

# Product Overview

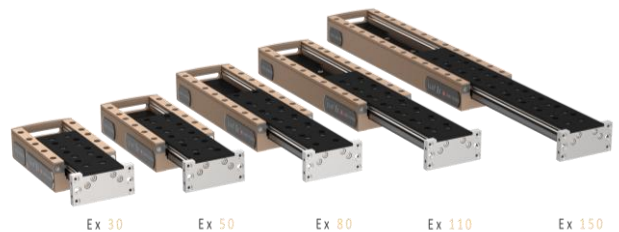
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With this product overview you can assemble the appropriate components for your application in a fast and simple way. You keep the overview of all types with all possible options and cabling requirements.

## INTAX® Linear Motor Axes with integrated servo controller



## ELAX® Electric Slide



## LINAX® Linear Motor Axes

Lxc = compact  
Lxu = universal  
Lxs = shuttle  
Lxe = exclusive



## ROTAX® Rotary Motor Axis

Rxvp = vacuum pressure  
Rxhq 50 = high torque  
Rxhq 110 = high torque



## XENAX® Servo Controllers

Xvi 75V8S  
Xvi 48V8



## Content

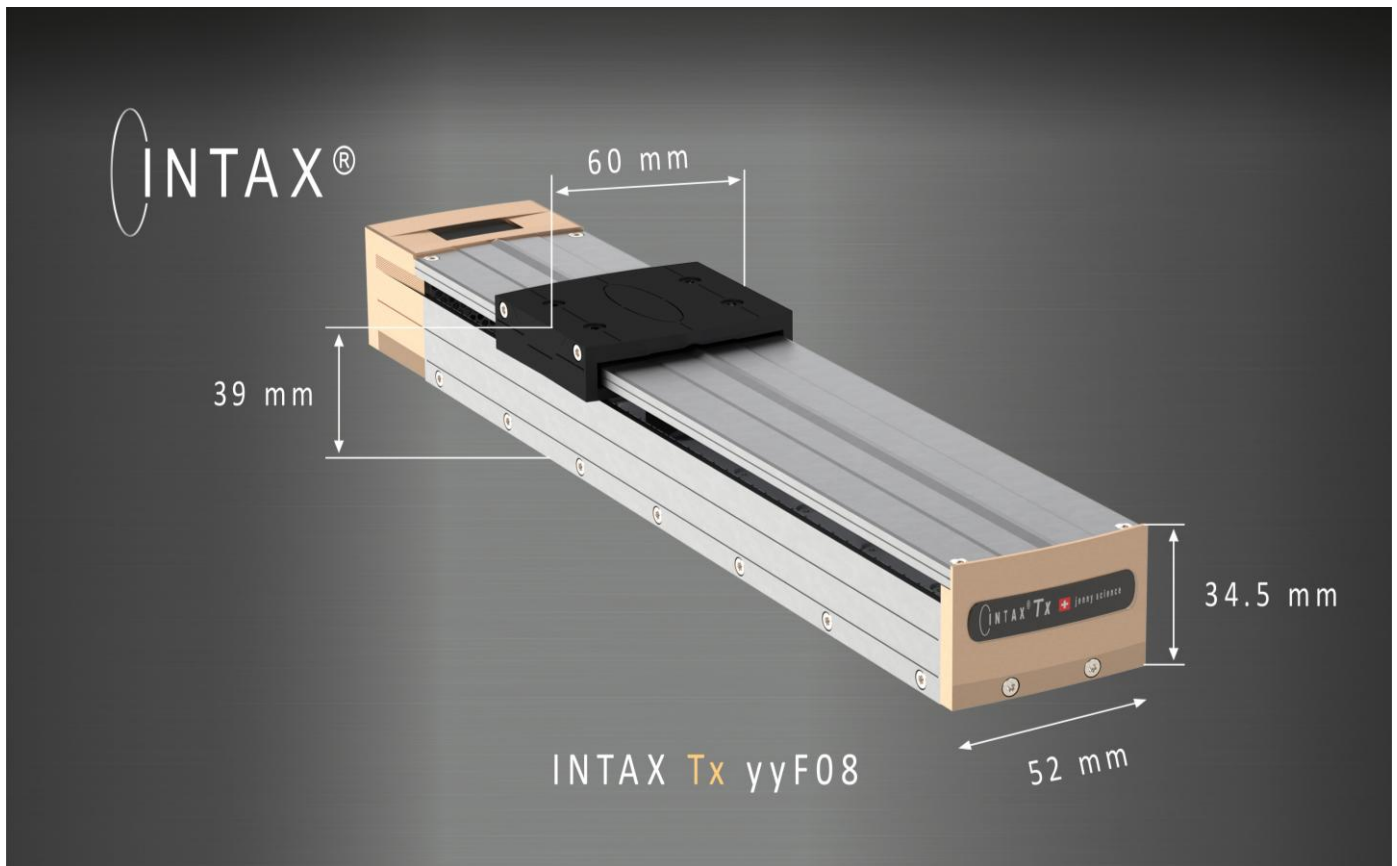
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## 1 INTAX® Linear Motor Axes with integrated servo controller



### INTAX® = integrated Axis

- Integrated servodrive, motor wiring and cable chain
- Two connectors only, one for Ethernet Bus (EtherCAT, Ethernet, Profinet etc.) and the other for 12V – 36VDC
- Absolute measurement system with 1µm resolution, no reference drive necessary
- No space is required in the control cabinet

Type	Stroke [mm]	Force Fn/Fp [N]	Weight Slider/Total [g]	L Installation [mm]	Art. No
<b>Tx 50F08</b>	50 (1.97")	8/24 (1.8/5.4 lbf)	170/425 (0.37/0.94 lbs)	149 (5.87")	<b>125.00.00</b>
<b>Tx 100F08</b>	100 (3.94")	8/24 (1.8/5.4 lbf)	170/550 (0.37/1.21 lbs)	201 (7.91")	<b>125.01.00</b>
<b>Tx 200F08</b>	200 (7.87")	8/24 (1.8/5.4 lbf)	170/800 (0.37/1.76 lbs)	299 (11.77")	<b>125.02.00</b>
<b>Tx 400F08</b>	400 (15.75")	8/24 (1.8/5.4 lbf)	170/1300 (0.37/2.87 lbs)	500 (19.69")	<b>125.03.00</b>
<b>Tx 600F08</b>	600 (23.62")	8/24 (1.8/5.4 lbf)	170/1800 (0.37/3.97 lbs)	700 (27.56")	<b>125.04.00</b>

Magnetic absolute measurement system with 1µm resolution and bidirectional repetitive accuracy +/- 2µm



## «GO» and the axis runs!

Everything runs automatically:

Simply connect the USB-C cable and a virtual network adapter is created on the PC/laptop. And by entering «run.Webmotion» in Windows Explorer, the web browser opens with WebMotion®. Button Quick Start, click on «GO» and the axis is running. No download, no installation of an app, no purchase of a license code and no registration, very user friendly.



## What's behind it?

The decisive factor is the integrated servo controller with web server and the WebMotion® graphical user interface. This HTML5-based operator interface can be accessed via any web browser.

For professional machine integration, the axis offers fully developed Ethernet fieldbus communication with various protocols.

With connection to the 24VDC supply, the axis is directly ready for operation. The power supply is separate for controller and power output stage. This means that STO is already included as a functional safety feature. If the power output stage is interrupted, communication is maintained.

## A milestone of miniaturization

The INTAX® linear motor axis pushes the boundaries of miniaturization and shows what is technologically feasible today. The idea of physically building the servo controller into a motor axis is not new, and there are some servo motor suppliers that build the motion controller in directly. For linear motor axes, the INTAX® is the only solution available on the market with a fully integrated servo controller.

The INTAX® linear motor axes were specifically designed for miniaturization to integrate the electronic boards, motor wiring and cable trailing into the «free space» of the mechanical design. For this reason, the design of the axis was redesigned and the electronics were extremely compressed and distributed on different PCBs.

It is not visible from the outside where the servo controller is located. This results in an incredibly compact design with a slim, clear geometric shape. This allows engineers to build their machines and systems smaller and more space-efficient. Wiring, connectors and space for a servo controller are no longer required. And compared to conventional toothed belt and spindle drives, the INTAX® linear motor direct drive is more precise, faster and quieter.

## 1.1 Connecting Cable INTAX®

Simply supply main power and a communications cable and your system integration is complete!

The connecting cable for the power/logic and the communication are suitable for cable chains and are available from stock in a standard length of 1.5m (59"). Customized lengths from 0.1m (4") to 20m (787") are available on request. The power/logic connection cable has a minimum bending radius of 65mm (2.6") for continuous motion and 32mm (1.3") for fixed cables. The connection cable for the Ethernet connection has a minimum bending radius of 41mm (1.6") for continuous movement and 22mm (0.9") for fixed cables.



Connecting Cable shielded, suitable for cable chains	Length [m]	Cable Ø [mm]	Power/Logik Art. No.	Cable Ø [mm]	Ethernet Art. No.
<b>INTAX®</b> Temp. moving -25° up to +80° oil resistant	1.5 (59")	5.4 (0.21")	<b>150.80.00</b>	5.3 (0.21")	<b>150.81.00</b>
	0.1-20 (4"-787")		<b>150.80.10</b>		<b>150.81.10</b>

## 1.2 INTAX® Bus communication

For professional machine integration, the axis offers fully developed Ethernet fieldbus communication with various protocols. The fieldbus connector provides a direct connection to the PLC, where currently the EtherCAT, Ethernet I/P and Profinet protocols are supported, more will follow.

Together with the library, similarly to PLCopen®, the axis can be put into operation immediately in cyclic synchronized mode or in profile position mode. The linear measuring system with absolute position allows an immediate start, without prior referencing to a zero point.

**EtherCAT®**

**PROFINET®**  
INDUSTRIAL ETHERNET  
IRT (Isochrone Real Time)

**EtherNet/IP™**  
ODVA

ETHERNET   
**POWERLINK**

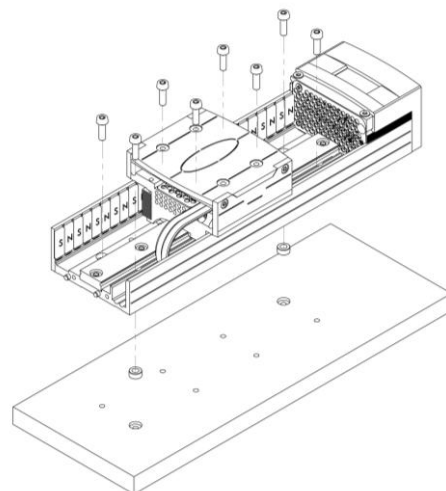
Ethernet Bus		Art. No.
<b>EtherCAT®</b> <b>PROFINET®</b> <b>EtherNet/IP®</b> <b>POWERLINK®</b>	Optional bus connection INTAX® Fast, internal data connection via data and address bus	<b>145.00.00</b>
		<b>145.00.10</b>
		<b>145.00.20</b>
		<b>145.00.30</b>



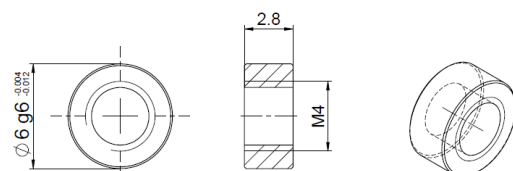
## 1.3 Mounting INTAX®

Fixing Screws	Screws	Art. No.
INTAX® Tx	12 x hexagon socket screws M3 x 8	145.01.00

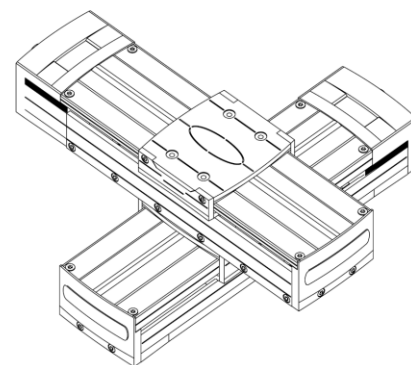
Tx 50F08 = 1 Set  
 Tx 100F08 = 1 Set  
 Tx 200F08 = 1 Set  
 Tx 400F08 = 2 Sets  
 Tx 600F08 = 3 Sets



Dowel bushings	Dowel bushings Ø 6mm	Art. No.
INTAX® Tx	10 x Ø 6mm -0.004/-0.012 x 2.8mm	136.12.00



Cross Table Fitting	Screws and dowel bushings	Art. No.
INTAX® Tx To INTAX® Tx	2 x dowel bushings Ø6 x 1.9mm 4 x hexagon socket screws, M3 x 6 (0.24")	145.01.01

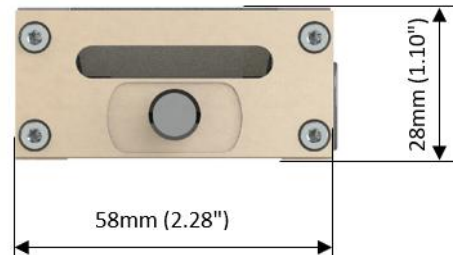


## 2 ELAX® Electric Linear Motor Slide



ELAX® is the evolutionary step of the widespread pneumatic slides. The great accomplishment is the patented compact integration of the linear motor in the slider case, resulting in a force/volume ratio which has hitherto never been achieved. A further essential key factor for future oriented automation solutions with ELAX® are the components with direct screw connections, the flexible one-cable connection and the function "force calibration" with which you can control, limit and monitor forces – no need for an additional force sensor.

ELAX® data sheets and CAT data (STEP) can be downloaded from [www.jennyscience.ch](http://www.jennyscience.ch)



Type	Stroke [mm]	Force Fn/Fp [N]	Weight slide/Tot. (+ weight comp.) [g]	L min [mm]	L max [mm]	Art. No
<b>Ex 30F20</b>	30 (1.18")	20/60 (4.5/13.5 lbf)	195/560 (+165) (0.43/1.23 (+0.4) lbs)	110 (4.33")	140 (5.51")	<b>116.00.00</b>
<b>Ex 50F20</b>	50 (1.97")	20/60 (4.5/13.5 lbf)	265/630 (+200) (0.58/1.39 (+0.4) lbs)	130 (5.12")	180 (7.09")	<b>116.01.00</b>
<b>Ex 80F20</b>	80 (3.15")	20/60 (4.5/13.5 lbf)	340/780 (+270) (0.75/1.72 (+0.6) lbs)	178 (7.01")	258 (10.16")	<b>116.02.00</b>
<b>Ex 110F20</b>	110 (4.33")	20/60 (4.5/13.5 lbf)	415/945 (+440) (0.91/2.08 (+1) lbs)	208 (8.19")	318 (12.52")	<b>116.03.00</b>
<b>Ex 150F20</b>	150 (5.90")	20/60 (4.5/13.5 lbf)	490/1110 (1.08/2.45 lbs)	268 (10.55")	418 (16.46")	<b>116.04.00</b>

Magnetic measurement system with 1µm resolution and accuracy +/- 10µm

**Note: ELAX® option cleanroom, food industry and pharmaceutical industry**

The ELAX® can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.

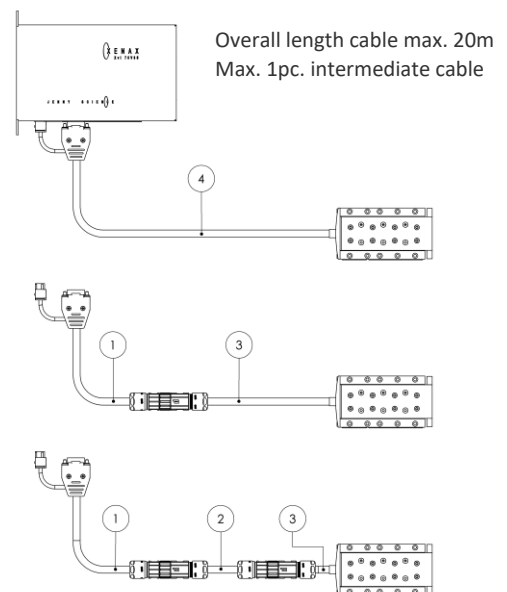


## 2.1 Connecting Cable ELAX® M16

Absolutely revolutionary is the flexible one-cable connection, which reduces the machine cabling effort considerably. In only one cable are the lines for encoder, for the 3 phases of the linear motor and for the communication between ELAX® and XENAX® Servocontroller.

These connection cables have a minimum bending radius of **48mm for continuous movement** and **of 20mm for fixed cables**. Intermediate cables are also available as accessories. The cable can withstand more than 1 million cycles of torsional stress at  $\pm 90^\circ$  over a length of 1m

The standard 0.3 m long connection cable with M16 plug connection for the extension or intermediate cable is fixed to the ELAX®. A side cable outlet to the left is also possible.



Connecting cable ELAX® shielded, suitable for cable chain	Length [m]	*) Linear Motor Type	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm (0.14") Art. No <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span>
<b>ELAX® anthracite, TPU, clean room</b> Operating temp. -40°C up to + 80°C, Ø 8mm (0.31")	1.5 (59")	Ex 30F20	150.51.30
		Ex 50F20	150.51.35
		Ex 80F20	150.51.40
		Ex 110F20	150.51.45
		Ex 150F20	150.51.50
	0.1-20 (4" - 787")	Ex 30F20	150.51.31
		Ex 50F20	150.51.36
		Ex 80F20	150.51.41
		Ex 110F20	150.51.46
		Ex 150F20	150.51.51

\*) Each type of linear motor slide has internally a different cable strip length; therefore, they all have a different article identification number.

Connecting cable M16 for ext. or intermediate cable ELAX®	Length [m]	ELAX® Type	ELAX® - M16 socket Art. No. <span>3</span>
ELAX® connection TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40°C up to + 80°C, Ø 8mm (0.31")	0.3 (12")	Ex 30F20	150.52.32
		Ex 50F20	150.52.37
		Ex 80F20	150.52.42
		Ex 110F20	150.52.47
		Ex 150F20	150.52.52
	0.1-20 (4" - 787")	Ex 30F20	150.52.33
		Ex 50F20	150.52.38
		Ex 80F20	150.52.43
		Ex 110F20	150.52.48
		Ex 150F20	150.52.53

Connecting- or extension cable XENAX® M16	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No. <span>1</span>
TPU, Clean Room 5-6 Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59")	150.83.01
	3.0 (118")	150.83.03
	5.0 (197")	150.83.05
	0.1-20 (4" - 787")	150.83.10

Intermediate cable 2 x M16	Length [m]	M16 Socket – M16 Plug Art. No. <span>2</span>
TPU, Clean Room 5-6 Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59")	150.84.01
	3.5 (138")	150.84.03
	5.0 (197")	150.84.05
	0.1-20 (4" - 787")	150.84.10

Cable connection		Art. No
Ex F20	Cable connection mounted on the left side *)	136.05.00



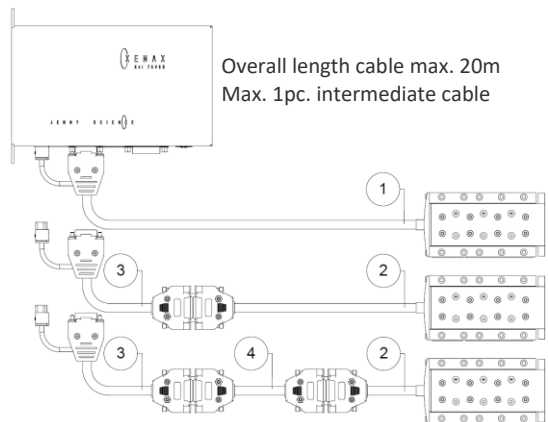
\* cable connection on the side not possible for vertical axes with weight compensation mounted on the left side.

## 2.2 Connecting Cable ELAX® D-Sub

For new projects, it is recommended to use the M16 standard.

With ELAX® the cables are directly mounted into the linear motor case in favor of the compactness. The flexible one-cable connection is absolutely revolutionary which significantly simplifies the machine cabling. The cable is mounted on the back of the linear motor slide by default. **Optionally the cable can be mounted on the left side.**

In just one cable there are the wires for encoder, the 3 phases for the linear motor and for the communication between ELAX® and XENAX® servo controller. The anthracite colored **TPU** connection cables are clean room capable and as a standard length of 1.5m (59") on stock available. Custom lengths from 0.1 (4") up to 20m (787") can be supplied upon request. These connection cables have a min bending radius of **40mm (1.6") for moving cables** and **16mm (0.7") for fixed cables**. The cable can withstand more than 1 million cycles of torsional stress at  $\pm 90^\circ$  over a length of 1m.



As an option, extension cables are also available. The connection cables are fix mounted to the motor and are only sold together with the linear Motor Slide.

Connecting cable shielded, suitable for cable chain	Length [m]	*) Linear Motor Type	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm (0.14") Art. No <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1</span>
ELAX® anthracite, TPU, clean room Operating temp. -40°C up to + 80°C, Ø 8mm (0.31")	1.5 (59")	Ex 30F20	150.51.30
		Ex 50F20	150.51.35
		Ex 80F20	150.51.40
		Ex 110F20	150.51.45
		Ex 150F20	150.51.50
	0.1-20 (4" - 787")	Ex 30F20	150.51.31
		Ex 50F20	150.51.36
		Ex 80F20	150.51.41
		Ex 110F20	150.51.46
		Ex 150F20	150.51.51

\*) Each type of linear motor slide has internally a different cable strip length; therefore, they all have a different article identification number.

Connecting cable <b>prepared for extension</b> , shielded, suitable for cable chain	Length [m]	Type Electric Slide *)	15 Pol D-Sub connector (2 rows) Art. No <span>2</span>
ELAX® anthracite, with 15 Pol D-Sub connector (2 rows), TPU, clean room Operating temp. -40°C up to + 80°C Ø 8mm (0.31")	1.5 (59")	Ex 30F20	150.52.30
		Ex 50F20	150.52.35
		Ex 80F20	150.52.40
		Ex 110F20	150.52.45
		Ex 150F20	150.52.50
	0.1-20 (4" - 787")	Ex 30F20	150.52.31
		Ex 50F20	150.52.36
		Ex 80F20	150.52.41
		Ex 110F20	150.52.46
		Ex 150F20	150.52.51

\*) Each type of electric slide has internally a different cable strip length; therefore, they all have a different article identification number.

## 2.3 Extension or Intermediary Cable Removable ELAX® D-Sub

Extension cables are also useful for highly dynamic multi axis applications with cable chains. The replaceable extension cable is plugged onto a connecting cable. These anthracite **TPU** extension cables have a min. bending radius of **40mm (1.6")** for moving cables and **16mm (0.7")** for fixed cables.



Extension cable, shielded, suitable for cable chain	Length [m]	15 Pol D-Sub socket (2 rows), 15 Pol D-Sub plug (3 rows) & 3 Pol Wago 3,5mm (0.14") Art. No. <span>3</span>
ELAX® anthrazit, TPU, clean room Operating temp. -40°C up to + 80°C Ø 8mm (0.31")	1.5 (59")	150.56.01
	0.5-20 (20" - 787")	150.56.05
Intermediary cable shielded, suitable for cable chain	Length [m]	15 Pol D-Sub socket (2 rows), 15 Pol D-Sub plug (2 rows) Art. No. <span>4</span>
ELAX® anthrazit, TPU, clean room Operating temp. -40°C up to + 80°C Ø 8mm (0.31")	0.5-20 (20" - 787")	150.56.10



## 2.4 Vertical Weight Compensation ELAX® magnetic



In the event of a power failure, the ELAX® linear motor slide is powerless. If the axis is installed vertically, the carriage therefore falls downwards without braking. With this weight compensation for the ELAX® Ex 30F20 to Ex 110F20, based on magnetic force, the slider moves upwards in the event of a power failure. Additional advantages of the vertical weight compensation include reduced heating of the axis, full utilization of the force to optimize cycle times, and a linear force characteristic of the magnetic weight compensation, ensuring consistent force throughout the entire stroke in Forceteq® applications.

The magnetic weight compensation (GEKO) for the retracted state is pre-mounted either on the right or left. It can be selected in the following increments to match the additional mass attached to the carriage: 600 g, 1200 g, 1800 g or 2500 g. The tare weight of the carriage is already taken into account - only the additional weight fitted needs to be taken into account.



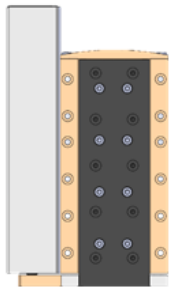
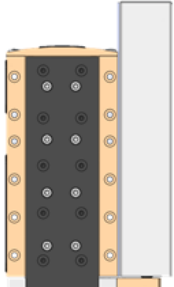
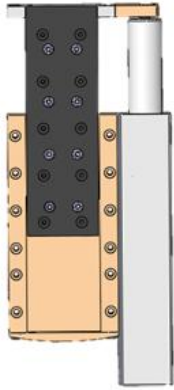
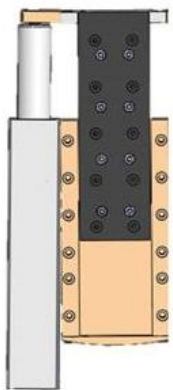
ELAX® Weight compensation magnetc	Weight	Left retracted	Right retracted
<b>Ex 30F20</b>	600g (0-1.32lbs)	<b>136.00.80</b>	<b>136.00.90</b>
	1200g (1.32-2.65lbs)	<b>136.00.81</b>	<b>136.00.91</b>
	1800g (2.65-3.97lbs)	<b>136.00.82</b>	<b>136.00.92</b>
	2500g (3.97-5.51lbs)	<b>136.00.83</b>	<b>136.00.93</b>
<b>Ex 50F20</b>	600g (0-1.32lbs)	<b>136.01.80</b>	<b>136.01.90</b>
	1200g (1.32-2.65lbs)	<b>136.01.81</b>	<b>136.01.91</b>
	1800g (2.65-3.97lbs)	<b>136.01.82</b>	<b>136.01.92</b>
	2500g (3.97-5.51lbs)	<b>136.01.83</b>	<b>136.01.93</b>
<b>Ex 80F20</b>	600g (0-1.32lbs)	<b>136.02.80</b>	<b>136.02.90</b>
	1200g (1.32-2.65lbs)	<b>136.02.81</b>	<b>136.02.91</b>
	1800g (2.65-3.97lbs)	<b>136.02.82</b>	<b>136.02.92</b>
	2500g (3.97-5.51lbs)	<b>136.02.83</b>	<b>136.02.93</b>
<b>Ex 110F20</b>	600g (0-1.32lbs)	<b>136.03.80</b>	<b>136.03.90</b>
	1200g (1.32-2.65lbs)	<b>136.03.81</b>	<b>136.03.91</b>
	1800g (2.65-3.97lbs)	<b>136.03.82</b>	<b>136.03.92</b>
	2500g (3.97-5.51lbs)	<b>136.03.83</b>	<b>136.03.93</b>

## 2.5 Vertical Weight Compensation ELAX® spring

In case of power interruption the linear motor of the ELAX® linear motor slides is powerless. If the axis is applied vertically, the slider falls downwards. With this weight compensation mounted **on the left side** \* available for the ELAX® Ex 30F20 up to Ex 110F20, based on spring force, the slider moves upwards in case of power interruption.

The case of the ELAX® weight compensation can be equipped with different types of spring packages for external payloads of **0-500g (0-1.10lbs)**, **500-1000g (1.10-2.21lbs)**, **1000-1500g (2.21-3.31lbs)** and **1500-2000g (3.31-4.41lbs)**. For existing ELAX® linear motor slides with weight compensation, the spring packages can be reordered and can be replaced and mounted very simply on your own.

\* A cable connection mounted on the left side (Art. No. 136.05.00) is not possible for ELAX® linear motor slides with weight compensation mounted on the left side.

ELAX® Weight compensation	Left side	Right side
Retracted		
Extended		

Ex 30F20	Weight Compensation <b>retracted</b>	Art. No.
Case and Cover left side Case and Cover right side	Please select the spring package corresponding to your payload.	136.00.00 136.00.01
Spring package, replaceable	0-500g (0-1.10lbs) retracted 500-1000g (1.10-2.21lbs) retracted 1000-1500g (2.21-3.31lbs) retracted 1500-2000g (3.31-4.41lbs) retracted	136.00.05 136.00.10 136.00.15 136.00.20

Ex 30F20	Weight Compensation <b>extended</b>	Art. No.
Case and Cover left side Case and Cover right side	Please select the spring package corresponding to your payload.	136.00.50 136.00.51
Spring package, replaceable	0-500g (0-1.10lbs) extended 500-1000g (1.10-2.21lbs) extended 1000-1500g (2.21-3.31lbs) extended 1500-2000g (3.31-4.41lbs) extended	136.00.55 136.00.60 136.00.65 136.00.70

Ex 50F20	Weight Compensation <b>retracted</b>	Art. No.
Case and Cover left side Case and Cover right side	Please select the spring package corresponding to your payload.	136.01.00 136.01.01
Spring package, replaceable	0-500g (0-1.10lbs) retracted 500-1000g (1.10-2.21lbs) retracted 1000-1500g (2.21-3.31lbs) retracted 1500-2000g (3.31-4.41lbs) retracted	136.01.05 136.01.10 136.01.15 136.01.20

Ex 50F20	Weight Compensation <b>extended</b>	Art. No.
Case and Cover left side Case and Cover right side	Please select the spring package corresponding to your payload.	136.01.50 136.01.51
Spring package, replaceable	0-500g (0-1.10lbs) extended 500-1000g (1.10-2.21lbs) extended 1000-1500g (2.21-3.31lbs) extended 1500-2000g (3.31-4.41lbs) extended	136.01.55 136.01.60 136.01.65 136.01.70

Ex 80F20	Weight Compensation <b>retracted</b>	Art. No.
Case and Cover left side Case and Cover right side	Please select the spring package corresponding to your payload.	136.02.00 136.02.01
Spring package, replaceable	0-500g (0-1.10lbs) retracted 500-1000g (1.10-2.21lbs) retracted 1000-1500g (2.21-3.31lbs) retracted 1500-2000g (3.31-4.41lbs) retracted	136.02.05 136.02.10 136.02.15 136.02.20

Ex 80F20	Weight Compensation <b>extended</b>	Art. No.
Case and Cover left side Case and Cover right side	Please select the spring package corresponding to your payload.	136.02.50 136.02.51
Spring package, replaceable	0-500g (0-1.10lbs) extended 500-1000g (1.10-2.21lbs) extended 1000-1500g (2.21-3.31lbs) extended 1500-2000g (3.31-4.41lbs) extended	136.02.55 136.02.60 136.02.65 136.02.70
Ex 110F20	Weight Compensation <b>retracted</b>	Art. No.
Case and Cover left side Case and Cover right side	Please select the spring package corresponding to your payload.	136.03.00 136.03.01
Spring package, replaceable	0-500g (0-1.10lbs) retracted 500-1000g (1.10-2.21lbs) retracted 1000-1500g (2.21-3.31lbs) retracted 1500-2000g (3.31-4.41lbs) retracted	136.03.05 136.03.10 136.03.15 136.03.20
Ex 110F20	Weight Compensation <b>extended</b>	Art. No.
Case and Cover left side Case and Cover right side	Please select the spring package corresponding to your payload.	136.03.50 136.03.51
Spring package, replaceable	0-500g (0-1.10lbs) extended 500-1000g (1.10-2.21lbs) extended 1000-1500g (2.21-3.31lbs) extended 1500-2000g (3.31-4.41lbs) extended	136.03.55 136.03.60 136.03.65 136.03.70

## 2.6 Chrome Steel Cover ELAX®

With this chrome steel cover the modular matrix holes and threads are covered and the surface is smooth and easy to clean. With the cover the ELAX® linear motor slide becomes suitable for the food- and pharmaceutical industry or for clean rooms of laboratory automation or medical technology.

