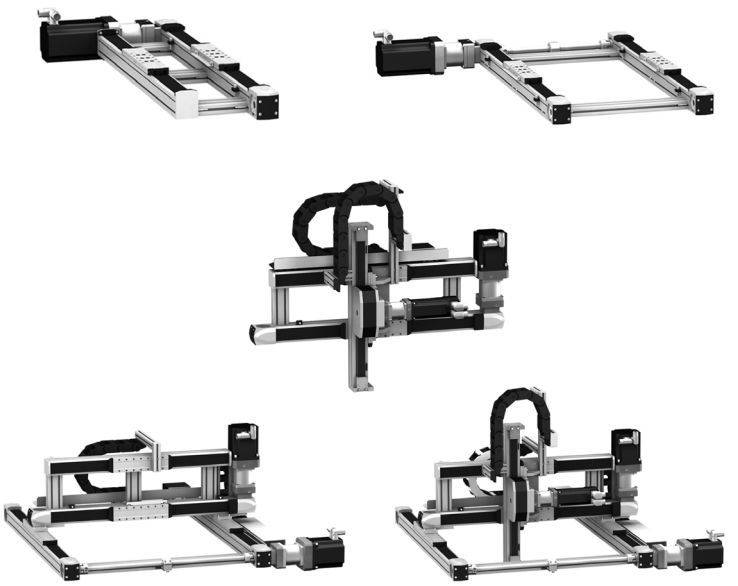
Operating Manual
Lexium MAX Series

(Original Document)

07/2016



EIO0000002230.00

www.schneider-electric.com

Schneider Electric

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

Table of Contents

Safety Information

Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Book

At a Glance

Document Scope

This manual is supposed to help you use the capabilities of the robot safely and properly.

Follow the instructions within this manual to:
- avoid risks,
- reduce repair costs and downtime of the robot,
- increase the service life of the robot,
- increase reliability of the robot.

Validity Note

The data and illustrations found in this book are not binding. We reserve the right to modify our products in line with our policy of continuous product development. The information in this document is subject to change without notice and should not be construed as a commitment by Schneider Electric.

The technical characteristics of the devices described in this document also appear online. To access this information online:

Step	Action
1	Go to the Schneider Electric home page *www.schneider-electric.com*.
2	In the **Search** box type the reference of a product or the name of a product range. ● Do not include blank spaces in the reference or product range. ● To get information on grouping similar modules, use asterisks (*).
3	If you entered a reference, go to the **Product Datasheets** search results and click on the reference that interests you. If you entered the name of a product range, go to the **Product Ranges** search results and click on the product range that interests you.
4	If more than one reference appears in the **Products** search results, click on the reference that interests you.
5	Depending on the size of your screen, you may need to scroll down to see the data sheet.
6	To save or print a data sheet as a .pdf file, click **Download XXX product datasheet**.

The characteristics that are presented in this manual should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the manual and online information, use the online information as your reference.

Related Documents

Title of Documentation	Reference Number
CAS3• Cantilever axis - Lexium Linear Motion Product Manual	*V3.00, 07.2012 - EN*
CAS4•B Cantilever axis - Lexium Linear Motion Product Manual	*0198441113785-EN*
PAS4xB Toothed belt axis - Lexium Linear Motion Product Manual	*MNA1MLBDM00EN*
PAS4xS Ball screw axis - Lexium Linear Motion Product Manual	*MNA1MLSDM00EN*
TAS4x Linear table - Product Manual	*TAS4x_manual_V3.00_EN_02-2012*

You can download these technical publications and other technical information from our website at http://download.schneider-electric.com

Product Related Information

The equipment described herein must be used in accordance with the applicationspecific risk analysis that you are to perform along with verification of all applicable standards. Pay attention in conforming to any safety information, different electrical requirements and normative standards that would apply to your application of the information contained in the present manual.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Perform an in-depth risk analysis to determine the appropriate safety integrity level for your specific application, based on all the applicable standards.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power from all equipment including connected devices before removing any covers or doors, or installing or removing any accessories, hardware, cables, or wires except under the specific conditions specified in the appropriate hardware guide for this equipment.
- Always use a properly rated voltage sensing device to confirm that the power is off where and when indicated.
- Replace and secure all covers, accessories, hardware, cables, and wires and confirm that a proper ground connection exists before applying power to the unit.
- Use only the specified voltage when operating this equipment and any associated products.

Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop, power outage, and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines.[1]
- Each implementation of this equipment must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

[1] for additional information, refer to NEMA ICS 1.1 (latest edition), safety guidelines for the application, installation, and maintenance of solid state control and to NEMA ICS 7.1 (latest edition), safety standards for construction and guide for selection, installation and operation of adjustable-Speed drive systems or their equivalent governing your particular location.

Schneider Electric assumes no responsibility for any errors that may appear in this document. If you have any suggestions for improvements or amendment or have found errors in this publication, please notify us.

Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in this manual, or that appear in or on the products themselves, are generally derived from the terms or definitions of international standards.

In the area of functional safety systems, drives and general automation, this may include, but is not limited to, terms such as *safety*, *safety function*, *safe state*, *fault*, *fault reset*, *malfunction*, *failure*, *error*, *error message*, *dangerous*, etc.

Among others, these standards include:

Standard	Description
EN 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2008	Safety of machinery: Safety related parts of control systems. General principles for design.
EN 61496-1:2013	Safety of machinery: Electro-sensitive protective equipment. Part 1: General requirements and tests.
ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction

Standard	Description
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 1088:2008 ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
ISO 13850:2006	Safety of machinery - Emergency stop - Principles for design
EN/IEC 62061:2005	Safety of machinery - Functional safety of safety-related electrical, electronic, and electronic programmable control systems
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: General requirements.
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Requirements for electrical/electronic/programmable electronic safety-related systems.
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Software requirements.
IEC 61784-3:2008	Digital data communication for measurement and control: Functional safety field buses.
2006/42/EC	Machinery Directive
2004/108/EC	Electromagnetic Compatibility Directive
2006/95/EC	Low Voltage Directive

In addition, terms used in the present document may tangentially be used as they are derived from other standards such as:

Standard	Description
IEC 60034 series	Rotating electrical machines
IEC 61800 series	Adjustable speed electrical power drive systems
IEC 61158 series	Digital data communications for measurement and control – Fieldbus for use in industrial control systems

Finally, the term *zone of operation* may be used in conjunction with the description of specific hazards, and is defined as it is for a *hazard zone* or *danger zone* in the *Machinery Directive* (*2006/42/EC*) and *ISO 12100:2010*.

Chapter 1
Specific Safety Information

What Is in This Chapter?

This chapter contains the following sections:

Section 1.1
Proper Use

Proper Use

Overview

This section contains information regarding the operation of the portal robot. Qualified personnel *(see page 16)* working with the portal robot must read and observe this information. The portal robot was built in compliance with the recognized technical safety regulations.

Installation

The Lexium MAX is intended to be installed in a machine or assembled with other components to form a machine or system.

The closed electrical equipment must be lockable by using a key or tool.

Provide for Protective Measures

Before installing the Lexium MAX, provide appropriate protective devices in compliance with local and national standards. Do not commission components without suitable protective devices. After installation, commissioning, or repair, test the protective devices used.

Perform a risk evaluation concerning the specific use before operating the product and take appropriate security measures.

If circumstances occur that affect the safety or cause changes to the operating behavior of the Lexium MAX, then immediately shut down the Lexium MAX and contact your Schneider Electric partner.

Use Original Equipment Only

Use only the accessories and mounting parts specified in the documentation and no third-party devices or components that have not been expressly approved by Schneider Electric. Only modify the portal robot at the intended points. Observe that you only modify the Lexium MAX without changing its basic properties.

Misuse

The Lexium MAX is not suitable for the transportation of living organisms or explosive materials, and it is not suitable either for impact activities.

Forbidden Environments

The components must not be used in the following environments:

- In hazardous (explosive) atmospheres
- In mobile, movable, or floating systems
- In life support systems
- In domestic appliances
- Underground
- In highly saline environments because salt may cause the materials used to corrode.
- In environments with increased radioactive radiation.
- In wash-down areas (food or pharmaceutical industry)
- In food industry applications
- In oily surrounding

This equipment has been designed to operate outside of any hazardous location. Only install this equipment in zones known to be free of a hazardous atmosphere.

⚠ DANGER

POTENTIAL FOR EXPLOSION

Install and use this equipment in non-hazardous locations only.

Failure to follow these instructions will result in death or serious injury.

Installation and Operating Conditions

Only use the components in accordance with the installation and operating conditions described in this documentation. The operating conditions at the installation location must be inspected and maintained in accordance with the required technical data (performance data and ambient conditions). Commissioning is prohibited until the usable machine or system in which the Lexium MAX is installed meets all requirements of EC guidelines 2006/42/EC (machinery directive).

Service Life

The expected service life of the portal robot as partly completed machinery is 10 years (dependent on load and dynamic).

$$\frac{Fy}{Fymax}+\frac{Fz}{Fzmax}+\frac{Mx}{Mxmax}+\frac{My}{Mymax}+\frac{Mz}{Mzmax}=k$$

Section 1.2
Qualification of Personnel

Qualification of Personnel

Target Audience for This Manual

This documentation is intended for users having the following knowledge:

- Advanced knowledge in mechanical engineering
- Advanced knowledge in electrical engineering
- Qualified person
- System engineer
- Knowledge of the portal robot control system and the construction

Qualified Person

Electrical and mechanical equipment must be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material. A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and the installation, and has received safety training to recognize and avoid the hazards involved.

The qualified personnel must be able to detect possible hazards that may arise from parameterization, changing parameter values and generally from mechanical, electrical, or electronic equipment. The qualified personnel must be familiar with the standards, provisions, and regulations for the prevention of industrial accidents, which they must observe when working on the drive system.

Section 1.3
Options to Move Robot without Drive Energy

What Is in This Section?

This section contains the following topics:

Manual Movement

Overview

To move the portal robot manually, proceed as follows:

Step	Action
1	Switch the portal robot into a torque-free state.
2	Manually hold the vertical axis in position with appropriate tools. **NOTE:** Take into consideration that axes installed in vertical or tilted position may move unexpectedly and their mass may act as a load.
3	Open the motor brakes. **NOTE:** The function for opening the brakes as well as for torque-free switching of the motors is not provided. Pay attention, that an emergency stop switch is not installed.
4	Manually move the portal robot. **NOTE:** A higher exertion of force is necessary because the motor and gearbox can cause braking effects.
5	Close the brakes.

