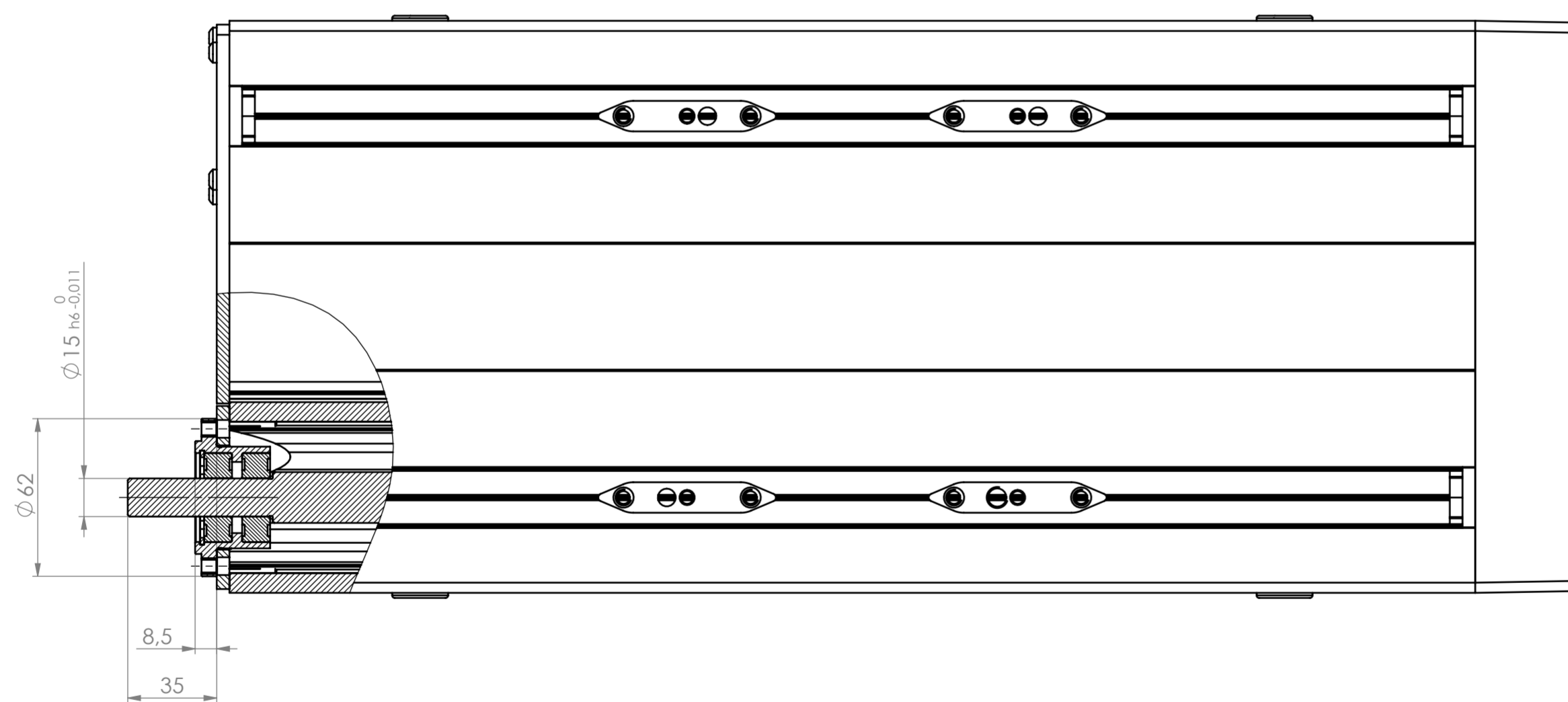
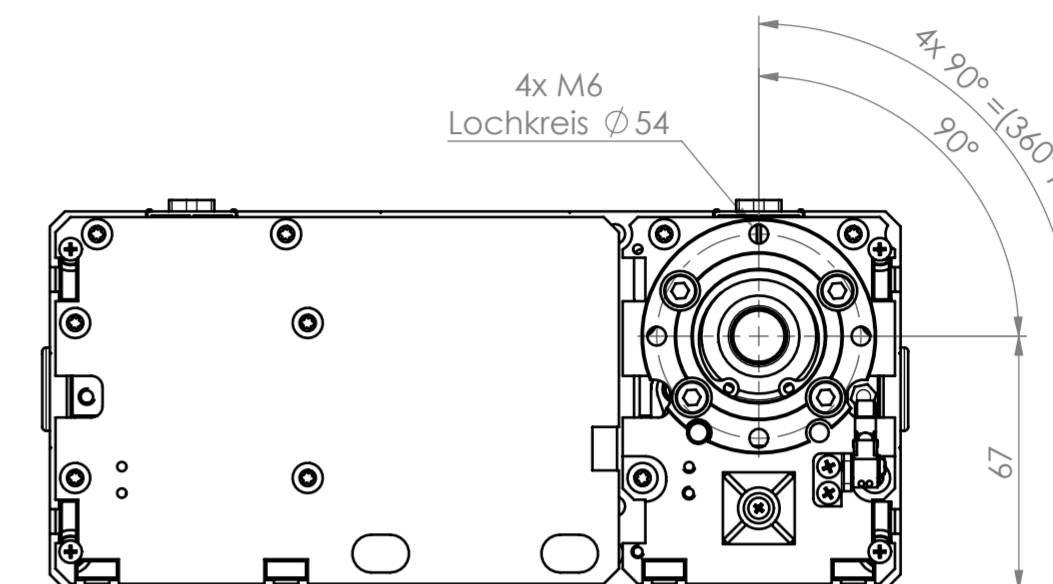
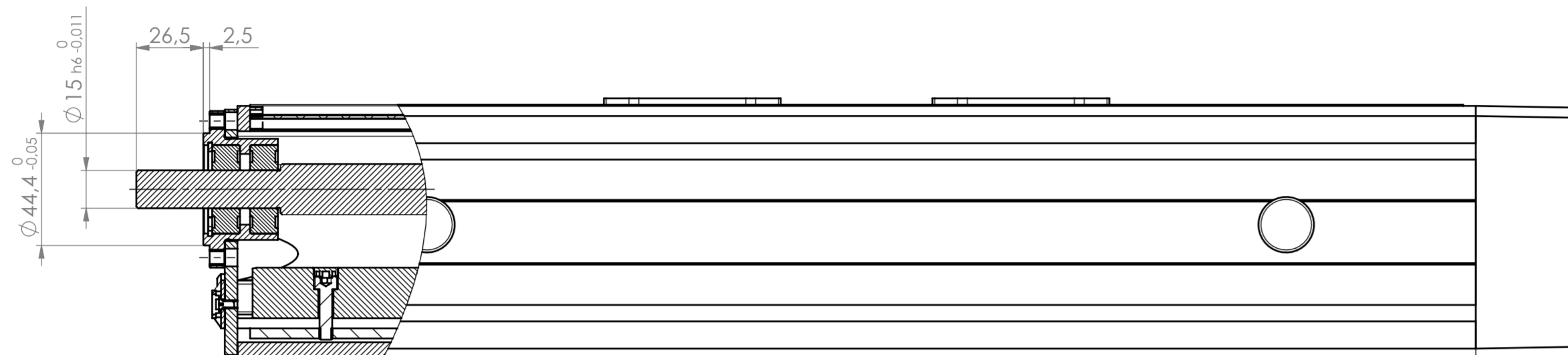
Pos.-Nr.	Artikelnummer	Menge	Benennung	Zeich.-Nr	Bemerkung
1	675015 3526	1	DU3526 - Spindelunterstützung CPC20	DU3526	
2	675015 3527	1	DU3527 - Spindelunterstützung CPC20_gespiegelt	DU3527	
3	675015 2991	2	DU2991 - Endschalterbetätiger - iLE20-20	DU2991	brüniert
4	675015 1438	2	DU1438 - Mitnehmer Spindelunterstützung kurz -iLE20-20	DU1438	brüniert
5	632500 0001	2	Neodym Flachgreifer Ø 13 mm mit Senkung M3 - 3 kg		
6	891191 0161	2	Senkschraube DIN 965 4.8 VZ M 3 x 16		
7	893160 0001	2	Zahnscheibe DIN 6797 Ø3,2		
8	893050 0001	2	Scheibe DIN 125 ST 3,2		
9	892022 0001	2	Sechskantmutter DIN 934 8 M 3		
10	891101 0051	2	Zylinderschraube DIN 912 8.8 VZ M3 x 5		
11	892162 0001	2	Vierkantmutter DIN 562 M3		