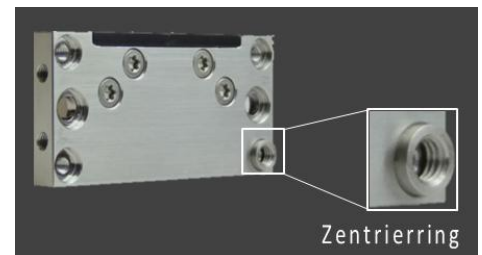
For ELAX®		Art. No
Ex 30F20 Ex 50F20 Ex 80F20 Ex 110F20 Ex 150F20	Chrome steel cover ELAX® for monobloc and slide	136.06.00 136.06.05 136.06.10 136.06.15 136.06.20



Please note: For ELAX® linear motor slides with weight compensation the chrome steel cover is not possible.

## 2.7 Arrangement Possibilities with Direct Screw Connection ELAX®

Modular system in perfection – An essential key factor when the ELAX® slides with direct drive were developed. No matter if held flat, upright, as cross table or as linear cantilever, the ELAX® slides can be directly screwed together by dowel bushing without the need of adapter plates. The hole matrix has always a grid of 20 x 50mm (0.79" x 1.97").

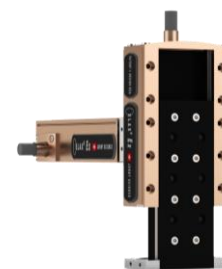


**Front flange**  
Stainless steel,  
rust-free 57mm x 27.5mm x 6mm,  
(2.24" x 1.08" x 0.24")

Hole matrix 20 x 50mm (0.79" x 1.97")

### 2.7.1 Y-Z Pick and Place flat

Pick and Place flat	Screws and dowel bushings	Art. No.
Ex F20	4 x dowel bushings Ø 6mm (0.24") 4 x hexagon socket screws, M3 x 29 (1.14")	136.10.00



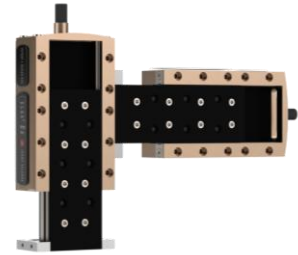
### 2.7.2 Cross Table Fitting

Cross Table Fitting	Screws and dowel bushings	Art. No.
Ex F20	4 x dowel bushings Ø 6mm (0.24") 4 x hexagon socket screws, M3 x 29 (1.14")	136.10.00



## 2.7.3 X-Z Pick and Place Upright

Pick and Place upright	Screws and dowel bushings	Art. No.
Ex F20	2 x dowel bushings $\varnothing$ 7mm (0.28") 2 x torx with low head, M4 x 8 (0.31")	136.10.01



## 2.8 Fixing Screws ELAX®

Fixing Screws	Screws	Art. No.
Ex F20	10 pcs M3 x 30 (1.18") hexagon socket screws for client's mounting plate	136.11.00



Ex 30F20 = 1 Set

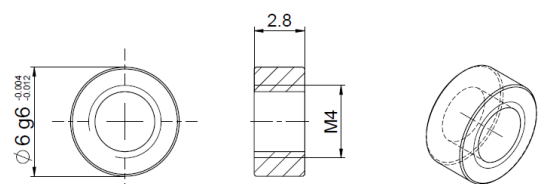
Ex 150F20 = 3 Sets

Ex 50F20/80F20/110F20 = 2 Sets

## 2.9 Dowel Bushings $\varnothing$ 6 and $\varnothing$ 7 ELAX®

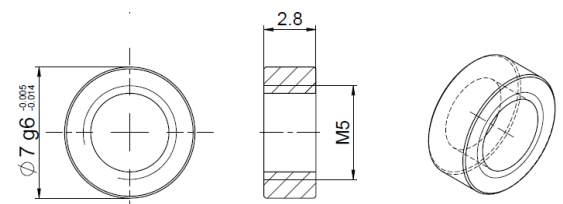
The dowel bushings with an outside  $\varnothing$  6mm (0.24") and M4 inside screw thread are used for the flat connections (X-Y cross tables or Y-Z Pick and Place flat) with 4 x M3 screws.

Dowel bushings	Dowel bushings $\varnothing$ 6mm (0.24")	Art. No.
Ex F20	10 x $\varnothing$ 6mm (0.24") -0.004/-0.012 x 2.8mm (0.11")	136.12.00



The dowel bushings with an outside  $\varnothing$  7mm (0.28") and M5 inside screw thread are used where slide and front flange are connected upright with 2 x M4 screws:

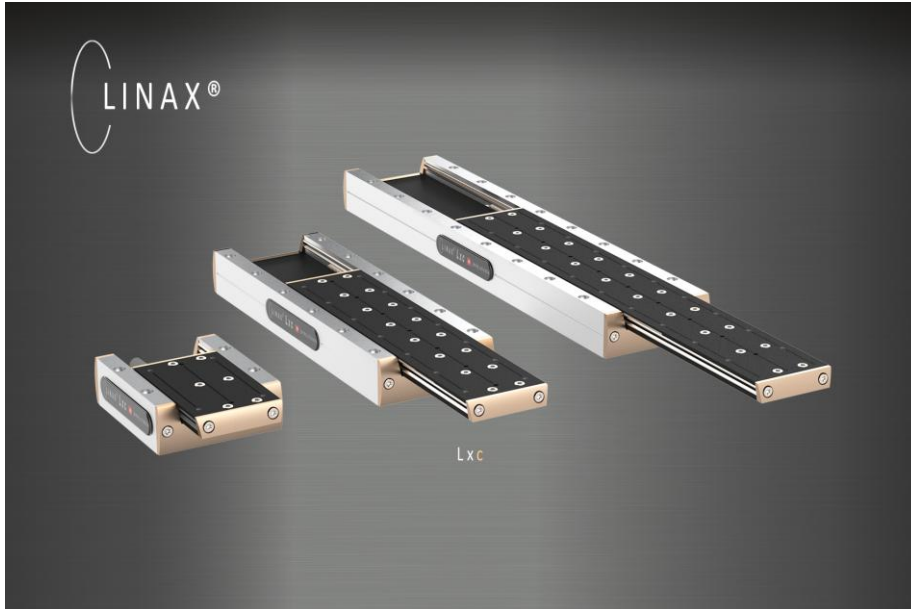
Dowel bushings	Dowel bushings $\varnothing$ 7mm (0.28")	Art. No.
Ex F20	10 x $\varnothing$ 7mm (0.28") -0.005/-0.014 x 2.8 (0.11")	136.12.01





### 3 LINAX® Linear Motor Axes

#### 3.1 LINAX® Lxc (compact)

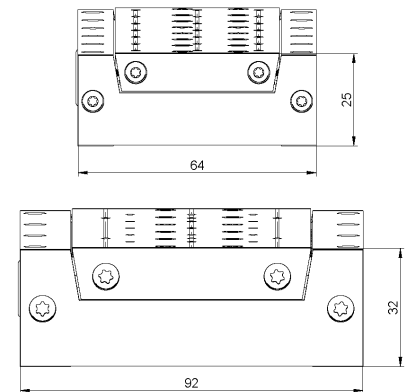


Compact series of linear motor axes in patented mono-bloc design.

The magnets move while the coils are stationary. This means that the cables are stationary and there are no movable cable chains necessary in single axis applications.

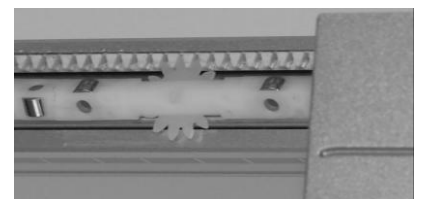
LINAX® Data sheets and **CAD files (STEP)** are available for download from [www.jennyscience.ch](http://www.jennyscience.ch)

Model	Stroke [mm]	Force Fn/Fp [N]	Weight Slider/Tot. (+ Weight comp.) [g]	Art. No.
<b>Lxc 44F08*)</b>	44 (1.73")	08/24 (1.8/5.4 lbf)	130/350 (+90) (0.29/0.77 (+0.2) lbs)	<b>115.00.10</b>
<b>Lxc 85F10*)</b>	85 (3.35")	10/30 (2.25/6.74 lbf)	230/650 (+180) (0.51/1.43 (+0.4) lbs)	<b>115.01.00</b>
<b>Lxc 135F10</b>	135 (5.31")	10/30 (2.25/6.74 lbf)	320/880 (0.71/1.94 lbs)	<b>115.02.00</b>
<b>Lxc 230F10</b>	230 (9.06")	10/30 (2.25/6.74 lbf)	450/1200 (0.99/2.65 lbs)	<b>115.03.00</b>
<b>Lxc 80F40*)</b>	80 (3.15")	40/114 (9.0/25.63 lbf)	520/1470 (+335) (1.15/3.24 (+0.74) lbs)	<b>115.10.00</b>
<b>Lxc 176F40*)</b>	176 (6.93")	40/114 (9.0/25.63 lbf)	750/2150 (+530) (1.65/4.74 (+1.17) lbs)	<b>115.12.00</b>
<b>Lxc 272F40</b>	272 (10.71")	40/114 (9.0/25.63 lbf)	1050/2800 (2.32/6.17 lbs)	<b>115.14.00</b>



The very compact Lxc series are based on the patented mono-bloc design. The coils are located in the mono-bloc and the magnets are at the bottom of the carriage slider.

- Centering forced control for cross rolls cage as a standard  
This centering force control prevents "cage creep" and increases the reliability and life time expectancy.
- Glass scale with a resolution of 1µm, accuracy +/- 2 µm
- Optional: A resolution of 100nm
- \*) Optional: A vertical weight compensation is available.



Cross roll cage contains a centering forced control with two toothed racks and a cog wheel.  
(System Schneeberger)

### Note: LINAX® Lxc option cleanroom, food industry and pharmaceutical industry

The LINAX® Lxc can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.



### 3.1.1 Measuring System with 100nm Resolution LINAX® Lxc

LINAX® Lxc 100nm	Option	Art. No
Lxc 44F08*)	100nm Messkopf mit redundanter Doppelabtastung	115.00.20
Lxc 85F10*)		115.01.20
Lxc 135F10		115.02.20
Lxc 230F10		115.03.20
Lxc 80F40*)		115.10.20
Lxc 176F40*)		115.12.20
Lxc 272F40		115.14.20

\*) Optional: A vertical weight compensation is available.

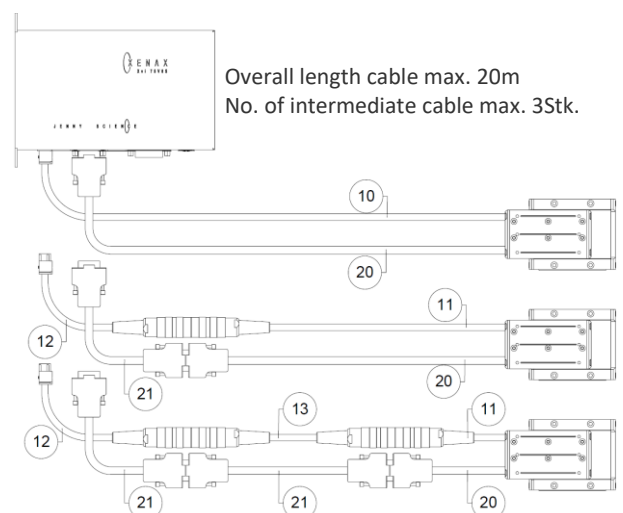
The optical measuring system has a standard resolution of 1µm. This resolution can be increased to 100nm while the maximum travel speed of the slider carriage will be reduced to 0.9m/s. The 100nm resolution information is stored in the LINAX® linear motor axis and is automatically detected by the XENAX® servo controller. Existing LINAX® glass scale linear motor axes in the field can be upgraded to 100nm resolution by Jenny Science.



### 3.1.2 Connecting Cable LINAX® Lxc

With the LINAX® Lxc the connecting cables are directly mounted into the case without plugs. For this reason, a high compactness is achieved. There are two connecting cables provided. One is for the encoder and the other is for the 3 linear motor phases. The additional lines in the encoder cable are for communication between LINAX® linear motor axis and XENAX® servo controller. The grey Lütze **PUR** connecting cables are compatible for continuous flexible operation in cable chains. Standard length is 1,5m (59"). Other lengths from 0,1 (4") to 20m (787") are available on request. The minimum bending radius for **moving cable** is **82mm (3.3")**. For **fixed cable**, the minimum bending radius is **41mm (1.7")**.

The optionally available, blue IGUS **TPE** connecting cables have a temperature range of -35° bis +100°. They are suitable for use in **clean rooms** and **oil resistant**. The minimum bending radius for **moving cable** is **44mm (1.8")**. For **fixed cable**, the minimum bending radius is **27mm (1.1")**.



Connecting Cable shielded, suitable for cable chain	Length [m]	*) Linear Motor Type	Cable Ø [mm]	Motor cable with 3 pole Wago, 3.5mm Art. No. <span>10</span>	Cable Ø [mm]	Encoder cable with 15 pole HD D-Sub Art. No. <span>20</span>
<b>LINAX® Lxc, Lütze, grey RAL 7001</b> Temp. moving -25° up to +80° Temp. stationary -40° up to + 80°	1.5 (59")	Lxc 44F08	4.7 (0.19")	150.22.30	6.3 (0.25")	150.23.30
		Lxc 85F10		150.22.35		150.23.35
		Lxc 135F10		150.22.40		150.23.40
		Lxc 230F10		150.22.45		150.23.45
	0.1-20 (4"-787")	Lxc 80F40	7.0 (0.28")	150.22.50	6.3 (0.25")	150.23.50
		Lxc 176F40		150.22.55		150.23.55
		Lxc 272F40		150.22.60		150.23.60
		Lxc 44F08		150.22.31		150.23.31
	1.5 (59")	Lxc 85F10	4.7 (0.19")	150.22.36	6.3 (0.25")	150.23.36
		Lxc 135F10		150.22.41		150.23.41
		Lxc 230F10		150.22.46		150.23.46
		Lxc 80F40		150.22.51		150.23.51
<b>LINAX® Lxc IGUS, blue,</b> Temp. moving -35° up to +100° Suitable for clean room and oil resistant	0.1-20 (4"-787")	Lxc 176F40	7.0 (0.28")	150.22.56	6.3 (0.25")	150.23.56
		Lxc 272F40		150.22.61		150.23.61
		Lxc 44F08		150.42.30	8.0 (0.31")	150.43.30
		Lxc 85F10		150.42.35		150.43.35
	1.5 (59")	Lxc 135F10	7.0 (0.28")	150.42.40		150.43.40
		Lxc 230F10		150.42.45		150.43.45
		Lxc 80F40		150.42.50		150.43.50
		Lxc 176F40		150.42.55		150.43.55
	0.1-20 (4"-787")	Lxc 272F40		150.42.60		150.43.60
		Lxc 44F08	7.0 (0.28")	150.42.31	8.0 (0.31")	150.43.31
		Lxc 85F10		150.42.36		150.43.36
		Lxc 135F10		150.42.41		150.43.41
		Lxc 230F10		150.42.46		150.43.46
	1.5 (59")	Lxc 80F40	7.0 (0.28")	150.42.51	8.0 (0.31")	150.43.51
		Lxc 176F40		150.42.56		150.43.56
		Lxc 272F40		150.42.61		150.43.61
		Lxc 44F08		150.42.31		150.43.31

The connection cables are fix mounted to the motor and are only sold together with the Linear Motor Axes.

Connecting Cable prepared for extension shielded, suitable for cable chain	Length [m]	*) Linear Motor Type	Cable Ø [mm]	Motorkabel 3 Pol binder round connector Art. No. <sup>(11)</sup>	Cable Ø [mm]	Encoderkabel mit 15 Pol HD D-Sub connector Art. No. <sup>(20)</sup>
<b>LINAX® Lxc, Lütze, grey RAL 7001</b> Temp. moving -25° up to +80° Temp. stationary -40° up to + 80°	1.5 (59")	Lxc 44F08	4.7 (0.19")	150.22.32	6.3 (0.25")	150.23.30
		Lxc 85F10		150.22.37		150.23.35
		Lxc 135F10		150.22.42		150.23.40
		Lxc 230F10		150.22.47		150.23.45
	0.1-20 (4"-787")	Lxc 80F40	7.0 (0.28")	150.22.52	6.3 (0.25")	150.23.50
		Lxc 176F40		150.22.57		150.23.55
		Lxc 272F40		150.22.62		150.23.60
		Lxc 44F08		150.22.33	6.3 (0.25")	150.23.31
	1.5 (59")	Lxc 85F10	4.7 (0.19")	150.22.38		150.23.36
		Lxc 135F10		150.22.43		150.23.41
		Lxc 230F10		150.22.48		150.23.46
<b>LINAX® Lxc IGUS, blue,</b> Temp. moving -35° up to +100° Suitable for clean room and oil resistant	0.1-20 (4"-787")	Lxc 80F40	7.0 (0.28")	150.22.53	6.3 (0.25")	150.23.51
		Lxc 176F40		150.22.58		150.23.56
		Lxc 272F40		150.22.63		150.23.61
		Lxc 44F08		150.42.32	8.0 (0.31")	150.43.30
	1.5 (59")	Lxc 85F10	7.0 (0.28")	150.42.37		150.43.35
		Lxc 135F10		150.42.42		150.43.40
		Lxc 230F10		150.42.47		150.43.45
	0.1-20 (4"-787")	Lxc 80F40	7.0 (0.28")	150.42.52	8.0 (0.31")	150.43.50
		Lxc 176F40		150.42.57		150.43.55
		Lxc 272F40		150.42.62		150.43.60
		Lxc 44F08		150.42.33	8.0 (0.31")	150.43.31
	1.5 (59")	Lxc 85F10	7.0 (0.28")	150.42.38		150.43.36
		Lxc 135F10		150.42.43		150.43.41
		Lxc 230F10		150.42.48		150.43.46
	0.1-20 (4"-787")	Lxc 80F40	7.0 (0.28")	150.42.53	8.0 (0.31")	150.43.51
		Lxc 176F40		150.42.58		150.43.56
		Lxc 272F40		150.42.63		150.43.61

\*) Each type of linear motor axis has internally different cable strip lengths; therefore they all have a different article identification number.

The connection cables are fix mounted to the motor and are only sold together with the Linear Motor Axes.

## 3.1.3 Removable Extension Cable LINAX® Lxc

Extension cables are also useful for highly dynamic multi axes applications with cable chains. Use short connection cables; then plug it into the extension cables. These extension cables run in the cable chain, and are easily replaceable. The grey Lütze **PUR** bending radius for **moving cable** is **76mm (3.0")**. For **fixed cable**, the minimum bending radius is **46mm (1.9")**. Through full PUR jacket and TPE / HGI insulation these cables are optimal for cable chains, extremely harsh operation conditions and an environment with aggressive coolants and lubricants. The optionally available dark blue **IGUS TPE** cables have a minimum bending radius of **44 mm for continuous movement** and **27 mm for fixed cable**.

When using extension cables, the 3 pole Wago connector is replaced by a metallic shielded round jack from the manufacturing company "Binder".



Extension cables shielded and suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable 3 pole binder round jack to 3 pole Wago-connector 3,5mm (0.14") Art. No. <sup>(12)</sup>	Cable Ø [mm]	Encoder cable 15 pole HD jack to 15 pole HD connector Art. No. <sup>(21)</sup>
LINAX® Lxc/Lxs/Lxu/Lxe, Lütze, grey, Temp. moving -25° up to +80°	1.5 (59") 3.5 (138") 5.0 (197") 0.5-20 (20" - 787")	7.5 (0.3")	150.26.01 150.26.03 150.26.05 150.26.10	7.2 (0.28")	150.27.01 150.27.03 150.27.05 150.27.10
LINAX® Lxc/Lxs/Lxu/Lxe, IGUS, darkblue, Temp. moving -35° up to +100° suitable for clean room and oil resistant	1.5 (59") 3.5 (138") 5.0 (197") 0.5-20 (20" - 787")	7.0 (0.3")	150.46.01 150.46.03 150.46.05 150.46.10	9.5 (0.37")	150.47.01 150.47.03 150.47.05 150.47.10

Intermediary cable shielded and suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable 3 pole binder round jack to 3 pole binder round connector Art. No. <sup>(13)</sup>	Cable Ø [mm]	Encoder cable 15 pole HD jack to 15 pole HD connector Art. No. <sup>(21)</sup>
LINAX® Lxc/Lxs/Lxu/Lxe, Lütze, grey, Temp. moving -25° up to +80°	0.5-20 (20" - 787")	7.0 (0.3")	150.26.15	7.2 (0.28")	150.27.10
LINAX® Lxc/Lxs/Lxu/Lxe, IGUS, darkblue, Temp. moving -35° up to +100° suitable for clean room and oil resistant	0.5-20 (20" - 787")	7.0 (0.3")	150.46.15	9.5 (0.37")	150.47.10

### 3.1.4 Vertical Weight Compensation compressed air LINAX® Lxc

Weight comp. compressed air	Maximal force at 6 bar	Mounted on the left Art No.	Mounted on the right Art No.
<b>Lxc44F08</b>	3 kg (6.62lbs)	<b>135.00.25</b>	<b>135.00.20</b>
<b>Lxc 85F10</b>	3 kg (6.62lbs)	<b>135.01.10</b>	<b>135.01.00</b>
<b>Lxc 80F40</b>	6 kg (13.23lbs)	<b>135.02.11</b>	<b>135.02.10</b>
<b>Lxc 176F40</b>	6 kg (13.23lbs)	<b>135.02.13</b>	<b>135.02.12</b>

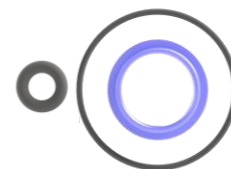
In case of a power interruption, the linear motor of the LINAX® axis is powerless. If the axis is applied vertically, the slider of the linear motor would fall downwards. With this weight compensation based on compressed air without air consumption, the slider remains in position or moves upwards depending on the air adjustment. For adjustment of the air pressure use a commercial **air pressure regulator**, for example Festo "VRPA".

A great advantage of the weight compensation is the support of the linear motor in vertical orientation. The motor runs without a static weight and is not heating in a stationary position. You get higher dynamics and at the same time you also save energy.



### 3.1.5 Piston seal for weight compensation compressed air LINAX® Lxc

Piston seal	Set	Art. No.
<b>Lxc F08/F10</b>	1 x Seal	<b>135.01.05</b>
<b>Lxc F40</b>	2 x O-ring already lubricated	<b>135.02.05</b>



### 3.1.6 Vertical Weight Compensation with Spring LINAX® Lxc

Weight comp. with spring	Maximal force	Mounted on the right Art No.
<b>Lxc 44F08</b>	0-200g (0-0.44lbs)	<b>135.00.02</b>
	200-400g (0.55-0.88lbs)	<b>135.00.04</b>
	400-600g (0.88-1.32lbs)	<b>135.00.06</b>
	600-900g (1.32-1.98lbs)	<b>135.00.09</b>

In case of power interruption the linear motor of the LINAX® linear motor axes is powerless. If the axis is applied vertically, the slider of the linear would fall downwards. With this weight compensation for the smallest LINAX® linear motor axis, mounted on the right side and based on spring force, the slider moves upwards in case of power interruption. It can be equipped with 4 different types of springs for external payloads of **0-200g (0-0.44lbs)**, **200-400g (0.55-0.88lbs)**, **400-600g (0.88-1.32lbs)** and **600-900g (1.32-1.98lbs)**.



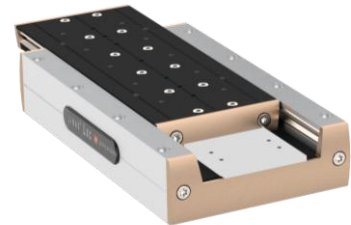


### 3.1.7 Dirt Wiper on Magnet Track LINAX® Lxc F40

LINAX® F40	Type	Art. No.
Lxc 80F40	Dirt wiper incl. 2 form milled front plates to LINAX® Lxc F40	135.06.00
Lxc 176F40		135.06.05
Lxc 272F40		135.06.10

Due to the construction of these stronger Lxc F40 series the linear motor opening between magnets and coils is bigger than on the smaller Lxc F08/F10 types. This is why the optional dirt wipers are only available for the LINAX® Lxc F40.

Besides dirt, small parts such as small screws (watch industry) can get stuck in this gap. This can potentially damage poles or coils. With this dirt wiper, particles >2/10mm are prevented from entering in the linear motor.



### 3.1.8 Fixing Screws for Monobloc LINAX® Lxc

Linear Motor Type	Screws	Art. No.
Lxc F08 / Lxc F10	10 x hexagon socket screws M3 x 27mm (1.06") low head, stainless	135.10.01
Lxc F40	10 x hexagon socket screws M3 x 35mm (1.38") low head, stainless	135.20.01



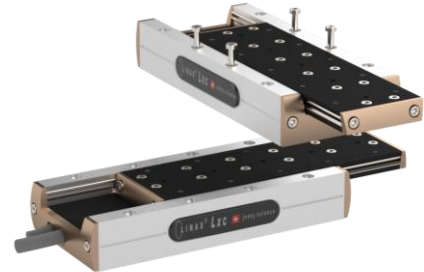
The very compact dimensions of the LINAX® Lxc let just little room for connecting screws. This is why for the Lxc axes, screws with low heads are to be used. Screws with standard heads would potentially get jammed in cross table applications.

Lxc 44F08/85F10 = 1 Set  
Lxc 135F10/230F10 = 2 Sets

Lxc 80F40 = 1 Set  
Lxc 176F40/272F40 = 2 Sets

### 3.1.9 Cross Table Fixing Screws LINAX® Lxc

Cross Table	Screws and centering pins	Art. No.
<b>Lxc F08 / Lxc F10</b>	4 x hexagon socket screws M3 x 27mm (1.06"), low head 2 x centering pin Ø 2,5mm (0.1") h8 x 6mm (0.24"), stainless	<b>135.10.00</b>
<b>Lxc F40</b>	4 x hexagon socket screws M3 x 35mm (1.38"), low head 2 x centering pin Ø 2,5mm (0.1") h8 x 6mm (0.24"), stainless	<b>135.20.00</b>



The various LINAX® linear motor types can be directly mounted to each other without the need of adapter plates. For cross table combinations there are multiple grid patterns possible.

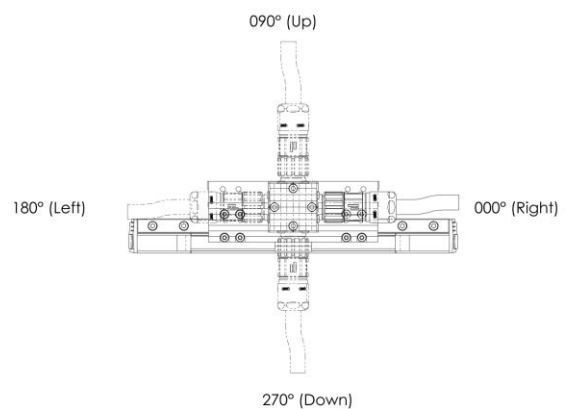
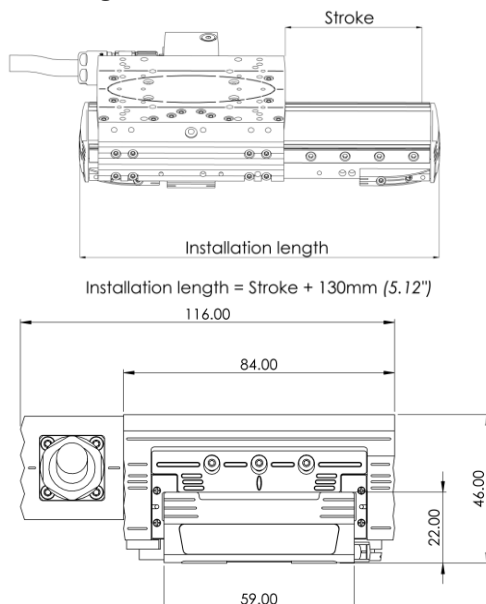
For the choice of the according screws, the upper mounted linear motor is relevant (For example if a LINAX® Lxc F10 is mounted on the top of a LINAX® Lxc F40, use fixing screw set for the Lxc F10).

### 3.2 LINAX® Lxu F60S (universal)



Lxu F60S

These universal linear motor axes, with integrated **absolute measuring system** and the **single-cable solution**, are real “all-rounders”. There are three mounting possibilities: mounting to carriage slider; to the ground plate; or to the front face. The four long holes through the carriage slider allow direct screw connections for the back to back mounting of two LINAX® Lxu slides, which is ideal for X-Z handling. For vertical orientations, an optional weight compensation unit is available. The air pressure coupling is on the 90° “rotatable” connector case. This LINAX® Lxu linear motor axes can be controlled only with the powerful XENAX® Xvi servo controller. We recommend the use of a **Brake Recovery Unit (BERU)** in conjunction with these linear motor stages for movements > 0.8m/s.



The connector case is rotatable with a 90° pattern, in 4 directions. As standard, the motor is supplied with a "right-hand cable outlet" (with view of the connector housing).

LINAX® Lxu F60S absolute	Stroke [mm]	Force Fn/Fp [N]	Weight carriage slider/total (+ weight comp.) [g]	Art. No. meas. scale opt. 100nm +/- 0.5µm	Art. No. meas. scale opt. 1µm +/- 1.5µm	Art. No. meas. scale magn. 1µm +/- 2µm
<b>Lxu 40F60S*</b>	40 (1.57")	60/180 (13.5/40.5 lbf)	950/1700 (+360) (2.09/3.75 (+0.79) lbs)	<b>115.44.00</b>	<b>115.40.00</b>	<b>115.39.00</b>
<b>Lxu 80F60S*</b>	80 (3.15")	60/180 (13.5/40.5 lbf)	950/1900 (+360) (2.09/4.19 (+0.79) lbs)	<b>115.44.02</b>	<b>115.40.02</b>	<b>115.39.02</b>
<b>Lxu 160F60S*</b>	160 (6.30")	60/180 (13.5/40.5 lbf)	950/2200 (+590) (2.09/4.85 (+1.30) lbs)	<b>115.44.06</b>	<b>115.40.06</b>	<b>115.39.06</b>
<b>Lxu 240F60S*</b>	240 (9.45")	60/180 (13.5/40.5 lbf)	950/2600 (+820) (2.09/5.73 (+1.81) lbs)	<b>115.44.10</b>	<b>115.40.10</b>	<b>115.39.10</b>
<b>Lxu 320F60S</b>	320 (12.60")	60/180 (13.5/40.5 lbf)	950/2900 (2.09/6.39 lbs)	<b>115.44.16</b>	<b>115.40.16</b>	<b>115.39.16</b>

All versions listed are with **absolute measuring system**

\* These models are available with vertical weight compensation.

With an optical measuring system resolution of 100 nm, the maximum traversing speed is reduced to max. 0.9 m/s.

**Note: LINAX® Lxu option cleanroom, food industry and pharmaceutical industry**

The LINAX® Lxu can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.

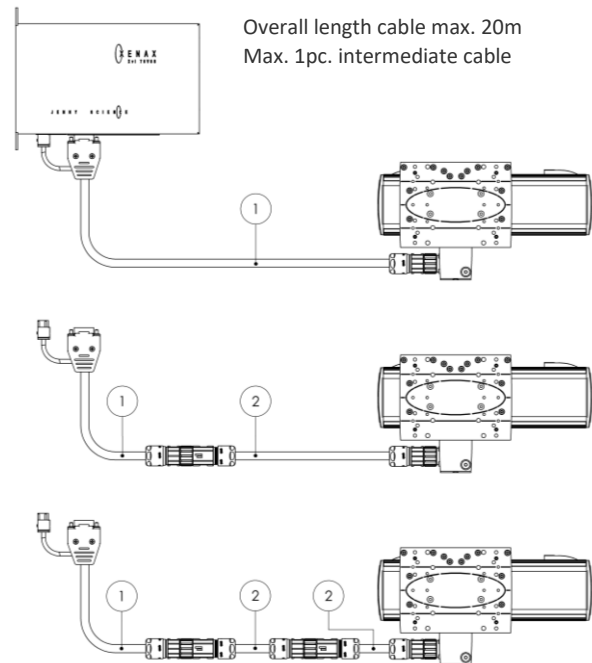


### 3.2.1 Connecting Cable LINAX® Lxu F60S

Absolutely revolutionary is the flexible one-cable connection, which reduces the machine cabling effort considerably. In only one cable are the lines for encoder, for the 3 phases of the linear motor and for the communication between LINAX® Lxu F60S and XENAX® Servocontroller.