⚠ WARNING

GREAT MASS OR FALLING PARTS

- Use a suitable crane or other suitable lifting gear for mounting the product if this is required by the mass of the product.
- Use the necessary personal protective equipment (for example, safety shoes, safety glasses and protective gloves).
- Mount the product in such a way (tightening torque, securing screws) that parts cannot come loose, even in the case of shocks and vibration.
- Take all necessary measures to avoid unanticipated movements of linear axes mounted in vertical or tilted positions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Free Trapped Persons

Overview

The Lexium MAX mechanics are not equipped with a security housing.

NOTE: Take appropriate security measures concerning the specific use before operating the portal robot.

⚠ WARNING

GREAT MASS OR FALLING PARTS

- Use a suitable crane or other suitable lifting gear for mounting the product if this is required by the mass of the product.
- Use the necessary personal protective equipment (for example, safety shoes, safety glasses and protective gloves).
- Mount the product in such a way (tightening torque, securing screws) that parts cannot come loose, even in the case of shocks and vibration.
- Take all necessary measures to avoid unanticipated movements of linear axes mounted in vertical or tilted positions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

For further information on moving the portal robot without energy drive, refer to Manual Movement *(see page 18)*.

Section 1.4
Residual Risks

What Is in This Section?

This section contains the following topics:

General Information on Residual Risks

Overview

Health risks arising from the portal robot have been reduced. However a residual risk remains since the Lexium MAX portal robot is operated with electrical voltage and electrical current.

If activities involve residual risks, a safety message is made at the appropriate points. This includes potential hazards that may arise, their possible consequences, and describes preventive measures to avoid the hazards. The residual risks described on the following pages cannot be assigned to a specific handling. The structure of a warning instruction is identical to that of a safety label.

Emergency Stop

Overview

The portal robot mechanics are not supplied with an emergency stop switch to trigger the brakes.

⚠ WARNING

CLAMPING AND DETECTION BY ROBOT MECHANICS

- Enable manual motion of the robot drives in emergencies, even if these are no longer supplied with drive energy.
- Provide an emergency switch for releasing the brake and position the same such that the drives can be manually moved by a single person. The drives must have been switched into a voltage-free state.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

SAGGING OF THE ROBOT

Before releasing the brake, ensure that no one is in the zone of operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

MOVING PARTS OF THE ROBOT

Axes, mounted in vertical or tilted position can move unexpectedly. Ensure that no one is in the zone of operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: Provide separation devices for all infeed energies. It must be possible to secure the separation devices in de-energized position, for example, by locking.

Electrical Parts

Overview

Take special care as the Lexium MAX runs on electrical current.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Operate electrical components only with a connected protective ground conductor.
- After the installation, verify the fixed connection of the protective ground conductor to all electrical devices to ensure that connection complies with the connection diagram.
- Before enabling the device, cover the live components to prevent contact.
- Do not touch the electrical connection points of the components.
- Provide protection against indirect contact (EN 50178).
- Connect and disconnect cables only after you have verified that the power has been removed from the system.
- Isolate the unused conductors on both ends of the motor cable.

Failure to follow these instructions will result in death or serious injury.

Assembly and Handling

Overview

Although the Lexium MAX portal robot is delivered as an assembled system, risks may arise due to improper assembly and handling.

⚠ WARNING

CRUSHING, SHEARING, CUTTING AND HITTING DURING HANDLING

- Observe the general construction and safety regulations for handling and assembly.
- Use suitable mounting and transport equipment correctly and use special tools if necessary.
- Prevent clamping and crushing by taking appropriate precautions.
- Cover edges and angles to protect against cutting damage.
- Wear suitable protective clothing (for example, safety goggles, safety boots, protective gloves).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Robot Motion

Overview

Parts of the mechanics can move at high speeds. In such cases, the net loading weight, additionally installed tools, and shifts in the center of gravity of the moving parts contribute to the total energy of the powers generated.

Safety Considerations

Motion sequences can occur when operating with robot mechanics, which allow operational staff to make misjudgments. For safety considerations (according to EN ISO 13849-1), consider the Lexium MAXR•3 and the brakes as unsafe elements. Ensure that necessary protective measures are implemented to prevent any risk of death.

The safety standards and directives for the respective country where the equipment is in use define which protective measures are appropriate. Additionally, the system engineer who is responsible for the integration of the robot mechanics must evaluate which measures have to be taken.

NOTE: The configuration of the robot mechanics, the TCP velocity, as well as the additional net loading have an effect on the total energy, which can potentially cause damage.

⚠ WARNING

CRUSHING, SHEARING, CUTTING AND IMPACT

- Open or enter the robot housing for cleaning and maintenance purposes only.
- The robot must be operated only within a frame.
- Design the frame such that it withstands an impact by the robot and that it resists ejected parts from escaping the zone of operation.
- Design the frame such that the robot is safely deactivated as soon as a person enters the zone of operation of the robot.
- All barriers, guard doors, contact mats, light barriers, and so on, must be configured correctly and enabled, whenever the robot mechanics are under power.
- Define the clearance distance to the zone of operation of the robot such that operational staff do not have access to, or can be enclosed in, the robot mechanics zone of operation.
- Design the frame to account for the maximum possible travel paths of the robot, that is, the maximum path until the hardware safety system limits (safety fence, housing, and so on) as well as the additional run-on paths in case of a power interruption. More information on travel path and power loss is included in this document.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

LEAVING THE PLANNED TRAJECTORY OF THE ROBOT MECHANICS

- Use the buffering of the 24 V supply (UPS), in order to enable a controlled stop of the mechanics in accordance with stop category 1 by making use of the stored residual mechanical and electrical energy.
- If the power supply of the control system fails, the brakes are applied and the robot mechanics leave the planned trajectory in an uncontrolled manner.
- Ideally use a synchronous stop on the path to avoid collisions with obstacles.
- Observe the extension of the run-on path during the safety considerations.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Carriage Motion

Overview

Although the motor is turned off, there is a risk of an electric shock when the carriage is moved fast backwards and forwards. Do not touch the cable attachment of the motor even in turned-off state.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Operate electrical components only with a connected protective ground conductor.
- After the installation, verify the fixed connection of the protective ground conductor to all electrical devices to ensure that connection complies with the connection diagram.
- Before enabling the device, cover the live components to prevent contact.
- Do not touch the electrical connection points of the components.
- Provide protection against indirect contact (EN 50178).
- Connect and disconnect cables only after you have verified that the power has been removed from the system.
- Isolate the unused conductors on both ends of the motor cable.

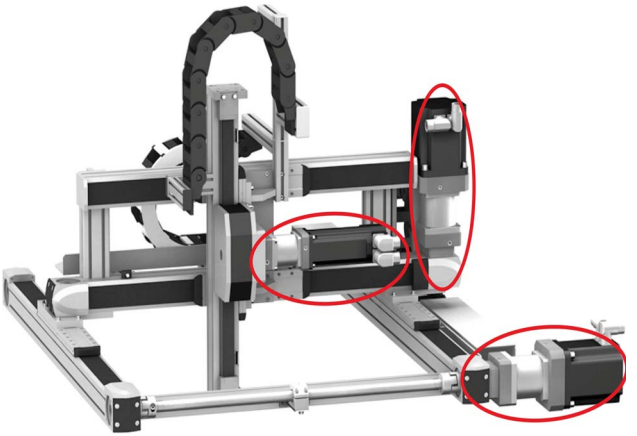
Failure to follow these instructions will result in death or serious injury.

Hot Surfaces

Overview

At high tact cycles, the motors and gearboxes of the portal robot can reach high temperatures. This warms up the surfaces of the motor and the gearbox housing.

The graphic below is an exemplary illustration for hot surfaces of the portal robot.



⚠ WARNING

HOT SURFACES

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions.
- Wait until the surface temperature has cooled before making contact.
- Wear protective gloves when working near hot surfaces.
- Prevent incidental or accidental contact with a protective cover or touch guard.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Hazardous Movements

Overview

There can be different causes of hazardous movements:

- Missing or incorrect homing of the drive
- Wiring or wiring errors
- Errors in the application program
- Potential component errors
- Potential error in the measured value and signal transmitter

NOTE: Provide for personal safety by primary equipment monitoring or measures. Do not rely only on the internal monitoring of the drive components. Adapt the monitoring or other arrangements and measures to the specific conditions of the installation in accordance with a risk and error analysis carried out by the system manufacturer.

⚠ DANGER

MISSING OR INADEQUATE PROTECTION DEVICE(S)

- Prevent entry to a zone of operation with, for example, protective fencing, mesh guards, protective coverings, or light barriers.
- Dimension the protective devices properly and do not remove them.
- Do not make any modifications that can degrade, incapacitate, or in any way invalidate protection devices.
- Before accessing the drives or entering the zone of operation, bring the drives to a stop.
- Protect existing workstations and operating terminals against unauthorized operation.
- Position EMERGENCY STOP switches in a way that they are easily accessible and can be reached quickly.
- Before start-up and during maintenance periods, verify the functionality of the EMERGENCY STOP equipment.
- Prevent unintentional start-up by disconnecting the power connection of the drives using the EMERGENCY STOP circuit or using an appropriate lock-out tagout sequence.
- Validate the system and installation before the initial start-up.
- Avoid operating high-frequency, remote control, and radio devices close to the system electronics and their feed lines. If necessary, perform a special EMC verification of the system.

Failure to follow these instructions will result in death or serious injury.

Noise Protection

Overview

The noise level of the mechanics depends on the basic cycle and the net loading, as well as on further application-specific accessory parts. Be aware of the fact that noise emissions multiply when several mechanics are in use at the same time. If noise emissions reach a value of more than 70dBA, wear ear protectors.

⚠ CAUTION
NOISE EMISSIONS OF THE MECHANICS ● Wear ear protectors in accordance with the locally applicable regulations. ● Attach a warning sign on the robot mechanics if the noise emissions reach an excessive value. **Failure to follow these instructions can result in injury or equipment damage.**

NOTE: Attach the adjoining symbol where it can easily be seen on the mechanics.

Emissions

Roller Guides

During operation, a small amount of oil can leak. Especially when the roller guide axis is used as vertical axis.

NOTE: The leakage of small oil amounts does not indicate a damage of the roller guide axis.

Gearbox

Pay attention to grease emissions on the gearbox. This is an indicator of a damaged portal robot.

NOTICE
GEARBOX GREASE EMISSIONS IN THE EVENT OF A DAMAGED EQUIPMENT ● Verify the mechanics before and during use. ● Shut down the mechanics immediately if necessary. **Failure to follow these instructions can result in equipment damage.**

Hanging Loads

Overview

As the Lexium MAX can have a large weight, take care especially during transport and installation.