Schutzvermerk DIN ISO 18016 beachten observe protection note DIN ISO 18016		Toleranz tolerance DIN ISO 2768- mK	Maßstab scale 1:3	Oberfläche surface Werkstoff material	Gewicht weight Halbzeug raw material
Datum date		Name	Benennung/description		
Bearb. 14.05.19	Arnold	Montage Spindelunterstützung und Endschalterbetätiger			
Gepr. 14.05.19	Ulrich T.	Zeichnungsnummer drawing No.		Blatt 3	von 4
Blattgröße sheet size		DIN A2		Artikelnummer article No. DU4475	
				Baugruppe assembly 2383xx xxxx	
				Projektbezeichnung project name iLE 20/20	
Zust. Änderung/modifikation	Datum/date		Name		



Ansicht ohne Abdeckhaube



Schutzvermerk DIN ISO 18016 beachten observe protection note DIN ISO 18016		Toleranz tolerance DIN ISO 2768- mK	Maßstab scale 1:2	Oberfläche surface Werkstoff material	Gewicht weight Halbzeug raw material
		Datum date	Name	Benennung/description	
Bearb. 14.05.19		14.05.19	Arnold	Lineareinheit iLE 20/20 Direktantrieb - Loslager	
Gepr. 14.05.19		14.05.19	Ulrich T.	Zeichnungsnummer drawing No. DU4475	
Blattgröße sheet size		DIN A2		Blatt 4 von 4	
		Artikelnummer article No. 2383xx xxxx		Baugruppe assembly	
		Projektbezeichnung project name iLE 20/20			
Zust.	Änderung/modifikation	Datum/date	Name	isel [®]	

2.4.1.1.2 Dimension sheet iLE - Preparation integrated drive according to DU4480

2.4.2 Ambient conditions

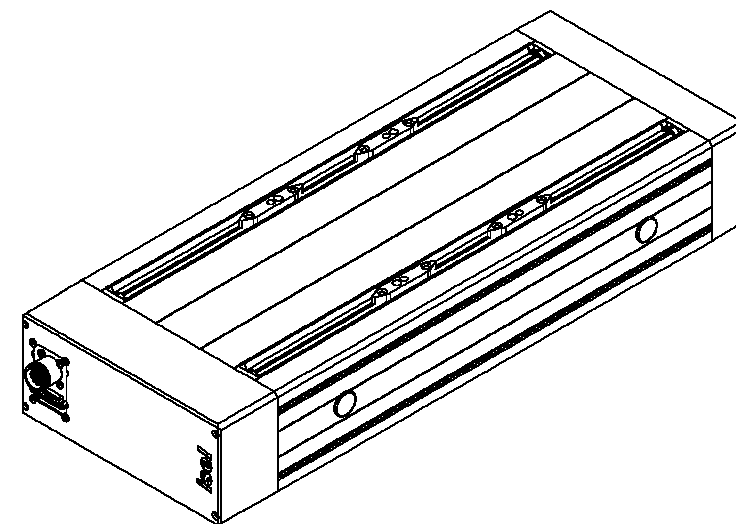
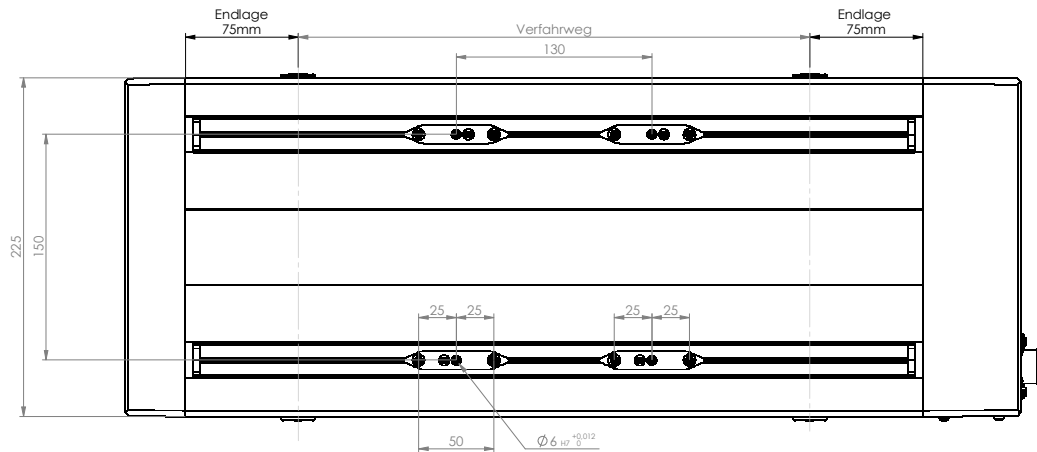
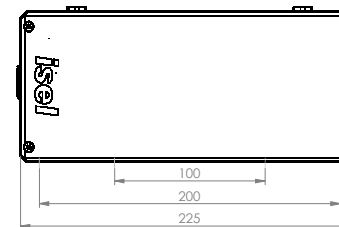
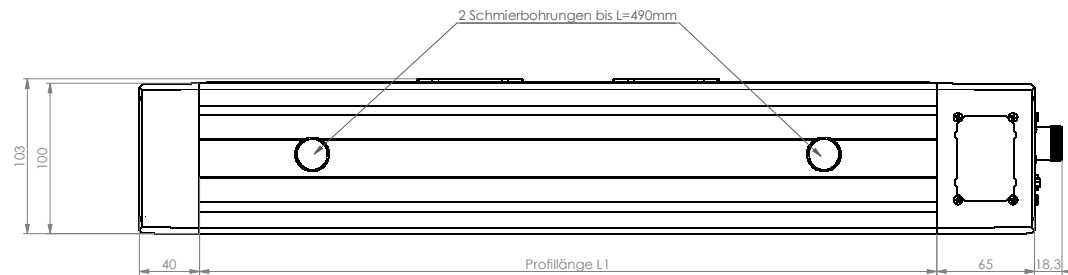
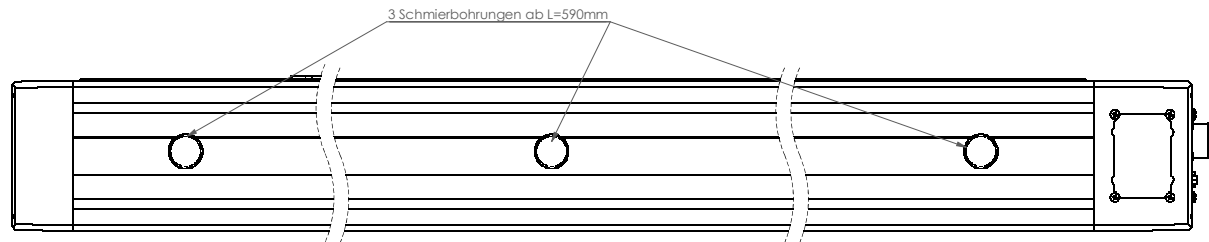
	Limit value
Installation site	Max. 2000m above sea level
Surrounding temperature	5° C to 40° C
Storage temperature	-5 to 50° C
Humidity	Max. 85% non-condensing

2.4.3 Sound pressure

The Machinery directive 2006/42/EC obliges the manufacturer and/or the distributor of a machine to indicate the noise emitted by the machine in the operating instructions. The noise emission level at the workplace L_{pA} is the first thing required as a noise emission characteristic.

Noise emission	Unit	Values
A-weighted emission sound pressure level L_{pA} at work	dB(A) re 1 pW	68
Applied measuring method	[Standard]	DIN EN 13128:2009-09 Appendix D
Sound power level L_{WA}	dB(A) re 1 pW	
Uncertainty K_{WA} in dB	dB(A)	
Applied measuring method	[Standard]	
Maximum value of the instantaneous C-rated sound pressure at the workstations of the operating personnel	dB(C)	

The numerical values mentioned are emission and not necessarily safe working levels. The factors influencing the actual exposure level of the employees include the characteristics of the work area, other noise sources, like the number of machines, the other processes running nearby and the processing itself. This information should allow the machine user to make a better hazard and risk assessment. Any necessary measures concerning the use of personal protective equipment result from the risk assessment of the workplace in according with the Ordinance on Industrial Safety and Health (BetrSichV) or other national requirements in the country of operation.