These connection cables have a minimum bending radius of **48mm for continuous movement** and of **20mm for fixed cables**. Extension cables are also available as accessories. The cable can withstand more than 1 million cycles of torsional stress at  $\pm 90^\circ$  over a length of 1m

The connector housing can also be rotated in  $90^\circ$  grid.



Connecting- or extension cable XENAX® M16	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No. <span style="float: right;">①</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	150.83.01 150.83.03 150.83.05 150.83.10

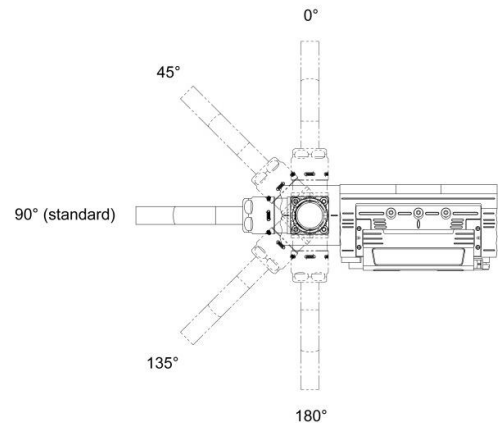
Intermediate cable 2x M16	Length [m]	M16 Socket – M16 Plug Art. No. <span style="float: right;">②</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.01 150.84.03 150.84.05 150.84.10

### 3.2.2 Connecting Cable LINAX® Lxu F60S with angled plug

Depending on the installation situation, it may be useful to use an angled connector for the cable outlet on the motor side. The orientation of the cable can be specified in 45° steps - you can easily specify this orientation when ordering.

To do this, please select the desired cable and length using the article number and add the desired orientation variant. Without specific information, a 90° orientation is assumed as standard.

The orientation always refers to the standard outlet from the connector housing on the motor ("cable outlet on the right", when viewed on the connector housing).



Connecting- or extension cable XENAX® M16 with angled plug	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No.	Variant orientation <span>①</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	0.1-20 (4" - 787")	150.83.30	90°      A 180°    B 0°        C 45°       D 135°     E
Intermediate cable 2 x M16 with angled plug	Length [m]	M16 Socket – M16 Plug Art. No.	Variant orientation <span>②</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.21 150.84.23 150.84.25 150.84.30	90°      A 180°    B 0°        C 45°       D 135°     E



### 3.2.3 Vertical Weight Compensation LINAX® Lxu F60S

In case of a power interruption, the linear motor of the LINAX® axis is powerless. If the axis is applied vertically, the slider of the linear motor would fall downwards. With this weight compensation based on compressed air without air consumption, the slider remains in position or moves upwards depending on the air adjustment. For adjustment of the air pressure use a commercial **air pressure regulator**, for example Festo "VRPA". The air pressure coupling is on the 90° "rotatable" connector case.

A great advantage of the weight compensation is the support of the linear motor in vertical orientation. The motor runs without a static weight and is not heating in a stationary position. You get higher dynamics and at the same time you also save energy.

Weight Compensation	Maximal force at 6 bar	Art. No.
Lxu 40F60	6 kg (13.23lbs)	135.03.01
Lxu 80F60		135.03.01
Lxu 160F60		135.03.05
Lxu 240F60		135.03.20



### 3.2.4 Piston rod seal weight compensation LINAX® Lxu F60S

Piston seal	Set	Art. No.
Lxu F60S	1 x Seal 2 x O-ring already lubricated	135.03.15

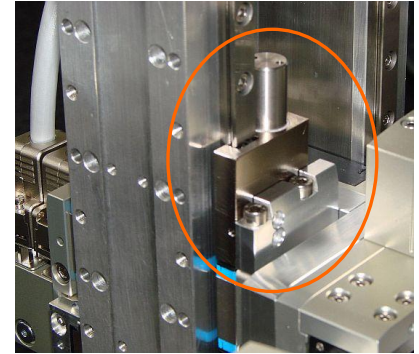


### 3.2.5 Spring Operated Brake LINAX® Lxu F60S

The spring operated brake is applied onto the guiding rail. In the “off” status the brake is inactive (non air-pressure). By activating a 3/2 way pneumatic valve, (for example Festo CPE10 M1BH-3GL-QS-4, Article No. 196 846), the brake is released with compressed air.

In use with the XENAX® Xvi servo controller, an OUTPUT FUNCTION can be assigned for the automatic control of the brake valve.

**IMPORTANT:** The stroke of the linear motor axis is reduced by 35mm (1.38") with the installation of the spring operated brake. For example, the LINAX® Lxu 320F60 with a spring applied brake has a stroke of 285mm (11.22") instead of 320mm (12.60").

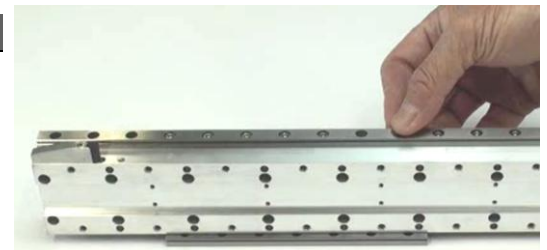


Spring Operated Brake	Maximal holding force	Art. No.
Lxu 80F60S to Lxu 320F60S (Hiwin guiding carriages)	Until 8 kg (17.64lbs)	<b>135.03.32</b>



### 3.2.6 Cover Caps for Screws LINAX® Lxu F60S

Linear Motor Type	Cover Caps	Art. No.
Lxu F60	Cap to cover the LINAX® Lxu/Lxs screws on the guiding rails	<b>135.08.00</b>



Lxu 40F60S = 16 pcs.  
Lxu 80F60S = 20 pcs.  
Lxu 160F60S = 28 pcs.

Lxu 240F60S = 36 pcs.  
Lxu 320F60S = 44 pcs.

### 3.2.7 Cross Table Fixing Screws LINAX® Lxu F60S

Linear Motor Type	Screws and centering pins	Art. No.
Lxu F60S	4 x hexagon socket screws M4 x 40mm (1.57"), 4 x centering pins Ø 4mm (0.16") x 8mm (0.31") stainless	<b>135.11.10</b>

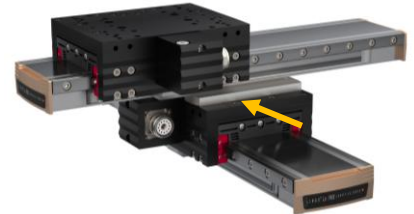
The various LINAX® linear motor types can be directly mounted to each other without the need of adapter plates. The four long holes through the carriage slider allow direct screw connections for the back to back mounting of two LINAX® Lxu slides, which is ideal for X-Z handling or 1 Lxu can be fixed to a back wall.



### 3.2.8 Adapter Plate LINAX® Lxu 60S

With this adapter plate a LINAX® Lxu slider can be connected to another LINAX® Lxu ground plate, incl. screws and centering pins.

Adapter Plate	Accessories	Art. No
<b>Lxu 40F60S to Lxu 320F60S</b>	Adapter Plate incl. 2x centering pins 2.5x6, 4x centuring pins 4x8, 6x Torx M4x8 and 4x hexagon socket screws M4x40	<b>135.12.00</b>

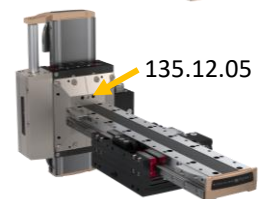
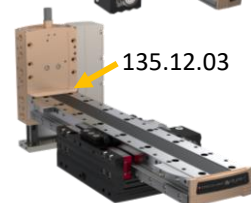
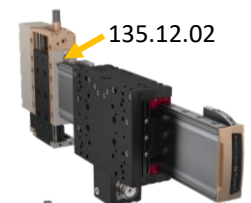


### 3.2.9 Front Flange LINAX® Lxu 60S

With the front flange it is possible to mount different Pick and Place orientations: The front plate of a LINAX® Lxu is replaced by the front flange which can directly be mounted to:

- to an ELAX slide (upright or flat),
- to a LINAX® Lxc F08/F10 or F40
- or to the carriage slider of another LINAX® Lxu.

Front Flange LINAX® Lxu	Accessories	Art. No.
<b>For ELAX® Ex 30/50/80F20 upright</b>	incl. 2 centering pins 4x8, 6 torx M4x8 and 2 dowel bushings D7 (Not usable for Ex 110F20 and 150F20)	<b>135.12.02</b>
<b>For ELAX® Ex F20 flat</b>	incl. 2 centering pins 4x8, 4 torx M4x8, 4 hexagon socket screws M3x30 and 4 dowel bushings D6	<b>135.12.03</b>
<b>For Lxu</b>	incl. 2 centering pins 4x8, 4 torx M4x12, 4 centering pins 2.5x5 and 8 torx M4x8	<b>135.12.05</b>
<b>For Lxc F40</b>	incl. 2 centering pins 4x8, 4 torx M4x12, 4 centering pins 2.5x5 and 4 hexagon socket screws M3x35	<b>135.12.06</b>
<b>For Lxc F08/F10</b>	incl. 6 centering pins 4x8, 8 torx M4x8 and 4 torx M4x12	<b>135.12.07</b>



### 3.2.10 Cantilever Armor LINAX® Lxu 60S

The cantilever armour is used with long cantilever stroke constructions for maximum stability and minimal bending.

Linear Motor Type	Armor	Art. No.
Lxu 240F60S Lxu 320F60S	incl. fixing screws M4x8	135.13.05 135.13.10



### 3.2.11 Additional Carriage Slider LINAX® Lxu F60S

With the LINAX® Lxu linear motor axes it is possible to assemble two or more carriage sliders on the same ground plate. The cable connector can be orientated on the left or right side of the slider. Each carriage slider requires a XENAX® servo controller.

Additional Carriage to LINAX® Lxu F60S	Type of carriage slider	Art. No.
Lxu F60S mag. 1 µm	Additional carriage slider to LINAX® Lxu F60S with precise, self-lubricating ball bearing carriages, integrated linear motor with dirt wiper and <b>magnetic absolute measuring system</b> , resolution 1 µm, accuracy +/-2µm	135.30.50
Lxu F60S opt. 1 µm	Additional carriage slider to LINAX® Lxu F60S with precise, self-lubricating ball bearing carriages, integrated linear motor with dirt wiper and <b>optical absolute measuring system</b> , resolution 1 µm, accuracy +/-1.5µm	135.30.52
Lxu F60S opt. 100nm	Additional carriage slider to LINAX® Lxu F60S with precise, self-lubricating ball bearing carriages, integrated linear motor with dirt wiper and <b>optical absolute measuring system</b> , resolution 100 nm, accuracy +/-0.5µm	135.30.54

With an optical measuring system resolution of 100 nm, the maximum traversing speed is reduced to max. 0.9 m/s.

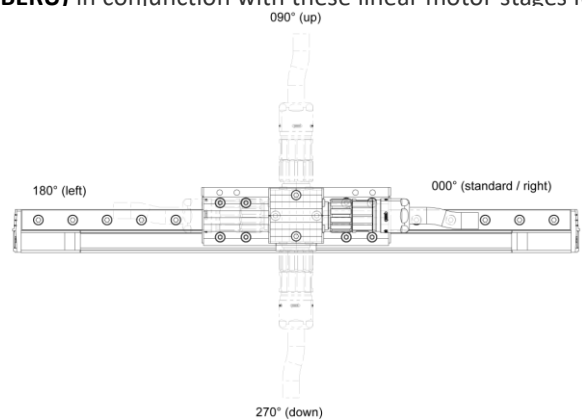
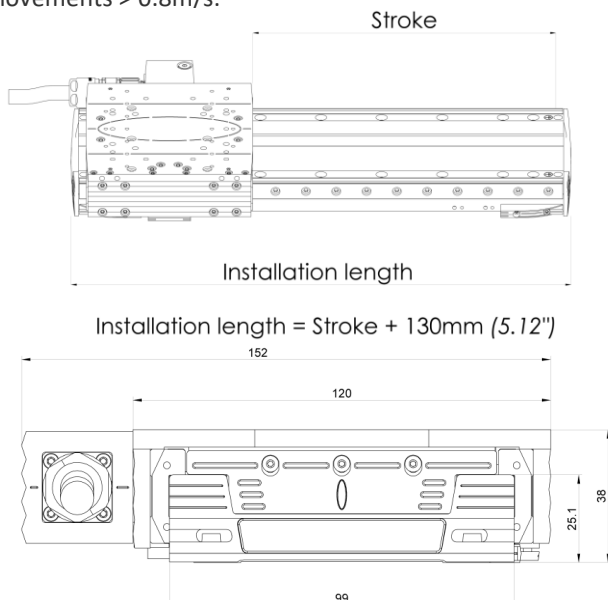
### 3.3 LINAX® Lxs F60S (shuttle)

LINAX®



Lxs F60S

These LINAX® linear motor axes, with **integrated absolute measuring system** and the **single-cable solution**, can be controlled with the powerful XENAX® Xvi Servocontroller. As the name implies, the Lxs shuttle series are basic axes for long strokes up to 1600mm (63"). Of particular importance is the wide-body construction with recessed linear motor, through which the height is reduced to just 38mm (1.5"). The wide spaced guiding rails are able to withstand high moments of force. For example, for long Lxu cantilever axes. We recommend the use of a **Brake Recovery Unit (BERU)** in conjunction with these linear motor stages for movements > 0.8m/s.



The connector case is rotatable with a 90° pattern, in 4 directions. As standard, the motor is supplied with a "cable outlet right" (with view of the connector housing).

LINAX® Lxs F60S absolute	Stroke [mm]	Force Fn/Fp [N]	Weight carriage slider/total [g]	Art. No. meas. scale opt. 100nm +/- 0.5µm	Art. No. meas. scale opt. 1µm +/- 1.5µm	Art. No. meas. scale magn. 1µm +/- 2µm
<b>Lxs 160F60S</b>	160 (6.30")	60/180 (13.5/40.5 lbf)	1000/2600 (2.21/5.73 lbs)	<b>115.42.06</b>	<b>115.38.06</b>	<b>115.37.06</b>
<b>Lxs 200F60S</b>	200 (7.87")	60/180 (13.5/40.5 lbf)	1000/2800 (2.21/6.17 lbs)	<b>115.42.08</b>	<b>115.38.08</b>	<b>115.37.08</b>
<b>Lxs 320F60S</b>	320 (12.60")	60/180 (13.5/40.5 lbf)	1000/3400 (2.21/7.50 lbs)	<b>115.42.14</b>	<b>115.38.14</b>	<b>115.37.14</b>
<b>Lxs 400F60S</b>	400 (15.75")	60/180 (13.5/40.5 lbf)	1000/3900 (2.21/8.60 lbs)	<b>115.42.18</b>	<b>115.38.18</b>	<b>115.37.18</b>
<b>Lxs 520F60S</b>	520 (20.47")	60/180 (13.5/40.5 lbf)	1000/4500 (2.21/9.92 lbs)	<b>115.42.24</b>	<b>115.38.24</b>	<b>115.37.24</b>
<b>Lxs 600F60S</b>	600 (23.62")	60/180 (13.5/40.5 lbf)	1000/5000 (2.21/11.03 lbs)	<b>115.42.28</b>	<b>115.38.28</b>	<b>115.37.28</b>
<b>Lxs 800F60S</b>	800 (31.50")	60/180 (13.5/40.5 lbf)	1000/6000 (2.21/13.45 lbs)	<b>115.42.38</b>	<b>115.38.38</b>	<b>115.37.38</b>
<b>Lxs 1000F60S</b>	1000 (39.37")	60/180 (13.5/40.5 lbf)	1000/7200 (2.21/15.88 lbs)	<b>115.42.48</b>	<b>115.38.48</b>	<b>115.37.48</b>
<b>Lxs 1200F60S</b>	1200 (47.24")	60/180 (13.5/40.5 lbf)	1000/8400 (2.21/18.52 lbs)	<b>115.42.58</b>	<b>115.38.58</b>	<b>115.37.58</b>
<b>Lxs 1600F60S</b>	1600 (62.99")	60/180 (13.5/40.5 lbf)	1000/10800 (2.21/23.81 lbs)	<b>N/A</b>	<b>N/A</b>	<b>115.37.78</b>

All versions listed are with **absolute measuring system**

With an optical measuring system resolution of 100 nm, the maximum traversing speed is reduced to max. 0.9 m/s.

**Note: LINAX® Lxu option cleanroom, food industry and pharmaceutical industry**

The LINAX® Lxu can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.

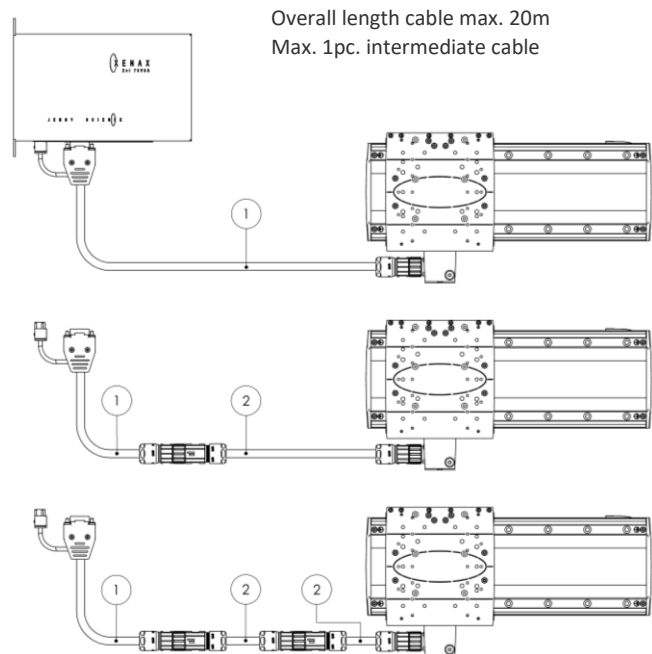


### 3.3.1 Connecting Cable LINAX® Lxs F60S

Absolutely revolutionary is the flexible one-cable connection, which reduces the machine cabling effort considerably. In only one cable are the lines for encoder, for the 3 phases of the linear motor and for the communication between LINAX® Lxs F60S and XENAX® Servocontroller.

These connection cables have a minimum bending radius of **48mm for continuous movement** and of **20mm for fixed cables**. Extension cables are also available as accessories. The cable can withstand more than 1 million cycles of torsional stress at  $\pm 90^\circ$  over a length of 1m

The connector housing can also be rotated in  $90^\circ$  grid.



Connecting- or extension cable XENAX® M16	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No. <span style="float: right;">①</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	150.83.01 150.83.03 150.83.05 150.83.10

Intermediate cable 2 x M16	Length [m]	M16 Socket – M16 Plug Art. No. <span style="float: right;">②</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.01 150.84.03 150.84.05 150.84.10

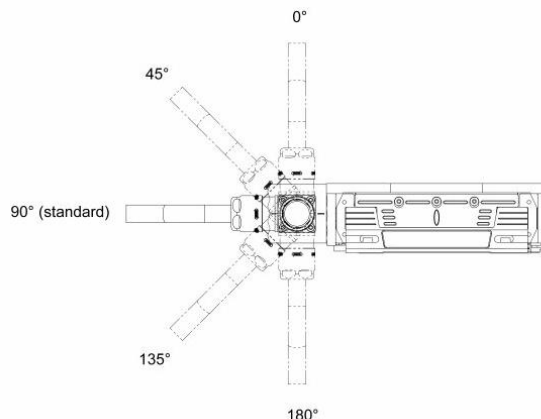


### 3.3.2 Connecting Cable LINAX® Lxs F60S with angled plug

Depending on the installation situation, it may be useful to use an angled connector for the cable outlet on the motor side. The orientation of the cable can be specified in 45° steps - you can easily specify this orientation when ordering.

To do this, please select the desired cable and length using the article number and add the desired orientation variant. Without specific information, a 90° orientation is assumed as standard.

The orientation always refers to the standard outlet from the connector housing on the motor ("cable outlet on the right", when viewed on the connector housing).



Connecting- or extension cable XENAX® M16 with angled plug	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No.	Variant orientation <span>①</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	0.1-20 (4" - 787")	150.83.30	90°      A 180°    B 0°        C 45°       D 135°     E

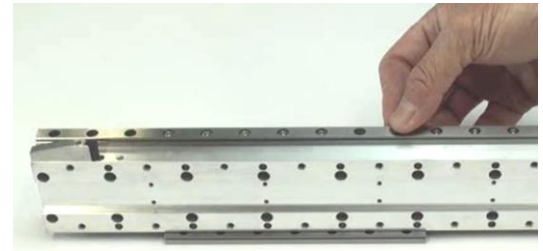
Intermediate cable 2 x M16 with angled plug	Length [m]	M16 Socket – M16 Plug Art. No.	Variant orientation <span>②</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.21 150.84.23 150.84.25 150.84.30	90°      A 180°    B 0°        C 45°       D 135°     E

### 3.3.3 Cover Caps for Screws LINAX® Lxs F60S

Type	Cover Caps	Art. No.
<b>Lxs F60S</b>	Cap to cover the LINAX® Lxu/Lxs screws on the guiding rails	<b>135.08.00</b>

*Lxs 160F60S = 28 pcs*  
*Lxs 200F60S = 32 pcs*  
*Lxs 320F60S = 44 pcs*  
*Lxs 400F60S = 52 pcs*  
*Lxs 520F60S = 64 pcs*

*Lxs 600F60S = 72 pcs*  
*Lxs 800F60S = 92 pcs*  
*Lxs 1000F60S = 112 pcs*  
*Lxs 1200F60S = 132 pcs*  
*Lxs 1600F60S = 172 pcs*



### 3.3.4 Fixings Screws for Ground Plate LINAX® Lxs F60S

Type	Set	Art. No.
<b>Lxs F60S</b>	10 x hexagon socket screws M4 x 25mm (0.98") stainless	<b>135.11.05</b>

*Lxs 160F60S/200F60S = 2 Sets*  
*Lxs 320F60S/400F60S = 3 Sets*  
*Lxs 520F60S/600F60S = 4 Sets*  
*Lxs 800F60S = 5 Sets*  
*Lxs 1000F60S = 6 Sets*

*Lxs 1200F60S = 7 Sets*  
*Lxs 1600F60S = 9 Sets*

In order to avoid mechanical vibrations of the long LINAX® Lxs linear motor axes, they have to be screwed with all fixing screws over the whole length onto a base plate.

### 3.3.5 Cross Table Fixing Screws LINAX® Lxs F60S

Cross table screw	Screws and centering pins	Art. No.
<b>Lxs F60S</b>	6 x hexagon socket screws M4 x 25mm (0.98"), 4 x centering pins Ø4mm (0.16") x 8mm (0.31") stainless	<b>135.11.20</b>

The various LINAX® linear motor types can be directly mounted to each other without the need of adapter plates. For cross table combinations there are multiple grid patterns possible.

For the choice of the according screws, the upper mounted linear motor is relevant

### 3.3.6 Additional Carriage Slider LINAX® Lxs F60S

With the LINAX® Lxs linear motor axes it is possible to assemble two or more carriage sliders on the same ground plate. The cable connector can be orientated to the left or right side of the slider. Each carriage slider requires a XENAX® servo controller.

Additional Carriage Slider LINAX® Lxs F60S	Type of carriage slider	Art. No.
Lxs F60S mag. 1µm	Carriage slider to LINAX® Lxs F60S with precise, self-lubricating ball bearing carriages, integrated linear motor with dirt wiper and <b>magnetic absolute measuring system</b> , resolution 1 µm, accuracy +/-2µm	<b>135.30.40</b>
Lxs F60S opt. 1µm	Carriage slider to LINAX® Lxs F60S with precise, self-lubricating ball bearing carriages, integrated linear motor with dirt wiper and <b>optical absolute measuring system</b> , resolution 1 µm, accuracy +/-1.5µm	<b>135.30.42</b>
Lxs F60S opt. 100nm	Carriage slider to LINAX® Lxs F60S with precise, self-lubricating ball bearing carriages, integrated linear motor with wiper and <b>optical absolute measuring system</b> , resolution 100nm, accuracy +/-0.5µm	<b>135.30.44</b>
Lxs F60S passiv	Passiv carriage slider with precise, self-lubricating ball bearing carriages. <b>WITHOUT MOTOR &amp; WITHOUT MEASURING SYSTEM.</b> Does not require servo controller.	<b>135.30.46</b>

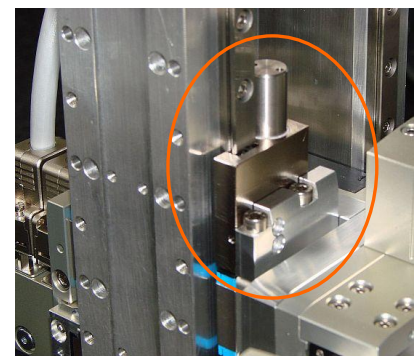
With an optical measuring system resolution of 100 nm, the maximum traversing speed is reduced to max. 0.9 m/s.

### 3.3.7 Spring Operated Brake LINAX® Lxs F60S

The spring operated brake is applied onto the guiding rail. In the “off” status the brake is inactive (non air-pressure). By activating a 3/2 way pneumatic valve, (for example Festo CPE10 M1BH-3GL-QS-4, Article No. 196 846), the brake is released with compressed air.

In use with the ENAX® Xvi servo controller, an OUTPUT FUNCTION can be assigned for the automatic control of the brake valve.

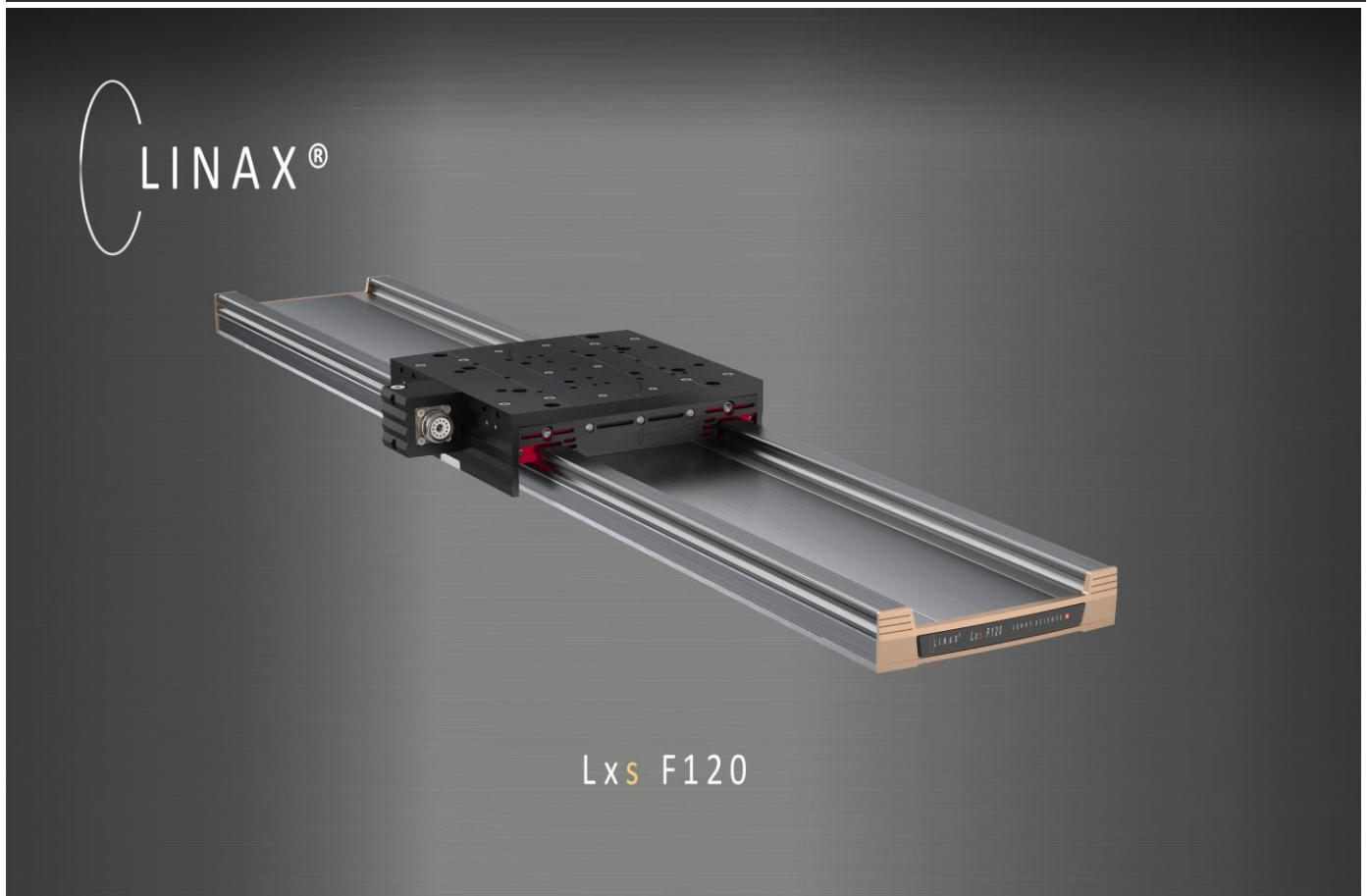
**IMPORTANT:** The stroke of the linear motor axis is reduced by 35mm (1.38”) with the installation of the spring operated brake. For example, the LINAX® Lxs 200F60 with a spring applied brake has a stroke of 165mm (6.5”) instead of 200mm (7.87”).



Spring Operated Brake	Maximal holding force	Art. No.
Lxs F60S (Schneeberger Guiding carriages)	Until 8 kg (17.64 lbs)	<b>135.03.37</b>



### 3.4 LINAX® Lxs F120 (shuttle)



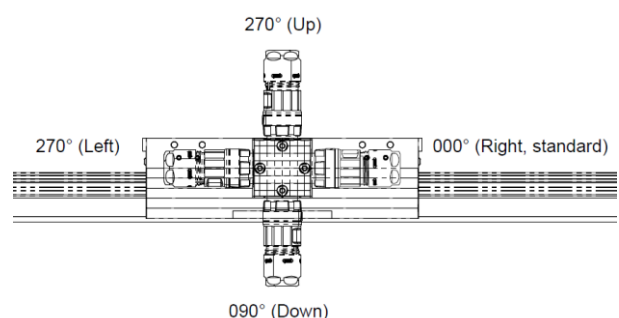
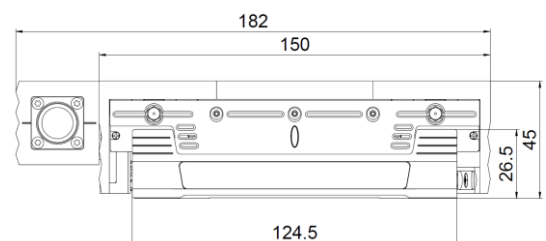
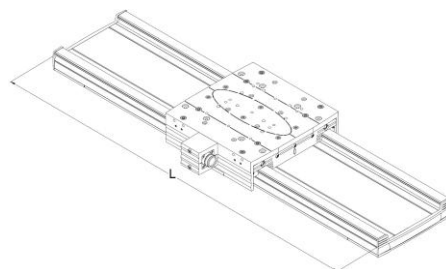
Lxs F120

The Lxs Shuttle linear motor stages, designed for travel **distances up to 2'000 mm**, feature a "recessed" linear motor design and a **height of only 45mm** for the Lxs F120 model. A new, more potent motor is incorporated, boasting a nominal force of 120N and **peak performances up to 300N**. More robust guides facilitate the absorption of high force moments from transverse cantilever axes. The **innovative single-cable solution** simplifies installation and maintenance, while the **absolute measurement system**, which no longer requires a reference run, makes operation more efficient.

All the LINAX® Lxs linear motor stage can be controlled with the latest, more powerful XENAX® Xvi 75V8S servo controller. We recommend the use of a **Brake Recovery Unit (BERU)** in conjunction with these linear motor stages.