⚠ WARNING
HANGING LOADS Do not stand under hanging loads. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

Attachments and Modifications

Overview

If different products are transported by the portal robot mechanics, then the product pickup must be modified consequently. For this reason, it is possible to build different product pickups (tool mounting) onto the flange. It must be ensured in this respect that the articulation movement is not restricted and/or that no motion errors can result from the modifications. Attachments and rebuilds may not influence the operation of the protective devices in any way.

⚠ WARNING

MECHANICAL BREAKDOWN

- Do not drill into or change the axes.
- Do not change the cable drag chains.
- Do not change components of movable mechanics.
- Do not use third-party devices or components that have not been expressly approved by Schneider Electric.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Chapter 2
System Overview

What Is in This Chapter?

This chapter contains the following sections:

Section 2.1
Product Overview Lexium MAX Series

What Is in This Section?

This section contains the following topics:

Product Overview Lexium MAXS• Series

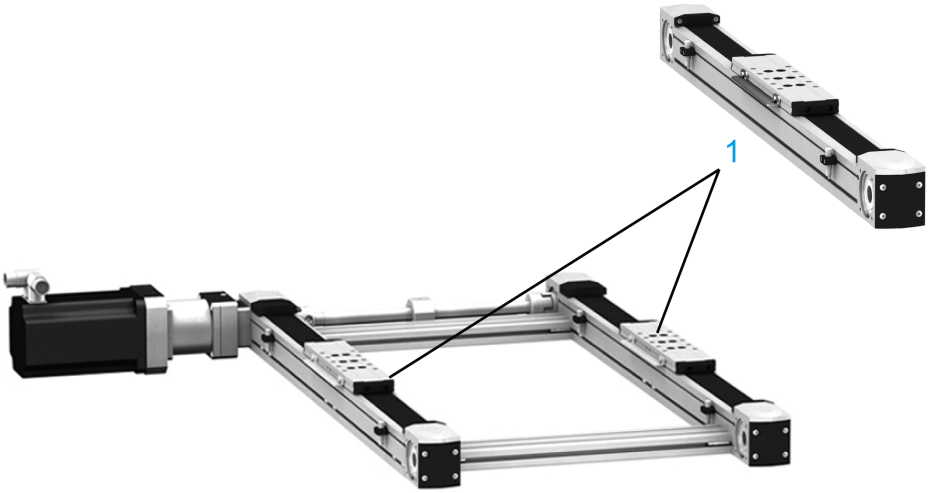
Overview

The Lexium MAXS• module consists of:

- Two linear axes Lexium PAS• mounted in parallel
- Two carriages (one on each axis)
- Two guide types:
  - Ball bearing guide or
  - Roller guide
- Drive element with gearbox and motor (option)
- Synchronous shaft

Components Overview

Components of Lexium MAXS•:



1 Lexium PAS• linear axis

Characteristics of the Lexium MAXS•

The Lexium MAXS• series provides the following features:

- Motor installation via compact and flexible coupling system
- Different stroke lengths
- Integration into systems and machines due to axis bodies with T-slots

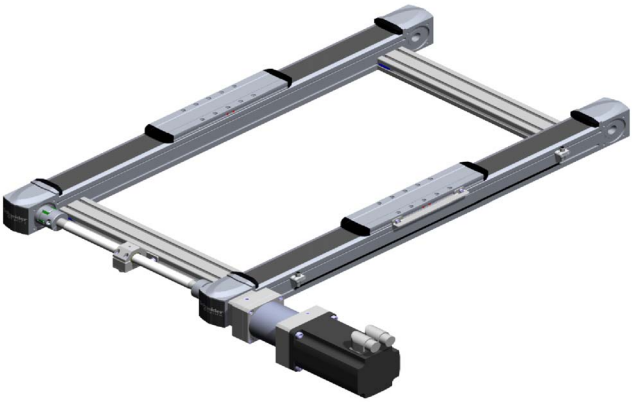
Drive Element Positions

The linear axes and the drive element are stationary while the carriages move in order to transport loads. The linear axes have on their end blocks on both sides hollow shafts, where the drive element or the synchronous shaft can be installed.

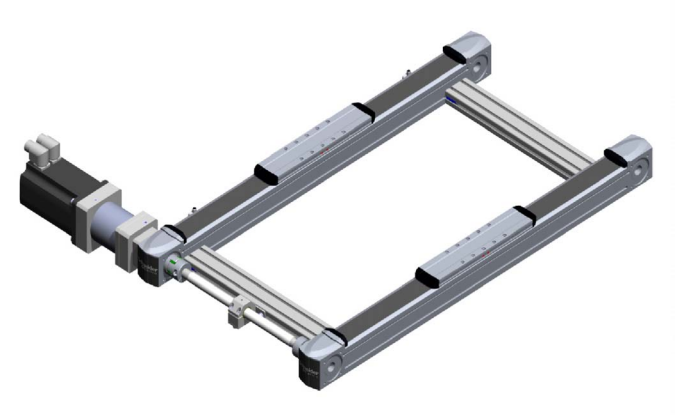
Both linear axes are connected to each other via the synchronous shaft.

If the drive element is attached on the right-hand side, the right axis is driven, while the left axis is the shaft driven axis.

The following graphics show the drive element attachment on the right and the drive element attachment on the left:



1 Drive element attachment on the right



2 Drive element attachment on the left

For more information about the particular axes, refer to PAS product manuals *(see page 10)*.

Product Overview Lexium MAXH• Series

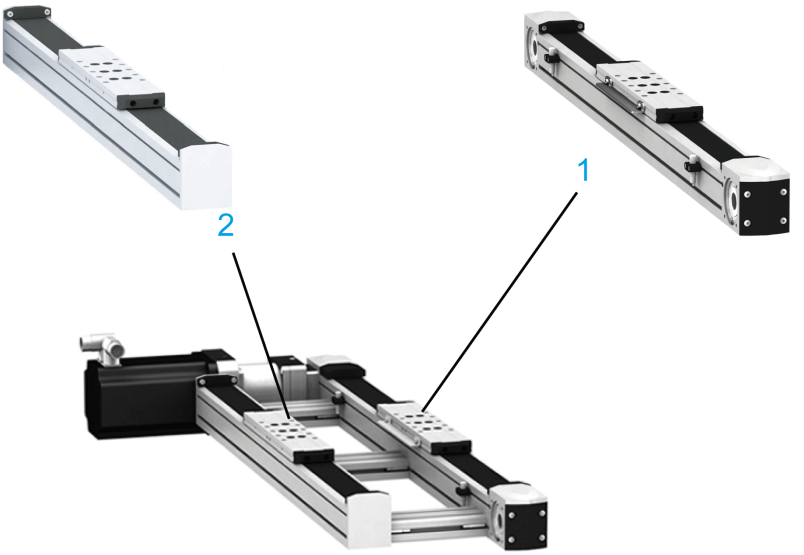
Overview

The Lexium MAXH• modules consist of:

- Two linear axes mounted in parallel:
  - Lexium PAS• driven axis
  - Lexium PAS• support axis
- Two carriages (one on each axis)
- Two guide types:
  - Ball bearing guide or
  - Roller guide
- Drive element with gearbox and motor (option)

Components Overview

Components of Lexium MAXH•:



1 Lexium PAS• driven axis
2 Lexium PAS• support axis

Characteristics of the Lexium MAXH•

The Lexium MAXH• series provides the following features:

- Motor installation via compact and flexible coupling system
- Different stroke lengths
- Integration into systems and machines due to axis bodies with T-slots

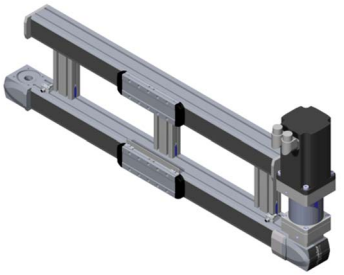
Drive Element Positions

The linear axes and the drive element are stationary while the carriages move in order to transport loads.

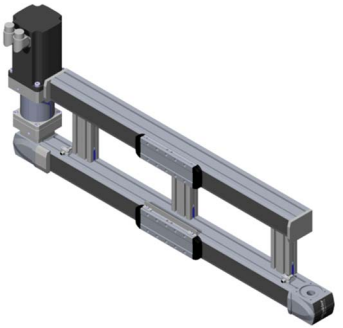
The linear axes have on their end blocks on both sides hollow shafts, where the drive element can be installed. Both linear axes are connected to each other mechanically.

If the drive element is attached on the right-hand side, the left axis is driven while the right axis is the support axis, driven via the load mounted on both carriages.

The following graphics show the drive element attachment right or the drive element attachment left:



1 Drive element attachment right



2 Drive element attachment left

For more information about the particular axes, refer to PAS product manuals *(see page 10)*.

Product Overview Lexium MAXP• Series

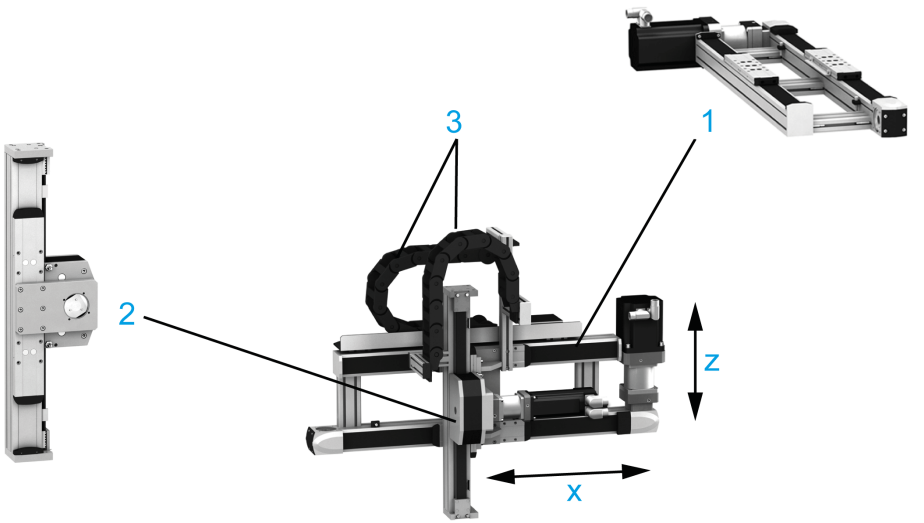
Overview

The Lexium MAXP• is a multi-axis system, which can operate above the working area in x- and z-direction. It consists of the following toothed belt-driven axes:

- Lexium MAXH• double axis
- Lexium CAS4• or Lexium CAS3• cantilever axis.