Bestellschlüssel

238 2XX XXXX

- Profillänge
z.B. 0290 = 290mm (min.)
3890 = 3890mm (max.)
- Kugelgewindtrieb
0 = ohne
3 = Steigung 5.0mm
4 = Steigung 10mm
5 = Steigung 20mm
6 = Steigung 40mm
- Stahlschlitzen
1 = 2 HRC 20
2 = 4 HRC 20

Verfahrweg

- bei 2x HRC 20 - L1 - 150mm
- bei 4x HRC 20 - L1 - 280mm

Schutzvermerk DIN ISO 15016 beachten observe protection note DIN ISO 15016		Toleranz tolerance DIN ISO 2768- mK	Maßstab scale 1:2,5	Oberfläche surface Vwerkstoff material	Gewicht weight Halbzeug raw material
Datum date	Name	Benennung/description			
Bearb. 16.05.19	Arnold	Lineareinheit iLE 20/20 Motor integriert - Loslager			
Gepr. 16.05.19	Ulrich T.	Zeichnungsnummer Drawing No. DU4480			
Blattgröße sheet size	DIN A2	Anzahl/number Drawing No. 2382xx xxxx			
Zust. Änderung/modifikation		Datum/date		Blatt von 1 3	
		isiel®		Baugruppe assembly Projektbezeichnung project name iLE 20/20	

2.5 Type plate

The type plate is attached to the front left of the machine. Maintain the type plate in readable condition.

iselGermany		www.isel.com
Bürgermeister-Ebert-Straße 40	Tel.: +49 (0) 66 59 / 981 - 700	
D-36124 Eichenzell	E-Mail: info@isel.com	
<hr/>		
Handling axis		
iLE20/20		
item no.:	238xxx xxxx	
Prod. date:	xx/2022	
Serial no.:	xxxxxx /xxxxxx	
Made in Germany		


Fig. 3 - Type plate

3 Safety

This chapter informs you about possible dangers and about your protection options against these dangers when handling the machine.

You will receive information on personal and accident protection and on safety-related behaviour when working with this machine. The basic prerequisite for the safe handling and trouble-free operation of this machine is the knowledge of the safety instructions, the safety regulations and the safety equipment of the machine as well as their function. This information, in particular the safety instructions, must be observed by all persons working on the machine.

In addition, the generally applicable rules and regulations for accident prevention must be observed.

⚠ DANGER!	
	<p>Failure to observe the safety instructions in the operating instructions</p> <p>Failure to observe the safety instructions will result in serious injury or death!</p> <ul style="list-style-type: none"> > Carefully read this section of the operating instructions before connecting and commissioning the machine! > As with all technical systems, perfect functioning and operational safety are only guaranteed with this machine if the usual safety precautions as well as the special safety instructions are observed during operation. > Store the operating instructions near the machine

3.1 Operator's liability

Instruction duty

The safety in the plant can only be implemented in operational practice if all necessary measures have been taken. It is the operator's duty of care to plan these measures and to monitor the execution of the same.

- The operator must instruct the employees before the initial start-up of the potential risks, remaining risk and measures during the use of this machine so that they can use it. This instruction must be given to every employee operating the system or being in the immediate danger zone. The operating personnel must have understood the instruction and it must be ensured that it is complied with.
- The knowledge of the operation and maintenance according to the following maintenance, repair and cleaning regulations of the machine is a prerequisite for the perfect machine operation. The machine operator must have an appropriate qualification for such tasks (to be able to carry out the corresponding work according to the state of the art). This qualification includes the ability to assess the remaining risks.
- The plant may only be used under a technically perfect condition as well as according to its intended purpose and with regard to safety and dangers by taking into consideration these operating instructions! Especially, malfunctions which could impair safety must be remedied immediately!
- The machine operator is responsible for ensuring that these operating instructions are supplemented and followed by in-house instructions concerning work instructions, supervision and reporting duty, organization of work, personnel qualifications, etc. The individual competencies related to the different tasks on and with the machine and in the immediate vicinity of the same must be clearly defined, identified and observed by the operator. In this context, potential hazards and risks must be taken into account.
- The applicable work safety regulations as well as any other applicable rules and regulations concerning work safety and health protection must be observed.

- The competences for the various activities in the context of the operation, maintenance and repair of the plant must be clearly defined and complied with. This is the only way to avoid wrongdoing - especially in dangerous situations.
- The operator must oblige the operating personnel to wear personal protective equipment if this is provided by the local regulations. If necessary or required by the regulations, an additional personal protective equipment must be used.
- If safety-relevant changes to the operating behaviour or malfunctions occur on the plant, the latter must be immediately shut down and the process must be reported to the responsible body/person in charge!

Determination of technological parameters

- The machine operator is responsible for the selection and processing of the materials. In addition, a risk assessment of the workplace according to the paragraphs 5 and 6 of the Work Protection Law ArbSchG must be carried out.

3.2 Intended use

Die Lineareinheiten werden für die lineare Bewegung von Lasten, die fest auf dem Führungsschlitten / der Schlittenplatte oder dem Trägerprofil montiert sind, in einer nicht explosionsgefährdeten Umgebung unter den für dieses Produkt definierten Betriebs- und Umgebungsbedingungen eingesetzt. Die Einbaulage kann beliebig sein (horizontal, vertikal oder geneigt).

The linear units are an incomplete machine (see article 2g of Machinery directive 2006/42/EC. An incomplete machine is defined there as follows (quote)

"A partly completed machinery" means an assembly which is almost a machine, but which cannot fulfil a specific function by itself. A drive system constitutes a partly completed machinery. A partly completed machinery is only intended to be incorporated into or assembled with other machinery or with other partly completed machinery or equipment in order to constitute machinery within the meaning of this Directive."

The product Linear unit Handling axisiLE 20/20 is intended to be incorporated into a machine or other partly completed machinery.

The intended use includes

- the observance of Assembly instruction, the safety instructions and accident prevention regulations.
- the operation and maintenance of the linear unit exclusively by instructed technical personnel
- the use of the linear unit exclusively in technically correct condition.
- the compliance with the intervals specified in the maintenance plan.
- to use only materials and accessories, approved by isel Germany GmbH as well as the spare parts listed in the Assembly instruction
- the use of the linear unit in dry rooms (workshops, laboratories or similar rooms) and industrial plants (maximum ambient temperature: 40°C)

The product must not be used:

- in the open air
- for the transport of persons
- in the food sector
- in the clean room


Any other use than that described above, is not intended and may result in personal injury or damage to property.

3.2.1 Reasonably foreseeable misuse

Reasonably foreseeable misuse includes

- any use beyond the intended use.
- the processing/use of non-approved components.
- operation outside the specified performance data.
- disregarding the documentation
- unauthorized additions and modifications that impair safety
- if faults are not rectified immediately, that affect safety

3.3 Safety instructions

⚠ WARNING!	
	<p>Non-compliance with the safety instructions in the operating manual</p> <p>Non-observance of the safety instructions may cause slight to severe injuries and damage to the machine!</p> <ul style="list-style-type: none"> > Read this section of the operating manual carefully before connecting and commissioning the machine! > As with all technical systems, perfect functioning and operational safety of this machine can only be guaranteed if both the generally applicable safety measures and the special safety instructions are observed during operation. > Keep the operating instruction near the machine

3.3.1 General safety instructions

Safety instructions

The following safety and hazard warnings are for your protection, the protection of third parties and the protection of the product. You should therefore observe them without fail.




- Observe all instructions attached to the product.
- The safety rules and regulations of the country in which the product is used/applied must be observed.
- The valid regulations for accident prevention and environmental protection must be observed.
- Persons who assemble, operate, disassemble or maintain this product must not be under the influence of alcohol, other drugs or medicines that influence the ability to react.
- Check the product for obvious damage and only use it in a technically perfect condition.
- The product must not come into direct contact with moisture or water. The system (the machine/plant in which the product is installed) is only suitable for dry indoor areas. When changing from cold to warm environments, allow the product to warm up for a few hours before use, otherwise damages from condensed water may occur.
- Do not install the product near equipment that generates strong electromagnetic fields. This could interfere with the function. Avoid environments with direct sunlight, intense heat, cold, humidity or wetness.
- Only accessories and spare parts approved by isel Germany GmbH may be used in order to avoid personal hazards due to unsuitable spare parts.
- Observe the technical data and ambient conditions specified in the product and accessory documentation.
- Do not put the product into operation until it has been determined that the end product (for example, a machine or system) in which the product is installed complies with the country-specific regulations, safety regulations and standards of the application.
- Ensure that the product is not modified or converted unless permitted in the product documentation.