#### LINAX® Lxs

Lxs	L [mm]
80F120	243 (9.57")
200F120	363 (14.29")
400F120	563 (22.17")
520F120	683 (26.89")
600F120	763 (30.04")
800F120	963 (37.91")
1000F120	1163 (45.79")
1200F120	1363 (53.66")
1600F120	1763 (69.41")
2000F120	2163 (85.16")



Rotatable connector housing in 90° grid.  
Standard cable outlet to the right  
when viewed from the connector housing.

LINAX® Lxs F120 absolute	Stroke [mm]	Force Fn/Fp [N]	Weight carriage slider/total [g]	Art. No. meas. scale opt. 100nm +/- 0.5µm	Art. No. meas. scale opt. 1µm +/- 1.5µm	Art. No. meas. scale magn. 1µm +/- 2µm
<b>Lxs 80F120*</b>	080 (3.15")	120/300 (27.0/67.4 lbf)	2300/4700 (5.07/10.36 lbs)	<b>115.45.02</b>	<b>115.36.02</b>	<b>115.35.02</b>
<b>Lxs 200F120*</b>	200 (7.87")	120/300 (27.0/67.4 lbf)	2300/5900 (5.07/13.00 lbs)	<b>115.45.08</b>	<b>115.36.08</b>	<b>115.35.08</b>
<b>Lxs 400F120</b>	400 (15.75")	120/300 (27.0/67.4 lbf)	2300/7800 (5.07/17.20 lbs)	<b>115.45.18</b>	<b>115.36.18</b>	<b>115.35.18</b>
<b>Lxs 520F120</b>	520 (20.47")	120/300 (27.0/67.4 lbf)	2300/9000 (5.07/19.84 lbs)	<b>115.45.24</b>	<b>115.36.24</b>	<b>115.35.24</b>
<b>Lxs 600F120</b>	600 (23.62")	120/300 (27.0/67.4 lbf)	2300/9800 (5.07/21.61 lbs)	<b>115.45.28</b>	<b>115.36.28</b>	<b>115.35.28</b>
<b>Lxs 800F120</b>	800 (31.50")	120/300 (27.0/67.4 lbf)	2300/11800 (5.07/26.01 lbs)	<b>115.45.38</b>	<b>115.36.38</b>	<b>115.35.38</b>
<b>Lxs 1000F120</b>	1000 (39.37")	120/300 (27.0/67.4 lbf)	2300/13700 (5.07/30.20 lbs)	<b>115.45.48</b>	<b>115.36.48</b>	<b>115.35.48</b>
<b>Lxs 1200F120</b>	1200 (47.24")	120/300 (27.0/67.4 lbf)	2300/15700 (5.07/34.61 lbs)	<b>115.45.58</b>	<b>115.36.58</b>	<b>115.35.58</b>
<b>Lxs 1600F120</b>	1600 (62.99")	120/300 (27.0/67.4 lbf)	2300/19600 (5.07/43.21 lbs)	<b>Coming soon</b>	<b>Coming soon</b>	<b>115.35.78</b>
<b>Lxs 2000F120</b>	2000 (78.74")	120/300 (27.0/67.4 lbf)	2300/23500 (5.07/51.82 lbs)	<b>Coming soon</b>	<b>Coming soon</b>	<b>115.35.88</b>

All versions listed are with **absolute measuring system**

\* These models are available with vertical weight compensation.

With an optical measuring system resolution of 100 nm, the maximum traversing speed is reduced to max. 0.9 m/s.

**Note: LINAX® Lxs option cleanroom, food industry and pharmaceutical industry**

The LINAX® Lxs can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.

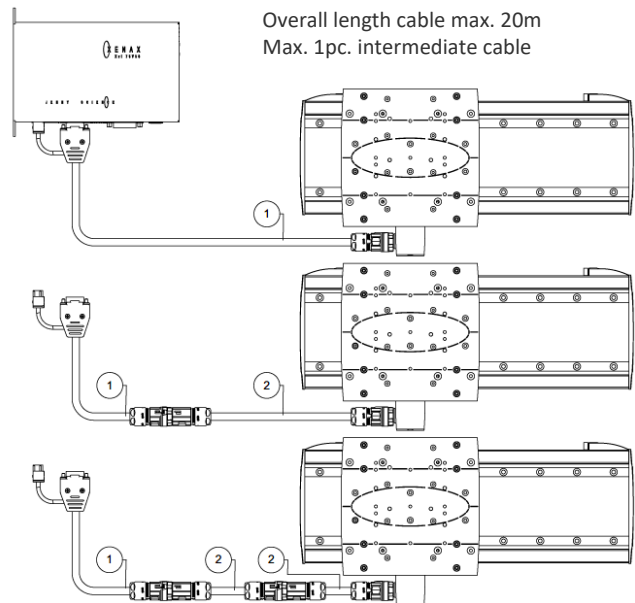


### 3.4.1 Connecting Cable LINAX® Lxs F120

Absolutely revolutionary is the flexible one-cable connection, which reduces the machine cabling effort considerably. In only one cable are the lines for encoder, for the 3 phases of the linear motor and for the communication between LINAX® Lxs F120 and XENAX® Servocontroller.

These connection cables have a minimum bending radius of **48mm for continuous movement** and of **20mm for fixed cables**. Extension cables are also available as accessories. The cable can withstand more than 1 million cycles of torsional stress at  $\pm 90^\circ$  over a length of 1m

The connector housing can also be rotated in  $90^\circ$  grid.



Connecting- or extension cable XENAX® M16	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No. <span>1</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	150.83.01 150.83.03 150.83.05 150.83.10

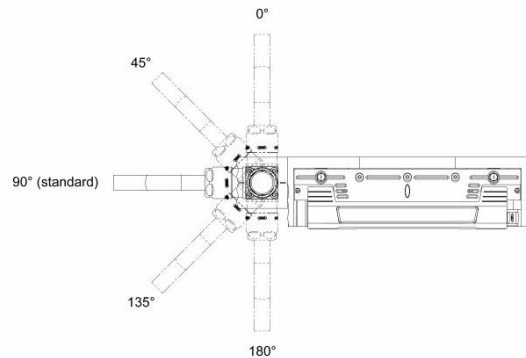
Intermediate cable 2 x M16	Length [m]	M16 Socket – M16 Plug Art. No. <span>2</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.01 150.84.03 150.84.05 150.84.10

### 3.4.2 Connecting Cable LINAX® Lxs F120 with angled plug

Depending on the installation situation, it may be useful to use an angled connector for the cable outlet on the motor side. The orientation of the cable can be specified in 45° steps - you can easily specify this orientation when ordering.

To do this, please select the desired cable and length using the article number and add the desired orientation variant. Without specific information, a 90° orientation is assumed as standard.

The orientation always refers to the standard outlet from the connector housing on the motor ("cable outlet on the right", when viewed on the connector housing).



Connecting- or extension cable XENAX® M16 with angled plug	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No.	Variant orientation <span>①</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	0.1-20 (4" - 787")	150.83.30	90°      A 180°     B 0°        C 45°       D 135°      E

Intermediate cable 2 x M16 with angled plug	Length [m]	M16 Socket – M16 Plug Art. No.	Variant orientation <span>②</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.21 150.84.23 150.84.25 150.84.30	90°      A 180°     B 0°        C 45°       D 135°      E

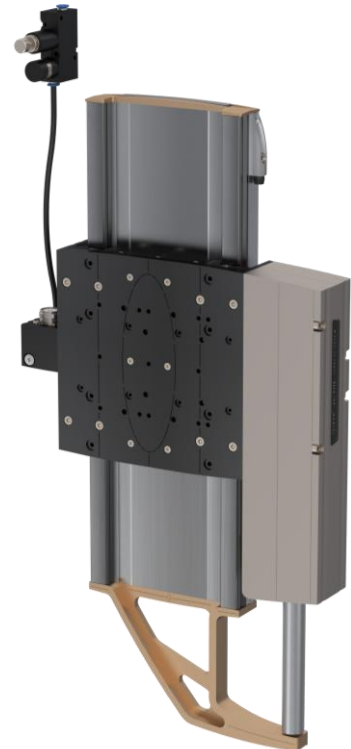


### 3.4.3 Vertical Weight Compensation LINAX® Lxs F120

In case of a power interruption, the linear motor of the LINAX® axis is powerless. If the axis is applied vertically, the slider of the linear motor would fall downwards. With this weight compensation based on compressed air without air consumption, the slider remains in position or moves upwards depending on the air adjustment. For adjustment of the air pressure use a commercial **air pressure regulator**, for example Festo "VRPA". The air pressure coupling is on the 90° "rotatable" connector case.

A great advantage of the weight compensation is the support of the linear motor in vertical orientation. The motor runs without a static weight and is not heating in a stationary position. You get higher dynamics and at the same time you also save energy.

Weight compensation Lxs F120	Maximal force at 6 bar	Art. No.
Lxs 80F120 Lxs 200F120	12 kg (26.5lbs)	135.04.01 135.04.05

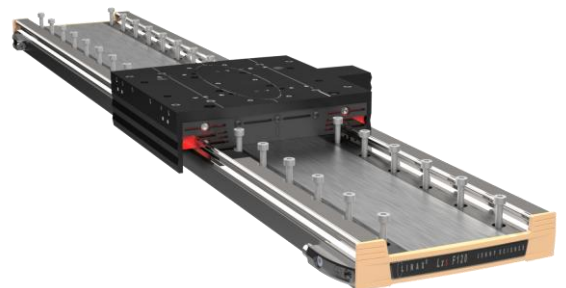


### 3.4.4 Fixings screws for ground plate LINAX® Lxs F120

Linear Motor Type	Screws	Art. No.
Fixing screws Lxs F120	10 x hexagon socket screws M4 x 20mm (0.79") stainless	135.11.07

Lxs 80F120 = 2 Sets  
Lxs 200F120 = 2 Sets  
Lxs 400F120 = 3 Sets  
Lxs 520F120 = 4 Sets  
Lxs 600F120 = 4 Sets

Lxs 800F120 = 5 Sets  
Lxs 1000F120 = 6 Sets  
Lxs 1200F120 = 7 Sets  
Lxs 1600F120 = 9 Sets  
Lxs 2000F120 = 11 Sets



### 3.4.5 Cross table fixing screws LINAX® Lxs F120

Linear Motor Type	Screws and centering pins	Art. No.
<b>Cross table set Lxs F120</b>	6 x hexagon socket screws M4 x 20mm (0.79"), 4 x centering pins Ø4mm (0.16") h8 x 8mm (0.31") stainless	<b>135.11.25</b>



The various LINAX® linear motor types can be directly mounted to each other without the need of adapter plates. For cross table combinations there are multiple grid patterns possible.

For the choice of the according screws, the upper mounted linear motor is relevant.

### 3.4.6 Cover tape for screws of ground plate LINAX® Lxs F120

Linear Motor Type	Cover tape set	Art. No.
Lxs 80F120 Lxs 200F120 Lxs 400F120 Lxs 520F120 Lxs 600F120 Lxs 800F120 Lxs 1000F120 Lxs 1200F120 Lxs 1600F120 Lxs 2000F120	The cover tape set includes 2 tapes to cover both sides.	135.08.02 135.08.04 135.08.10 135.08.12 135.08.14 135.08.16 135.08.18 135.08.20 135.08.22 135.08.24



Without Cover tape



With Cover tape

### 3.4.7 Additional carriage slider LINAX® Lxs F120

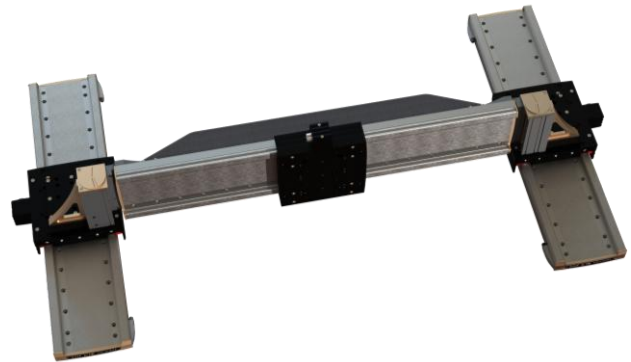
With the LINAX® Lxs linear motor axes it is possible to assemble two or more carriage sliders on the same ground plate. The cable connector can be orientated on the left or right side of the slider. Each carriage slider requires a XENAX® servo controller.



Additional carriage slider LINAX® Lxs F120	Type of carriage slider	Art. No.
Lxs xxxF120 mag. 1 µm	Carriage slider to LINAX® Lxs "shuttle" F120 with precise, self-lubricating ball bearing carriages, integrated <b>absolute magnetic measuring system</b> resolution 1 µm, accuracy +/-2µm	<b>135.30.30</b>
Lxs xxxF120 opt. 1 µm	Carriage slider to LINAX® Lxs "shuttle" F120 with precise, self-lubricating ball bearing carriages, integrated <b>absolute optical measuring system</b> resolution 1 µm, accuracy +/-1.5µm	<b>135.30.32</b>
Lxs xxxF120 opt. 100 nm	Carriage slider to LINAX® Lxs "shuttle" F120 with precise, self-lubricating ball bearing carriages, integrated <b>absolute optical measuring system</b> resolution 100 nm, accuracy +/-0.5µm	<b>135.30.34</b>
Lxs xxxF120 passiv	Passive carriage slider with precise, self-lubricating ball bearing carriages. <b>WITHOUT MOTOR &amp; WITHOUT MEASURING SYSTEM</b> Does not require servo controller	<b>135.30.36</b>

## 3.5 Gantry

Our gantry accessories with absolutely backlash- and maintenance-free spherical plain bearings not only offer maximum stability and precision, they also offer simple installation of the structure and simple commissioning with the XENAX® servo controller. We are thus setting new standards for user-friendliness and efficiency in demanding applications. Precise angular alignment is achieved by offsetting the sub-axis position to the master position in the XENAX® servo controller with an exceptional resolution of  $\pm 1\mu\text{m}$ .

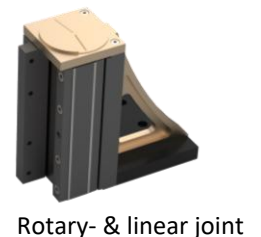
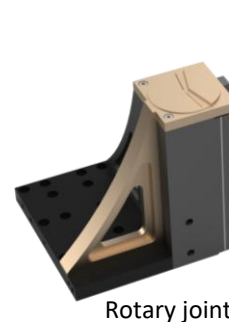


### 3.5.1 Rotary and linear joints Gantry LINAX® Lxs F60S / F120

This set includes a rotary joint for the master axis and a rotary and linear joint for the sub-axis. All including the corresponding fastening screw set.

The selection of the type is made according to the gantry axes, regardless of the mounted cross axis.

Gantry axes typ	Rotary joint left	Art. No.
Lxs xxxF60 / F60S	Rotary (left) and linear (right) joints for gantry axes incl. fixing screws	135.12.34
Lxs xxxF120		135.12.35



Gantry axes typ	Rotary joint right	Art. No.
Lxs xxxF60 / F60S	Rotary (right) and linear (left) joints for gantry axes incl. fixing screws	135.12.40
Lxs xxxF120		135.12.41

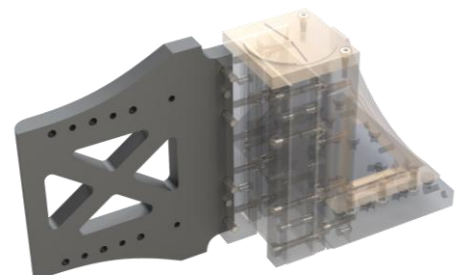


### 3.5.2 Adapter plates Gantry LINAX® Lxs F60S / F120

These 2 adapter plates are used to attach the transverse axes directly to the rotary and linear joints.

The selection of the type is made according to the cross axis, regardless of the gantry axes.

Cross axis type	Accessories-Set	Art. No.
Lxs xxxF60 / F60S	2x Adapter plates to Rotary and linear joints Gantry incl. fixing screws	135.12.36
Lxs xxxF120		135.12.37



### 3.5.3 Support base plate Gantry Lxs F60S / F120

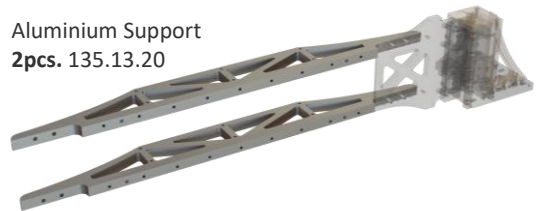
The aluminium or optionally carbon stiffening beams ensure the stability of the body and meet even the highest precision requirements.

Support Base plate	Type of axis	Art. No.
<b>Carbon incl. Screws</b>	Lxs 400F60S/F120	135.13.38
	Lxs 520F60S/F120	135.13.40
	Lxs 600F60S/F120	135.13.42
	Lxs 800F60S/F120	135.13.44
	Lxs 1000F60S/F120	135.13.46
	Lxs 1200F60S/F120	135.13.48
<b>1pc. Aluminium Incl. Screws</b> (Order 2pcs. to support the cross axis at the top and bottom)	Lxs 400F60S/F120	135.13.18
	Lxs 520F60S/F120	135.13.20
	Lxs 600F60S/F120	135.13.22
	Lxs 800F60S/F120	135.13.24

Carbon Support  
**1pc.** 135.13.40

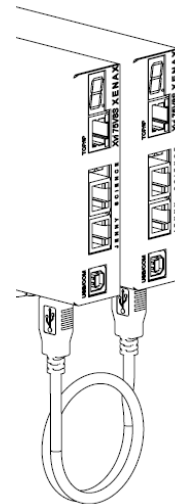


Aluminium Support  
**2pcs.** 135.13.20

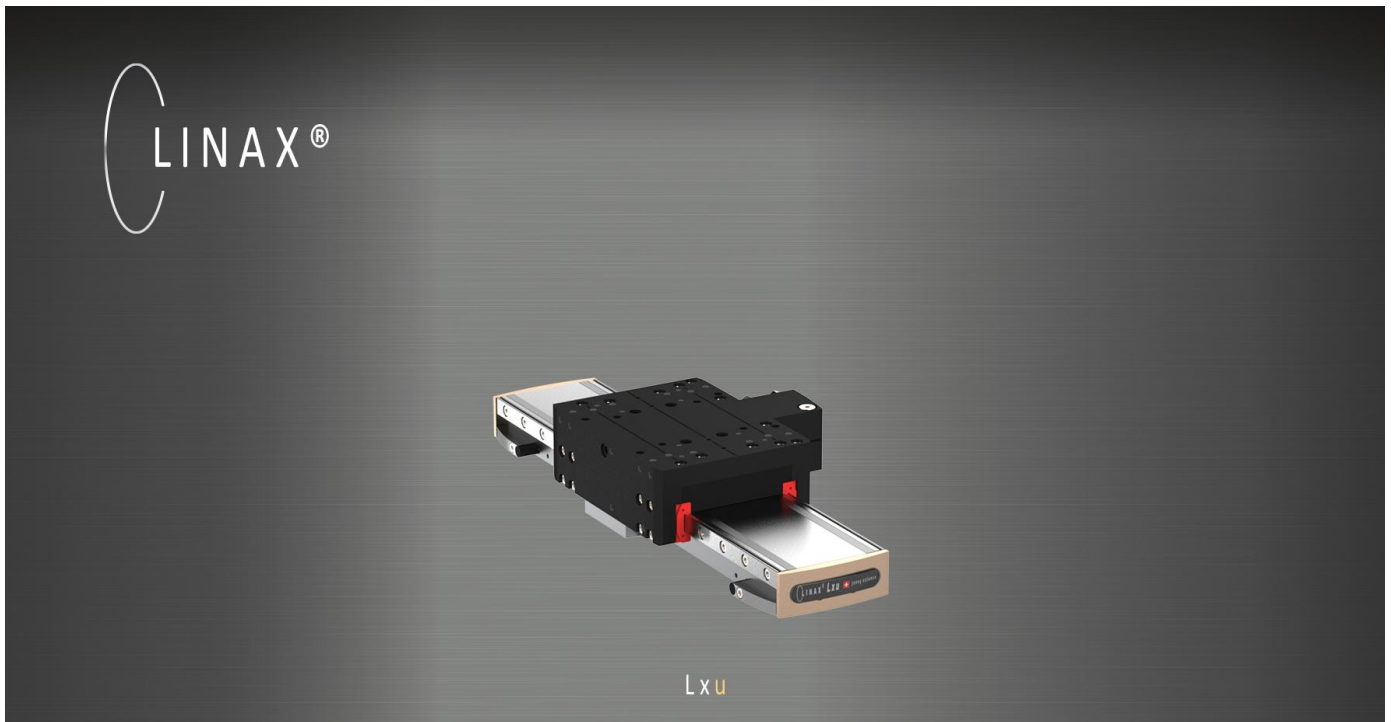


### 3.5.4 Gantry Master-Slave Synch Cable

XENAX® Master-Slave Synch Cable	Length [m]	Art. No.
<b>I<sup>2</sup>C Cable</b>	0.5 (19.7")	<b>150.25.20</b>

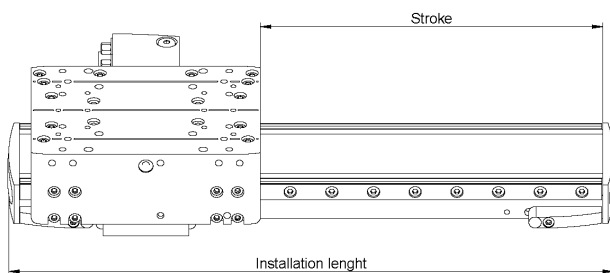


### 3.6 LINAX® Lxu F60 (universal)

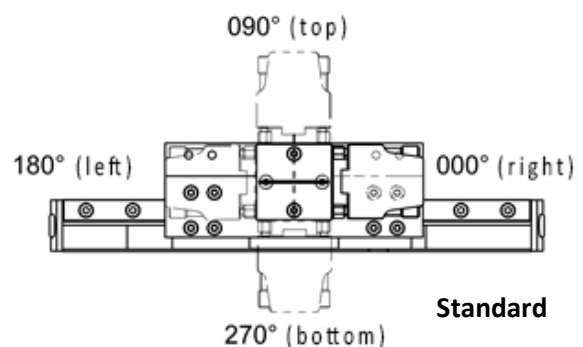
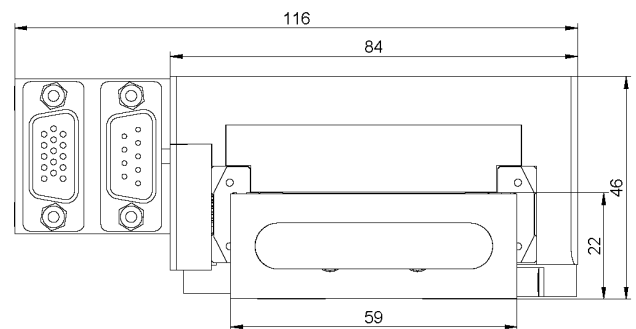


These universal linear motor axes are real “all-rounders”. There are three mounting possibilities: mounting to carriage slider; to the ground plate; or to the front face. The four long holes through the carriage slider allow direct screw connections for the back to back mounting of two LINAX® Lxu slides, which is ideal for X-Z handling. For vertical orientations, an optional weight compensation unit is available. The air pressure coupling is on the 90° “rotatable” connector case. This LINAX® Lxu linear motor axes can be controlled only with the powerful XENAX® Xvi servo controller. We recommend the use of a **Brake Recovery Unit (BERU)** in conjunction with these linear motor stages for movements > 0.8m/s.

These axes are no longer to be used in new projects. Instead, the Lxu F60S with absolute measuring system and single-cable solution are available for new projects.



Installation length = Stroke + 130mm (5.12")



The connector case is rotatable with a 90° pattern, in 4 directions. As standard, the motor is supplied with a "right-hand cable outlet" (with view of the connector housing).

LINAX® Lxu F60	Stroke [mm]	Force Fn/Fp [N]	Weight carriage slider/total (+ weight comp.) [g]	Art. No. meas. scale opt. 100nm +/- 0.5µm	Art. No. meas. scale opt. 1µm +/- 2µm	Art. No. meas. scale magn. 1µm +/- 5µm
<b>Lxu 40F60*</b>	40 (1.57")	60/180 (13.5/40.5 lbf)	950/1700 (+360) (2.09/3.75 (+0.79) lbs)	<b>115.43.00</b>	<b>115.33.00</b>	<b>115.32.00</b>
<b>Lxu 80F60*</b>	80 (3.15")	60/180 (13.5/40.5 lbf)	950/1900 (+360) (2.09/4.19 (+0.79) lbs)	<b>115.43.02</b>	<b>115.33.02</b>	<b>115.32.02</b>
<b>Lxu 160F60*</b>	160 (6.30")	60/180 (13.5/40.5 lbf)	950/2200 (+590) (2.09/4.85 (+1.30) lbs)	<b>115.43.06</b>	<b>115.33.06</b>	<b>115.32.06</b>
<b>Lxu 240F60*</b>	240 (9.45")	60/180 (13.5/40.5 lbf)	950/2500 (+820) (2.09/5.51 (+1.81) lbs)	<b>115.43.10</b>	<b>115.33.10</b>	<b>115.32.10</b>
<b>Lxu 320F60</b>	320 (12.60")	60/180 (13.5/40.5 lbf)	950/2900 (2.09/6.39 lbs)	<b>115.43.14</b>	<b>115.33.14</b>	<b>115.32.14</b>

Magnetic measurement system with 1µm standard resolution; accuracy +/- 5µm

\* These models are available with vertical weight compensation.

With an optical measuring system resolution of 100 nm, the maximum traversing speed is reduced to max. 0.9 m/s.

**Note: LINAX® Lxu option cleanroom, food industry and pharmaceutical industry**

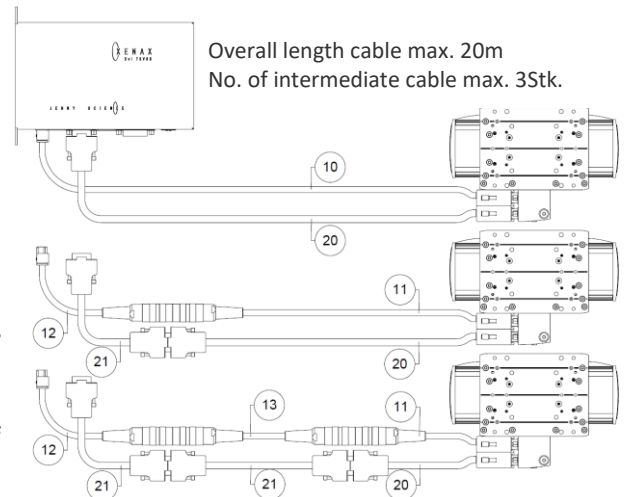
The LINAX® Lxu can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.





### 3.6.1 Connecting Cable LINAX® Lxu F60

With the LINAX® Lxu (and Lxs) the cables are removable and are connected with D-Sub connectors to the connector housing. One cable is for the encoder and the other is for the 3 phases of linear motor. For the communication between LINAX® linear motor axis and XENAX® servo controller, additional lines for communication exists in the encoder cable. Through full PUR jacket and TPE / HGI insulation these cables are optimal for cable chains, extremely harsh operation conditions and an environment with aggressive coolants and lubricants. The **bending radius for moving cable is 98mm (3.9")**. For **fixed cable, the minimum bending radius is 50mm (2.0")**. The optionally available, darkblue **IGUS TPE** connecting cable has a **minimum bending radius of 44mm (1.8") for moving cable and of 27mm (1.1") for fixed cable**.



Connecting Cable shielded, suitable for cable chains	Length [m]	Cable Ø [mm]	Motor cable 9 Pol D- Sub jack on 3 pole Wago-connector 3,5mm (0.14") Art. No. <span>10</span>	Cable Ø [mm]	Encoder cable 15 pole HD jack on 15 pole HD connector Art. No. <span>20</span>
LINAX® Lxs /Lxu, Lütze, gray, Temp. moving -25° up to +80°	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	7.5 (0.3")	150.20.10 150.20.15 150.20.20 150.20.21	8.1 (0.32")	150.21.10 150.21.15 150.21.20 150.21.21
LINAX® Lxs / Lxu, IGUS, darkblue, Temp. moving -35° up to +100° Suitabel for clean room and oil resistant	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	7.5 (0.3")	150.40.10 150.40.15 150.40.20 150.40.21	9.5 (0.37")	150.41.10 150.41.15 150.41.20 150.41.21

Connecting Cable <b>prepared for extension</b> shielded, suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable 9 Pol D- Sub jack on 3 Pol binder round connector Art. No. <span>11</span>	Cable Ø [mm]	Encoder cable 15 pole HD jack on 15 pole HD connector Art. No. <span>20</span>
LINAX® Lxs /Lxu, Lütze, gray, Temp. moving -25° up to +80°	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	7.5 (0.3")	150.20.22 - - 150.20.23	8.1 (0.32")	150.21.10 150.21.15 150.21.20 150.21.21
LINAX® Lxs / Lxu, IGUS, darkblue, Temp. moving -35° up to +100° Suitabel for clean room and oil resistant	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	7.5 (0.3")	150.40.22 - - 150.40.23	9.5 (0.37")	150.41.10 150.41.15 150.41.20 150.41.21

### 3.6.2 Removable Extension Cable LINAX® Lxu F60

Extension cables are also useful for highly dynamic multi axes applications with cable chains. Use short connection cables; then plug it into the extension cables. These extension cables run in the cable chain, and are easily replaceable. The grey Lütze **PUR** bending radius for **moving cable** is **76mm (3.0")**. For **fixed cable**, the minimum bending radius is **46mm (1.9")**.

Through full PUR jacket and TPE / HGI insulation these cables are optimal for cable chains, extremely harsh operation conditions and an environment with aggressive coolants and lubricants. The optionally available dark blue **IGUS TPE** cables have a minimum bending radius of **44 mm for continuous movement** and **27 mm for fixed cable**.

When using extension cables, the 3 pole Wago connector is replaced by a metallic shielded round jack from the manufacturing company "Binder".

Extension cables shielded and suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable 3 pole binder round jack to 3 pole Wago-connector 3,5mm (0.14") Art. No. <sup>(12)</sup>	Cable Ø [mm]	Encoder cable 15 pole HD jack to 15 pole HD connector Art. No. <sup>(21)</sup>
LINAX® Lxc/Lxs/Lxu/Lxe, Lütze, grey, Temp. moving -25° up to +80°	1.5 (59") 3.5 (138") 5.0 (197") 0.5-20 (20" - 787")	7.5 (0.3")	150.26.01 150.26.03 150.26.05 150.26.10	7.2 (0.28")	150.27.01 150.27.03 150.27.05 150.27.10
LINAX® Lxc/Lxs/Lxu/Lxe, IGUS, darkblue, Temp. moving -35° up to +100° suitable for clean room and oil resistant	1.5 (59") 3.5 (138") 5.0 (197") 0.5-20 (20" - 787")	7.0 (0.3")	150.46.01 150.46.03 150.46.05 150.46.10	9.5 (0.37")	150.47.01 150.47.03 150.47.05 150.47.10

Intermediary cable shielded and suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable 3 pole binder round jack to 3 pole binder round connector Art. No. <sup>(13)</sup>	Cable Ø [mm]	Encoder cable 15 pole HD jack to 15 pole HD connector Art. No. <sup>(21)</sup>
LINAX® Lxc/Lxs/Lxu/Lxe, Lütze, grey, Temp. moving -25° up to +80°	0.5-20 (20" - 787")	7.0 (0.3")	150.26.15	7.2 (0.28")	150.27.10
LINAX® Lxc/Lxs/Lxu/Lxe, IGUS, darkblue, Temp. moving -35° up to +100° suitable for clean room and oil resistant	0.5-20 (20" - 787")	7.0 (0.3")	150.46.15	9.5 (0.37")	150.47.10

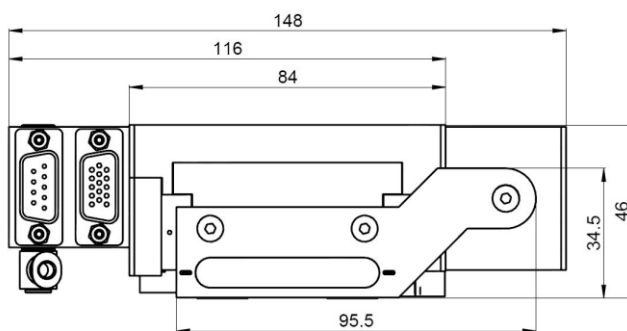
### 3.6.3 Vertical Weight Compensation LINAX® Lxu F60

In case of a power interruption, the linear motor of the LINAX® axis is powerless. If the axis is applied vertically, the slider of the linear motor would fall downwards. With this weight compensation based on compressed air without air consumption, the slider remains in position or moves upwards depending on the air adjustment. For adjustment of the air pressure use a commercial **air pressure regulator**, for example Festo "VRPA". The air pressure coupling is on the 90° "rotatable" connector case.