Components Overview

Components of Lexium MAXP•, in this example with a Lexium CAS4• axis:



1 Lexium MAXH• double axis
2 Lexium CAS3• or the Lexium CAS4• cantilever axis
3 Cable drag chains

The Lexium MAXH• double axis (1) is installed to an installation surface. The Lexium CAS3• or the Lexium CAS4• cantilever axes (2) are installed to the carriages of the Lexium MAXH• double axis. The cantilever axis is installed vertically to the carriages of the Lexium MAXH•. Alongside the axes, there are cable drag chains (3) to wire the Lexium MAXP•.

For more information about the particular axes, refer to CAS or PAS product manuals *(see page 10)*.

Operating Directions

Each axis allows to operate in two different directions above the working area:

Axis type	Short form axis type	Direction of movement
Lexium MAXH•	H•	X-direction (horizontal)
Lexium CAS3• or Lexium CAS4•	C3 or C4	Z-direction (vertical)

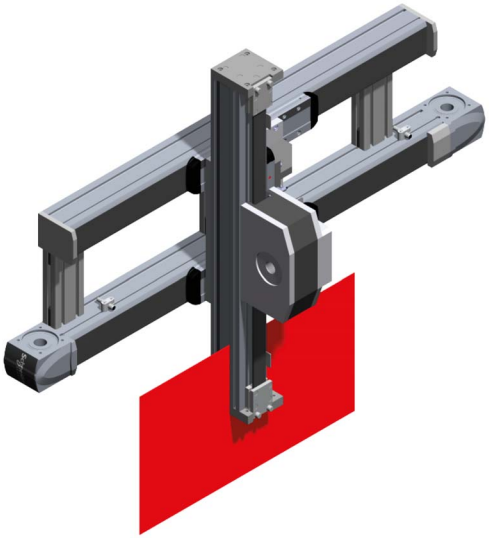
Due to this construction, the portal robot can handle heavy loads on long travel paths in x-direction and short travel paths in z-direction.

The portal robot is always driven by a toothed belt.

Working Area

The illustration below shows the working area of the Lexium MAXP• with the maximum strokes in x- and z- direction.

For detailed information on stroke values, refer to Technical Data *(see page 104)* of the corresponding axis.



General Characteristics of the Lexium MAXP•

The Lexium MAXP• series provides the following features:

- Motor installation via compact and flexible coupling system
- Different stroke lengths

- Integration into systems and machines due to axis bodies with T-slots
- Installation of threads with counterbores for locating dowels at the endplate of the z-axis for reproducible mounting of the payload

Guide Types

There are two guide types available for the Lexium MAXP• series. The following table illustrates the particular Lexium MAXP• series and the guide type, they can be equipped with. For a detailed name description of the Lexium MAXP• series, refer to *Typecode* *(see page 62)*.

Roller guide	Recirculating ball bearing
MAXP12•-H41BR••••-C31BC••••	—
MAXP12•-H41BR••••-C41BR••••	—
MAXP22•-H42BR••••-C32BC••••	MAXP22•-H42BB••••-C32BC••••
MAXP22•-H42BR••••-C42BR••••	MAXP22•-H42BB••••-C42BB••••
MAXP32•-H43BR••••-C34BC••••	MAXP32•-H43BB••••-C34BC••••
MAXP32•-H43BR••••-C43BR••••	MAXP32•-H43BB••••-C43BB••••
—	MAXP42•-H44BB••••-C44BB••••

Product Overview Lexium MAXR•2 Series

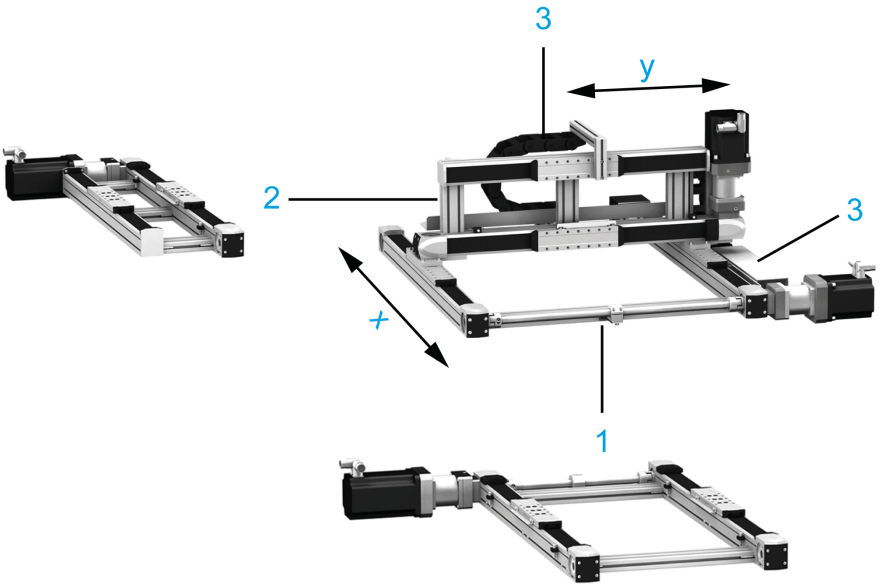
Overview

The Lexium MAXR•2 is a double-axis system, which can operate above the working area in x-, y-direction. It consists of the following toothed belt-driven axes:

- Lexium MAXS• double axis
- Lexium MAXH• double axis or Lexium PAS• portal axis

Components Overview

Components of Lexium MAXR•2, in this example with a Lexium MAXH• axis:



1 Lexium MAXS• double axis
2 Lexium MAXH• double axis or Lexium PAS• portal axis
3 Cable drag chains

The Lexium MAXS• double axis (1) is installed to an installation surface. The Lexium MAXH• double axis or the Lexium PAS• portal axis (2) are installed to the carriages of the Lexium MAXS•. Alongside the axes, there are cable drag chains (3) to wire the Lexium MAXR•2.

For more information about the particular axes, refer to PAS product manuals *(see page 10)*.

Operating Directions

Each axis allows the Lexium MAXR•2 portal robot to operate in two different directions above the working area:

Axis type	Short form axis type	Direction of movement
Lexium MAXS•	S•	X-direction (horizontal)
Lexium MAXH• or Lexium PAS•	H• P•	Y-direction (horizontal)

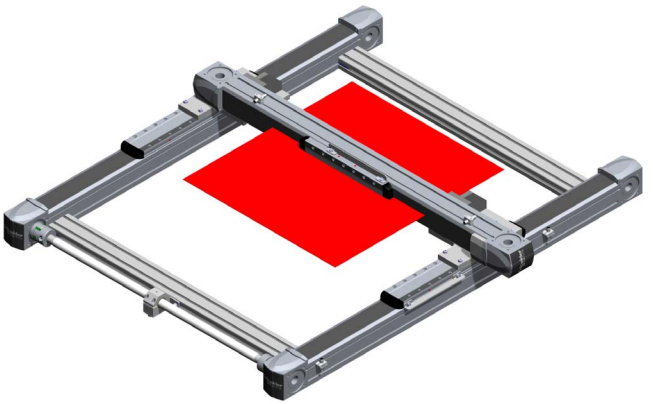
Due to this construction, the portal robot can handle heavy loads on long travel paths in x- and y-direction.

The portal robot is always driven by a toothed belt.

Working Area

The illustration below shows the working area of the Lexium MAXR•2 with the maximum strokes in x- and y- direction.

For detailed information on stroke values, refer to Technical Data *(see page 123)* of the corresponding axis.



General Characteristics of the Lexium MAXR•2

The Lexium MAXR•2 series provides the following features:

- Motor installation via compact and flexible coupling system
- Different stroke lengths
- Integration into systems and machines due to axis bodies with T-slots
- Installation of threads with counter-bores for locating dowels at the end plate of the y-axis for reproducible mounting of the payload

Guide Types

There are two guide types available for the Lexium MAXR•2 series. The following table illustrates the particular Lexium MAXR•2 series and the guide type, they can be equipped with. For a detailed name description of the Lexium MAXR•2 series, refer to *Typecode (see page 62)*.

Roller guide	Recirculating ball bearing
MAXR12•-S41BR••••-P41BR••••	—
MAXR12•-S41BR••••-H41BR••••	—
MAXR22•-S42BR••••-P42BR••••	MAXR22•-S42BB••••-P42BB••••
MAXR22•-S42BR••••-H42BR••••	MAXR22•-S42BB••••-H42BB••••
MAXR32•-S43BR••••-P43BR••••	MAXR32•-S43BB••••-P43BB••••
MAXR32•-S43BR••••-H43BR••••	MAXR32•-S43BB••••-H43BB••••
—	MAXR42•-S44BB••••-H44BB••••

Product Overview Lexium MAXR•3 Series

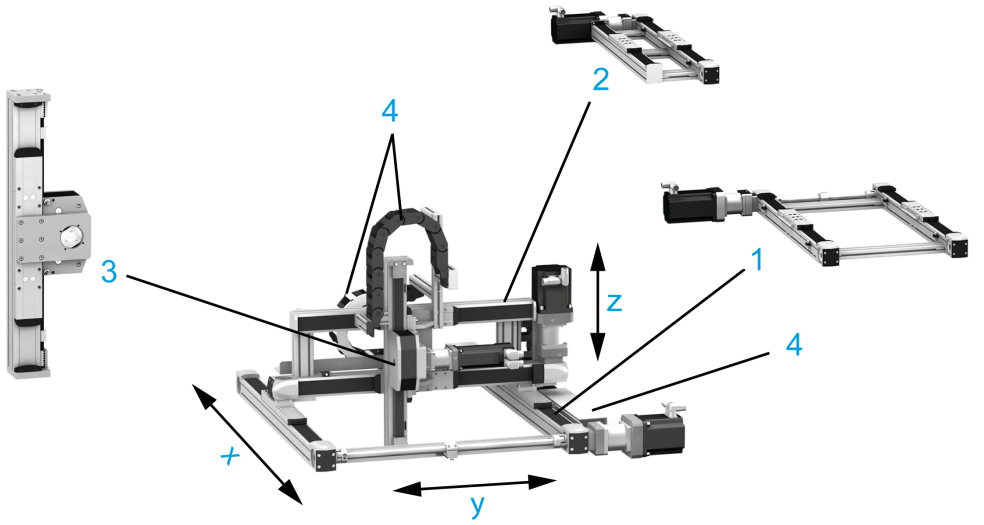
Overview

The Lexium MAXR•3 is a triple-axis system, which can operate above the working area in x-, y- and z-direction. It consists of the following toothed belt-driven axes:

- Lexium MAXS• double axis
- Lexium MAXH• double axis
- Lexium CAS3• or Lexium CAS4• cantilever axis

Components Overview

Components of Lexium MAXR•3, in this example with a Lexium CAS4• axis:



1 Lexium MAXS• double axis
2 Lexium MAXH• double axis
3 Lexium CAS3• or the Lexium CAS4• cantilever axis
4 Cable drag chains

The Lexium MAXS• double axis (1) is installed to an installation surface. The Lexium MAXH• double axis (2) is installed to the carriages of the Lexium MAXS• double axis. The Lexium CAS3• or the Lexium CAS4• cantilever axes (3) are installed vertically to the carriages of the Lexium MAXH• double axis (2). Alongside the axes, there are cable drag chains (4) to wire the Lexium MAXR•3.