- Never disassemble the product.
- Parts of the product can become very hot during the operation. Allow these parts to cool before touching.
- Do not place any loose objects on the product.


3.3.2 Special safety instructions

You have to work on and with the machine exclusively with authorised, trained and instructed personnel. These personnel must have received special instruction about potential dangers (especially about remaining risk).


product-specific safety instructions

NOTE!	
	<p>Service life / wear</p> <p>Non-observance of the safety instructions may result in damage to property!</p> <ul style="list-style-type: none"> > The Handling axis is not designed for continuous operation and must be serviced at regular intervals. In order to be able to detect possible failures due to wear or material fatigue at an early stage, regular visual and functional checks must be carried out. > Unauthorised conversion and/or modification of the Handling axis is not permitted. > Do not subject the Handling axis to any impermissible mechanical load under any circumstances. Please observe the technical data in this Assembly instruction. > During operation, the Handling axis must not be covered by supply lines, objects or tarpaulins, packaging material or fabrics, etc., as this may cause mechanical damage or heat accumulation and possibly lead to fire.
NOTE!	
	<p>Falling / sagging during vertical mounting</p> <p>Non-observance of the safety instructions may result in damage to property!</p> <ul style="list-style-type: none"> > The ball screws in the linear units are generally not self-locking. For vertical installation, the motor of the linear unit should therefore be equipped with a holding brake (in this case, the spindle pitch of the ball screw and the weight of the loaded carriage plate must be calculated), which secures the movable guide carriage of the linear axis against falling down when the power is switched off. > If no holding brake (e.g. magnetic brake) is mounted on the motor, another (electro-)mechanical brake must be used, e.g. on the counter bearing of the ball screw. Further information on this can be found in the specialist journal "Gravity loaded axes" published by the DGUV Wood and Metal Division.
NOTE!	
	<p>electrical drives</p> <p>Non-observance of the safety instructions may result in damage to property and/or personal injury!</p> <ul style="list-style-type: none"> > Before handling the product, read and observe the safety instructions in the manuals regarding the motor, controller and control system.

NOTE!	
	<p>Transport</p> <p>Non-observance of the safety instructions may result in damage to property and/or personal injury!</p> <ul style="list-style-type: none"> > Please observe the transport instructions. > During transport, support the product only in the designated places. > Observe the weight and use suitable and tested load carrying equipment for lifting and transport.

NOTE!	
	<p>Commissioning / Operation</p> <p>Non-observance of the safety instructions may result in damage to property and/or personal injury!</p> <ul style="list-style-type: none"> > Only operate a fully installed and secured product. > Do not touch into moving parts (e.g. slides). > In case of excessive noise, wear suitable hearing protection. > Ensure that only persons authorised by the operator operate adjustment devices on components and parts within the scope of the intended use of the Handling axis adjustment devices and have access to the working area of the Handling axis. > Sicherstellen, dass nur vom Betreiber autorisierte Personen Zutritt zum unmittelbare > In case of emergency, fault or other irregularities, shut down the product and secure it against restarting. > Observe safety functions and equipment and do not put them out of operation.

3.3.3 Fire protection

ATTENTION!	
	<p>Risk of fire if machine parts overheat due to overload, dust formation and irregular cleaning / maintenance of motors and storage of drives!</p> <p>Non-observance of the safety instructions may result in damage to the Handling axis and the environment!</p> <ul style="list-style-type: none"> > Regular instruction of the operating personnel. > Pollutions on the components must be removed immediately. > Regularly check the tool for wear. > Do not operate components such as motors and gears above the specified nominal values. > Maximum feed speed (with optional drive motor mounted) must not be exceeded.

3.4 Personal Protective Equipment

In the following chapters, the operating instructions explicitly describe the use of the personal protective equipment.

WARNING!




Do not wear personal protective equipment!

If you do not wear the specified personal protective equipment or you use faulty personal protective equipment, you may be involved in an occupational accident.

- > Always wear the instructed personal protective equipment.
- > Immediately exchange damages personal protective equipment.

4 Transport

Below you will find information on how to transport the machine correctly, without damaging it and without endangering persons.

NOTE!	
	<p>Improper lifting of the Handling axis</p> <p>If you do not lift the Handling axis correctly, damage may occur due to deflection!</p> <p>If you do not lift the Handling axis correctly, injuries to the musculoskeletal system may occur due to incorrect lifting!</p> <ul style="list-style-type: none"> > Find out about the weight of the unit. > Please observe the DGUV and BG instructions for the correct carrying and lifting of loads. > Avoid long transport distances after lifting. If necessary, use a transport table or place the unit on a pallet to transport it further with a suitable industrial truck.

The following specifications should be observed:

- Lifting by one person:
 - max. ≤ 20 kg and/or max. ≤ 1000mm length.
 - Encompassing the unit with two hands, with maximum distance between the right and left hand.
- Lifting by two persons:
 - max. ≤ 40 kg and/or max. ≤ 2000mm length.
 - Encompassing the unit with two hands, with maximum distance between the right and left hand.
 - Encompassing the unit at the beginning and end of the last third to prevent the unit from bending in the middle.
- Lifting by several persons:
 - max. ≤ 60 kg und/oder max. ≤ 3000mm Länge.
 - Encompassing the unit with two hands, with maximum distance between the right and left hand.
 - Encompassing the unit at the beginning or end of the last third and in the middle to prevent the unit from bending in the middle.

5 Assembly and commissioning

5.1 Assembly

Mounting on the guide profile

Free positioning

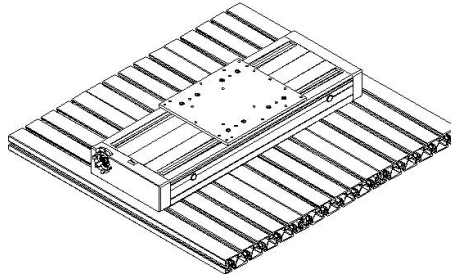


Fig. 4 - Handling axis iLE 20/20 for installation as free standing



You can place the Handling axis on a frame, a work table or any other suitable stable base. Select the installation location so that the product cannot fall down by itself or by an impact or pulling on the cable.

Rack mounting (recommended)

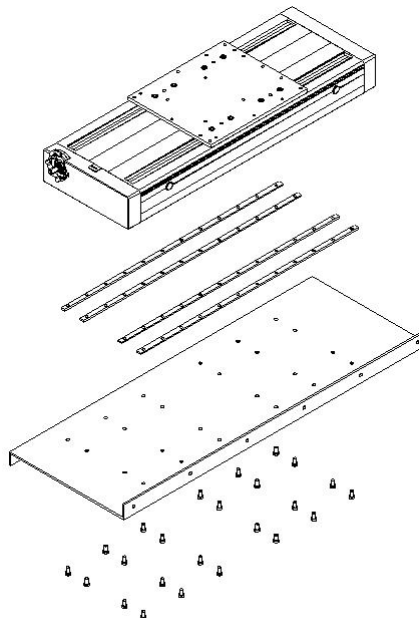



Fig. 5 - Handling axis iLE 20/20 for rack mounting

The shaft mounting profiles have several T-slots on the underside to mount the Handling axis to your frame. These are used to accommodate threaded rails or sliding nuts (accessories). Use fastening screws - M6 to mount the Handling axis from below on your frame.

	<p>Ensure that the mounting surfaces are sufficiently clean.</p>

The used aluminium profiles are extruded profiles which, due to the manufacturing process, showed deviations in terms of straightness and torsion. The tolerance of this deviation is defined in DIN EN 12020-2. Handling axis are face milled and therefore these deviations are usually undercut. In order to achieve the desired guiding accuracy and running behaviour, however, it is necessary to clamp the axis system on a correspondingly precise bearing surface or to align it using levelling plates. This allows tolerances of a minimum of 0.1mm / 1000mm to be achieved.