A great advantage of the weight compensation is the support of the linear motor in vertical orientation. The motor runs without a static weight and is not heating in a stationary position. You get higher dynamics and at the same time you also save energy.



Weight Compensation Lxu	Maximal force at 6 bar	Art. No.
Lxu 40F60	6 kg (13.23lbs)	135.03.01
Lxu 80F60		135.03.01
Lxu 160F60		135.03.05
Lxu 240F60		135.03.20



### 3.6.4 Piston seal for weight compensation compressed air LINAX® Lxu F60

Piston seal	Set	Art. No.
Lxu F60	1 x Seal 2 x O-ring already lubricated	135.03.15

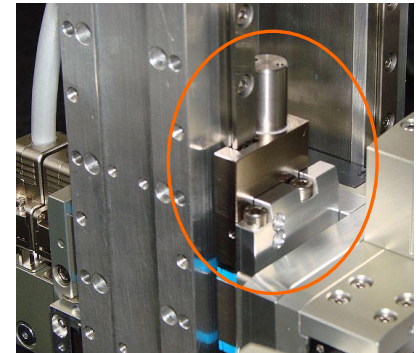


## 3.6.5 Spring Operated Brake LINAX® Lxu F60

The spring operated brake is applied onto the guiding rail. In the “off” status the brake is inactive (non air-pressure). By activating a 3/2 way pneumatic valve, (for example Festo CPE10 M1BH-3GL-QS-4, Article No. 196 846), the brake is released with compressed air.

In use with the XENAX® Xvi servo controller, an OUTPUT FUNCTION can be assigned for the automatic control of the brake valve.

**IMPORTANT:** The stroke of the linear motor axis is reduced by 35mm (1.38”) with the installation of the spring operated brake. For example, the LINAX® Lxu 320F60 with a spring applied brake has a stroke of 285mm (11.22”) instead of 320mm (12.60”).



Spring Operated Brake	Maximal holding force	Art. No.
Lxu 80F60 to Lxu 320F60 (Hiwin guiding carriages)	Until 8 kg (17.64lbs)	135.03.32

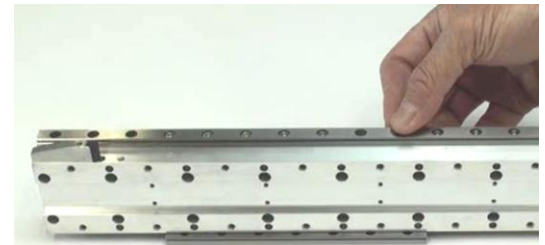


## 3.6.6 Cover Caps for Screws LINAX® Lxu F60

Linear Motor Type	Cover Caps	Art. No.
Lxu F60	Cap to cover the LINAX® Lxu/Lxs screws on the guiding rails	135.08.00

Lxu40F60 = 16 pcs  
Lxu 80F60 = 20 pcs  
Lxu 160F60 = 28 pcs

Lxu 240F60 = 36 pcs  
Lxu 320F60 = 44 pcs



## 3.6.7 Cross Table Fixing Screws LINAX® Lxu F60

Linear Motor Type	Screws and centering pins	Art. No.
Lxu F60	4 x hexagon socket screws M4 x 40mm (1.57”), 4 x centering pins Ø 4mm (0.16”) x 8mm (0.31”) stainless	135.11.10

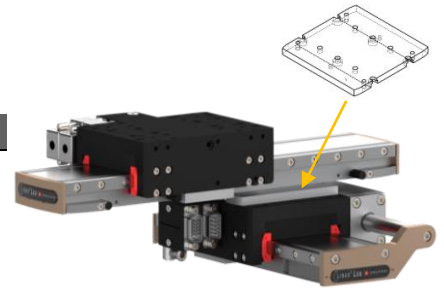
The various LINAX® linear motor types can be directly mounted to each other without the need of adapter plates. The four long holes through the carriage slider allow direct screw connections for the back to back mounting of two LINAX® Lxu slides, which is ideal for X-Z handling or 1 Lxu can be fixed to a back wall.



### 3.6.8 Adapter Plate LINAX® Lxu F60

With this adapter plate a LINAX® Lxu slider can be connected to another LINAX® Lxu ground plate, incl. screws and centering pins.

Adapter Plate	Accessories	Art. No
<b>Lxu 40F60 to Lxu 320F60</b>	Adapter Plate incl. 2x centering pins 2.5x6, 4x centuring pins 4x8, 6x Torx M4x8 and 4x hexagon socket screws M4x40	<b>135.12.00</b>

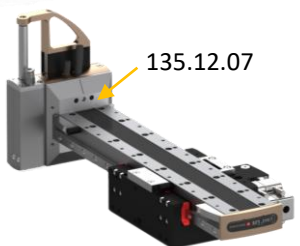
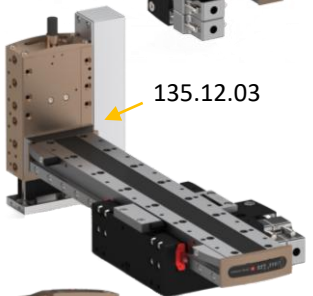
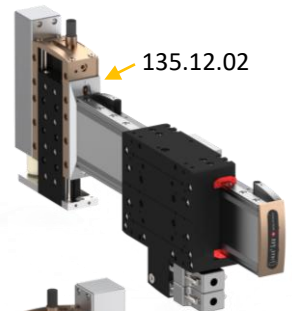


### 3.6.9 Front Flange LINAX® Lxu F60

With the front flange it is possible to mount different Pick and Place orientations: The front plate of a LINAX® Lxu is replaced by the front flange which can directly be mounted to:

- to an ELAX slide (upright or flat),
- to a LINAX® Lxc F08/F10 or F40
- or to the carriage slider of another LINAX® Lxu.

Front Flange LINAX® Lxu	Accessories	Art. No.
<b>For ELAX® Ex 30/50/80F20 upright</b>	incl. 2 centering pins 4x8, 6 torx M4x8 and 2 dowel bushings D7 (Not usable for Ex 110F20 and 150F20)	<b>135.12.02</b>
<b>For ELAX® Ex F20 flat</b>	incl. 2 centering pins 4x8, 4 torx M4x8, 4 hexagon socket screws M3x30 and 4 dowel bushings D6	<b>135.12.03</b>
<b>For Lxu</b>	incl. 2 centering pins 4x8, 4 torx M4x12, 4 centering pins 2.5x5 and 8 torx M4x8	<b>135.12.05</b>
<b>For Lxc F40</b>	incl. 2 centering pins 4x8, 4 torx M4x12, 4 centering pins 2.5x5 and 4 hexagon socket screws M3x35	<b>135.12.06</b>
<b>For Lxc F08/F10</b>	incl. 6 centering pins 4x8, 8 torx M4x8 and 4 torx M4x12	<b>135.12.07</b>



### 3.6.10 Cantilever Armor LINAX® Lxu F60

The cantilever armour is used with long cantilever stroke constructions for maximum stability and minimal bending.

Linear Motor Type	Armor	Art. No.
<b>Lxu 240F60 Lxu 320F60</b>	incl. fixing screws M4x8	<b>135.13.05</b> <b>135.13.10</b>

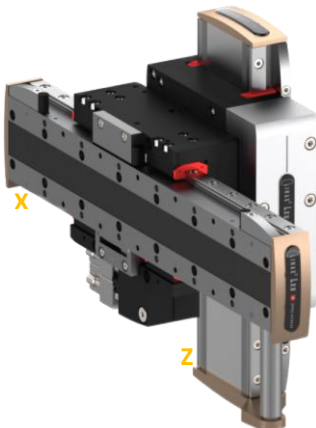


### 3.6.11 Additional Carriage Slider LINAX® Lxu F60

With the LINAX® Lxu linear motor axes it is possible to assemble two or more carriage sliders on the same ground plate. The cable connector can be orientated on the left or right side of the slider. Each carriage slider requires a XENAX® servo controller.

Linear Motor Type	Type of carriage slider	Art. No.
Lxu xxxF60 mag. 1 µm	Additional carriage slider to LINAX® Lxu "universal" F60 with precise, self-lubricating ball bearing carriages, integrated linear motor with dirt wiper and <b>magnetic measurement system</b> , resolution 1 µm, accuracy +/-5µm	<b>135.30.20</b>
Lxu xxxF60 opt. 1 µm	Additional carriage slider to LINAX® Lxu "universal" F60 with precise, self-lubricating ball bearing carriages, integrated linear motor with dirt wiper and <b>optical measurement system</b> , resolution 1 µm, accuracy +/-2µm	<b>135.30.22</b>
Lxu xxxF60 opt. 100nm	Additional carriage slider to LINAX® Lxu F60, opt. 100nm with precise, self-lubricating ball bearing carriages, integrated linear motor with dirt wiper and <b>optical measurement system</b> , resolution 100nm, accuracy +/- 500nm	<b>135.30.24</b>

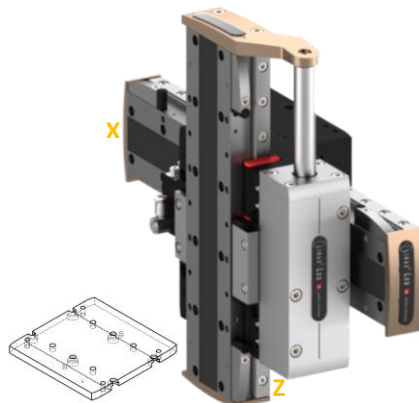
### 3.6.12 Examples of X-Z Construction Possibilities LINAX® Lxu



**X-Z LINE PORTAL**  
(design for highest dynamic)

LINAX® direct connection; Lxu carriage slider to Lxu carriage slider. „Back to back mounting“.

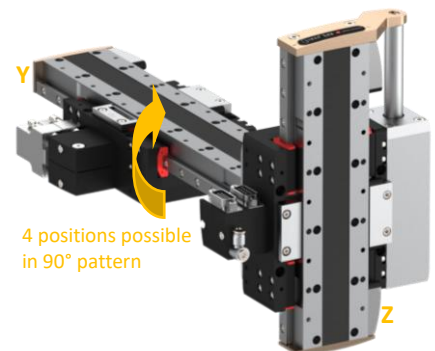
The ground plate of the X-axis is mounted on the wall in upright orientation. The carriage slider of this X-axis is directly fixed to the carriage slider of the Z-axis. The Z-axis needs more installation space because the ground plate is moving. But this construction allows storing all cables in the same cable chain. The Z-axis is equipped with the optional weight compensation.



**X-Z LINE PORTAL**  
(design for minimal installation space)

Lxu ground plate on Lxu carriage slider with adapter plate Lxu (3.6.8 Adapter Plate LINAX® Lxu).

The ground plate of the Z-axis is in a vertical orientation mounted on the wall. The ground plate on the X-axis is horizontally orientated and connected to the carriage slider of the Z-axis with the adapter plate. Since no ground plate is moving in longitudinal direction the installation space is minimal. The Z-axis also holds the weight of X-axis. Therefore, the Z-axis is equipped with the optional weight compensation.



**Y-Z LINE CANTILEVER**

The carriage slider of the Y-axis is fixed mounted. The carriage slider of the Z-axis is fixed vertical with the front flange of the Y-axis. The front flange of the Y-axis can be fixed with 90° pattern in 4 directions to the Z-axis. This allows the carriage slider of the Y-axis to be oriented on the left, on the right, upwards or downwards (like in the picture).



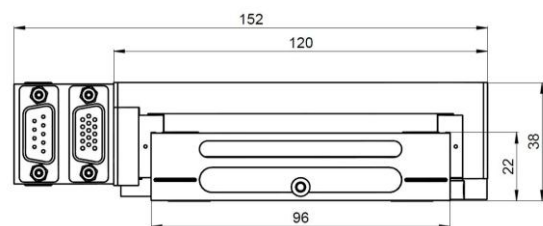
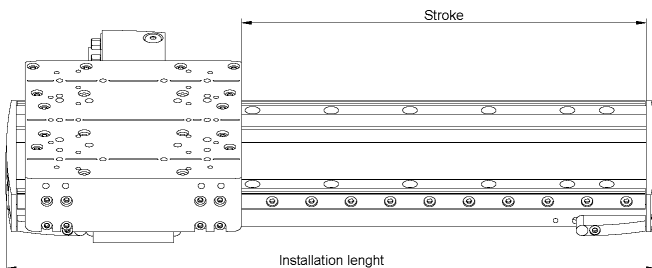
### 3.7 LINAX® Lxs F60 (shuttle)



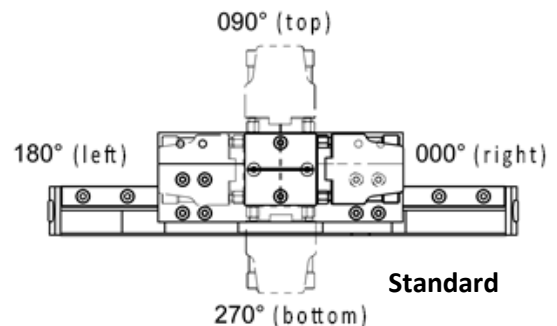
These LINAX® linear motor axes can be controlled with the powerful XENAX® Xvi Servocontroller. As the name implies, the Lxs shuttle series are basic axes for long strokes up to 1600mm (63"). Of particular importance is the wide-body construction with recessed linear motor, through which the height is reduced to just 38mm (1.5"). The wide spaced guiding rails are able to withstand high moments of force. For example, for long Lxu cantilever axes. We recommend the use of a **Brake Recovery Unit (BERU)** in conjunction with these linear motor stages for movements > 0.8m/s.

**These axes are no longer to be used in new projects. Instead, the Lxs F60S with absolute measuring system and single-cable solution are available for new projects.**

Installation length = Stroke + 130mm (5.12")



The connector case is rotatable with a 90° pattern, in 4 directions. As standard, the motor is supplied with a "cable outlet right" (with view of the connector housing).





LINAX® Lxs F60	Stroke [mm]	Force Fn/Fp [N]	Weight carriage slider/total [g].	Art. No. meas. scale opt. 100nm +/- 0.5µm	Art. No. meas. scale opt. 1µm +/- 2µm	Art. No. meas. scale magn. 1µm +/- 5µm
<b>Lxs 160F60</b>	160 (6.30")	60/180 (13.5/40.5 lbf)	1000/2600 (2.21/5.73 lbs)	<b>115.41.06</b>	<b>115.31.06</b>	<b>115.30.06</b>
<b>Lxs 200F60</b>	200 (7.87")	60/180 (13.5/40.5 lbf)	1000/2800 (2.21/6.17 lbs)	<b>115.41.08</b>	<b>115.31.08</b>	<b>115.30.08</b>
<b>Lxs 320F60</b>	320 (12.60")	60/180 (13.5/40.5 lbf)	1000/3400 (2.21/7.50 lbs)	<b>115.41.14</b>	<b>115.31.14</b>	<b>115.30.14</b>
<b>Lxs 400F60</b>	400 (15.75")	60/180 (13.5/40.5 lbf)	1000/3900 (2.21/8.60 lbs)	<b>115.41.18</b>	<b>115.31.18</b>	<b>115.30.18</b>
<b>Lxs 520F60</b>	520 (20.47")	60/180 (13.5/40.5 lbf)	1000/4500 (2.21/9.92 lbs)	<b>115.41.24</b>	<b>115.31.24</b>	<b>115.30.24</b>
<b>Lxs 600F60</b>	600 (23.62")	60/180 (13.5/40.5 lbf)	1000/5000 (2.21/11.03 lbs)	<b>115.41.28</b>	<b>115.31.28</b>	<b>115.30.28</b>
<b>Lxs 800F60</b>	800 (31.50")	60/180 (13.5/40.5 lbf)	1000/6100 (2.21/13.45 lbs)	<b>115.41.38</b>	<b>115.31.38</b>	<b>115.30.38</b>
<b>Lxs 1000F60</b>	1000 (39.37")	60/180 (13.5/40.5 lbf)	1000/7200 (2.21/15.88 lbs)	<b>115.41.48</b>	<b>115.31.48</b>	<b>115.30.48</b>
<b>Lxs 1200F60</b>	1200 (47.24")	60/180 (13.5/40.5 lbf)	1000/8400 (2.21/18.52 lbs)	<b>115.41.58</b>	<b>115.31.58</b>	<b>115.30.58</b>
<b>Lxs 1600F60</b>	1600 (62.99")	60/180 (13.5/40.5 lbf)	1000/10800 (2.21/23.81 lbs)	<b>N/A</b>	<b>N/A</b>	<b>115.30.78</b>

Measurement system magnetic with 1µm standard resolution; accuracy +/- 5µm

With an optical measuring system resolution of 100 nm, the maximum traversing speed is reduced to max. 0.9 m/s.

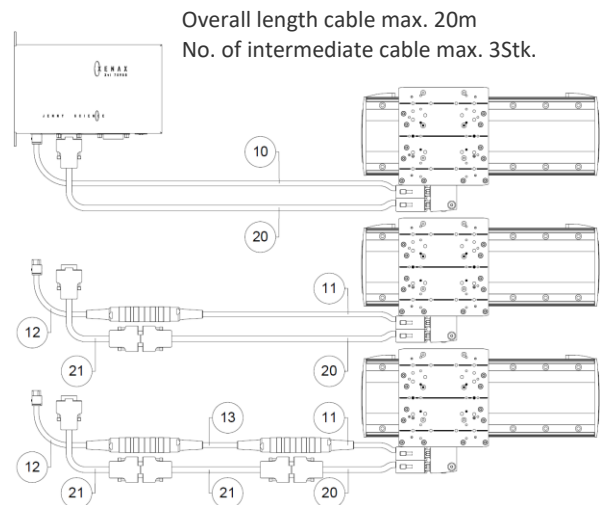
#### Note: LINAX® Lxs option cleanroom, food industry and pharmaceutical industry

The LINAX® Lxs can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.



### 3.7.1 Connecting Cable LINAX® Lxs F60

The connecting cable LINAX® Lxs F60 are identical to the connecting cable LINAX® Lxu and the connector cases are also rotatable with a 90° pattern, in 4 directions. Through full PUR jacket and TPE / HGI insulation these cables are optimal for cable chains, extremely harsh operation conditions and an environment with aggressive coolants and lubricants. The **bending radius for moving cable is 98mm (3.9")**. For fixed cable, the minimum bending radius is 50mm (2.0"). The optionally available, blue IGUS TPE connecting cable has a **minimum bending radius of 44mm (1.8") for moving cable and of 27mm (1.1") for fixed cable**.



Connecting Cable shielded, suitable for cable chains	Length [m]	Cable Ø [mm]	Motor cable 9 Pol D-Sub jack on 3 pole Wago-connector 3,5mm (0.14") <span>10</span>	Cable Ø [mm]	Encoder cable 15 pole HD jack on 15 pole HD connector Art. No. <span>20</span>
LINAX® Lxs /Lxu, Lütze, gray, Temp. moving -25° up to +80°	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	7.5 (0.3")	150.20.10 150.20.15 150.20.20 150.20.21	8.1 (0.32")	150.21.10 150.21.15 150.21.20 150.21.21
LINAX® Lxs / Lxu, IGUS, darkblue, Temp. moving -35° up to +100° Suitabel for clean room and oil resistant	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	7.5 (0.3")	150.40.10 150.40.15 150.40.20 150.40.21	9.5 (0.37")	150.41.10 150.41.15 150.41.20 150.41.21

Connecting Cable prepared for extension shielded, suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable 9 Pol D-Sub jack on 3 Pol binder round connector Art. No. <span>11</span>	Cable Ø [mm]	Encoder cable 15 pole HD jack on 15 pole HD connector Art. No. <span>20</span>
LINAX® Lxs /Lxu, Lütze, gray, Temp. moving -25° up to +80°	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	7.5 (0.3")	150.20.22 - - 150.20.23	8.1 (0.32")	150.21.10 150.21.15 150.21.20 150.21.21
LINAX® Lxs / Lxu, IGUS, darkblue, Temp. moving -35° up to +100° Suitabel for clean room and oil resistant	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	7.5 (0.3")	150.40.22 - - 150.40.23	9.5 (0.37")	150.41.10 150.41.15 150.41.20 150.41.21

### 3.7.2 Removable Extension Cable LINAX® Lxs F60

Extension cables are also useful for highly dynamic multi axes applications with cable chains. Use short connection cables; then plug it into the extension cables. These extension cables run in the cable chain, and are easily replaceable. The grey Lütze **PUR** bending radius for **moving cable** is **76mm (3.0")**. For **fixed cable**, the minimum bending radius is **46mm (1.9")**.

Through full PUR jacket and TPE / HGI insulation these cables are optimal for cable chains, extremely harsh operation conditions and an environment with aggressive coolants and lubricants. The optionally available dark blue **IGUS TPE** cables have a minimum bending radius of **44 mm for continuous movement** and **27 mm for fixed cable**.

When using extension cables, the 3 pole Wago connector is replaced by a metallic shielded round jack from the manufacturing company "Binder".

Extension cables shielded and suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable 3 pole binder round jack to 3 pole Wago-connector 3,5mm (0.14") Art. No. <sup>(12)</sup>	Cable Ø [mm]	Encoder cable 15 pole HD jack to 15 pole HD connector Art. No. <sup>(21)</sup>
LINAX® Lxc/Lxs/Lxu/Lxe, Lütze, grey, Temp. moving -25° up to +80°	1.5 (59") 3.5 (138") 5.0 (197") 0.5-20 (20" - 787")	7.5 (0.3")	<b>150.26.01</b> <b>150.26.03</b> <b>150.26.05</b> <b>150.26.10</b>	7.2 (0.28")	<b>150.27.01</b> <b>150.27.03</b> <b>150.27.05</b> <b>150.27.10</b>
LINAX® Lxc/Lxs/Lxu/Lxe, IGUS, darkblue, Temp. moving -35° up to +100° suitable for clean room and oil resistant	1.5 (59") 3.5 (138") 5.0 (197") 0.5-20 (20" - 787")	7.0 (0.3")	<b>150.46.01</b> <b>150.46.03</b> <b>150.46.05</b> <b>150.46.10</b>	9.5 (0.37")	<b>150.47.01</b> <b>150.47.03</b> <b>150.47.05</b> <b>150.47.10</b>

Intermediary cable shielded and suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable 3 pole binder round jack to 3 pole binder round connector Art. No. <sup>(13)</sup>	Cable Ø [mm]	Encoder cable 15 pole HD jack to 15 pole HD connector Art. No. <sup>(21)</sup>
LINAX® Lxc/Lxs/Lxu/Lxe, Lütze, grey, Temp. moving -25° up to +80°	0.5-20 (20" - 787")	7.0 (0.3")	<b>150.26.15</b>	7.2 (0.28")	<b>150.27.10</b>
LINAX® Lxc/Lxs/Lxu/Lxe, IGUS, darkblue, Temp. moving -35° up to +100° suitable for clean room and oil resistant	0.5-20 (20" - 787")	7.0 (0.3")	<b>150.46.15</b>	9.5 (0.37")	<b>150.47.10</b>

### 3.7.3 Cover Caps for Screws LINAX® Lxs F60

Linear Motor Type	Cover Caps	Art. No.
<b>Lxs F60</b>	Cap to cover the LINAX® Lxu/Lxs screws on the guiding rails	<b>135.08.00</b>

*Lxs 160F60 = 28 pcs*

*Lxs 200F60 = 32 pcs*

*Lxs 320F60 = 44 pcs*

*Lxs 400F60 = 52 pcs*

*Lxs 520F60 = 64 pcs*

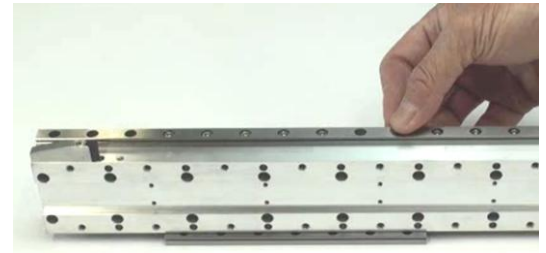
*Lxs 600F60 = 72 pcs*

*Lxs 800F60 = 92 pcs*

*Lxs 1000F60 = 112 pcs*

*Lxs 1200F60 = 132 pcs*

*Lxs 1600F60 = 172 pcs*



### 3.7.4 Fixings Screws for Ground Plate LINAX® Lxs F60

Linear Motor Type	Screws	Art. No.
<b>Lxs F60</b>	10 x hexagon socket screws M4 x 25mm (0.98") stainless	<b>135.11.05</b>

*Lxs 160F60/ 200F60 = 2 Sets*

*Lxs 320F60/400F60 = 3 Sets*

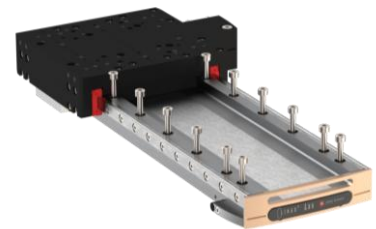
*Lxs 520F60/600F60 = 4 Sets*

*Lxs 800F60 = 5 Sets*

*Lxs 1000F60 = 6 Sets*

*Lxs 1200F60 = 7 Sets*

*Lxs 1600F60 = 9 Sets*



In order to avoid mechanical vibrations of the long LINAX® Lxs linear motor axes, they have to be screwed with all fixing screws over the whole length onto a base plate.

### 3.7.5 Cross Table Fixing Screws LINAX® Lxs F60

Linear Motor Type	Screws and centering pins	Art. No.
<b>Lxs F60</b>	6 x hexagon socket screws M4 x 25mm (0.98"), 4 x centering pins Ø4mm (0.16") x 8mm (0.31") stainless	<b>135.11.20</b>



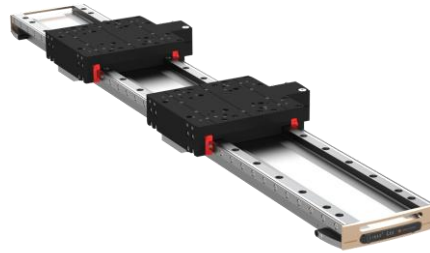
The various LINAX® linear motor types can be directly mounted to each other without the need of adapter plates. For cross table combinations there are multiple grid patterns possible.

For the choice of the according screws, the upper mounted linear motor is relevant

2 LINAX® Lxs F60 for high precision X-Y cross table

### 3.7.6 Additional Carriage Slider LINAX® Lxs F60

With the LINAX® Lxs linear motor axes it is possible to assemble two or more carriage sliders on the same ground plate. The cable connector can be orientated on the left or right side of the slider. Each carriage slider requires a XENAX® servo controller.



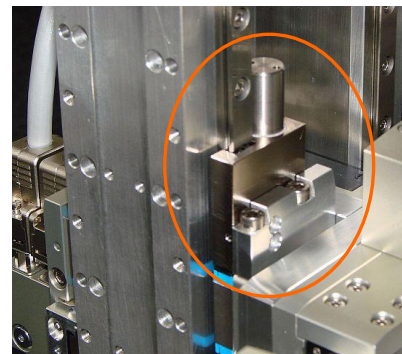
Additional Carriage Slider LINAX® Lxs	Type of carriage slider	Art. No.
Lxs xxxF60 mag. 1 µm	Carriage slider to LINAX® Lxs "shuttle" F60 with precise, self-lubricating ball bearing carriages, integrated linear motor with dirt wiper and <b>magnetic measuring system</b> , resolution 1 µm, accuracy +/-5µm	<b>135.30.10</b>
Lxs xxxF60 opt. 1 µm	Carriage slider to LINAX® Lxs "shuttle" F60 with precise, self-lubricating ball bearing carriages, integrated linear motor with dirt wiper and <b>optical measuring system</b> , resolution 1 µm, accuracy +/-2µm	<b>135.30.12</b>
Lxs xxxF60 opt. 100nm	Carriage slider to Lxs "shuttle" F60 opt. 100nm Carriage slider to LINAX® Lxs "shuttle" F60 with precise, self-lubricating ball bearing carriages, integrated linear motor with wiper and magnetic measurement system, resolution 100nm, accuracy +/-0.5µm	<b>135.30.14</b>
Lxs xxxF60 passiv	Passiv carriage slider with precise, self-lubricating ball bearing carriages. WITHOUT MOTOR & WITHOUT MEASURING SYSTEM. Does not require servo controller.	<b>135.30.09</b>

### 3.7.7 Spring Operated Brake LINAX® Lxs F60

The spring operated brake is applied onto the guiding rail. In the “off” status the brake is inactive (non air-pressure). By activating a 3/2 way pneumatic valve, (for example Festo CPE10 M1BH-3GL-QS-4, Article No. 196 846), the brake is released with compressed air.

In use with the ENAX® Xvi servo controller, an OUTPUT FUNCTION can be assigned for the automatic control of the brake valve.

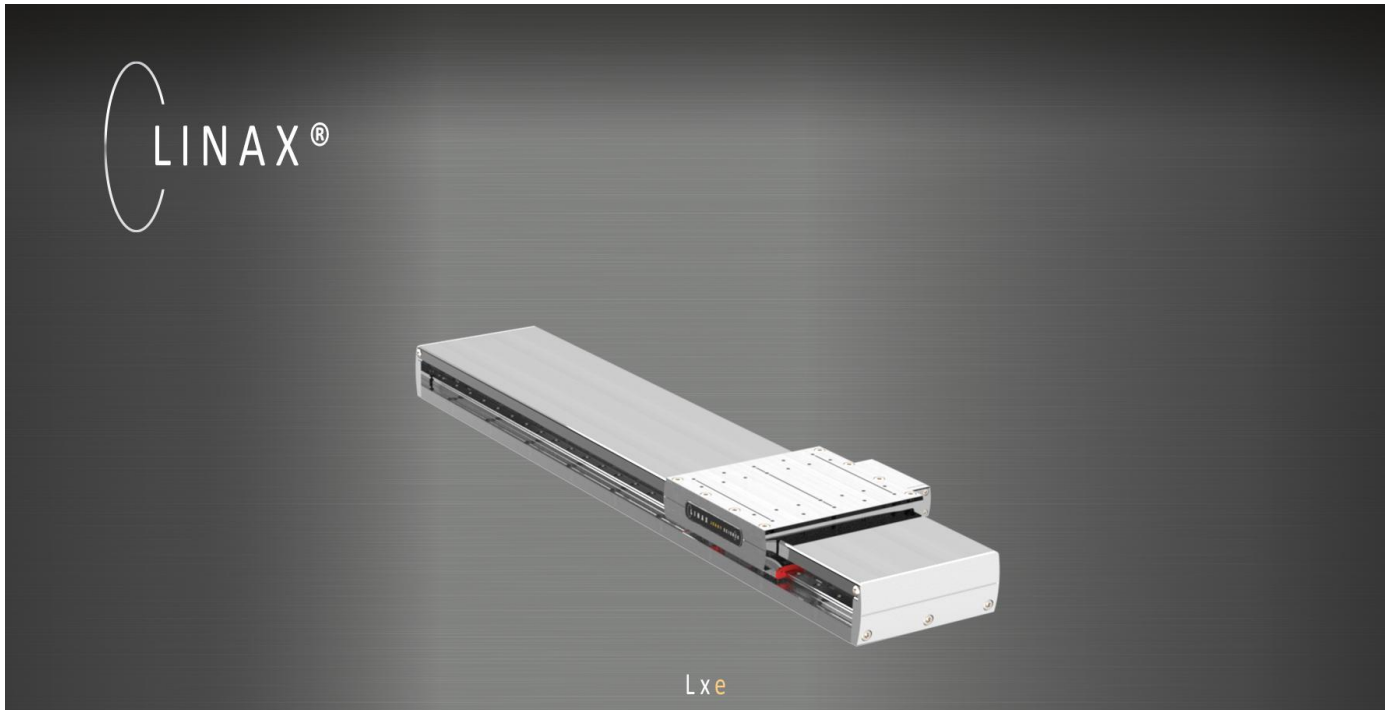
**IMPORTANT:** The stroke of the linear motor axis is reduced by 35mm (1.38”) with the installation of the spring operated brake. For example, the LINAX® Lxs 200F60 with a spring applied brake has a stroke of 165mm (6.5”) instead of 200mm (7.87”).