For more information about the particular axes, refer to CAS or PAS product manuals *(see page 10)*.

Operating Directions

Each axis allows the Lexium MAXR•3 portal robot to operate in up to three different directions above the working area:

Axis type	Short form axis type	Direction of movement
Lexium MAXS•	S•	X-direction (horizontal)
Lexium MAXH•	H•	Y-direction (horizontal)
Lexium CAS3• or Lexium CAS4•	C3 or C4	Z-direction (vertical)

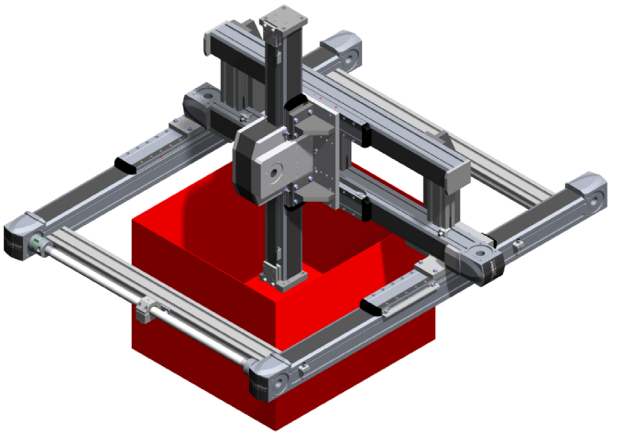
Due to this construction, the portal robot can handle heavy loads on long travel paths in x- and y-direction, and short travel paths in z-direction.

The portal robot is always driven by a toothed belt.

Working Area

The illustration below shows the working area of the Lexium MAXR•3 with the maximum strokes in x, y- and z- direction.

For detailed information on stroke values, refer to Technical Data *(see page 142)* of the corresponding axis.



General Characteristics of the Lexium MAXR•3

The Lexium MAXR•3 series provides the following features:

- Motor installation via compact and flexible coupling system
- Different stroke lengths
- Integration into systems and machines due to axis bodies with T-slots
- Installation of threads with counter-bores for locating dowels at the end plate of the z-axis for reproducible mounting of the payload

Guide Types

There are two guide types available for the Lexium MAXR•3 series. The following table illustrates the particular Lexium MAXR•3 series and the guide type, they can be equipped with. For a detailed name description of the Lexium MAXR•3 series, refer to *Typecode* *(see page 62)*.

Roller guide	Recirculating ball bearing
MAXR13•-S41BR••••-H41BR••••-C31BC••••	—
MAXR13•-S41BR••••-H41BR••••-C41BR••••	—

Roller guide	Recirculating ball bearing
MAXR23•-S42BR••••-H42BR••••-C32BC••••	MAXR23•-S42BB••••-H42BB••••-C32BC••••
MAXR23•-S42BR••••-H42BR••••-C42BR••••	MAXR23•-S42BB••••-H42BB••••-C42BB••••
MAXR33•-S43BR••••-H43BR••••-C34BC••••	MAXR33•-S43BB••••-H43BB••••-C34BC••••
MAXR33•-S43BR••••-H43BR••••-C43BR••••	MAXR33•-S43BB••••-H43BB••••-C43BB••••
—	MAXR43•-S44BB••••-H44BB••••-C44BB••••

Product Overview Lexium MAXK• Series

Overview

The Lexium MAXK• modules are customized applications, which can operate above the working area in x- and/or y- and/or z-direction. It consists either of toothed belt axis and/or ball screw axis. All information about technical data and characteristics can be found in the delivered product data sheet and the according product manuals of the CAS, PAS and TAS axes *(see page 10)*.

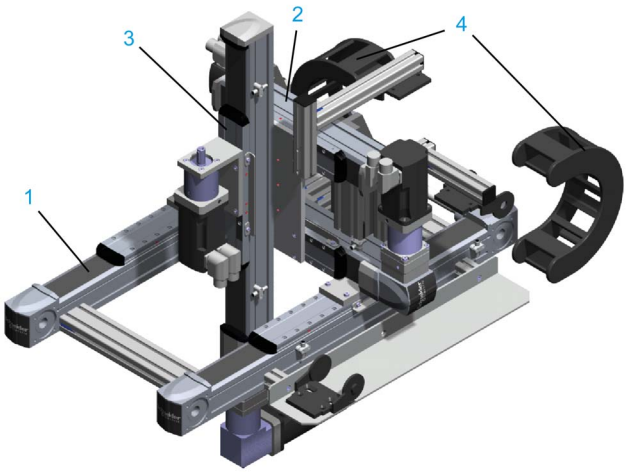
NOTE: The following description is an example of a customized Lexium MAXK•.

The Lexium MAXK• can consist of:

- Lexium MAXS• double axis
- Lexium MAXH• double axis
- Lexium PAS4• portal axis
- Lexium TAS4• table axis
- Lexium CAS• cantilever axis

Components Overview

Example of a Lexium MAXK•:



1 Lexium MAXS• double axis
2 Lexium MAXH• double axis
3 Lexium PAS4• portal axis
4 Rotation axis
5 Cable drag chains

The Lexium MAXS• double axis (1) is installed to an installation surface. The Lexium MAXH• double axis (2) is installed to the carriages of the Lexium MAXS• double axis. The Lexium PAS4• portal axis (3) is installed vertically to the carriages of the Lexium MAXH• double axis (2). The rotation axis (4) is mounted to the carriage of the Lexium PAS4• portal axis. Alongside the axes, there are cable drag chains (5) to wire the Lexium MAXK•.

Operating Direction

For information about the operating direction of the specified Lexium MAXK•, refer to the provided product data sheet of the axis.

Working Area

For information about the working areas of the specified Lexium MAXK•, refer to the provided product data sheet of the axis.

General Characteristics of the Lexium MAXK•

The Lexium MAXK• series provides the following features:

- Motor installation via compact and flexible coupling system
- Different stroke lengths
- Integration into systems and machines due to axis bodies with T-slots

Guide Types

There are two guide types available for the Lexium MAXK• series.

For more information about the guide types of the specified Lexium MAXK•, refer to the provided product data sheet of the axis.

For a detailed name description of the Lexium MAXK• series, refer to *Typecode (see page 64)*.

Section 2.2
Typecodes

What Is in This Section?

This section contains the following topics:

Typecode of the Lexium MAXH• and the Lexium MAXS• Series

Overview

To find your appropriate machine information, refer to the type plate located on your machine.

References (1)

Lexium MAX H or Lexium MAX S double portal axis, complete each references by replacing the "•"

Example: MAX H 1 B R M 1000 A 2 B A XXX R 0 120R/ ...

MAX • • B • • •••• • • • • ••• • ••••

Type of drive for support axis	H = Support axis driven by the load one axis driven S = Support axis driven by a drive shaft
Size (profile cross-section)	1 = 40 x 40 mm (1.57 x 1.57 in) 2 = 60 x 60 mm (2.36 x 2.36 in) 3 = 80 x 80 mm (3.15 x 3.15 in) 4 = 110 x 110 mm (4.33 x 4.33 in)
Drive system for carriages	B = Toothed belt
Type of guide for carriages	R = Roller (for MAX •1B, •2B, •3B) B = Ball (for MAX •2B, •3B, •4B)
Feed per revolution	M = 84 mm (3.31 in) (MAX •1B) M = 155 mm (6.10 in) (MAX •2B) M = 205 mm (8.07 in) (MAX •3B) M = 264 mm (10.39 in) (MAX •4B)
Stroke	•••• Maximum 3000 mm (118.11 in) (for MAX •1) •••• Maximum 5500 mm (216.53 in) (for MAX •2, •3 and •4)
Limit switches (2)	A = 2 sensors with PNP output, NC contact, not connected C = 2 sensors with PNP output, NO contact, not connected E = 2 sensors with NPN output, NC contact, not connected G = 2 sensors with NPN output, NO contact, not connected N = Without sensors/without detecion plate
Type of carriages	1 = Type 1 (for MAX •2B, •3B, •4B) 2 = Type 2 4 = Type 4
Options	B = With protective metal strip C = Anti-corrosion version/without protective metal strip A = With anti-static toothed belt/without protective metal strip E = Anti-corrosion version/with anti-static toothed belt/without protective metal strip L = With anti-static toothed belt/with ptotective metal strip N = Without option
Number of carriages (3)	A = 1 B = 2 C = 3
Distance between two carriages	••• State the distance in mm XXX = 1 carriage only, state "XXX"
Interface for the drive element (4)	R = Drive element fixed on right-hand side L = Drive element fixed on left-hand side A = Drive element fixed externally, right-hand side (for MAX H) B = Drive element fixed externally, left-hand side (for MAX H) G = Without drive element/driven axis on right (for MAX H) H = Without drive element/driven axis on left (for MAX H) N = Without drive element (for MAX S)
Distance between two axes	•••• State the distance in mm

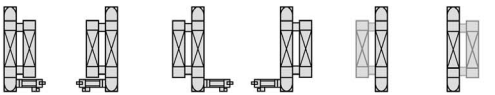
(1) All technical data (characteristics, dimensions, etc.) for Lexium MAX H and Lexium MAX S axes is available on our website www.schneider-electric.com

(2) Supplied with a 0.1 m cable equipped with an M8 connector.

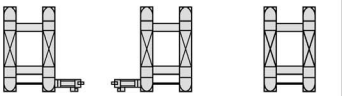
(3) Only carriages of the same type (type 1 , type 2 or type 4) are permitted.

(4) Types of interface for the drive element :

MAX H•B... ...R••••/ ... ...L••••/ ... ...A••••/ ... ...B••••/ ... ...G••••/ ... ...H••••/ ...



MAX S•B... ...R••••/ ... ...L••••/ ... ...N••••/ ...