Foot mounting

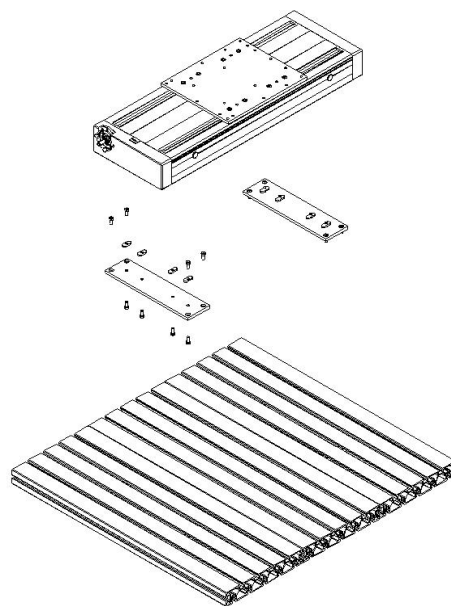



Fig. 6 - Handling axis iLE 20/20 for foot mounting

If mounting the Handling axis from below is not possible or too complex, it is also possible to mount the Handling axis from above using special mounting strips or appropriate adapter plates. For this purpose, the respective adapters must be fastened to the linear guide rail again using sliding nuts or threaded rails and the unit must then be mounted completely from above.

	<p>Ensure that the mounting surfaces are sufficiently clean and level.</p>

Mounting on the guide carriages

Carriage mounting

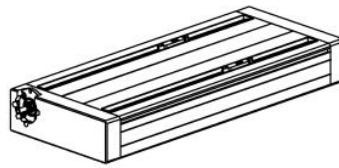


Fig. 7 - Handling axis iLE 20/20 for mounting the carriage

The guide carriages have tapped holes - M6 - for fastening transport loads to the guide carriages. Fitting holes 6h7 enable precise positioning and reproducibility of the mounting position. The clamping surface of the guide carriages is face milled.



Ensure that the mounting surfaces are sufficiently clean and level. Clamping of the guide carriages leads to reduced performance, unclean running, increased running noise and premature wear.

Slide plate mounting

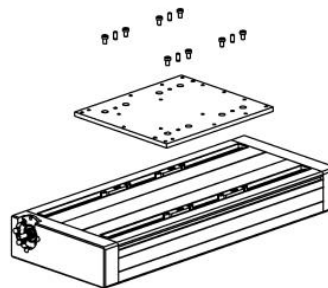


Fig. 8 - Handling axis iLE 20/20 for slide plate mounting

Carriage plates (accessories) offers another possibility for fastening transport loads. These are made of steel, grounded and have an M6 fastening thread. The carriage plates are mounted to the guide carriages with M6 fixing screws and positioned using pins. The flatness of the plane-parallel plates is less than 0.2mm. Slide plates also allow the combination of different Handling axis to cross tables.

Slide plate mounting

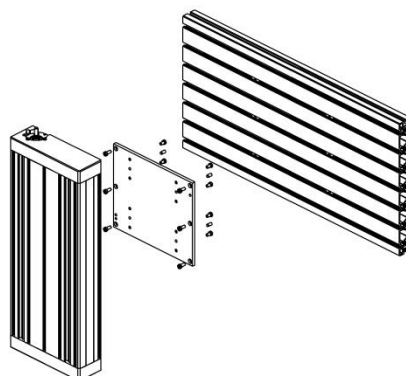


Fig. 9 - Handling axis iLE 20/20 for slide plate mounting - frame

Laterally protruding carriage plates enable the guide carriages to be fixed to the frame and thus enable linear movement of the linear guide rail relative to the frame. The fixing and positioning of these ground steel plates on the carriages is again carried out with socket head screws - M6 and pins. End countersinks for socket head screws - M6 enable the adaptation of the Handling axis on the frame.

Mounting of optional motor modules

Direct drive modules

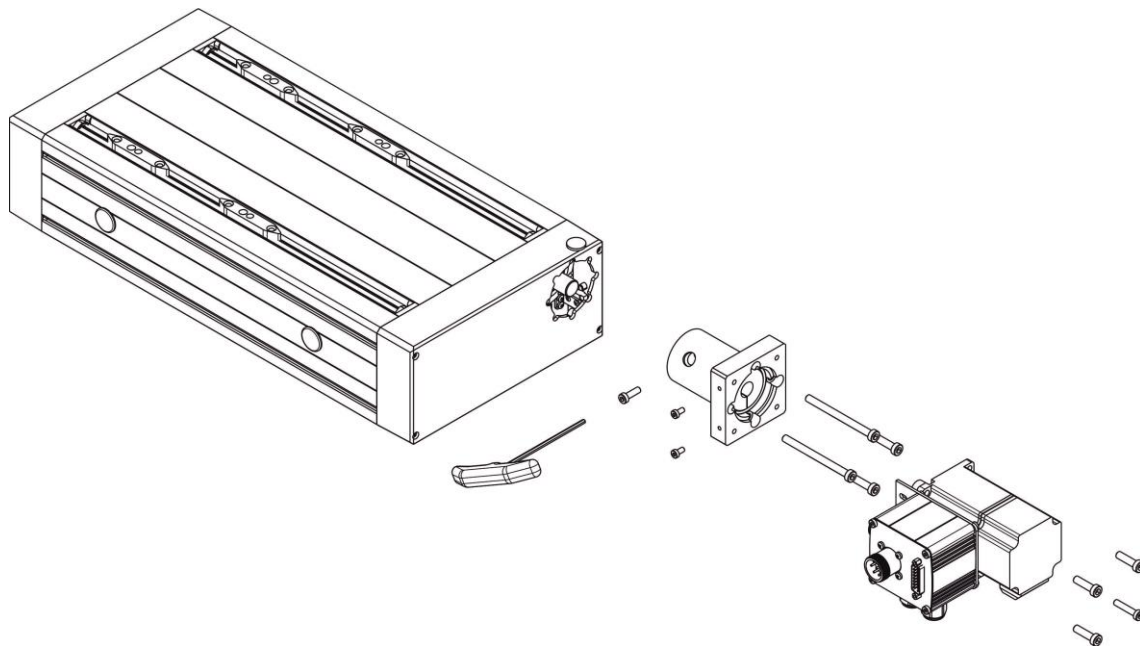


Fig. 10 - Mounting direct drive module

The mounting of the direct drive module to the linear units is shown in the above figure. It must be ensured that the parts to be connected are free of burrs, rust and dirt.

Before tightening the coupling halves, make sure that the spindle and motor axis are well aligned.

The tightening torque of the clutch clamping screws is 3 Nm.