Spring Operated Brake	Maximal holding force	Art. No.
Lxs (Schneeberger Guiding carriages)	Until 8 kg (17.64 lbs)	135.03.36

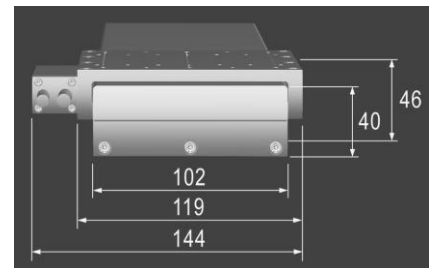


### 3.8 LINAX® Lxe (exclusive)



The LINAX® Lxe linear motors have a special cover. This results in a flat and elegant exterior geometry for easy cleaning. Additional carriage sliders on the same ground plate allow highly integrated machine solutions. Available Lxe stroke lengths begin at 250mm (9.84") up to 1000mm (31.37").

Type	Stroke [mm]	Force Fn/Fp [N]	Weight carriage slider/total [g]	Art. No.
<b>Lxe 250F40</b>	250 (9.84")	40/114 (9.0/25.63 lbf)	980/3080 (2.16/6.79 lbs)	<b>115.20.00</b>
<b>Lxe 400F40</b>	400 (15.75")	40/114 (9.0/25.63 lbf)	980/3850 (2.16/8.49 lbs)	<b>115.22.00</b>
<b>Lxe 550F40</b>	550 (21.65")	40/114 (9.0/25.63 lbf)	980/4620 (2.16/10.19 lbs)	<b>115.24.00</b>
<b>Lxe 800F40</b>	800 (31.50")	40/114 (9.0/25.63 lbf)	980/5900 (2.16/13.01 lbs)	<b>115.26.00</b>
<b>Lxe 1000F40</b>	1000 (31.37")	40/114 (9.0/25.63 lbf)	980/6930 (2.16/15.28 lbs)	<b>115.28.00</b>



#### Note: LINAX® Lxe option cleanroom, food industry and pharmaceutical industry

The LINAX® Lxe can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.





### 3.8.1 Measuring System with 100nm Resolution LINAX® Lxe

LINAX® Lxe 100nm	Type	Art. No.
Lxe 250F40	100nm Read-head with redundant double scanning	115.20.20
Lxe 400F40		115.22.20
Lxe 550F40		115.24.20
Lxe 800F40		115.26.20
Lxe 1000F40		115.28.20

The optical measuring system has a standard resolution of 1µm. This resolution can be increased to 100nm while the maximum travel speed of the slider carriage will be reduced to 0.9m/s. All measurement systems have a separate reference track on the entire length with distance-coded reference marks. After a short move of maximum 10mm (0.4"), the absolute position is automatically calculated by XENAX® Xvi servo controller. No external "zero point sensor" is necessary.



### 3.8.2 Connecting Cable LINAX® Lxe

Connecting Cable shielded, suitable for cable chains	Length [m]	Cable Ø [mm]	Motor cable with 3 pole Wago- connector, 3.5mm (0.14") Art. No.	Cable Ø [mm]	Encoder cable with 15 pole HD D-Sub connector Art. No.
LINAX® Lxe, Lütze, gray Temp. moving -25° up to +80°	1.5 (59")	7.0 (0.3")	150.22.10	6.3 (0.25")	150.23.10
	3.0 (118")		150.22.15		150.23.15
	5.0 (197")		150.22.20		150.23.20
	0.1-20 (4" - 787")		150.22.21		150.23.21
LINAX® Lxe IGUS, darkblue, Temp. moving -35° up to +100° suitable for clean rooms and oil resistant	1.5 (59")	7.0 (0.3")	150.42.10	8.0 (0.31")	150.43.10
	3.0 (118")		150.42.15		150.43.15
	5.0 (197")		150.42.20		150.43.20
	0.1-20 (4" - 787")		150.42.21		150.43.21

Connecting Cable <b>prepared for extension</b> shielded, suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable with 3 Pol binder round connector Art. No.	Cable Ø [mm]	Encoder cable with 15 pole HD D-Sub connector Art. No.
LINAX® Lxe, Lütze, gray Temp. moving -25° up to +80	1.5 (59")	7.0 (0.3")	150.22.22	6.3 (0.25")	150.23.10
	3.0 (118")		-		150.23.15
	5.0 (197")		-		150.23.20
	0.1-20 (4" - 787")		150.22.23		150.23.21
LINAX® Lxe, IGUS, darkblue, Temp. moving -35° up to +100° suitable for clean rooms and oil resistant	1.5 (59")	7.0 (0.3")	150.42.22	8.0 (0.31")	150.43.10
	3.0 (118")		-		150.43.15
	5.0 (197")		-		150.43.20
	0.1-20 (4" - 787")		150.42.23		150.43.21

### 3.8.3 Removable Extension Cable LINAX® Lxe

Extension cables are also useful for highly dynamic multi axes applications with cable chains. Use short connection cables; then plug it into the extension cables. These extension cables run in the cable chain, and are easily replaceable. The grey Lütze **PUR** bending radius for **moving cable** is **76mm (3.0")**. For **fixed cable**, the minimum bending radius is **46mm (1.9")**.

Through full PUR jacket and TPE / HGI insulation these cables are optimal for cable chains, extremely harsh operation conditions and an environment with aggressive coolants and lubricants.

When using extension cables, the 3 pole Wago connector is replaced by a metallic shielded round jack from the manufacturing company "Binder". The overall length of the cables of max. 20m and the number of intermediate cables of max. 3pcs. must not be exceeded.



Extension cables shielded and suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable 3 pole binder round jack to 3 pole Wago-connector 3,5mm (0.14") Art. No.	Cable Ø [mm]	Encoder cable 15 pole HD jack to 15 pole HD connector Art. No.
LINAX® Lxc/Lxs/Lxu/Lxe, Lütze, grey, Temp. moving -25° up to +80°	1.5 (59") 3.5 (138") 5.0 (197") 0.5-20 (20" - 787")	7.5 (0.3")	150.26.01 150.26.03 150.26.05 150.26.10	7.2 (0.28")	150.27.01 150.27.03 150.27.05 150.27.10
LINAX® Lxc/Lxs/Lxu/Lxe, IGUS, darkblue, Temp. moving -35° up to +100° suitable for clean room and oil resistant	1.5 (59") 3.5 (138") 5.0 (197") 0.5-20 (20" - 787")	7.0 (0.3")	150.46.01 150.46.03 150.46.05 150.46.10	9.5 (0.37")	150.47.01 150.47.03 150.47.05 150.47.10

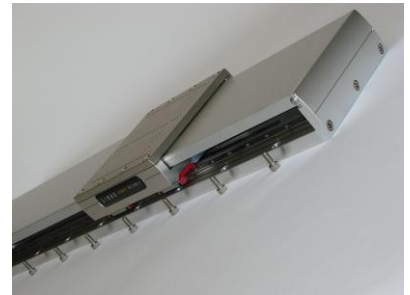
Intermediary cable shielded and suitable for cable chain	Length [m]	Cable Ø [mm]	Motor cable 3 pole binder round jack to 3 pole binder round connector Art. No.	Cable Ø [mm]	Encoder cable 15 pole HD jack to 15 pole HD connector Art. No.
LINAX® Lxc/Lxs/Lxu/Lxe, Lütze, grey, Temp. moving -25° up to +80°	0.5-20 (20" - 787")	7.0 (0.3")	150.26.15	7.2 (0.28")	150.27.10
LINAX® Lxc/Lxs/Lxu/Lxe, IGUS, darkblue, Temp. moving -35° up to +100° suitable for clean room and oil resistant	0.5-20 (20" - 787")	7.0 (0.3")	150.46.15	9.5 (0.37")	150.47.10

### 3.8.4 Fixing Screws LINAX® Lxe

Linear Motor Type	Screws	Art. No.
<b>Lxe F40</b>	10 x hexagon socket screws M4 x 12mm (0.47") stainless	<b>135.11.01</b>

*Lxe 250F40/400F60 = 2 Set*  
*Lxe 550F40 = 3 Sets*

*Lxe 800F40 = 4 Sets*  
*Lxe 1000F40 = 5 Sets*



### 3.8.5 Cross Table Fixing Screws LINAX® Lxe

For cross table constructions with two Lxe F40, the top part of the carriage slider that is placed on the bottom of the cross table should be removed first. The total height of the cross table will be reduced by 6mm (0.24") to 86mm (3.39").

Linear Motor Type	Screws and centering pins	Art. No.
<b>Lxe F40</b>	4 x hexagon socket screws M4 x 12mm (0.47") 2 x centering pins $\varnothing 4$ h8 x 8mm (0.31"), stainless	<b>135.11.00</b>



### 3.8.6 Additional Carriage Slider LINAX® Lxe

With the LINAX® Lxe linear motor axes it is possible to assemble two or more carriage sliders on the same ground plate. The cable connector can be orientated on the left or right side of the slider. Each carriage slider requires a XENAX® servo controller

Linear Motor Type	Type of carriage slider	Art. No.
<b>Lxe xxx F40</b>	Carriage slider to LINAX® Lxe "exclusive" F40 with precise, self-lubricating ball bearing carriages, integrated linear motor and <b>optical measurement system</b> , resolution 1 $\mu$ m, accuracy +/-2 $\mu$ m	<b>135.30.00</b>
<b>Lxe xxx F40</b>	Carriage slider to LINAX® Lxe "exclusive" F40, <b>100nm</b> , with precise, self-lubricating ball bearing carriages, integrated linear motor and <b>optical measurement system</b> , resolution 100nm, accuracy +/-500nm	<b>135.30.05</b>

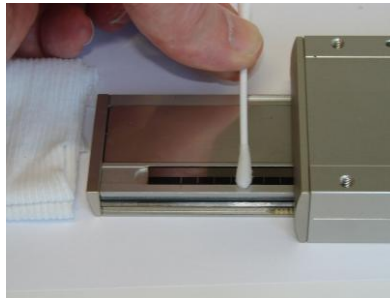


## 3.9 Maintenance

### 3.9.1 Cleaning Glass Scale of LINAX®

At the end of the mechanical installation, the glass scale should be cleaned. Afterwards please do not touch the glass scale anymore.

If the error 54 occurs “read-head signal goes off”, the glass scale is dirty and a reading problem may result. Use a cloth and a degreasing, non-abrasive, cleaning liquid. e.g., clear, cleaning petrol from a chemist, to clean the glass scale.



### 3.9.2 Lubricating Cross Roller Guides ELAX® and LINAX® Lxc

Die ELAX® and LINAX® Lxc linear bearing have two cross roller cages and four miniature precision shafts. The cross roller cages contain a centering forced control with two toothed racks and a cog wheel (system Schneeberger). This cross roller guides is highly reliable and needs low maintenance. We recommend lubricating all visible shafts every 12 months.



The easiest way to do this is to moisten the guide at all accessible points with a grease-soaked cotton swab and make sure that the glass scale remains dry, otherwise clean it afterwards.

Suitable lubrication cartridges and dosage pistol can be found in chapter 3.9.4.

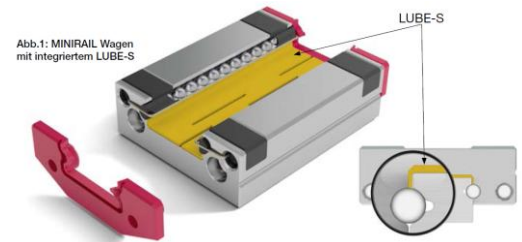
### 3.9.3 Lubricating Ball Bearing Guides LINAX® Lxe/Lxs/Lxu

As a standard the LINAX® Lxe, Lxs and Lxu are delivered with the ball bearing guides (red) which need very little maintenance  
**Important: If the guiding rails are cleaned, please apply new lubricant on the guides to avoid that the lubricant in the reservoir is used up too quickly.**

Depending on the operational environment the linear motors are equipped with 3 different types of ball bearing guides:

#### Current Guiding Systems

- Red carriages, standard:** Low on maintenance, we recommend to re-lubricate every 5'000km with „Isoflex Topas NB 5051“
- Red carriages, clean room:** Re-lubricate After 3'000km or at least every 12 months with „Klüberalfa HX 83-302“
- Red oder black carriages  
Food or pharma industry:** Re-lubricate After 3'000km or at least every 12 months with „Klübersynth UH1 14-151“



*Integrated long term lubrication system*

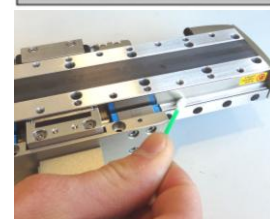
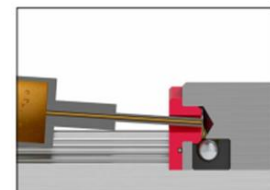
#### Application Instructions:

The carriages are lubricated with a dosage pistol in which the cartridge contains the according lubricant. The slider of the motor should be placed either in the front or in the back of its ground plate. You only have to lubricate either from the front or from the back of the linear motor, but make sure to lubricate on the top and on the bottom on the left and on the right side.

The red ball bearing carriages have two needle holes on the front face. Please put the dosage pistol through the needle hole and apply lubricant until lubricant exits on to the guiding rails.

**For linear motors with an optical measuring system please make sure to remove the lubricant surplus with a cotton swap.**

Suitable lubrication cartridges and dosage pistol can be found in chapter 2.5.4.



### 3.9.4 Lubrication sets with dosage pistol and lubrication cartridges

Linear Motor Type	Lubricatingset	Art. No.
ELAX® & LINAX®	Dosage pistol to lubricate ELAX® & LINAX® guides (excl. lubricant filled cartridge)	155.00.10
	Cartridge with standard lubricant: Lubricant "Isoflex Topas NB 5051" filled cartridge to lubricate the ELAX® & LINAX® guides. Content 20cc lubricant is enough for about 10 relubrications per motor.	155.00.11
	Cartridge with clean room lubricant: Lubricant "Klüberalfa HX 83-302" filled cartridge to lubricate the ELAX® & LINAX® guides. Content 20cc lubricant is enough for about 10 relubrications per motor.	155.00.12
	Cartridge with clean room lubricant for pharma- and food industry: Lubricant "Klübersynth UH1 14-151" filled cartridge to lubricate the ELAX® & LINAX® guides. Content 20cc lubricant is enough for about 10 relubrications per motor.	155.00.13



## 4 ROTAX® Rotary Motor Axis



Whether you choose the ROTAX® Rxvp with direct connection options to ELAX® linear motor slides and LINAX® linear motor axes or you go for the new ROTAX® Rxhq with enormous torque despite its small dimensions and the 12 resp. 50 mm diameter hollow shaft – the compact ROTAX® rotary motor axes from Jenny Science all work precisely, can be used flexibly and are robust in application.



## 4.1 ROTAX® Rxvp with Vacuum/Compressed Air Feedthrough

This ultra-compact rotary axis with vacuum gripper picks parts within a typical weight range of 1mg up to 500g. With the standard internal screw thread of M5, a lot of different commercially available vacuum grippers are applicable. This unit is the perfect fit for the ELAX® electric slide or for LINAX® linear motor axis.

The high precision rotary drive runs endless 360° with a resolution of 64'000 Inc/rev. They can be assembled in a grid of 30mm next to each other. Opposing each other, the minimal distance of the ROTAX® shafts is also 30mm. This saves space and applications can be built more compact.

Model	Measuring System [inc/rev <sup>-1</sup> ]	Force Nom/Peak [mNm]	n-max [rpm]	Weight [g]	Art. No.
<b>Rxvp 28-6T0.04,</b> <b>shaft 30mm (1.18")</b> - with connection plug Ø4 - with M5 internal thread - with blind plug  <b>Rxvp 28-6T0.04,</b> <b>shaft 15mm (0.59")</b> - with connection plug Ø4 - with M5 internal thread - with blind plug  <b>Rxvp 28-6T0.04, for ELAX® with</b> <b>weight Comp., shaft 30mm (1.18")</b> - with connection plug Ø4 - with M5 internal thread - with blind plug  <b>Rxvp 28T0.04, for ELAX® with</b> <b>weight Comp., shaft 15mm (0.59")</b> - with connection plug Ø4 - with M5 internal thread - with blind plug	64'000	40/110 (0.090/0.024 lbs)	1000	180 (0.40 lbs)  175 (0.39 lbs)  200 (0.44 lbs)  195 (0.43 lbs)	120.00.00 120.00.01 120.00.02  120.00.10 120.00.11 120.00.12  120.01.00 120.01.01 120.01.02  120.01.10 120.01.11 120.01.12

### Note: ROTAX® option cleanroom, food industry and pharmaceutical industry

The ROTAX® Rxvp can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.



#### 4.1.1 Types of compressed air connections



**Connection plug outside diameter 4mm**  
(0.16")

The ROTAX® Rxvp is supplied with a  $\varnothing 4\text{mm}$  (0.16") connection plug as standard. Recommended hose inner diameter 3mm (suitable hose, see chapter 3.1.5).

Suitable for mounting on the flange side of ELAX® Rx linear motor slides.

**M5 internal thread**

Plug nipple with M5 female thread for connection coupling such as Festo QSM-M5-4I.

**Not suitable for flange-side attachment to ELAX® Ex linear motor slides.**

**Blind plug**

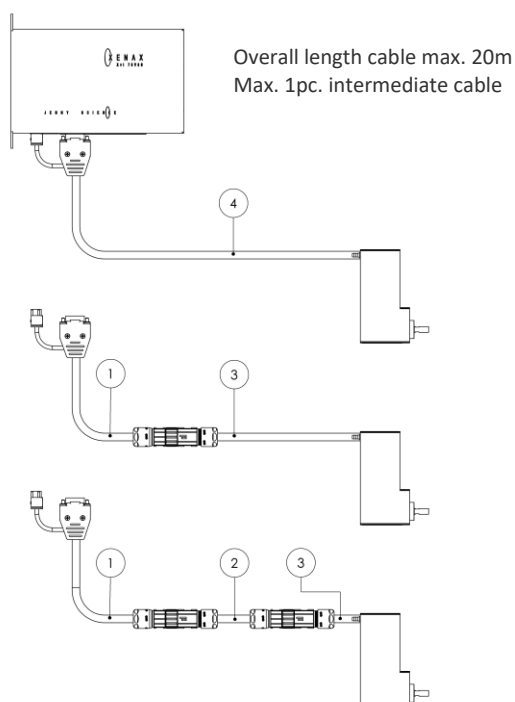
Blind plug, without vacuum/compressed air connection.

## 4.1.2 Connecting Cable ROTAX® Rxvp M16

Absolutely revolutionary is the flexible one-cable connection, which reduces the machine cabling effort considerably. In only one cable are the lines for encoder, for the 3 phases of the motor and for the communication between ROTAX® and XENAX® Servocontroller.

These connection cables have a minimum bending radius of **48mm for continuous movement** and **of 20mm for fixed cables**. Intermediate cables are also available as accessories. The cable can withstand more than 1 million cycles of torsional stress at  $\pm 90^\circ$  over a length of 1m

The standard 0.3 m long connection cable with M16 plug connection for the extension or intermediate cable is fixed to the ROTAX®. A side cable outlet to the left is also possible.



Connecting cable ROTAX® Rxvp shielded, suitable for cable chain	Length [m]	Rotary Motor Type	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm (0.14") Art. No <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span>
<b>ROTAX® anthracite, TPU, Clean Room 5-6</b> <b>Operating temp. -40°C up to + 80°C,</b> <b>Ø 8mm (0.31")</b>	1.5 (59")	<b>Rxvp 28-6T0.04</b>	<b>150.70.00</b>
		<b>Rxvp 28-6T0.04 for ELAX® with weight comp.</b>	<b>150.70.05</b>
	0.1-20 (4" - 787")	<b>Rxvp 28-6T0.04</b>	<b>150.70.01</b>
		<b>Rxvp 28-6T0.04 for ELAX® with weight comp.</b>	<b>150.70.06</b>

Connecting cable M16 for ext. or intermediate cable ROTAX® Rxvp	Length [m]	ROTAX® Type	ROTAX® - M16 Socket Art. No. <sup>3</sup>
<b>ROTAX® connection TPU,</b> <b>Clean Room 5-6, Suitable for cable chains,</b> <b>Operating temp. -40°C up to + 80°C,</b> <b>Ø 8mm (0.31")</b>	0.3 (12")	Rxvp 28-6T0.04, for ELAX® <u>without</u> weight Comp	150.71.02
		Rxvp 28-6T0.04, for ELAX® <u>with</u> weight Comp	150.71.07
	0.1-20 (4" - 787")	Rxvp 28-6T0.04, for ELAX® <u>without</u> weight Comp	150.71.03
		Rxvp 28-6T0.04, for ELAX® <u>with</u> weight Comp	150.71.08

Connecting- or extension cable XENAX® M16	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No. <sup>1</sup>
<b>TPU, Clean Room 5-6,</b> <b>Suitable for cable chains,</b> <b>Operating temp. -40° up to + 80°,</b> <b>Ø 9.6mm (0.38")</b>	1.5 (59")	150.83.01
	3.0 (118")	150.83.03
	5.0 (197")	150.83.05
	0.1-20 (4" - 787")	150.83.10

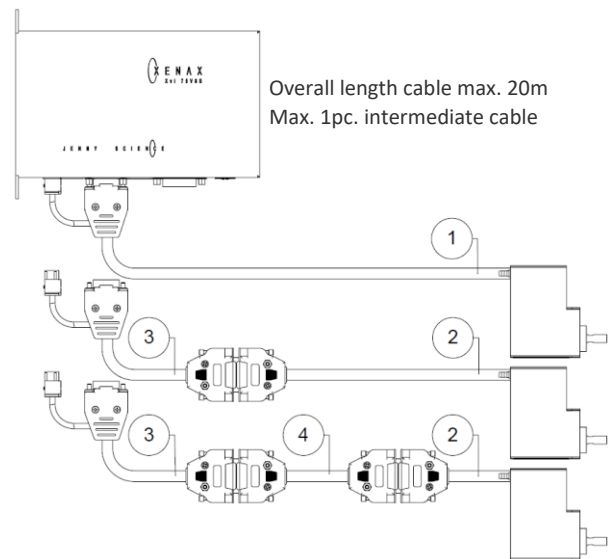
Intermediate cable 2 x M16	Length [m]	M16 Socket – M16 Plug Art. No. <sup>2</sup>
<b>TPU, Clean Room 5-6,</b> <b>Suitable for cable chains,</b> <b>Operating temp. -40° up to + 80°,</b> <b>Ø 9.6mm (0.38")</b>	1.5 (59")	150.84.01
	3.5 (138")	150.84.03
	5.0 (197")	150.84.05
	0.1-20 (4" - 787")	150.84.10

### 4.1.3 Connecting Cable ROTAX® Rxvp D-Sub

With ROTAX® the cables are directly mounted into the linear motor case in favor of the compactness. The flexible one-cable connection is absolutely revolutionary which significantly simplifies the machine cabling.

In just one cable there are the wires for encoder, the 3 phases for the motor and for the communication between ROTAX® and XENAX® servo controller. The anthracite colored **TPU** connection cables are clean room capable and as a standard length of 1.5m on stock available. Custom lengths from 0.1 (4") up to 20m (787") can be supplied upon request. These connection cables have a min bending radius of **40mm (1.6")** for moving cables and **16mm (0.7")** for fixed cables. The cable can withstand more than 1 million cycles of torsional stress at ±90° over a length of 1m

As an option, extension cables are also available.



Connecting cable shielded, suitable for cable chain	Length [m]	Rotary Motor Type	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm (0.14") Art. No <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1</span>
<b>ROTAX® anthracite, TPU, Clean Room 5-6</b> <b>Operating temp. -40°C up to + 80°C,</b> <b>Ø 8mm (0.31")</b>	1.5 (59")	Rxvp 28-6T0.04	150.70.00
		Rxvp 28-6T0.04 for ELAX® with weight comp.	150.70.05
	0.1-20 (4" - 787")	Rxvp 28-6T0.04	150.70.01
		Rxvp 28-6T0.04 for ELAX® with weight comp.	150.70.06

Connecting cable prepared for extension or intermediary cable shielded, suitable for cable chain	Length [m]	Rotary Motor Type	15 Pol D-Sub connector (2 rows) Art. No <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">2</span>
<b>ROTAX® anthracite, with 15 Pol D-Sub connector (2 rows), TPU, clean room 5-6</b> <b>Operating temp. -40°C up to + 80°C</b> <b>Ø 8mm (0.31")</b>	1.5 (59")	Rxvp 28-6T0.04	150.71.00
		Rxvp 28-6T0.04 for ELAX® with weight comp.	150.71.05
	0.1-20 (4" - 787")	Rxvp 28-6T0.04	150.71.01
		Rxvp 28-6T0.04 for ELAX® with weight comp.	150.71.06

#### 4.1.4 Extension or Intermediary Cable Removable ROTAX® D-Sub

Extension cables are also useful for highly dynamic multi axis applications with cable chains. The replaceable extension cable is plugged onto a connecting cable. These anthracite **TPU** extension cables have a min. bending radius of **40mm (1.6")** for moving cables and **16mm (0.7")** for fixed cables.



Extension cable, shielded, suitable for cable chain	Length [m]	15 Pol D-Sub jack, 15 Pol D-Sub connector (2 rows) and 3 Pol Wago 3,5mm (0.14") Art. No. <span style="float: right;">3</span>
<b>ROTAX® anthrazit, TPU,</b> <b>Clean Room 5-6</b> <b>Operating temp. -40°C up to + 80°C</b> <b>Ø 8mm (0.31")</b>	1.5 (59")	<b>150.56.01</b>
	0.5-20 (20" - 787")	<b>150.56.05</b>

Intermediary cable shielded, suitable for cable chain	Length [m]	15 Pol D-Sub jack, 15 Pol D-Sub connector (2 rows) Art. No. <span style="float: right;">4</span>
<b>ROTAX® anthrazit, TPU,</b> <b>Clean Room 5-6</b> <b>Operating temp. -40°C up to + 80°C</b> <b>Ø 8mm (0.31")</b>	0.5-20 (20" - 787")	<b>150.56.10</b>

#### 4.1.5 Hose Coupling ROTAX® Rxvp

Hose Coupling	Art. No.
Nipple $\varnothing 4a$ to M5i, ROTAX®	140.00.10
M5 to $\varnothing 4a$ , Festo QSM-M5-4I	140.00.11
M5 to $\varnothing 6a$ , Festo QSM-M5-6I	140.00.12



#### 4.1.6 Hose ROTAX® Rxvp Vacuum/Compressed Air Feedthrough

Hose	Length [m]	Art. No.
$\varnothing 5a$ , $\varnothing 3i$ to $\varnothing 4a$ pneumatic hose PUR black, for ROTAX®	1.5 (59")	140.00.19
	0.1-20 (4" - 787")	140.00.20



#### 4.1.7 Angle Bracket ROTAX® Rxvp to LINAX® Lxu

Angle Bracket	Screws and dowel bushings	Art. No.
ROTAX® Rxvp to LINAX® Lxu Y lengthwise	incl. 2x Torx M4x8, 2x dowel bushings $\varnothing 7mm$ , 2x centering pins $\varnothing 4x6$	135.12.20





#### 4.1.8 D-Open End Spanner ROTAX®

D-Open End Spanner	Art. No.
5mm (0.2") for Vacuum Shaft ROTAX®	140.00.15



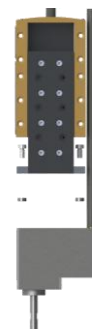
#### 4.1.9 Hose- and Cable Feedthrough ROTAX®

Hose- and Cable Feedthrough	Screws and dowel bushings	Art. No.
ROTAX® on ELAX® Z sidewise	Incl. 1xTorx M4x12	140.00.01
ROTAX® on ELAX® Z and ELAX® Y upright	incl. 2x Torx M4x18, 4x Torx M3x5, Incl. 2x Torx M4x18, 4x Torx M3x5, 4x dowel bushings Ø7mm	140.00.02



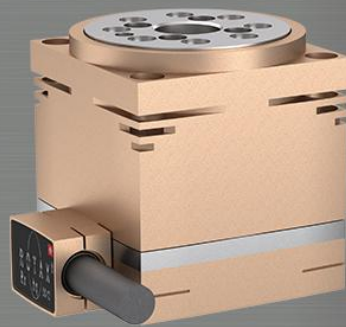
#### 4.1.10Y-Z-R Pick and Place Upright

Pick and Place upright	Screws and dowel bushings	Art. No.
Rxvp 28-6T0.04	2 x dowel bushings Ø7mm (0.28") 2 x torx with low head, M4 x 8mm (0.31")	136.10.01



## 4.2 ROTAX® Rxhq 50-12T0.3 (High Torque)

ROTAX®



Rxhq 50-12T0.3

The miniature hollow shaft servo motor ROTAX® Rxhq (High Torque) impresses with its extremely compact design. **Direct drive motor, precise bearings and the single turn absolute encoder are completely integrated.**

The ROTAX® Rxhq does not require a gearbox. This means no wear and the highest precision over the whole lifetime. The drive is maintenance-free and contains no lubricants. Furthermore, the reaction time is significantly shorter than with geared motors. This aspect is enhanced by a low rotary inertia which allows high acceleration values. This means shorter cycle times and higher productivity, so it is also ideal for high-speed applications.

The through hollow shaft of  $\varnothing 12\text{mm}$  (0.47") offers generous space for cables, vacuum or compressed air lines, light and laser beams, glass fibres, cameras and other media.

Typically, such special motors require an external encoder. This will result in larger dimensions and more complex wire installation. For this reason, the ROTAX® Rxhq already has a precision encoder built in.

#### 4.2.1 ROTAX® Rxhq 50-12T0.3

Model	Measuring system [inc/rev <sup>-1</sup> ]	Force Nom/Peak [mNm]	Nominal Speed 48V [rpm]	Weight [g]	Art. No.
Rxhq 50-12T0.3 cable connection on the right side	120'000 optical	300/1'020 (2.66 – 9.03 lbf in)	1'500	440 (0.97 lbs)	121.00.03
	162'000 optical		1'300		121.00.01
	2'592'000 optical		200		121.00.02
Rxhq 50-12T0.3 cable connection on the left side	120'000 optical		1'500		121.00.08
	162'000 optical		1'300		121.00.06
	2'592'000 optical		200		121.00.07
Rxhq 50-12T0.3 cable connection downwards	120'000 optical		1'500		121.00.13
	162'000 optical		1'300		121.00.11
	2'592'000 optical		200		121.00.12



#### Note: ROTAX® option cleanroom, food industry and pharmaceutical industry

The ROTAX® Rxhq can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.