References (continued) (1)

Lexium MAX H or Lexium MAX S double portal axis, complete each references by replacing the "•"

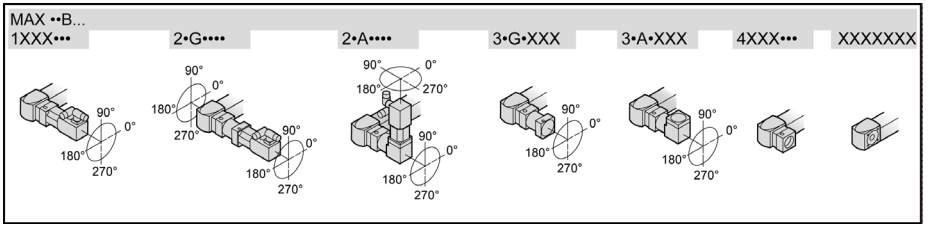
Example: MAX H 1 B R M 1000 A 2 B A XXX R 0 120R/2 1G 0 H7 0 MAX • • • • • •••• • • • • ••• • •••
+PLE60 3:1 + BMH 0702P01A2A

• •• • •• • + ...

Motor drive configuration (2)	1 = Motor only 2 = Motor + gearbox 3 = Gearbox only 4 = Without motor/without gearbox/with adapter plate for the drive X = Without motor/without gearbox
Gearbox interface	0G = PLE 40 gearboxes 1G = PLE 60 gearboxes 3G = PLE 80 gearboxes 5G = PLE 120 gearboxes 0A = WPLE 40 gearboxes 1A = WPLE 60 gearboxes 3A = WPLE 80 gearboxes 5A = WPLE 120 gearboxes YY = Other third-party gearboxes not assembled by Schneider Electric (gearbox drawings required) ZZ = Other third-party gearboxes assembled by Schneider Electric (gearbox drawings required) XX = Without gearbox
Gearbox orientation	3 = 0° 0 = 90° 9 = 180° 6 = 270° X = Without gearbox
Motor interface	H5 = BSH 055• servo motors H7 = BSH 0701, 0702 / BMH 0701, 0702 servo motors H8 = BSH 0703 / BMH 0703 servo motors H1 = BSH 1001 ... 1003 / BMH 1001 ... 1003 servo motors H4 = BSH 1004 servo motors H2 = BSH 1401 ... 1404 / BMH 1401 ... 1403 servo motors I6 = Lexium ILS••571, 572 integrated drives with 3-phases stepper motor I7 = Lexium ILS••573 integrated drives with 3-phases stepper motorElectric I9 = Lexium ILS••851, 852 integrated drives with 3-phases stepper motor I8 = Lexium ILS••853 integrated drives with 3-phases stepper motor A6 = Lexium ILS••57 integrated drives with AC synchronous servo motor E7 = Lexium ILE••66 integrated drives with DC brushless motor and gearbox with straight teeth V8 = BRS 368 stepper motors V9 = BRS 397, 39A stepper motors V0 = BRS 39B stepper motors V1 = BRS 3AC, 3AD stepper motors YY = Third-party motors not assembled by Schneider Electric (motor drawings required) ZZ = Third-party motors assembled by Schneider Electric (motor drawings required) XX = Without motor
Gearbox orientation	0 = 90° 9 = 180° 6 = 270° X = Without gearbox
Planetary gearbox gear ratio + motor reference	State the planetary gearbox gear ratio and the complete motor reference at the reference, in plain text. Example: PLE60 3:1 + BMH 0702P01A2A

(1) All technical data (characteristics, dimensions, etc.) for Lexium MAX H and Lexium MAX S axes is available on our website www.schneider-electric.com

(2) Possible motor drive configurations and orientation (view from motor/gearbox towards the axes or from motor towards the gearbox):


MAX ••B...
1XXX•••
2•G••••
2•A••••
3•G•XXX
3•A•XXX
4XXX•••
XXXXXXX
90°
0°
180°
270°

Typecode of the Lexium MAXP• Series

Overview

To find your appropriate machine information, refer to the type plate located on your machine.

References (1)

MAX P linear positioner, complete each references by replacing the "•"

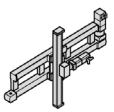
Example: MAX P 1 2 R - H41 B R 2000 - C41 B R 0400
+ PLE60 3:1 + BMH 0702P01A2A (for the X axis)
+ PLE60 3:1 + BMH 0702P01A2A (for the Z axis)

MAX P • 2 • - ••• B • •••• - ••• B • •••• + … + …

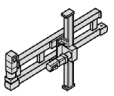
Size of X axis (profile cross-section)	1 = 40 x 40 mm (1.57 x 1.57 in) 2 = 60 x 60 mm (2.36 x 2.36 in) 3 = 80 x 80 mm (3.15 x 3.15 in) 4 = 110 x 110 mm (4.33 x 4.33 in)
Number of independet axes	2 axes = 1 X axis, 1 Z axis
Interface for the drive element (3)	R = Drive elements fixed on right-hand side L = Drive elements fixed on left-hand side
Type of X axis	H41 = MAX H41 (for MAX P12) (2) H42 = MAX H42 (for MAX P22) (2) H43 = MAX H43 (for MAX P32) (2) H44 = MAX H44 (for MAX P42) (2)
Type of X drive	B = Toolhed belt
Type of X guide	R = Roller (for MAX P•2• - H41/H42/H43) B = Ball (for MAX P•2• - H42/H43/H44)
Stroke	•••• State the length in mm (maximum possible length depending on the model)
Type of Z axis	C41 = CAS 41 (for MAX P12) (2) C42 = CAS 42 (for MAX P22) (2) C43 = CAS 43 (for MAX P32) (2) C44 = CAS 44 (for MAX P42) (2) C31 = CAS 31 (for MAX P12) (2) C32 = CAS 32 (for MAX P22) (2) C34 = CAS 34 (for MAX P32) (2)
Type of Z drive	B = Toolhed belt
Type of Z guide	R = Roller (for MAX P•2• - H4•B••••• - C41/C42/C43) B = Ball (for MAX P•2• - H4•B••••• - C42/C43/C44) C = Ball (C3•)
Stroke of Z axis	•••• State the length in mm (maximum possible length depending on the model)
Planetary gearbox gear ratio + motor reference	State the planetary gearbox gear ratio and the complete motor reference at the end of the reference, in plain text, selected for the X axis and the Z axis. Example: + PLE60 3:1 + BMH 0702P01A2A for the each axes

(1) All technical data (characteristics, dimensions, etc.) for Lexium MAX Plinear positioners is available on our website www.schneider-electric.com
(2) Supplied with 2 PNP output sensors, NC contact, with a 0,1 m cable equipped with an M8 connector.
(3) Types of interface for the drive element:

MAX P•2R - ...



MAX P•2L - ...



Typecode of the Lexium MAXR•2 Series

Overview

To find your appropriate machine information, refer to the type plate located on your machine.

References (1)

MAX R•2 portal robot, complete each references by replacing the "•"

Example: MAX R 1 2 R - S41 B R 000 - H41 B R 1200
+ PLE60 3:1 + BMH 0702P01A2A
+ PLE60 3:1 + BMH 0702P01A2A

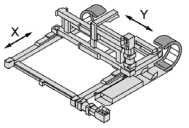
MAX R • 2 • - ••• B • •••• - ••• B • •••• + … + …

Size of X axis (profile cross-section)	1 = 40 x 40 mm (1.57 x 1.57 in) 2 = 60 x 60 mm (2.36 x 2.36 in) 3 = 80 x 80 mm (3.15 x 3.15 in) 4 = 110 x 110 mm (4.33 x 4.33)
Number of independet axes	2 axes = 1 X axis, 1 Y axis
Interface for the drive element (3)	R = Drive elements fixed on right-hand side L = Drive elements fixed on left-hand side
Type of X axis	S41 = MAX S41 (for MAX R 12) (2) S42 = MAX S42 (for MAX R 22) (2) S43 = MAX S43 (for MAX R 32) (2) S44 = MAX S44 (for MAX R 42) (2)
Type of X drive	B = Toolhed belt
Type of X guide	R = Roller (for MAX R•2• - S41/S42/S43) B = Ball (for MAX R•2• - S42/S43/S44)
Stroke	•••• State the length in mm (maximum possible length depending on the model)
Type of Y axis	H41 = MAX H41 (for MAX R12) (2) H42 = MAX H42 (for MAX R22) (2) H43 = MAX H43 (for MAX R32) (2) H44 = MAX H44 (for MAX R42) (2) P41 = PAS 41 (for MAX R12) (2) P42 = PAS 42 (for MAX R22) (2) P43 = PAS 43 (for MAX R32) (2)
Type of Y drive	B = Toolhed belt
Type of Y guide	R = Roller (for MAX R•2• - S4•B••••• - H41/H42/H43/P41/P42/P43) B = Ball (for MAX R•2• - S4•B••••• - H42/H43/H44/P42/P43/P44)
Stroke of Y axis	•••• State the length in mm (maximum possible length depending on the model)
Planetary gearbox gear ratio + motor reference	State the planetary gearbox gear ratio and the complete motor reference at the end of the reference, in plain text, selected for the X axis and the Yaxis. Example: + PLE60 3:1 + BMH 0702P01A2A for the each axis

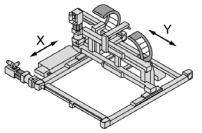
+ …
+ …

(1) All technical data (characteristics, dimensions, etc.) for Lexium MAXR•3 portal robots is available on our website www.schneider-electric.com
(2) Each axis is supplied with 2 PNP output sensors, NC contact, with a 0,1 m cable equipped with an M8 connector.
(3) Types of interface for the drive element.

MAX R•2R - ...



MAX R•2L - ...



Typecode Lexium MAXR•3 Series

Overview

To find your appropriate machine information, refer to the type plate located on your machine.