Belt drive modules

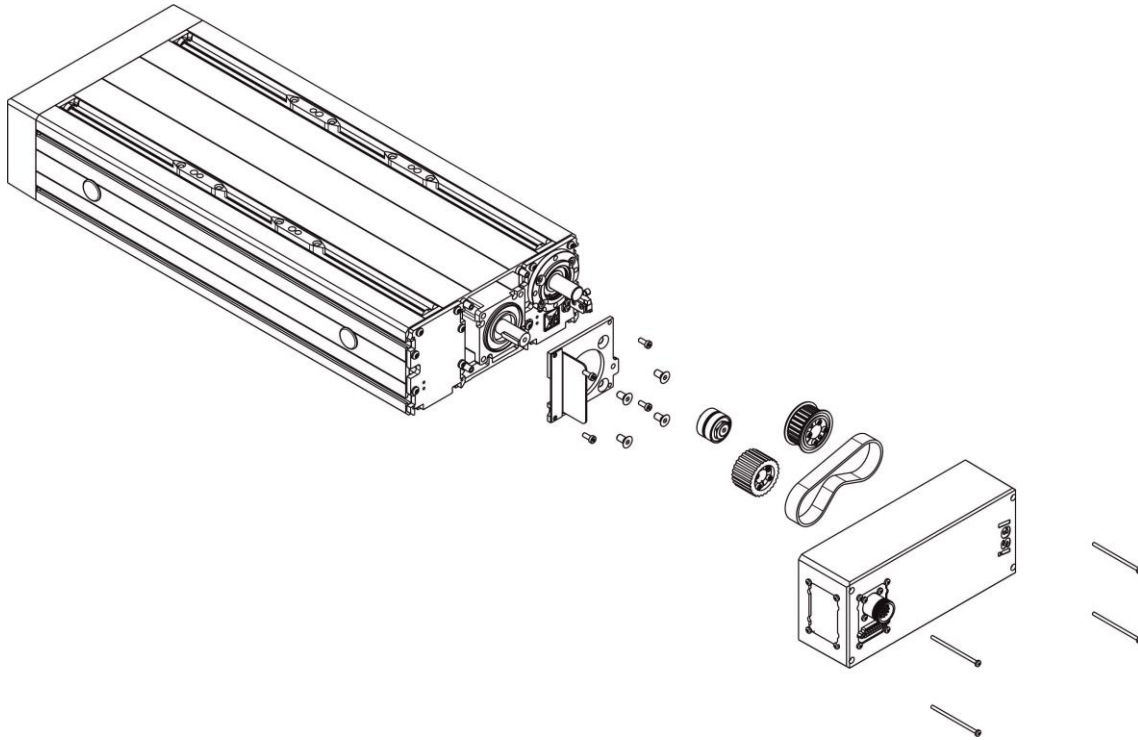



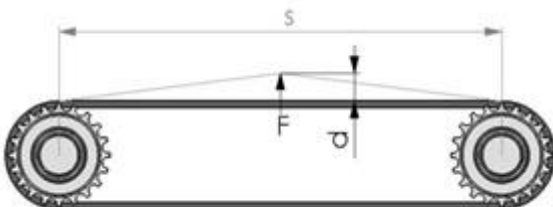
Fig. 11 - Mounting belt drive module

The picture above shows the assembly of a belt drive module. The pulleys must have the same pitch as the toothed belt. Both shaft ends and the pulleys should be free of burrs, rust and dirt. As shaft-hub connection, we recommend forceful connections using clamping bushes.

Before mounting the toothed belt and the belt pulleys, the shaft ends must be aligned. The installation of the toothed belt must be carried out easily by hand. For this purpose, the centre distance must be reduced when using on-board pulleys or both belt pulleys must be fitted together. Under no circumstances should the toothed belt be forced onto the pulleys with force or mounting levers, as the belt can be damaged - often invisibly.

The pretension of the belt depends on the power to be transmitted and the drive characteristics. However, due to the positive power transmission of the timing belt, only a low pretension is required. We recommend the use of eccentric tension rollers to set the pretension or to correct tolerances.

Information	
	<p>Too much pre-tension causes higher running noise, premature belt wear and can even lead to the shaft ends tearing off. Too little pretension leads to synchronisation fluctuations and promotes skipping of the belt teeth.</p>



We give the following recommendation for adjusting the preload:

- Test force: $F = 16,5N$
- Belt deflection: $d = 3,5mm$

5.2 Commissioning

The Handling axis iLE is commissioned after the respective drive modules have been mounted and the necessary cabling has been installed. To do this, follow the relevant instructions in the documentation of the motor modules, power amplifiers or entire control system used.



Incorrect installation (including loading of the axis system), cabling or commissioning increases the risk.

6 Mounting parts

In this chapter you will find information about the components that are mounted when your axis is delivered.

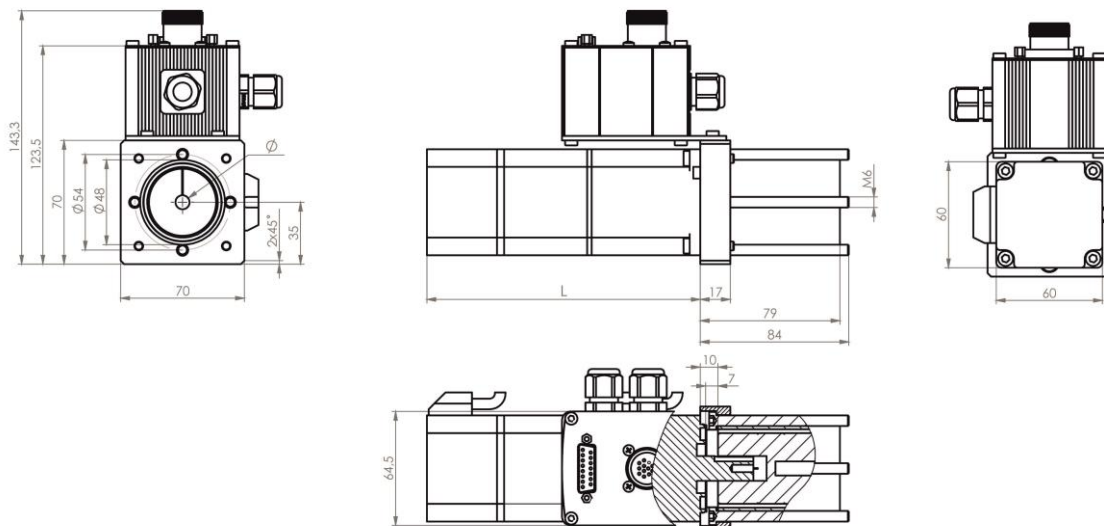
6.1 Motor modules

Various drive modules with servo motors are offered as standard for the iLEHandling axis. These can be mounted either directly via a coupling, spacer and adapter flange in extension of the ball screw spindle or laterally or integrated by means of a toothed belt step.

- Version **Direct drive** possible for:
 - iLE
- Version **Belt drive lateral (right)** possible for:
 - iLE
- Version **Belt drive integrated** possible for:
 - iLE

Direct drive - floating bearing

EC 60 TM



Direct drive floating bearing iLE 20/20	Item-No.	L [mm]	Ø
EC servo motor EC 60 TM 200W 48V	396421 006015	107.7	15
EC servo motor EC 60 TM 200W 48V with brake	396421 026015	154.7	15
EC servo motor EC 60 TM 200W 310V	396421 007015	107.7	15
EC servo motor EC 60 TM 200W 310V with brake	396421 027015	154.7	15
EC servo motor EC 60 TM 400W 48V	396440 008015	135.7	15
EC servo motor EC 60 TM 400W 48V with brake	396440 028015	182.7	15
EC servo motor EC 60 TM 400W 310V	396440 007015	135.7	15
EC servo motor EC 60 TM 400W 310V with brake	396440 027015	182.7	15

Belt drive modules (integrated)

iLE 20/20	Item-No.
EC servo motor EC 60 TM 200W 48V	396421 1060
EC servo motor EC 60 TM 200W 48V with brake	396421 1260
EC servo motor EC 60 TM 200W 310V	396421 1070
EC servo motor EC 60 TM 200W 310V with brake	396421 1270
EC servo motor EC 60 TM 400W 48V	396440 1080
EC servo motor EC 60 TM 400W 48V with brake	396440 1280
EC servo motor EC 60 TM 400W 310V	396440 1070
EC servo motor EC 60 TM 400W 310V with brake	396440 1270

6.2 Sliding plates

An overview of all our slide/cross table tops with their dimensions, hole patterns and mounting options can be found here

Dimensioned drawing Slide plates for iLE 20/20

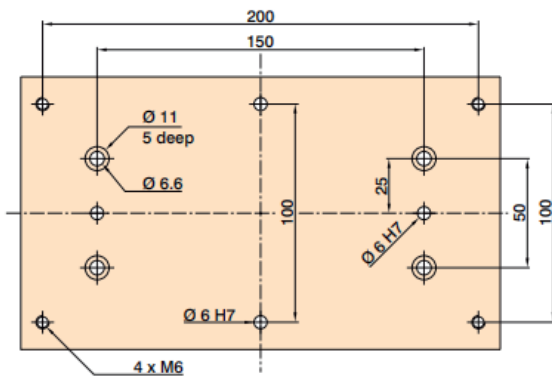
Hole diagram, slide plate PS 3

L 220 x W 125 x H 7.5 mm

Mounting on:

LES 5 with 2 x WS 5/70

Part no.: 277003



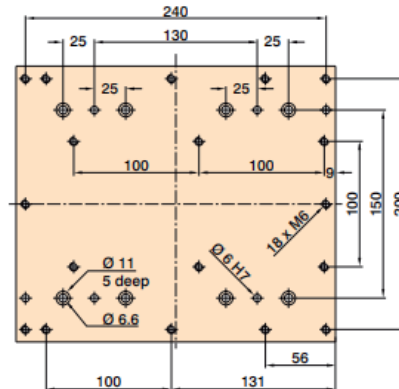
Hole diagram, slide plate PS 4

L 225 x W 220 x H 7.5 mm

Mounting on: LES 5 with 4 x WS 5/70

Mounting on crossbench: LES 5 with LES 5 (in conjunction with VP 2) Fixing option for: Angle bracket WV 3 / WV 6