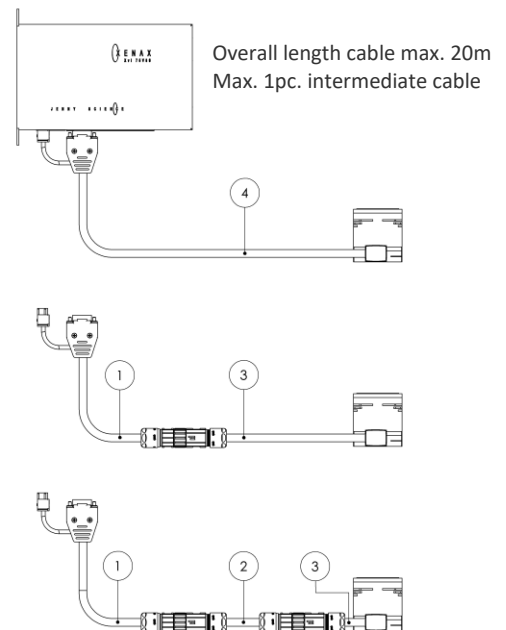


## 4.2.2 Connecting Cable ROTAX® Rxhq 50-12T0.3 M16

Absolutely revolutionary is the flexible one-cable connection, which reduces the machine cabling effort considerably. In only one cable are the lines for encoder, for the 3 phases of the motor and for the communication between ROTAX® and XENAX® Servocontroller.

These connection cables have a minimum bending radius of **48mm for continuous movement** and of **20mm for fixed cables**. Intermediate cables are also available as accessories. The cable can withstand more than 1 million cycles of torsional stress at  $\pm 90^\circ$  over a length of 1m

The standard 0.3 m long connection cable with M16 plug connection for the extension or intermediate cable is fixed to the ROTAX®.



Connecting cable ROTAX® Rxhq shielded, suitable for cable chain	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm (0.14") Art. No	4
<b>ROTAX® anthracite, TPU, Clean Room 5-6 Operating temp. -40° up to + 80°, Ø 8mm (0.31")</b>	1.5 (59")	<b>150.75.00</b>	
	0.1-20 (4" - 787")	<b>150.75.01</b>	

Connecting cable M16 for ext. or intermediate cable ROTAX® Rxhq	Length [m]	ROTAX® - M16 socket Art. No.	3
<b>ROTAX® connection TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40°C up to + 80°C, Ø 8mm (0.31")</b>	0.3 (12")	<b>150.76.02</b>	
	0.1-20 (4" - 787")	<b>150.76.03</b>	

Connecting- or extension cable XENAX® M16	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No. <span>①</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	150.83.01 150.83.03 150.83.05 150.83.10

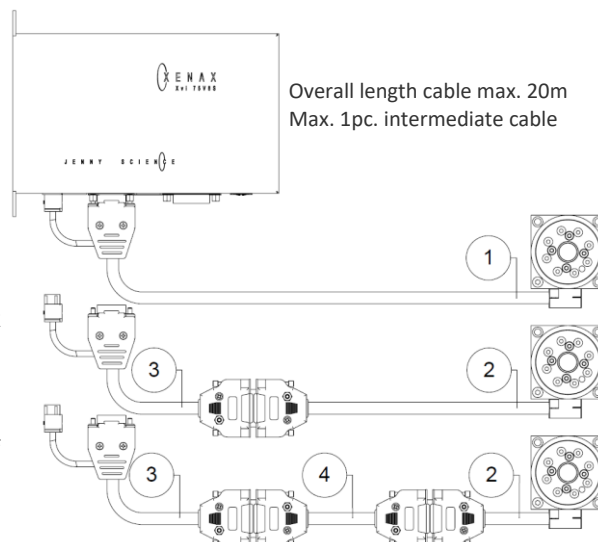
Intermediate cable 2 x M16	Length [m]	M16 Socket – M16 Plug Art. No. <span>②</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.01 150.84.03 150.84.05 150.84.10

## 4.2.3 Connecting Cable ROTAX® Rxhq 50-12T0.3 D-Sub

With ROTAX® the cables are directly mounted into the linear motor case in favor of the compactness. The flexible one-cable connection is absolutely revolutionary which significantly simplifies the machine cabling.

In just one cable there are the wires for encoder, the 3 phases for the motor and for the communication between ROTAX® and XENAX® servo controller. The anthracite colored **TPU** connection cables are clean room capable and as a standard length of 1.5m (59") on stock available. Custom lengths from 0.1 (4") up to 20m (787") can be supplied upon request. These connection cables have a min bending radius of **40mm (1.6")** for moving cables and **16mm (0.7")** for fixed cables. The cable can withstand more than 1 million cycles of torsional stress at ±90° over a length of 1m

As an option, extension cables are also available.



Connecting cable shielded, suitable for cable chain	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm (0.14") Art. No
<b>ROTAX® anthracite, TPU, Clean Room 5-6</b> <b>Operating temp. -40° up to + 80°, Ø 8mm (0.31")</b>	1.5 (59")	<b>150.75.00</b>
	0.1-20 (4" - 787")	<b>150.75.01</b>

Connecting cable prepared for extension or intermediary cable shielded, suitable for cable chain	Length [m]	15 Pol D-Sub connector (2 rows) Art. No
<b>ROTAX® anthracite, with 15 Pol D-Sub connector (2 rows), TPU, Clean room 5-6</b> <b>Operating temp. -40° up to + 80° Ø 8mm (0.31")</b>	1.5 (59")	<b>150.76.00</b>
	0.1-20 (4" - 787")	<b>150.76.01</b>

#### 4.2.4 Extension & Intermediary Cable Removable ROTAX® Rxhq 50-12T0.3 D-Sub

Extension cables are also useful for highly dynamic multi axis applications with cable chains. The replaceable extension cable is plugged onto a connecting cable. These anthracite **TPU** extension cables have a min. bending radius of **40mm (1.6")** for moving cables and **16mm (0.7")** for fixed cables.



Extension cable, shielded, suitable for cable chain	Length [m]	15 Pol D-Sub jack, 15 Pol D-Sub connector (2 rows) and 3 Pol Wago 3,5mm (0.14") Art. No. <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span>
<b>ROTAX® anthracite, TPU,</b> <b>Clean Room 5-6</b> <b>Operating temp. -40°C up to + 80°C</b> <b>Ø 8mm (0.31")</b>	1.5 (59")	<b>150.56.01</b>
	0.5-20 (20" - 787")	<b>150.56.05</b>

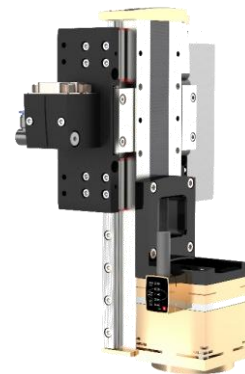
Intermediary cable shielded, suitable for cable chain	Length [m]	15 Pol D-Sub jack, 15 Pol D-Sub connector (2 rows) Art. No. <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span>
<b>ROTAX® anthrazit, TPU,</b> <b>Clean Room 5-6</b> <b>Operating temp. -40°C up to + 80°C</b> <b>Ø 8mm (0.31")</b>	0.5-20 (20" - 787")	<b>150.56.10</b>





#### 4.2.8 Angle Bracket ROTAX® Rxhq 50-12T0.3 to LINAX® Lxu F60

Angle Bracket	Screws and dowel bushings	Art. No.
<b>Angle Bracket Lxu F60</b>	2 x centring pin $\varnothing 4 \times 8$ 4 x Torx, M4 x 14 4 x distance bushings with centering 4 x hexagon socket screws, M4 x 52	<b>140.05.10</b>



#### 4.2.9 Angle Bracket ROTAX® Rxhq 50-12T0.3 to LINAX® Lxc F10/F40

Angle Bracket	Screws and dowel bushings	Art. No.
<b>Angle Bracket Lxc F10/F40</b>	2 x Dowel pin $\varnothing 2.5 \times 6$ 4 x Torx, M3 x 12 4 x distance bushings with centering 4 x hexagon socket screws, M4 x 52	<b>140.05.11</b>



#### 4.2.10 Angle Bracket ROTAX® Rxhq 50-12T0.3 to ELAX® Ex F20

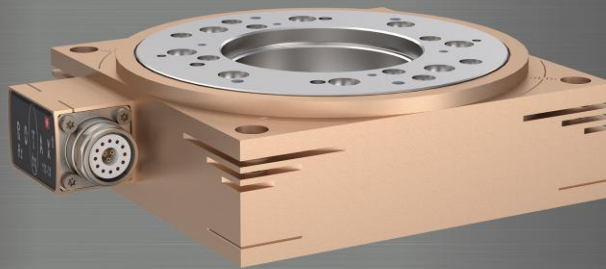
Angle Bracket	Screws and dowel bushings	Art. No.
<b>Angle Bracket Ex F20</b>	2 x Centering ring $\varnothing 6$ 4 x Torx, M3 x 12 4 x distance bushings with centering 4 x hexagon socket screws, M4 x 52	<b>140.05.12</b>



### 4.3 ROTAX® Rxhq 110-50T1.5 (High Torque)



ROTAX®



Rxhq 110-50T1.5 M16

The direct drive motor developed in-house is based on the magnetic flux technology of wind turbine generators. This results in a high torque with compact installation space. In figures, this means a factor of two to three greater torque with the same construction volume compared to conventional direct drives from competitors. The continuous hollow shaft with a diameter of 50mm offers generous space for cables, vacuum or compressed air lines, light and laser beams, glass fibres or camera lenses. The absolute measuring system allows an immediate start without previous referencing. The single-cable connection can be supplied in right-hand or left-hand output configuration.

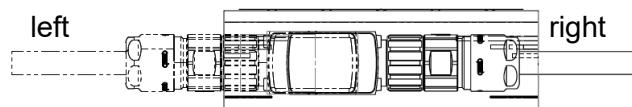
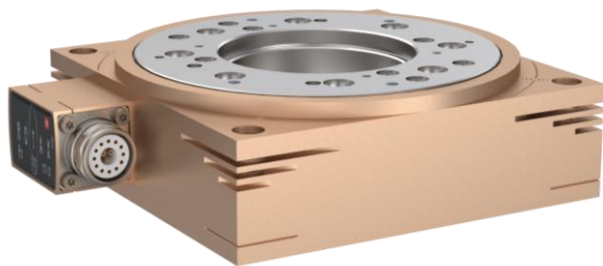
Together with the patented "Force Calibration" function, undesired cogging, weight and friction forces of the ROTAX® Rxhq direct drives can be easily compensated. This makes it possible to specify, limit and monitor forces in processes. Together with the Forceteq® basic technology included in the XENAX® servo controller, complete force/distance diagrams can be recorded - an additional torque sensor is not necessary.

#### Specific advantages, USP's

- Ultra compact dimensions
- Oversized continuous hollow shaft
- High torque - no gearbox
- Integrated absolute encoder system
- Single cable connection

#### 4.3.1 ROTAX® Rxhq 110-50T1.5 with M16 connection

Model	Measuring system [inc/rev <sup>-1</sup> ]	Force Nom/Peak [Nm]	Nominal speed 48V [rpm]	Weight [g]	Art. No.
Rxhq 110-50T1.5 M16 connection to the right	120'000 optical	1.5 / 4.0 (2.66 – 9.03 lbf in)	600	1'200 (2.65 lbs)	121.05.02
	648'000 optical		600		121.05.40
	2'592'000 optical		200		121.05.50
Rxhq 110-50T1.5 M16 connection to the left	120'000 optical	1.5 / 4.0 (2.66 – 9.03 lbf in)	600	1'200 (2.65 lbs)	121.05.07
	648'000 optical		600		121.05.45
	2'592'000 optical		200		121.05.55



#### Note: ROTAX® option cleanroom, food industry and pharmaceutical industry

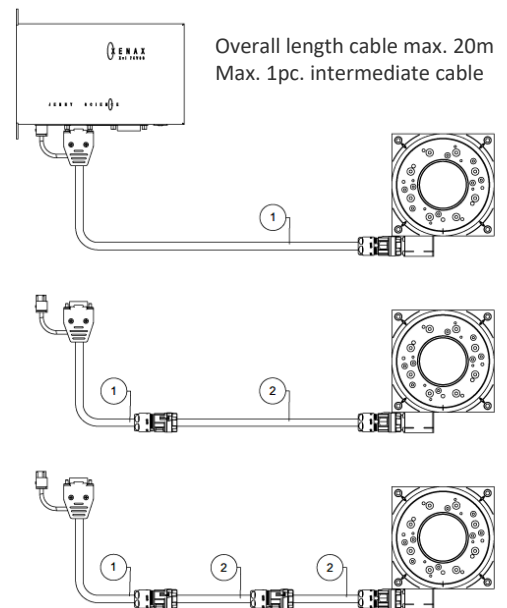
The ROTAX® Rxhq can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.



## 4.3.2 Connecting Cable ROTAX® Rxhq 110-50T1.5

Absolutely revolutionary is the flexible one-cable connection, which reduces the machine cabling effort considerably. In only one cable are the lines for encoder, for the 3 phases of the motor and for the communication between ROTAX® Rxhq and XENAX® Servocontroller. These connection cables have a minimum bending radius of **48mm for continuous movement** and of **20mm for fixed cables**. Extension cables are also available as accessories. The cable can withstand more than 1 million cycles of torsional stress at  $\pm 90^\circ$  over a length of 1m

As an option, extension cables are also available.



Connecting or extension cable XENAX® M16	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Stecker Art. No. <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	150.83.01 150.83.03 150.83.05 150.83.10

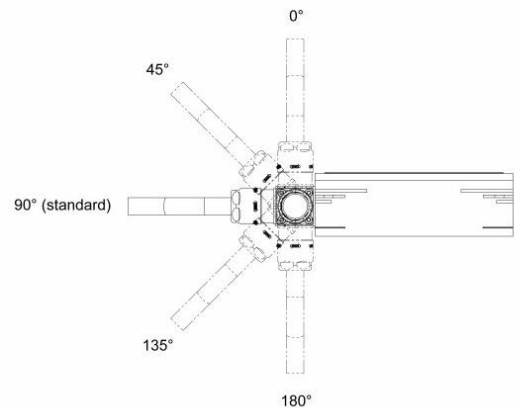
Intermediate cable 2 x M16	Length [m]	M16 Socket – M16 Plug Art. No. <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">2</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.01 150.84.03 150.84.05 150.84.10

### 4.3.3 Connecting Cable ROTAX® Rxhq 110-50T1.5 with angled plug

Depending on the installation situation, it may be useful to use an angled connector for the cable outlet on the motor side. The orientation of the cable can be specified in 45° steps - you can easily specify this orientation when ordering.

To do this, please select the desired cable and length using the article number and add the desired orientation variant. Without specific information, a 90° orientation is assumed as standard.

The orientation always refers to the standard outlet from the connector housing on the motor ("cable outlet on the right", when viewed on the connector housing).

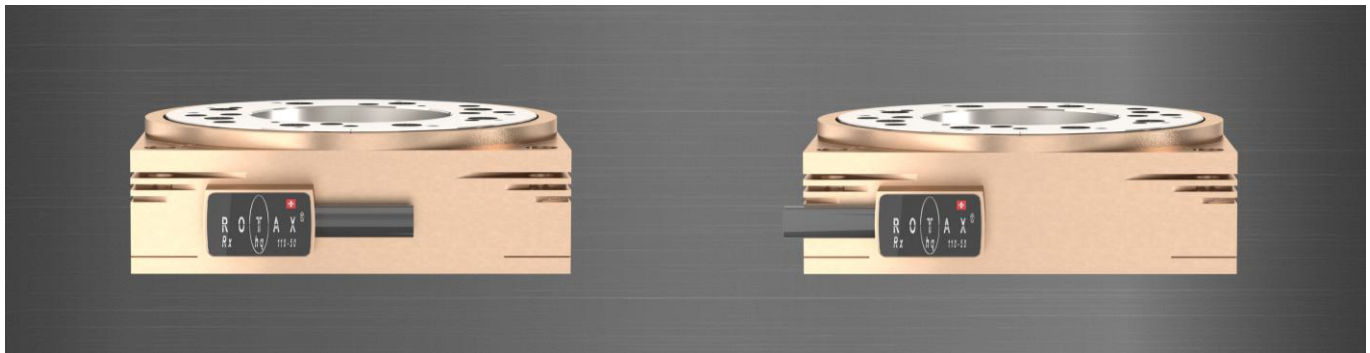


Connecting- or extension cable XENAX® M16 with angled plug	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No.	Variant orientation <span>①</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	0.1-20 (4" - 787")	150.83.30	90°     A 180°   B 0°     C 45°     D 135°   E

Intermediate cable 2 x M16 with angled plug	Length [m]	M16 Socket – M16 Plug Art. No.	Variant orientation <span>②</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.21 150.84.23 150.84.25 150.84.30	90°     A 180°   B 0°     C 45°     D 135°   E

#### 4.3.4 ROTAX® Rxhq 110-50T1.5 with integrated cable

Model	Measuring system [inc/rev <sup>-1</sup> ]	Force Nom/Peak [Nm]	Nominal speed 48V [rpm]	Weight [g]	Art. No.
Rxhq 110-50T1.5 cable connection on the right side	120'000 optical	1.5 / 4.0 (2.66 – 9.03 lbf in)	600	1'200 (2.65 lbs)	121.05.01
	648'000 optical		600		121.05.30
	2'592'000 optical		200		121.05.35
Rxhq 110-50T1.5 cable connection on the left side	120'000 optical		600		121.05.06
	648'000 optical		600		121.05.31
	2'592'000 optical		200		121.05.36



#### Note: ROTAX® option cleanroom, food industry and pharmaceutical industry

The ROTAX® Rxhq can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.



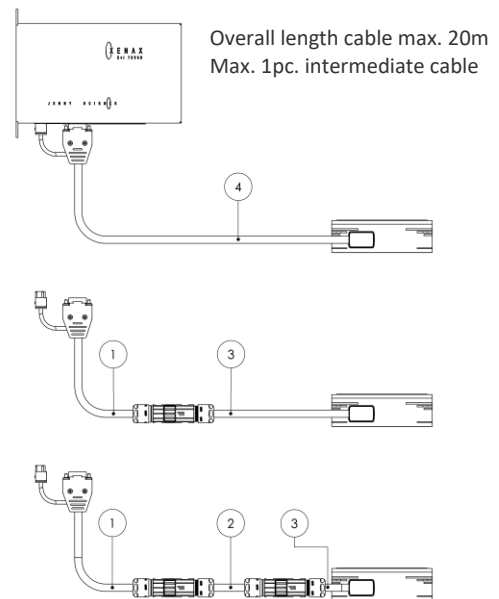


#### 4.3.5 Connecting Cable ROTAX® Rxhq 110-50T1.5 with integrated M16 cable

Absolutely revolutionary is the flexible one-cable connection, which reduces the machine cabling effort considerably. In only one cable are the lines for encoder, for the 3 phases of the linear motor and for the communication between ROTAX® and XENAX® Servocontroller.

These connection cables have a minimum bending radius of **48mm for continuous movement** and **of 20mm for fixed cables**. Intermediate cables are also available as accessories. The cable can withstand more than 1 million cycles of torsional stress at  $\pm 90^\circ$  over a length of 1m

The standard 0.3 m long connection cable with M16 plug connection for the extension or intermediate cable is fixed to the ROTAX®.



Connecting cable ROTAX® Rxhq shielded, suitable for cable chain	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm (0.14") Art. No <span style="float: right;">(4)</span>
<b>ROTAX® anthracite, TPU, Clean Room 5-6</b> <b>Operating temp. -40° up to + 80°, Ø 8mm (0.31")</b>	1.5 (59")	<b>150.75.10</b>
	0.1-20 (4" - 787")	<b>150.75.11</b>

Connecting cable M16 for ext. or intermediate cable ROTAX® Rxhq	Length [m]	ROTAX® - M16 socket Art. No. <span style="float: right;">(3)</span>
<b>ROTAX® connection TPU, Clean Room 5-6, Suitable for cable chains,</b> <b>Operating temp. -40°C up to + 80°C, Ø 8mm (0.31")</b>	0.3 (12")	<b>150.76.12</b>
	0.1-20 (4" - 787")	<b>150.76.13</b>

Connecting or extension cable XENAX® M16	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No. <span>①</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	150.83.01 150.83.03 150.83.05 150.83.10

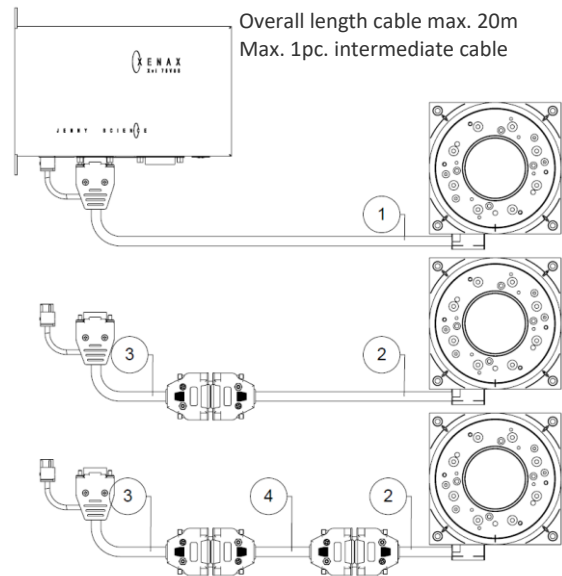
Intermediate cable 2 x M16	Length [m]	M16 Socket – M16 Plug Art. No. <span>②</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.01 150.84.03 150.84.05 150.84.10

#### 4.3.6 Connecting Cable ROTAX® Rxhq 110-50T1.5 with integrated D-Sub cable

With ROTAX® the cables are directly mounted into the linear motor case in favor of the compactness. The flexible one-cable connection is absolutely revolutionary which significantly simplifies the machine cabling.

In just one cable there are the wires for encoder, the 3 phases for the linear motor and for the communication between ROTAX® and XENAX® servo controller. The anthracite colored **TPU** connection cables are clean room capable and as a standard length of 1.5m (59") on stock available. Custom lengths from 0.1 (4") up to 20m (787") can be supplied upon request. These connection cables have a min bending radius of **40mm (1.6")** for moving cables and **16mm (0.7")** for fixed cables. The cable can withstand more than 1 million cycles of torsional stress at ±90° over a length of 1m

As an option, extension cables are also available.



Connecting cable shielded, suitable for cable chain	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm (0.14") Art. No <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1</span>
<b>ROTAX® anthracite, TPU, Clean Room 5-6</b> <b>Operating temp. -40° up to + 80°, Ø 8mm (0.31")</b>	1.5 (59")	<b>150.75.10</b>
	0.1-20 (4" - 787")	<b>150.75.11</b>

Connecting cable prepared for extension or intermediary cable shielded, suitable for cable chain	Length [m]	15 Pol D-Sub connector (2 rows) Art. No <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">2</span>
<b>ROTAX® anthracite, with 15 Pol D-Sub connector (2 rows), TPU, Clean room 5-6</b> <b>Operating temp. -40° up to + 80° Ø 8mm (0.31")</b>	1.5 (59")	<b>150.76.10</b>
	0.1-20 (4" - 787")	<b>150.76.11</b>

#### 4.3.7 Extension & Intermediary Cable Removable ROTAX® Rxhq 110-50T1.5 D-Sub

Extension cables are also useful for highly dynamic multi axis applications with cable chains. The replaceable extension cable is plugged onto a connecting cable. These anthracite **TPU** extension cables have a min. bending radius of **40mm (1.6")** for moving cables and **16mm (0.7")** for fixed cables.

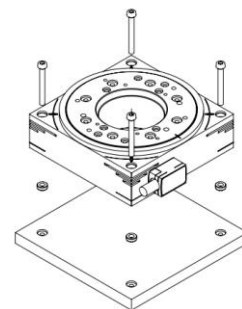


Extension cable, shielded, suitable for cable chain	Length [m]	15 Pol D-Sub jack, 15 Pol D-Sub connector (2 rows) and 3 Pol Wago 3,5mm (0.14") Art. No. <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span>
ROTAX® anthracite, TPU, Clean Room 5-6 Operating temp. -40°C up to + 80°C Ø 8mm (0.31")	1.5 (59")	150.56.01
	0.5-20 (20" - 787")	150.56.05

Intermediary cable shielded, suitable for cable chain	Length [m]	15 Pol D-Sub jack, 15 Pol D-Sub connector (2 rows) Art. No. <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span>
ROTAX® anthrazit, TPU, Clean Room 5-6 Operating temp. -40°C up to + 80°C Ø 8mm (0.31")	0.5-20 (20" - 787")	150.56.10

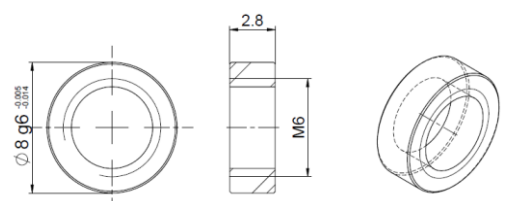
#### 4.3.8 Fixing screws with dowel bushings ROTAX® Rxhq 110-50T1.5

Rxhq 110-50T1.5	Accessories	Art. No.
Fixings screws with dowel bushings	4 pcs, hexagon socket screws, M4x25mm 4 pcs, dowel bushings with centering Ø8g6x2.8	140.10.00



#### 4.3.9 Dowel bushings ROTAX® Rxhq 110-50T1.5

Dowel bushings	Dowel bushings Ø 8mm	Art. No.
Dowel bushings	10 x Ø 8mm -0.005/-0.014 x 2.8mm	140.10.05



#### 4.4 ROTAX® Rxhq 110-50T4.0 (High Torque)



The direct drive developed in-house impresses with its compact external dimensions and a hollow shaft with a diameter of 50 mm. Cables, vacuum or compressed air lines, light and laser beams, glass fibres or camera lenses can be guided through the hollow shaft without any problems.

The absolute measuring system allows an immediate start without previous referencing. With a resolution of 648'000 or 2'592'000inc. per revolution, repeatability of  $\pm 1\text{arcsec}$  can be achieved. The single-cable connection can be supplied in right-hand or left-hand output configuration.

Together with the patented "IForce Calibration" function, undesired cogging, weight and friction forces of the ROTAX® Rxhq direct drives can be easily compensated. This makes it possible to limit and monitor torques in processes. Together with the Forceteq® basic technology included in the XENAX® servo controller, complete torque/distance diagrams can be recorded - an additional torque sensor is not necessary.

##### Specific advantages, USP's

- Ultra compact dimensions
- Oversized continuous hollow shaft
- High torque - no gearbox
- Integrated absolute encoder system
- Single cable connection

#### 4.4.1 ROTAX® Rxhq 110-50T4.0

Model	Measuring system optical [inc/rev <sup>-1</sup> ]	Force Nom/Peak [Nm]	Nominal speed 48V [rpm]	Weight [g]	Art. No.
Rxhq 110-50T4.0 cable connection right (Standard)	648'000 2'592'000		420 200		121.10.00 121.10.20
Rxhq 110-50T4.0 cable connection left	648'000 2'592'000	4.0 / 12.0	420 200	2250	121.10.05 121.10.25
Rxhq 110-50T4.0 cable connection down	648'000 2'592'000		420 200		121.10.10 121.10.30



#### Note: ROTAX® option cleanroom, food industry and pharmaceutical industry

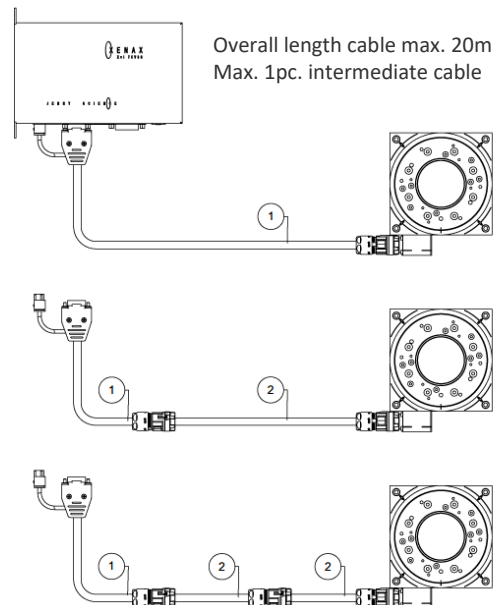
The ROTAX® Rxhq can be mounted in clean room standard with additional charge of 10%. The ball bearing carriages are filled with a special lubrication. If you wish to use this option, please add the note „**OPTION CLEANROOM/FOODINDUSTRIE/AND PHARMACEUTICAL INDUSTRY**“ (depending on your requirement) on your purchase order.



#### 4.4.2 Connecting Cable ROTAX® Rxhq 110-50T4.0

Absolutely revolutionary is the flexible one-cable connection, which reduces the machine cabling effort considerably. In only one cable are the lines for encoder, for the 3 phases of the motor and for the communication between ROTAX® Rxhq and XENAX® Servocontroller. These connection cables have a minimum bending radius of **48mm for continuous movement** and of **20mm for fixed cables**. Extension cables are also available as accessories. The cable can withstand more than 1 million cycles of torsional stress at  $\pm 90^\circ$  over a length of 1m

As an option, extension cables are also available.



Connecting or extension cable XENAX® M16	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Stecker Art. No. <span style="float: right;">①</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.0 (118") 5.0 (197") 0.1-20 (4" - 787")	150.83.01 150.83.03 150.83.05 150.83.10

Intermediate cable 2 x M16	Length [m]	M16 Socket – M16 Plug Art. No. <span style="float: right;">②</span>
TPU, Clean Room 5-6, Suitable for cable chains, Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.01 150.84.03 150.84.05 150.84.10

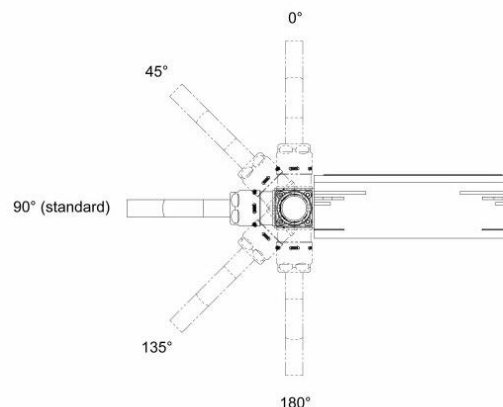


#### 4.4.3 Connecting Cable ROTAX® Rxhq 110-50T4.0 with angled plug

Depending on the installation situation, it may be useful to use an angled connector for the cable outlet on the motor side. The orientation of the cable can be specified in 45° steps - you can easily specify this orientation when ordering.

To do this, please select the desired cable and length using the article number and add the desired orientation variant. Without specific information, a 90° orientation is assumed as standard.

The orientation always refers to the standard outlet from the connector housing on the motor ("cable outlet on the right", when viewed on the connector housing).

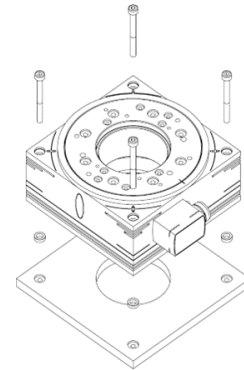


Connecting- or extension cable XENAX® M16 with angled plug	Length [m]	15 Pol D-Sub Connector and 3 Pol Wago 3,5mm - M16 Plug Art. No.	Variant orientation <span>①</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	0.1-20 (4" - 787")	150.83.30	90°     A 180°   B 0°     C 45°     D 135°   E

Intermediate cable 2 x M16 with angled plug	Length [m]	M16 Socket – M16 Plug Art. No.	Variant orientation <span>②</span>
TPU, Clean Room 5-6, Suitable for cable chains Operating temp. -40° up to + 80°, Ø 9.6mm (0.38")	1.5 (59") 3.5 (138") 5.0 (197") 0.1-20 (4" - 787")	150.84.21 150.84.23 150.84.25 150.84.30	90°     A 180°   B 0°     C 45°     D 135°   E

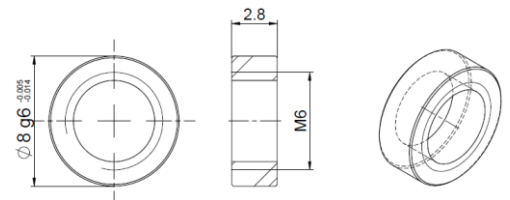
#### 4.4.4 Fixing screws with dowel bushings ROTAX® Rxhq 110-50T4.0

Rxhq 110-50T4.0	Accessories	Art. No.
<b>Fixings screws with dowel bushings</b>	4 pcs, hexagon socket screws, M4x45mm 4 pcs, dowel bushings with centering $\varnothing 8g6x2.8$	<b>140.10.10</b>



#### 4.4.5 Dowel bushings ROTAX® Rxhq 110-50T4.0

Dowel bushings	Dowel bushings $\varnothing 8mm$	Art. No.
<b>Dowel bushings</b>	10 x $\varnothing 8mm$ -0.005/-0.014 x 2.8mm	<b>140.10.05</b>



## 5 XENAX® Servo Controller

XENAX® Xvi 75V8S



XENAX® Xvi 48V8



XENAX® Xvi 75V8



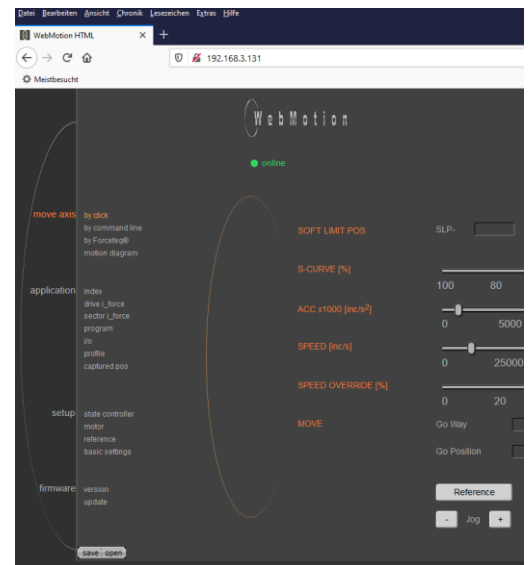
### Setup

The XENAX® servo controllers can be operated via web browser for commissioning, testing and parameterization. With an Ethernet switch, you can instantly combine several axes for multi-axes operation. Inputs and outputs for PLC functionality are available. The firmware can handle up to 64 programs, 50 positioning points, 10 force limited drives, 10 force sectors and 5 trajectory profiles.