Part no.: 277004



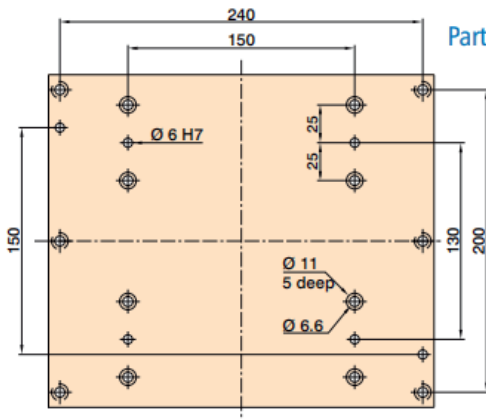
Hole diagram, connection plate VP 2

L 255 x W 220 x H 7.5 mm

Mounting on: LES 5 with 4 x WS 5/70

Fixing option for: LES 5

Part no.: 277006

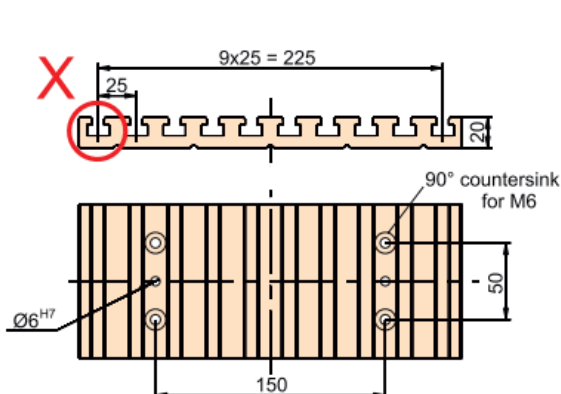


Hole pattern T-slot plate PT 25 x 250 for LES 5

L 100 x W 250 x H 20 mm

Mounting on: LES 5 with 2 x WS 5/70

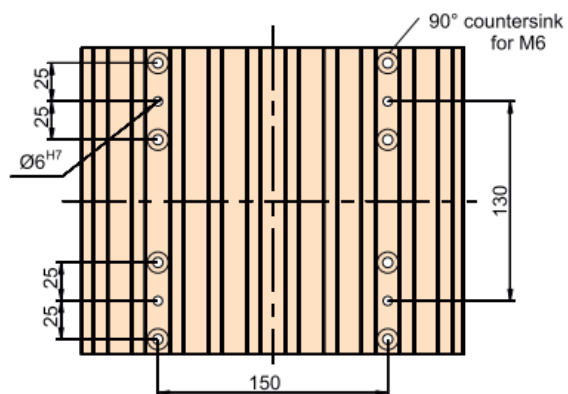
Part no.: 277030 0005



L 200 x W 250 x H 20 mm

Mounting on: LES 5 with 4 x WS 5/70

Part no.: 277030 0006



6.3 Other options

6.3.1 External limit switches



Fig. 12 - external limit switches iLE

	Limit switch mounting kit for iLE	Limit switch mounting kit for iLE	Limit switch mounting kit for iLE
Item number	216460 0001	216460 0002	216460 0006

6.3.2 Angular transmission

The angular transmission is available in two installation variants for iLE20/20 with direct drive.

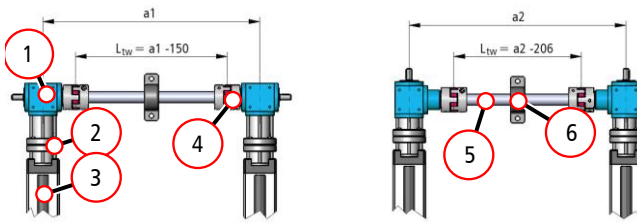


Fig. 13 - Coupling housing set 90° and 0


- 1 - angular transmission
- 2 - split coupling housing with shaft coupling WK 40/60
- 3 - iLE20/20
- 4 - Coupling for transmission shaft Ø 25 mm
- 5 - Transmission shaft Ø 25 mm
- 6 - Pedestal bearing (recommended from a transmission shaft of 1500 mm)

Item No.			Lieferumfang
216150 0001	with H-construction on iLE20/20	Mounting 0°	2x angular transmission, 2x split coupling housing with WK 40/60, 2x coupling for transmission shaft
216451 0001	with H-construction on iLE20/20	Mounting 90°	2x angular transmission, 2x split coupling housing with WK 40/60, 2x coupling for transmission shaft

7 Maintenance, service and cleaning


Regular maintenance and preventive maintenance are prerequisites for the safety of the personnel who are in the machine area. In addition, maintenance contributes to maintaining the value and functionality of the machine.

Carry out the work listed in the maintenance schedule within the specified intervals. Should it become apparent during machine operation that the intervals mentioned are too long or too short, adjust the intervals accordingly.

Information	
	<p>In the following cases, any claim under guarantee or warranty automatically expires:</p> <ul style="list-style-type: none"> • improper maintenance by the operator or third parties, • Installation of production parts that are not manufactured by isel Germany GmbH <p>isel Germany GmbH shall not be liable for any personal injury or property damage in this case. Ensure that safety equipment is regularly maintained and checked for proper functioning.</p>

The linear units work with high precision and reliability. Therefore the maintenance effort is comparatively low. Maintenance of the linear units is limited to their regular cleaning from coarse dirt and impurities as well as regular lubrication.

The ball screws, the ball screw nuts, the guide carriages and the steel shafts of the guide rails must be lubricated.

⚠ NOTE!	
	<p>Please observe the following instructions before starting any maintenance work.</p> <p>Non-observance of the safety instructions will result in serious injury or death!</p> <ul style="list-style-type: none"> > Only carry out maintenance work when the machine is at a standstill. > Let heated areas cool down first. > During repair and maintenance work on the electrical installation, disconnect the power supply (e.g. controller, regulator) from the mains and remove all connecting cables (e.g. motor cables, encoder cables). > Observe the safety instructions and safety data sheets of the corresponding manufacturer when using oil/lubricants, cleaning agents and spare parts.


7.1 Cleaning

- Clean the surface of the aluminium shaft mounting profile, (flange-mounted) motor modules, sealing lips for profile sealing or guide carriage of the linear unit with a lint-free, dry / slightly damp cloth.
- Do not use harsh cleaning agents or abrasive cleaners.

7.2 Lubrication

General information

- The guide rails and drive shafts are provided with long-term central lubrication ex works. Depending on the load, you should relubricate the guides and drive shafts, but at the latest after the specified maintenance interval of 300 - 700 operating hours. To do this, use the grease gun for central lubrication available as an accessory and the corresponding special grease.
- Do not lubricate too much at once, the shafts and steel rails do not have to float in grease.
- Follow the lubrication instructions for the mechanical components.

⚠ CAREFUL!	
	<p>Maintenance work</p> <p>Non-observance can lead to slight to severe injuries.</p> <p>> Maintenance work may only be carried out by authorised and trained specialist personnel (mechanical maintainer).</p>

Basic lubrication

The drive components are lubricated with a special grease ex works. They can be started up immediately. The EC safety data sheet according to Directive 93/112/EEC and ISO 11014-1 can be requested from the manufacturer.

Relubrication

For relubrication of linear bearings with shafts, only the special grease of isel Germany GmbH should be used.

Oil lubrication is possible and reduces heating at higher spindle speeds, but the mounting position must be observed and the lubrication intervals are shortened every 40 to 60 operating hours.

The required grease can be ordered under the following part numbers:

- Item no. 299031 Universal grease
- Part No. 931170 Grease gun

Grease characteristics

- enormous reduction in wear
- significantly less consumption
- miscible with lithium and calcium fats
- water-repellent
- highly resistant to cold, hot and salt water and solvents
- Temperature range: -25°C to 200°C, emergency operation > 300°C
- up to 6 times longer service life
- extremely good adhesion to metal surfaces

Classification and labelling according to EU Directives 67/548/EEC and 88/379/EEC - Water hazard class 1.

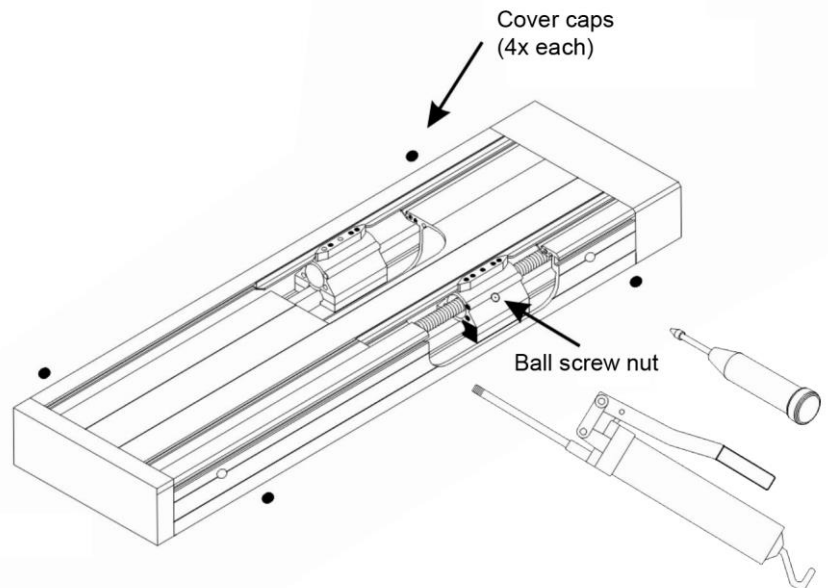


Fig. 14 - Lubrication points of the Handling axis iLE

Proceed as follows to lubricate the Handling axis iLE.


1. Remove the cover caps.
2. Position the guide carriage behind a lubrication opening. (see points)
3. Attach the grease gun to all accessible grease nipples and lubricate the shaft slides, guide, ball screw nut and ball screw spindle. 2 - 3 strokes are sufficient.
4. Push the cover caps back in.
 - ✓ The ball screw nuts of the Handling axis are lubricated.

7.3 Maintenance plan

Maintenance interval	Activity to be performed
on request	Cleaning the Handling axis
300 - 700 Operating hours	Relubrication guide carriage and ball screw nut with special grease from isel Germany GmbH
monthly	-Visual inspection of linear guide rail - wear -Visual inspection of the toothed belt (tension, abrasion...) -Acoustic check for unusual noise
every two years	-Replacement timing belt -Check backlash-free guide carriage and ball screw

7.4 Troubleshooting

The table below includes some general solutions to potential problems occurring when using the machine; they can be rectified independently by the operator if necessary.

Information	
	<p>If the problem can not be solved, please get in touch with the maintenance personnel or contact our service/support department. See chapter RS.</p>

Fault / Problem / Error	Possible cause	Solution	see also chapter ...
Increased running noises	-Pollution -Missing lubricant film	-Cleaning the linear unit -Reduce relubrication interval	
Sluggishness	-Pollution -Bracing	-Cleaning the linear unit -Ausrichtung, Justage	
Increased wear (abrasion)	-Too high load -Missing lubricant film	-Reduce load -Reduce maintenance interval	
Increased play on guide carriage, spindle drive	-Wear -Too high load -Reduction of the preload	-Reduce load -Reduce maintenance interval -Adjusting the preload	RSe_1776

Table 1 - General faults on the Handling axis

8 Dismantling and disposal

After the machine has reached the end of its service life, it must be dismantled and disposed of in an environmentally friendly manner.

8.1 Safety instructions for dismantling and disposal

Safety instructions for dismantling and disposal

Personnel required:

- Specialist staff
- Maintenance staff
- Manufacturer

Protective equipment:



⚠ DANGER!	
	<p>In the event of improper dismantling and disposal of the machine</p> <p>Improper dismantling of the machine can result in serious injuries due to angular components, points, corners, sharp edges, vapours, lubricants, liquids, etc.! Observe the safety regulations, accident prevention regulations and safety data sheets!</p> <ul style="list-style-type: none"> > Disassembly may only be carried out by specially trained personnel! > Work on the electrical system may only be carried out by qualified electricians! > The corresponding warning notices must be visibly displayed in the areas!
⚠ DANGER!	
	<p>Danger to life due to electric shock!</p> <p>Touching live parts or damaging insulation poses a risk to life (danger to life and limb) due to electric shock!</p> <ul style="list-style-type: none"> > When carrying out maintenance, servicing and cleaning work, always disconnect the machine from the mains first and wait a few minutes before starting work. > To avoid electric shock, do not insert any objects into the machine, except for the intended replacement of parts in accordance with these operating instructions.
⚠ CAUTION!	
	<p>Danger to the environment due to improper disposal!</p> <p>Improper disposal may pose a hazard to the environment! Disposal of materials may only be carried out by qualified personnel and in accordance with legally applicable regulations. When handling hazardous substances, the respective safety data sheet must be observed and, if necessary, personal protective equipment must be used!</p> <ul style="list-style-type: none"> > Disposal must be carried out by qualified personnel and in accordance with legally applicable regulations. > Suitable personal protective equipment must be used! > When disposing of the hazardous substances, they must be handled in accordance with the instructions on the relevant safety data sheet!

8.2 Disassembly

Disassembly


Important notes before disassembly:

- Make sure you have enough space before starting work!
- Handle open sharp-edged components with care!
- Pay attention to order and cleanliness in the working area. Loose components and tools lying on top of or around each other are sources of accidents!
- Make sure that the components are dismantled properly!
- Please note that some of the components have a high dead weight. If necessary, use lifting gear!
- Secure components against falling down and toppling over!
- Do not breathe in any vapours or dusts!
- Fire, naked lights and smoking are prohibited in the areas!
- Eating and drinking is prohibited in the areas!
- Consult the manufacturer if anything is unclear!

Decommissioning

Before starting disassembly, be sure to follow these steps

1. Switch off the machine (see chapter [RS](#)).
2. Disconnect the machine from all media (power supply network, compressed air supply, cooling water supply, hydraulic supply, etc.).
3. Physically disconnect the entire power supply from the machine and discharge residual energy.
4. Remove all remaining operating and auxiliary materials as well as all processing materials. Dispose of them in an environmentally friendly way according to your local regulations.
5. Then clean and dismantle the components professionally in compliance with the locally applicable occupational health and safety and environmental protection regulations.
 - ✓ Machine decommissioned and prepared for dismantling

Information	
	<p>Dismantling may only be started after all work required for decommissioning has been carried out and after approval by an authorised specialist.</p>

Dismantling is defined as the dismantling of the machine for relocation to another installation site or for scrapping.




The electrical and electronic components belonging to the machine as well as the operating materials contained in the machine to make it ready for operation are to be disposed of exclusively in a professional manner, in accordance with the valid jurisdiction of the country of operation. Disposal via household or general commercial waste is strictly prohibited!

8.3 Disposal

Disposal

If no take-back or disposal agreements have been made, recycle the dismantled components.

- Scrap all metals
- Give all glass and plastic elements for recycling
- Sort the remaining components according to their material composition
- Dispose of hazardous substances such as oils, oil-water mixtures, emulsions, greases, fuels, coolants and lubricants properly!

Electronic components	
	<p>Return and collection systems</p> <ul style="list-style-type: none"> • Users of electrical and electronic equipment are obliged to collect old equipment separately in accordance with the country-specific regulations. Waste electrical and electronic equipment must not be disposed of together with household waste. Separate collection is a prerequisite for recycling and recovery, which helps to conserve resources in the environment. • Separate collection is a prerequisite for recycling and recovery, which conserves resources in the environment. The local waste management companies have created disposal options for this purpose.

9 Spare parts overview

Spare parts iLE 20/20

Quantity	Item-No.	Designation
1	613500 3748	Locking nut flanged housing
1	21115x 3xxx	KG spindle Ø 20
1	613703 xxxx	KG nut Ø 33
1	623010 1434	Steel slide for KG nut
1 (3)	623010 4170	Steel slide without KG nut
1	623065 1441	Bearing flange fixed bearing side
1	623065 4479	bearing flange drive non-locating bearing side
1	616002 4481	Toothed belt wheel Z25AT5
1	616001 0003	Toothed belt wheel Z25AT5
2	699114 8248	Scraper
1	616503 0280	Timing belt 16AT5-280
4	630900	Sealing lips
1	397030 1012	Limit position switch L=400
1	3970xx 1012	Limit position switch L=xxxx

Table 2 - Spare parts iLE 20/20