### Power-current supply:

The typical POWER supply is 24V DC. For the stronger LINAX® F40 / F60 axes with high masses (>2kg) or high dynamics (>1.5m/s) a POWER supply of 48V or 72V DC is applicable. The current consumption per axis can be up to 8A and 18A peak per axis. Depending on mass in motion, profile and power supply voltage.

For a detailed calculation of the required power supply in your application, please contact our support <https://www.jennyscience.ch/en/Service>.



**Important:** The 0V line of the power supply must be connected to a ground point of the machine chassis.

## 5.1 XENAX® Servo Controller Model Overview

Model	Xvi 75V8S	Xvi 48V8	Xvi 75V8*
Art. No.	110.19.00	110.18.01	110.16.01*
<b>For linear motor axes</b>			
LINAX® Lxc / Lxe	X	(X)	X
LINAX® Lxs F60 / Lxu F60	X	(X)	X
LINAX® Lxs F60S / Lxu F60S	X	(X)	-
LINAX® Lxs F120	X	-	-
<b>For electric slides</b>			
ELAX® Ex	X	X	X
<b>For rotative motors</b>			
ROTAX® Rxvp / Rxhq	X	X	X
<b>For AC, EC, DC motors</b>	X	X	X
<b>Web Browser setup</b>	X (HTML5)	X (HTML5)	X
<b>Ethernet TCP/IP</b>	X	X	X
<b>RS232</b>	(X) (Art. No. 110.19.01)	X	X
<b>USB</b>	X	-	-
<b>Puls / Direction</b>	(X) (Art. Nr. 110.19.07)	(X)	X
<b>Input</b>	12	4	12
<b>Output</b>	8 (24V Source/Sink)	2 (24V Source)	8 (24V Source/Sink)
<b>Start-up Key</b>	(X)	(X)	(X)
<b>Voltage</b>	12-75V	12-48V	12-75V
<b>Power-Current</b> [Nom./Peak]	8/20A	8/18A	8/18A
<b>Binary coded programming</b>	X	-	X
<b>Bus Module</b> (refer to chapter XENAX® Xvi Bus modules)			
EtherCAT®			
Powerlink®	(X)	(X)	(X)
CANopen®			
Profinet®			
EtherNet/IP®			
<b>Master/Slave Operation</b>	X	X	X
<b>S-Curve speed profile</b>	X	X	X
<b>Safety Motion Unit SMU</b>			
TÜV certified	(X)	-	(X)
<b>UL Certification available</b>	Art. No. 110.19.10 (USB) Art. No. 110.19.11 (RS232) In combination with a Brake Energy Converter UL (Chapter Brake Energy Converter)	-	Art. No. 110.16.02 In combination with a Brake Energy Converter UL (Chapter Brake Energy Converter)
<b>Forceteq® basic</b>	X	(X) (Art. No. 130.25.00)	X
<b>Forceteq® pro (with Signateq®)</b>	X	-	-
<b>FastTriggerOut</b>	X	-	-
<b>Dimension [mm]</b>	182x110x30 (7.17"x4.33"x1.18")	159x110x30 (6.26"x4.33"x1.18")	182x110x30 (7.17"x4.33"x1.18")
<b>Weight [g]</b>	840 (1.85 lbs)	720 (1.59 lbs)	515 (1.14 lbs)

(X) = Optional possible

\* The XENAX® Xvi 75V8 is replaced by the Xvi 75V8S. Do not use for new projects.

You can download the XENAX® manual from our website: [www.jennyscience.ch/en](http://www.jennyscience.ch/en)

### 5.1.1 Licenses for XENAX® Xvi 48V8

XENAX® Xvi 48V8 Licenses	Art. No.
License Force Processes (Forceteq® basic)	130.25.00
Licenses LINAX®	130.25.05



### 5.1.2 PLC and Optio Kabel

PLC and Optio cables to XENAX® Xvi 75V8/S round, shielded, free wire end (PLC) and RJ45 cable, shielded	Length [m]	Art. No.
PLC 26 Pole, 12 Input / 8 Output	1.5 (59")	150.24.30
	3 (118")	150.24.31
	0.1-20 (4" - 787")	150.24.39
Optio 8 Pole, CAN (Xvi75V8S), Puls/Direction, 2nd encoder channel	0.5 (20")	150.31.00



PLC and Optio cables to XENAX® Xvi 48V8 round, shielded, free wire end	Length [m]	Art. No.
PLC 15 Pol, 4 Input / 2 Output, Optio 8 Pol, Pulse/Direction, 2nd encoder channel	1.5 (59")	150.24.40
	3 (118")	150.24.41
	0.1-20 (4" - 787")	150.24.49

### 5.1.3 Start-up Key

XENAX® Start-up Key	Art. No.
Start-up Key with EEPROM and 2 Adresscoding-switches 01 – 99	130.04.00

All parameters and application programs can be saved to the Start-up Key. The Start-up Key can be plugged into a new, unprogrammed servo controller and when powered on, all data will be installed automatically. At the same time, the card identifier (CI) is also read from the Start-up Key into the XENAX®.



#### 5.1.4 I/O Box for Commissioning and Testing

XENAX® I/O Box 12 switches for Inputs, 4 Inputs binary coded with rotary switches 8 LED for Output 1-8	Art. No.
Xvi 75V8/S, LED bicolor green= 0V, red = 24V	130.07.10
Adapter cable for Xvi48v8	150.24.45



The XENAX® I/O box is useful for the set up and testing of the Linear-Motor with the XENAX® Controller. 8 switches are connected to inputs 1-8. The binary coded rotary switch is connected to inputs 9-12. This is how programs 1-15 can be preselected (operation mode 10 or higher). Through input trigger 8 the preselected program will be started. With the Xvi 75V8 or Xvi75V8S the outputs can be chosen to be sink driver (0V) or source driver (24V) or both. The 8 LED will show the current status. The I/O box can be connected directly to the PLC I/O socket of the XENAX® (cable length 60cm (23")).

#### 5.1.5 Brake Energy Recovery Unit

Cool Power: Efficient Brake Energy Recovery with the BERU!

The new Break Energy Recovery Unit (BERU) stores braking energy in capacitors and reuses it instead of converting it to heat. With the BERU, the axis saves energy. The BERU eliminates the need for traditional brake resistors, keeping the unit cool and requiring fewer capacitors.

Brake Energy Recovery Unit	Art. No.
Brake Energy Recovery Unit Brake Energy Recovery Unit UL incl. customer-side plug	130.08.10 Coming soon



#### 5.1.6 Cable for Brake Energy Recovery Unit

Cable BERU to XENAX®	Länge [m]	Art. No.
Cableset Brake Energy Recovery Unit to XENAX® 1x0.14m/1x0.19m/1x0.24m/1x0.29m	0.14 / 0.19 0.24 / 0.29 (5.5"/7.5" 9.5"/11.4")	150.35.40
Individual cable Brake Energy Recovery Unit to XENAX®	0.14 (5.5") 0.19 (7.5") 0.24 (9.5") 0.29 (11.4") 0.1-5 (4"-197")	150.35.44 150.35.45 150.35.50 150.35.55 150.35.65

### 5.1.7 Brake Energy Converter

XENAX® Brake Energy Converter	Art. No.
<b>Brake Energy Converter</b>	<b>130.08.05</b>
<b>Brake Energy Converter UL</b>	<b>130.08.06</b>

Converts the braking energy in heat, so the voltage of the power supply does not increase, and proper function does not interfere. It can be used for power supplies from 24 – 72 VDC. Up to 3 servo controllers can be attached. Ppeak 500W.



### 5.1.8 Cable for Brake Energy Converter

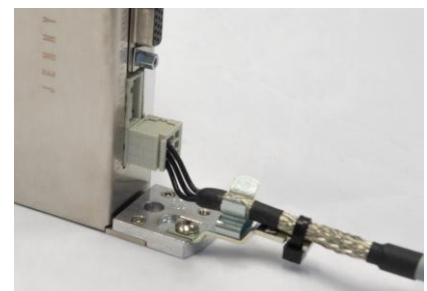
XENAX® Cable for Brake Energy Converter	Length [m]	Art. No.
<b>Cablesset for Brake Energy Converter</b> <b>1x0.19m (7.5")/1x0.24m (9.5")/</b> <b>1x0.29m (11.4")</b>	0.19+0.24+0.29 (7.5"+9.5"+11.4")	<b>150.35.00</b>
<b>Cable for Brake Energy Converter</b>	0.19 (7.5")	<b>150.35.05</b>
	0.24 (9.5")	<b>150.35.10</b>
	0.29 (11.4")	<b>150.35.15</b>
	0.1-5 (4"-197")	<b>150.35.20</b>
<b>WAGO Connector Male for BEC-Side</b> Note: Female is included together with XENAX®		<b>151.10.06</b>



### 5.1.9 EMC Shielding Clamp for Motor Cable

XENAX® EMC shielding clamp	Art. No.
<b>EMC shielding clamp</b>	<b>130.09.00</b>

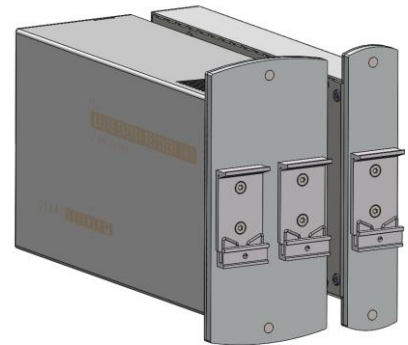
The EMC shielding clamp ensures a secure and simple connection of the shield to the motor cable and helps to avoid errors on data transfers. The shielding clamp is for LINAX® linear motors, ELAX® electric slides as well as ROTAX® designed. With an additional cable binder, the cable will also be strain-relieved.





### 5.1.10 DIN rail adapter

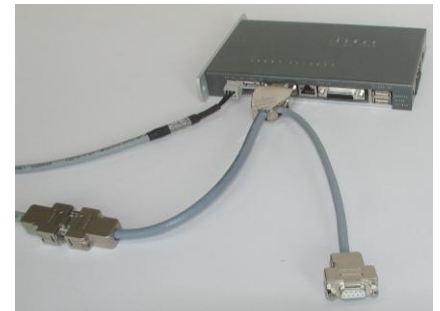
DIN rail adapter 35mm	Art. No.
<b>XENAX® 35mm</b>	<b>130.09.10</b>
<b>BERU 35mm</b>	<b>130.09.20</b>



### 5.1.11 Y-Cable for Encoder Signal Pick-Up

XENAX® Y-Cable	Length [m]	Art. No.
<b>Y-Cable</b>	2 x 0.2m (7.9")	<b>150.28.00</b>

The Y-cable allows picking up the quadrature encoder signals (A, B) of the measurement system for external control process or for an "electronic gear-box". The signal transfer is differential, RS422.



### 5.1.12 Master-Slave Cable

XENAX® Master-Slave Cable	Length [m]	Art. No.
<b>Master-Slave Cable</b>	0.5 (19.7")	<b>150.25.20</b>

The master-slave operation is software based via I2C bus. It is typical for handling modules. For example, with three linear motor axes a Pick & Place application with rotary axis can be realized. The programming has to be completed with the master device, which automatically recognizes the connected slave devices. Each device is identified with a Card Identifier (CI), the master always carries the number 0.



### 5.1.13 Computer Cable PC/Laptop for RS232

XENAX® RS232-Cable	Length [m]	Art. No.
<b>RS232-Cable</b> <b>D-Sub 9 Pol to USB-B</b>	1.8 (70.9")	<b>150.20.00</b>

With this computer cable the RS232 interface is connected to the XENAX® servo controller. The cable is usually used for communications or for service purposes. Do not use for the standard version of XENAX® Xvi 75V8S (only for Xvi 75V8S with the RS232 option). The standard version of the XENAX® Xvi 75V8S has a USB interface.






## 5.2 XENAX® Xvi Bus modules




### XENAX® Xvi (Intuitiv)


Xvi 48V8

Xvi 75V8



Xvi 75V8S

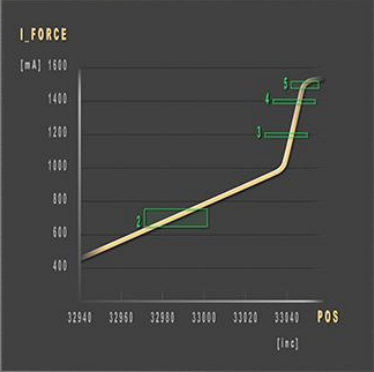






IRT (Isochrone Real Time)



Bus Protocol		Art. No.
<b>EtherCAT® MP <sup>1)</sup></b> <b>Profinet® MP <sup>4)</sup></b> <b>EtherNet/IP® MP <sup>5)</sup></b> <b>POWERLINK® MP <sup>2)</sup></b> <b>CANopen® <sup>3)</sup></b>	Bus module clipped onto XENAX® Xvi Rapid, internal data binding via data and address bus	<b>130.10.30</b> <b>130.10.32</b> <b>130.10.31</b> <b>130.10.33</b> <b>130.10.05</b>

**MP = Multiprotocol** -> One module hardware with licence for the corresponding protocol (Cannot be modified by the user. Please specify protocol with order)

1), 2), 3) The user application interface is standardized according to CANopen® over Ethernet DS 301 and DS402 (Communication and Drive control protocol profiles).

<sup>1)</sup> Including a PLCopen library for TwinCAT 3.

PLC samples for OMRON NJ2 controller available on demand.

<sup>2)</sup> Including PLCopen library for Automation studio.

<sup>3)</sup> PLC sample for Schneider Electric controller available on demand.

<sup>4)</sup> The interface is standardized according to PROFIdrive, including PLCopen Libraries for TIA Portal and SIMATIC.

<sup>5)</sup> Including PLCopen AOP for Studio5000

Example with RJ45 0.1m und Xvi 75V8S:  
Art. 150.31.01



Cable	Protocol	Art. No.
Patch-cable RJ45 Ethernet-Bus module Cat 5e, yellow, length 0.5m (1.97")	Ethernet TCP/IP / EtherCAT® / POWERLINK®	<b>150.31.00</b>
Patch-cable RJ45 Ethernet-Bus module flat, Cat 6, white, length 0.1m (0.39")	Profinet® / EtherNet/IP®	<b>150.31.01</b>

### 5.3 Xvi 75V8/S Safety Motion Unit (SMU) TÜV certified

XENAX® Xvi 75V8/S SMU	Art. No.
<b>Safety Motion Unit (SMU)</b> <b>SIL2, Perform. Level D, Cat 3, Safety STO, SS1, SS2, SLS</b>	<b>130.20.00</b>

In order to use the TÜV certified functional safety, a XENAX® servo controller Xvi 75V8/S with optional integrated Safety Motion Unit (SMU) is needed.



#### Functional Safety:

<b>STO</b>	Safe Stop Off	Immediate shut-down to the output stage
<b>SS1</b>	Safe Stop 1	Stop followed by shut-down of the output stage
<b>SS2</b>	Safe Stop 2	Stop while remaining in stop position, axis remains under power, power stage active
<b>SLS</b>	Safely Limited Speed	Limiting and Observing of a safe speed. If Safety Limited Speed (SLS) is exceeded, Safe Stop (SS2) while observing the position window. If position window is exceeded as well, then triggering STO, shut-down of The output stage.

Subsequent upgrade of SMU modules on existing XENAX® Xvi75V8 Servo Controllers is only possible on hardware V4 and higher and can only be completed by Jenny Science assembly.

Functional Safety with SMU can be used for all LINAX® und ELAX® linear motor types and for rotary brushless motors. Rotary brush type DC motors are excluded of the TÜV certified functional safety.

## 5.4 Forceteq® pro

### 5.4.1 Signateq® Force Measuring Amplifier

Signateq® is a measuring amplifier for any DMS force sensors especially developed for connection to the XENAX® Xvi 75V8S servo controller. This allows even smaller forces to be measured precisely with Forceteq® technology. Force control, recording and evaluation are done directly in the servo controller. No additional hardware is required. The measuring amplifier is in a compact housing and can, for example, be screwed onto the side of the ELAX® linear motor carriage in a very space-saving way.



Signateq® Force Measuring Amplifier		Art. No.
<b>Signateq® force measuring amplifier for XENAX® Xvi 75V8S</b>	Signateq® measuring amplifier for any strain gauge load cells. The measuring amplifier must be gauged together with the force sensor as a pair.	<b>154.30.02</b>
<b>Gauging Signateq® measuring amplifier with force sensor</b>	Wiring of the force sensor to Signateq® measuring amplifier. Gauging of the Signateq® amplifier with the force sensor as a pair. Measurement report is supplied.	<b>154.30.10</b>

The following information must be provided by the customer for the gauging:

- Cable length from sensor to Signateq®
- Measuring range to be calibrated and its direction (tension, compression, tension/compression)
- Preload from the force sensor (if available)
- Data sheet from the force sensor or force sensor type and sensitivity (if not from JSc supplied)

The connection cable Signateq® for connecting the measuring amplifier to the XENAX® Xvi 75V8S is oil-resistant and suitable for cable chains. The XENAX® side with RJ45 plug and Signateq® side with push-pull connection. These connection cables have a minimum bending radius of **41 mm** in motion.



Connecting Cable Signateq®	Length [m]	Art. No.
<b>Connecting Cable Signateq® to XENAX® Xvi 75V8S</b> <b>Operating temp. -40° bis + 80°, Ø 5.4mm (21")</b>	1.5 (59")	<b>150.09.10</b>
	3.5 (138")	<b>150.09.11</b>
	5.0 (197")	<b>150.09.12</b>
	0.1-20 (4" - 787")	<b>150.09.13</b>

### 5.4.2 Load cell FUTEK with overload protection

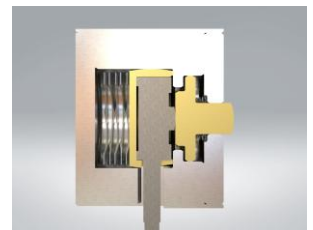
The LSB205 S Beam Jr.<sup>®</sup> Load Sensor is one of FUTEK's most in-demand miniature force sensors, offering exceptional accuracy, unparalleled capabilities, and best-in-class durability in a tiny package. Built for both tension and compression applications, this versatile model is perfect for any application that requires high accuracy and a small footprint.



Sensor incl. cable	Data	Art. No.
0–4.4N FUTEK FSH04782 Deflection FS 0.13mm	Sensitivity 2mV/V Nonlinearity ±0.1% Overload protection 1000% of FS Inc. 1.5m connection cable sensor	154.31.10
0–9N FUTEK FSH04783 Deflection FS 0.10mm		154.32.10
0–22N FUTEK FSH04784 Deflection FS 0.08mm		154.33.10
0–44N FUTEK FSH04785 Deflection FS 0.08mm		154.34.10
0–111N FUTEK FSH04786 Deflection FS 0.08mm		154.35.10
0–222N FUTEK FSH04787 Deflection FS 0.08mm		154.36.10

### 5.4.3 Compact Jenny Science sensor-housing

The miniature compression load cell of the Burster series 8416 in an extremely compact housing from Jenny Science. It offers overload protection up to 1kN and preloading of the sensor to 3N. The housing has the same dimensions and mounting options for all force ranges. A change of the force range is therefore easily possible without mechanical modification.



Housing without force sensor. Select the appropriate force sensor from chapter 5.4.4.

Sensor in housing	Data	Art. No.
Housing for 0–20N Burster 8416-5020	Overload protection up to 1kN and preloaded to 3N	154.39.20
Housing for 0–50N Burster 8416-5050		154.39.30
Housing for 0–100N Burster 8416-5100		154.39.40
Housing for 0–200N Burster 8416-5200		154.39.50

#### 5.4.4 Load cell Burster without housing

Due to their extremely compact design, these load cells can be used wherever static or dynamic load forces have to be measured in very tight spaces.

Model 8416 is perfect for use in micro-technology and just as suitable for measuring tasks in the research and development sector.

#### Ultra-Miniature Load Cell MODEL 8416



Sensor without housing	Data	Art. No.
<b>0–20N Burster 8416-5020 no overload protection</b>	Sensitivity 1mV/V / Resolution 5.4mN/0.55gf Relative non-linearity 0.25%	<b>154.33.08</b>
<b>0–50N Burster 8416-5050 no overload protection</b>	Sensitivity 1mV/V / Resolution 13.4mN/1.37gf Relative non-linearity 0.25%	<b>154.34.08</b>
<b>0–100N Burster 8416-5100 no overload protection</b>	Sensitivity 1mV/V / Resolution 26.8mN/2.73gf Relative non-linearity 0.25%	<b>154.35.08</b>
<b>0–200N Burster 8416-5200 no overload protection</b>	Sensitivity 1mV/V / Resolution 53.6mN/5.47gf Relative non-linearity 0.25%	<b>154.36.08</b>

#### 5.4.5 Load cell Burster with overload protection

Precise tension and compression force measurements can be performed in limited space with model 8431 and 8432 precision miniature load cells. High precision, various measuring ranges, convenient load application via threaded pins with external winding and small dimensions offer a wide scope of applications in laboratories and production. Deflection FS 0.015 – 0.04mm



Sensor without housing	Data	Art. No.
<b>0–5N Burster 8432-5005 with overload protection to 25N</b>	Sensitivity 0.75mV/V / Resolution 1.3mN/0.13gf Relative non-linearity 0.20%	<b>154.31.05</b>
<b>0–10N Burster 8432-5010 with overload protection to 50N</b>	Sensitivity 1.5mV/V / Resolution 2.7mN/0.28gf Relative non-linearity 0.20%	<b>154.32.05</b>
<b>0–20N Burster 8432-5020 with overload protection to 100N</b>	Sensitivity 2mV/V / Resolution 5.4mN/0.55gf Relative non-linearity 0.20%	<b>154.33.05</b>
<b>0–50N Burster 8432-5050 with overload protection to 250N</b>	Sensitivity 2mV/V / Resolution 13.4mN/1.37gf Relative non-linearity 0.20%	<b>154.34.05</b>
<b>0–100N Burster 8432-5100 with overload protection to 500N</b>	Sensitivity 2mV/V / Resolution 26.8mN/2.73gf Relative non-linearity 0.20%	<b>154.35.05</b>
<b>0–200N Burster 8432-5200 with overload protection to 1kN</b>	Sensitivity 2mV/V / Resolution 53.6mN/5.47gf Relative non-linearity 0.20%	<b>154.36.05</b>



## 6 Commercial Products

### 6.1 AC-Servo Motor (new intercontec plugs)

Type	Mn/Mpeak [Nm]	n-max [rpm]	Specifications	Art. No.
<b>B28D4I</b>	0.38 / 1.4 (3.45 / 12.39 lbf in)	6000	No key-way	<b>113.04.10</b>
<b>B28D4I-K</b>			With key way	<b>113.05.20</b>
<b>B28D4I-KB</b>			With key way and brake	<b>113.05.30</b>



Three phase servo motor

These brushless servo motors contain a 4 pole winding, brushless and an integrated encoder (4096 inc. per rev.) with A/B channel and line driver. All motors have a fully shielded metallic Intercontec connectors, suitable for harsh industrial environment.

#### 6.1.1 Connecting Cable AC-Servo Motor

Cable Type	Type	Length [m]	Art. No.
<b>Motor for Xvi</b>	Intercontec jack, 3 Pol Wago 3,5mm (0.14")	X.X	<b>150.02.12</b>
<b>Motor for Xvi with Brake</b>	Intercontec jack, 3 Pol Wago 3,5mm (0.14") 26 Pol D-Sub connector for XENAX® Xvi	X.X	<b>150.02.15</b>
<b>Motor for Sv</b>	Intercontec jack, 3 Pol Wago 5,0mm (0.2")	X.X	<b>150.02.17</b>
<b>Encoder /Hall Sv, Xvi with and without Brake</b>	Intercontec jack, 15 Pol HD D-Sub	X.X	<b>150.03.12</b>



\*) Special motor cable for servo motors with brake controlled by all other Jenny Science controllers are available upon request.

## 6.2 Ultra Compact Rotary Axis with Hollow Shaft

Type	Mn/Mpeak [Nm]	n-max [rpm]	Flange, Hollow Shaft	Art. No.
<b>RA 60R30</b>	1.8 / 4.5 (15.9 / 39.8 lbf in)	200	60 x 60mm (2.36 x 2.36") Ø 8.0mm (0.31")	<b>113.06.10</b>



Ultra compact, three-phase servo motor with 10 pole winding and a high precision reduction gear of 1:30 which is free from backlash. The internal encoder has 8'000 increments A/B per revolution on the motor shaft. These are 240'000 inc. per revolution at the hollow shaft output of the gear. Accordingly, the resolution is 5.4 arc seconds. The connection cables of 0.2m (7.9") are standard, with one round connector and one HD-D-Sub connector assembled. These cables are suitable to connect with extension cables at different lengths.

### 6.2.1 Ultra Compact Rotary Axis Connecting Cable

Extension cables shielded, suitable for cable chain	Length [m]	Motor 3 pole round connector "Binder", Wago 3,5mm (0.14") Art. No.	Encoder 15 pole HD connector To 15 pole HD jack Art. No.
cable, grau, Temp. moving -25° up to +80°	1.5 (59")	<b>150.26.01</b>	<b>150.27.01</b>
	3.5 (138")	<b>150.26.03</b>	<b>150.27.03</b>
	5.0 (197")	<b>150.26.05</b>	<b>150.27.05</b>
	0.1-20 (4"-787")	<b>150.26.10</b>	<b>150.27.10</b>
IGUS, blue, Temp. moving -35° up to +100° Clean room suitable and oil resistant	1.5 (59")	<b>150.46.01</b>	<b>150.47.01</b>
	3.5 (138")	<b>150.46.03</b>	<b>150.47.03</b>
	5.0 (197")	<b>150.46.05</b>	<b>150.47.05</b>
	0.1-20 (4"-787")	<b>150.46.10</b>	<b>150.47.10</b>



These extension cables for the ultra compact rotary axis are identical to the extension cables of the LINAX® Lxc / Lxe linear motor axes.



## 6.3 Round Table with Direct Drive and Hollow Shaft

Modell	Mn/Mpeak [Nm]	n-max [rpm]	Flange, Hollow shaft	Art. No.
<b>RT-120-25H80</b>	1.8 / 6.5 (15.9 / 57.5 lbf in)	955	120 x 80mm (4.72 x 3.15") Ø 25mm (0.98")	<b>113.07.12</b>
<b>RT-120-37H37</b>	0.6 / 2.1 (5.3 / 18.6 lbf in)	400	120 x 37mm (4.72 x 1.46") Ø 30mm (1.18")	<b>113.07.19</b>

The direct drive is an ironless torque motor without cogging forces. The high resolution measuring encoder is integrated and has a zero-pulse per rotation for the reference. The RT hollow shaft motors can be directly controlled with a XENAX® Xvi servo controller.

One motor connecting cable and one cable fan out (encoder and hall cable) of each 3.0m (118") is included as a standard, mounted with a 3 pole Wago 3.5mm (0.14") and 15 pole HD connector.



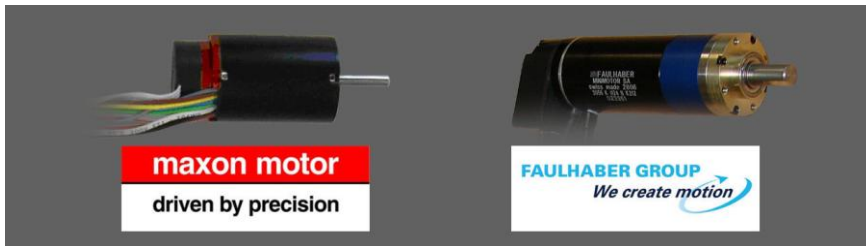
### 6.3.1 Round Table with Direct Drive and Hollow Shaft and extension cable

Modell	Art. NO.
<b>RT-120-25H80 for extension</b>	<b>113.07.13</b>
<b>RT-120-37H37 for extension</b>	<b>113.07.20</b>

Extension cables shielded, suitable for cable chain	Length [m]	Motor 3 pole round connector "Binder", Wago 3,5mm (0.14") Art. No.	Encoder 15 pole HD connector To 15 pole HD jack Art. No.
<b>Lütze, grau, Temp. moving -25° up to +80°</b>	1.5 (59")	<b>150.26.01</b>	<b>150.27.01</b>
	3.5 (138")	<b>150.26.03</b>	<b>150.27.03</b>
	5.0 (197")	<b>150.26.05</b>	<b>150.27.05</b>
	0.1-20 (4"-787")	<b>150.26.10</b>	<b>150.27.10</b>
<b>IGUS, darkblue, Temp. moving -35° up to +100° Clean room suitable and oil resistant</b>	1.5 (59")	<b>150.46.01</b>	<b>150.47.01</b>
	3.5 (138")	<b>150.46.03</b>	<b>150.47.03</b>
	5.0 (197")	<b>150.46.05</b>	<b>150.47.05</b>
	0.1-20 (4"-787")	<b>150.46.10</b>	<b>150.47.10</b>

These extension cables for the ultra compact rotary axis are identical to the extension cables of the LINAX® Lxc / Lxe linear motor axes.

## 6.4 Setup and Cabeling of non Jenny Science Motors



The XENAX® servo controllers are also suitable to control commercial brushless and brush type three phases servo motors (AC-/BL- /EC-). Of course it is also possible to control brush type DC Motors. For that purpose it is necessary to use rotary encoders with A / B signals (preferably differential, RS422). When powering on the electrical angle is determined with the hall signals. Then the vector oriented current commutation can be completed. For brush type DC motors an incremental encoder is needed.

### Cables Servo Motor

Assembling cables	Cable	Length [m]	Art. No.
<b>Motor 3 pole, Wago 3,5mm (0.14")</b>  <b>Encoder/Hall 15 pole HD D-Sub</b>	Lütze, shielded	1.5 (59")	<b>150.90.00</b>

### Preparing Motor Parameters

Motor Parameter	Necessary parameters	Parameter Memory	Art. No.
<b>according data sheet of servo motor</b>	Torque constant [Nm/A] Rotor inertia [kg*m2] Number of pole pair [1] Resistance phase to phase [mΩ] Inductivity phase to phase [μH] Nominal current [A] Resolution of encoder [INC/REV]	WebMotion® Open -> from File Save -> to XENAX	<b>150.90.05</b>

The XENAX® Xvi controls with state controller and observer mathematically. This is why the exact motor data is necessary.

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