References (1)

MAXR•3 portal robot, complete each references by replacing the "•"

Example: MAX R 1 3 R - S41 B R 3000 - H41 B R 1200 - C31 B C 200

MAX R • 3 • - ••• B • •••• - ••• B • •••• - ••• B • •••• + …

Product designation (MAXR = Portal robot)	
Size of robot (profile cross-section)	1 = 40 x 40 mm (1.57 x 1.57 in) 2 = 60 x 60 mm (2.36 x 2.36 in) 3 = 80 x 80 mm (3.15 x 3.15 in) 4 = 110 x 110 mm (4.33 x 4.33 in)
Number of axes	3 independent axes = 1 X axis, 1 Y axis, 1 Z axis
Interface for the drive element (3)	R = Drive elements fixed on right-hand side L = Drive elements fixed on left-hand side
Type of X axis	S41 = MAX S41 (for MAX R13) (2) S42 = MAX S42 (for MAX R23) (2) S43 = MAX S43 (for MAX R33) (2) S44 = MAX S44 (for MAX R43) (2)
Type of X drive	B = Toolhed belt
Type of X guide	R = Roller (for MAXR•3• - S41/S42/S43) B = Ball (for MAXR•3• - S42/S43/S44)
Stroke of X axis	•••• State the length in mm (maximum possible length depending on the model)
Type of Y axis	H41 = MAX H41 (for MAX R13) (2) H42 = MAX H42 (for MAX R23) (2) H43 = MAX H43 (for MAX R33) (2) H44 = MAX H44 (for MAX R43) (2)
Type of Y drive	B = Toolhed belt
Type of Y guide	R = Roller (for MAX R•3• - S4•B••••• - H41/H42/H43) B = Ball (for MAX R•3• - S4•B••••• - H42/H43/H44)
Stroke of Y axis	•••• State the length in mm (maximum possible length depending on the model)
Type of Z axis	C41 = CAS 41 (for MAX R13) (2) C42 = CAS 42 (for MAX R23) (2) C43 = CAS 43 (for MAX R33) (2) C44 = CAS 44 (for MAX R43) (2) C31 = CAS 31 (for MAX R13) (2) C32 = CAS 32 (for MAX R23) (2) C34 = CAS 34 (for MAX R33) (2)
Type of Z drive	B = Toolhed belt
Type of Z guide	R = Roller (for MAX R•3• - S4•B••••• - H4•B••••• - C41/C42/C43) B = Ball (for MAX R•3• - S4•B••••• - H4•B••••• - C42/C43/C44) C = Ball (C3•)
Stroke of Z axis	•••• State the length in mm (maximum possible length depending on the model)
Planetary gearbox gear ratio + motor reference	State the planetary gearbox gear ratio and the complete motor reference at the end of the reference, in plain text, selected for the X axis, the Y axis and the Z axis. Example:+ PLE60 3:1 + BMH 0702P01A2A for the X axis

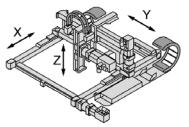
+ …
+ …
+ …

(1) All technical data (characteristics, dimensions, etc.) for Lexium MAX R•3 portal robots is available on our website www.schneider-electric.com

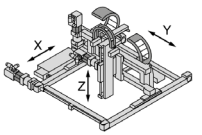
(2) Each axis is supplied with 2 PNP output sensors, NC contact, with a 0,1 m cable equipped with an M8 connector.

(3) Types of interface for the drive element.

MAX R•3R - ...



MAX R•3L - ...



Typecode Lexium MAXK• Series

Overview

Typecode MAXK

Multi Axis Type

Axis size

								1		2		3		4		1	2	3	4	n
Customer specific axes combination				MAXK	3	4	R	S	X	H	Y	C	Z	R	Z	42	42	32		

Size axis system	**1,2,3,4**	**1,2,3**	**0,1,2,3,4**
Based on the first axis	PAS,CAS4,CAS2,MAX	TAS41,42,43	CAS3

Number of axes 2,3,4,5,...

Location of electrical interface at first axis R = right L = left

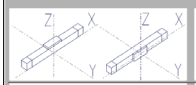
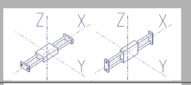
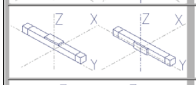
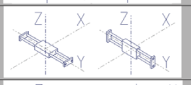
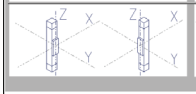
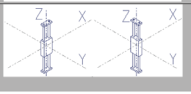
Axis type

Code	Axis type	Single axis / double axis / type	Drive element
P	Portal axis	Single axis	Toothed belt or ballscrew
H	Portal axis	Double axis with support axis	One axis driven
S	Portal axis	Double axis with synchronous shaft	Both axis driven
T	Linear table	Single axis	Ballscrew
C	Cantilever axis	Single axis	Toothed belt
F	Cantilever axis	Double axis with support axis	One axis driven
G	Cantilever axis	Double axis with synchroous shaft	Both axis driven
E	Telescop axis with boom	Single axis	Toothed belt
M	Telescop axis with carriage	Single axis	Toothed belt
K	Telescop axis with boom	Double axis with synchronous shaft	Both axis driven
R	Rotation axis		
N	Special axis, actuator,...		

Orientation

Character for orientation in space

Direction of movement
Linear axis
Orientation rotational axis

Portal axis	Cavtilever axis	Rotation axis	
			X
			Y
			Z

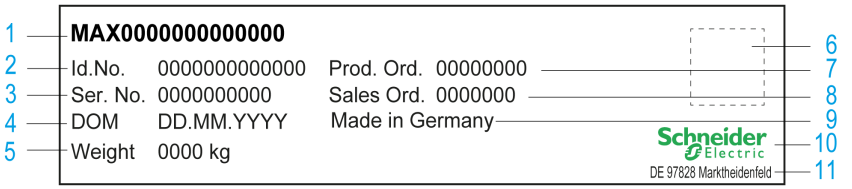
Size of the single axis (from the outside to the inside)	**PAS41-44**	**TAS41-43**	**CAS41-44**	**CAS30-34**	**MAXH / MAXS**	**Rotation axis**
Axis 1	41,42,43,44	41,42,43	41,42,43,44	30,31,32,33,34	41,42,43,44	none
Axis 2	41,42,43,44	41,42,43	41,42,43,44	30,31,32,33,34	41,42,43,44	none
Axis 3	41,42,43,44	41,42,43	41,42,43,44	30,31,32,33,34	41,42,43,44	none
Axis 4	41,42,43,44	41,42,43	41,42,43,44	30,31,32,33,34	41,42,43,44	none
Axis 5	41,42,43,44	41,42,43	41,42,43,44	30,31,32,33,34	41,42,43,44	none

Section 2.3
Typeplate

Typeplate Lexium MAX

Overview

The typeplate is positioned on the x-axis near the motor.



1 Device name
2 ID number
3 Serial number
4 Date of manufacture
5 Weight of product
6 Data matrix code
7 Product order number
8 Sales order number
9 Country of origin
10 Schneider Electric logo
11 Production site

Chapter 3
Technical Data of the Lexium MAX Series

What Is in This Chapter?

This chapter contains the following sections:

Section 3.1
Ambient Conditions

Ambient Conditions

Overview

Procedure	Parameter	Value	Specification
Operation	**Class 3 K3**		IEC/EN 60721-3-3
	Ambient temperature	0 °C ... +50°C / +32°F ... +122°F	
	Condensation	prohibited	
	Formation of ice	prohibited	
	Relative humidity	5% ... 85%	
Transport	**Class 2 K2**		IEC/EN 60721-3-2
	Ambient temperature	-25°C ... +70°C / -13°F ... +158°F	
	Condensation	prohibited	
	Formation of ice	prohibited	
	Other liquid	prohibited	
	Relative humidity	5% ... 85%	
Long-term storage in transport packaging	**Class 1 K3**		IEC/EN 60721-3-1
	Ambient temperature	-25...+55 °C (-13...+131 °F)	
	Condensation	prohibited	
	Formation of ice	prohibited	
	Other liquid	prohibited	
	Relative humidity	5% ... 85%	

NOTE: Store the portal robot in a clean and dry room.

Section 3.2
Positioning Accuracy and Motor

Positioning Accuracy and Repeatability

Overview

Positioning accuracy is the tolerance between the specified position and end position reached, measured at the carriage. To determine this value, the carriage is moved from different directions to the end position at different velocities.

Repeatability is the accuracy that allows to move back to a previous position again under the same conditions. To determine this value, the carriage is moved from the same direction to the end position at the same velocity.

Influencing Factors

Positioning accuracy and repeatability depend on various factors such as:

- Motor type
- Ambient temperature
- Load changes
- Different velocities
- Different accelerations
- Pitch of the toothed belt
- Stiffness of the toothed belt
- Accuracy of the switching point of the sensors
- Backlash of various components (for example, gearbox)
- Friction (for example, ball bearings, guide carriage, rollers, ball screw drive, toothed belt, cover strip)

Motor

For more information about the motor, refer to the corresponding *Motor Manual*.

Gearbox

For more information about the gearbox, refer to the corresponding *Gearbox Manual*.

Section 3.3
Mechanical Data of the Lexium MAXS• Series

What Is in This Section?

This section contains the following topics:

MAXS1•BR••••

Technical Data - MAXS1•BR••••

See dimensional drawing MB536.090-R/L

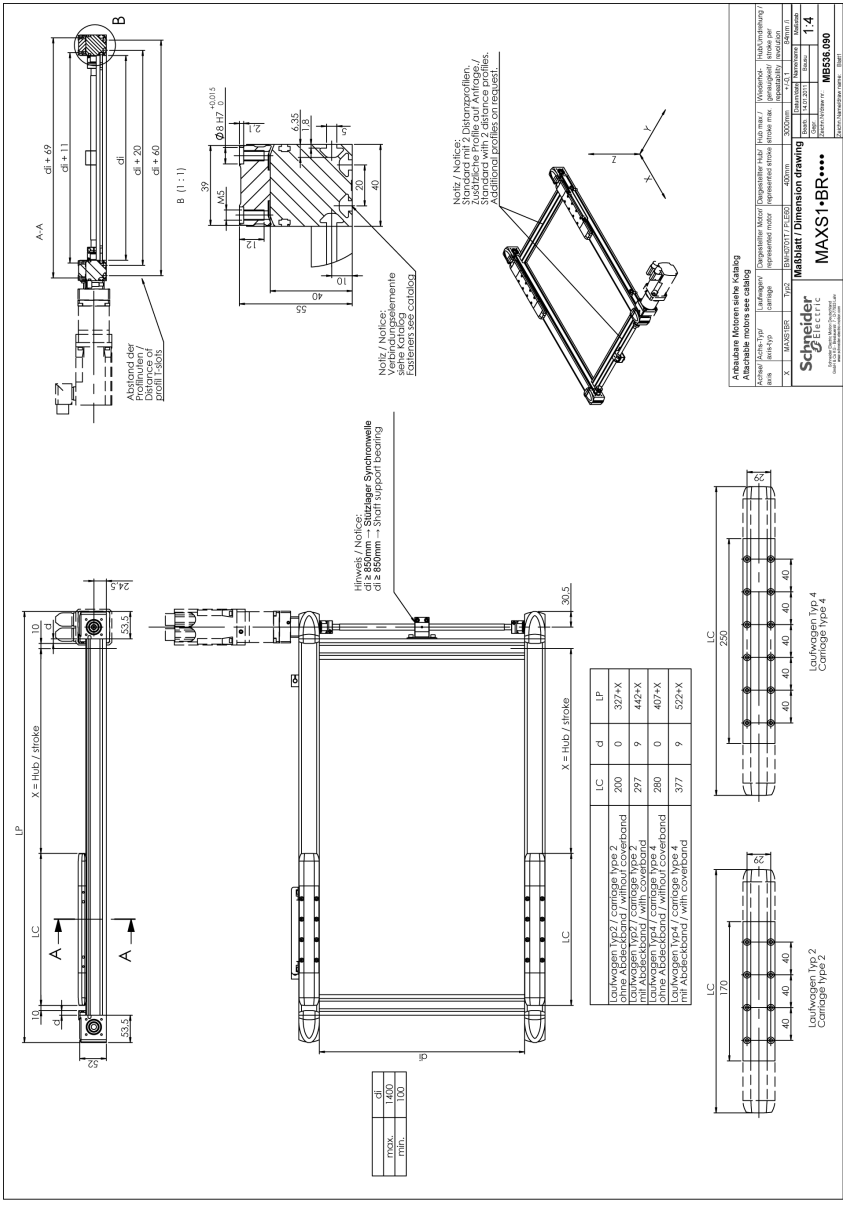
Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXS1BR	
		Carriage type 2	Carriage type 4
Toothed belt drive	–	15HTD-3M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	15 (33.06)	
Carriage length	mm (in)	297 (11.7) / 200 (7.9)	377 (14.8) / 280 (11.1)
Feed constant	mm/rev. (in/rev.)	84 (3.3)	
Effective diameter toothed belt pulley	mm (in)	26.738 (1.1)	
Maximum feed force Fx_{max}	N (lbf)	450 (101.16)	
Maximum velocity[1)]	m/s (ft/s)	8 (26.3)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	6 (53.10)	
Breakaway torque 0-stroke axis	Nm (lbf*in)	0.6 (5.31)	
Breakaway torque per additional pair of carriage	Nm (lbf*in)	0.2 (1.77)	
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	2.5 (0.85) / 2.2 (0.8)	3.0 (1.03) / 2.6 (0.88)
Moment of inertia synchronous shaft per m	kg*cm²/m (lb*in²/in)	0.14 (0.047)	
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	2.0 (0.68) / 1.6 (0.55)	2.4 (0.82) / 2.0 (0.68))
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	0.2 (0.06)	
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	1.8 (0.6)	
Max. force Fydynmax	N (lbf)	990 (222.6)	
Max. force Fzdynmax	N (lbf)	645 (145)	
Max. force Mydynmax	Nm (lbf*in)	22 (4.9)	56 (12.6)
Max. force Mzdynmax	Nm (lbf*in)	25 (221.26)	64 (566.44)

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS1BR	
		Carriage type 2	Carriage type 4
Max. force Mxdynmax related on distance (di) between axis body	Nm (lbf*in)	35 (309.8) (at di=120 mm (4.72 in))	
Mass 0 stroke axis	kg (lb)	4.0 (8.80) / 3.2 (7.1)	4.6 (10.1) / 3.8 (8.4)
Mass synchronous shaft and distance profiles per m	kg/m (lb/in)	3.1 (6.83)	
Mass per additional pair of carriage (with axis body)	kg (lb)	2.6 (5.73) / 1.8 (4.0)	3.2 (7.05) / 2.4 (5.3)
Mass per m of stroke	kg (lb)	4.5 (9.92)	
Moving mass pair of carriage	kg (lb)	1.2 (2.6) / 1.0 (2.2)	1.4 (3.1) / 1.2 (2.6)
Maximum stroke	mm (in)	2880 (113.39) / 3000 (118.1)	2800 (110.24) / 2920 (115)
Minimum stroke[2)]	mm (in)	125 (4.9)	
Minimum distance (di) between axis body	mm (in)	100 (3.94)	
Maximum distance (di) between axis body	mm (in)	1400 (55.11)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	
Diameter motor shaft	mm (in)	6.35...14 (0.25...0.55)	
Cross section axis body (W x H)	mm (in)	40 x 40 (1.6 x 1.6)	
Axial area moment of inertia	mm^4 (in^4)	153280 (6034.6) / 217860 (8577.1)	
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)	
Load rating linear guide Cstat	N (lbf)	8920 (2005.3)	
Load rating linear guide Cdyn	N (lbf)	15840 (3561)	
Service Life	km (mi)	30000 (18641)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide


Maßblatt / Dimension drawing
MAXS1•BR•••
MB536.090
Schneider ELECTRIC
Abstand der Profilnuten / Distance of profil slots
Hinweis / Notice: Stützlager Synchronwelle ab 850mm -- Shaft support bearing
Notiz / Notice: Verbindungselemente siehe Katalog fasteners see catalog
Notiz / Notice: Standard mit 2 Distanzprofilen. Zusätzliche Profile auf Anfrage. / Standard with 2 distance profiles. Additional profiles on request.
Laufwagen Typ 2 Carriage type 2
Laufwagen Typ 4 Carriage type 4
Laufwagen Typ2 / carriage type 2 ohne Abdeckband / without coverband
Laufwagen Typ2 / carriage type 2 mit Abdeckband / with coverband
Laufwagen Typ4 / carriage type 4 ohne Abdeckband / without coverband
Laufwagen Typ4 / carriage type 4 mit Abdeckband / with coverband

MAXS2•BR•••• and MAXS2•BB••••

Technical Data - MAXS2•BR••••

See dimensional drawing MB536.100-R/L.

Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXS2BR		
		Carriage type 1	Carriage type 2	Carriage type 4
Toothed belt drive	–	25HTD-5M		
Guide type	–	Roller guide		
Typical payload	kg (lb)	25 (55.11)		
Carriage length	mm (in)	303 (11.89) / 206 (8.11)	363 (14.29) / 266 (10.5)	483 (19.02) / 386 (15.2)
Feed constant	mm/rev. (in/rev.)	155 (6.10)		
Effective diameter toothed belt pulley	mm (in)	49.338 (1.9)		
Maximum feed force Fx_{max}	N (lbf)	1200 (269.77)		
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)		
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	30 (265.52)		
Breakaway torque 0-stroke axis	Nm (lbf*in)	2.4 (21.24)		
Breakaway torque per additional pair of carriage	Nm (lbf*in)	0.4 (3.5)		
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	19.0 (6.49) / 16.8 (5.7)	21.6 (7.38) / 19.4 (6.6)	27.2 (9.29) / 25.0 (8.5)
Moment of inertia synchronous shaft per m	kg*cm²/m (lb*in²/in)	0.94 (0.32)		
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	13.0 (4.44) / 10.8 (3.69)	15.8 (5.49) / 13.6 (4.64)	21.4 (7.31) / 19.2 (6.56)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	2.4 (0.82)		
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	6.1 (2.08)		
Max. force Fydynmax	N (lbf)	990 (222.6)		
Max. force Fzdynmax	N (lbf)	645 (145)		
Max. force Mydynmax	Nm (lbf*in)	36 (318.6)	62 (548.8)	112 (991.3)

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS2BR		
		Carriage type 1	Carriage type 2	Carriage type 4
Max. force Mzdynmax	Nm (lbf*in)	42 (371.73)	72 (637.25)	130 (1150.59)
Max. force Mxdynmax related on distance (di) between axis body	Nm (lbf*in)	45 (398.3) (at di=140 mm (5.5 in))		
Mass 0 stroke axis	kg (lb)	9.4 (20.7) / 7.8 (17.2)	10.4 (22.9) / 8.8 (196.4)	12.4 (27.3) / 10.8 (23.8)
Mass synchronous shaft and distance profiles per m	kg/m (lb/in)	6.2 (13.7)		
Mass per additional pair of carriage (with axis body)	kg (lb)	5.0 (11.02) / 3.8 (8.4)	6.0 (13.22) / 4.8 (10.6)	7.8 (17.20) / 6.6 (14.6)
Mass per m of stroke	kg/m (lb/in)	9.2 (20.28)		
Moving mass pair of carriage	kg (lb)	2.2 (4.85) / 1.8 (4.0)	2.6 (5.73) / 2.4 (5.3)	3.6 (7.94) / 3.2 (7.1)
Maximum stroke	mm (in)	5540 (218.11) / 5660 (222.8)	5480 (215.75) / 5600 (220.5)	5360 (211.02) / 5480 (215.7)
Minimum stroke[2)]	mm (in)	130 (5.11)		
Minimum distance (di) between axis body	mm (in)	110 (4.33)		
Maximum distance (di) between axis body	mm (in)	1800 (70.86)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		
Diameter motor shaft	mm (in)	6.35...20 (0.25...0.79)		
Cross section axis body (W x H)	mm (in)	60 x 60 (2.36 x 2.36)		
Axial area moment of inertia (Ix / Iy	mm^4 (in^4)	870780 (34282.6) / 1303220 (51307.7)		
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)		
Load rating linear guide Cstat	N (lbf)	8920 (2005.3)		
Load rating linear guide Cdyn	N (lbf)	15840 (3561)		
Service Life	km (mi)	30000 (18641)		
1) Depending on load, stroke and length of synchronous shaft **2)** Minimum stroke required for lubrication of the linear guide				

Technical Data - MAXS2•BB••••

See dimensional drawing MB536.100-R/L.

Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXS2BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Toothed belt drive	–	25HTD-5M		
Guide type	–	Ball bearing guide		
Typical payload	kg (lb)	75 (165.4)		
Carriage length	mm (in)	303 (11.9) / 206 (8.1)	363 (14.3) / 266 (10.5)	483 (19) / 386 (15.2)
Feed constant	mm/rev. (in/rev.)	155 (6.10)		
Effective diameter toothed belt pulley	mm (in)	49.338 (1.9)		
Maximum feed force Fx_{max}	N (lbf)	1200 (269.8)		
Maximum velocity[1)]	m/s (ft/s)	5 (16.4)		
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)		
Maximum driving torque M_{max}	Nm (lbf*in)	30 (265.5)		
Breakaway torque 0-stroke axis	Nm (lbf*in)	3.6 (31.9)		
Breakaway torque per additional pair of carriage	Nm (lbf*in)	1.6 (14.2)		
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	20.6 (7.1) / 18.4 (6.3)	22.6 (7.7) / 20.4 (7.0)	27.5 (9.4) / 25.0 (8.5)
Moment of inertia synchronous shaft per m	kg*cm²/m (lb*in²/in)	0.94 (0.32)		
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	14.6 (5) / 12.4 (4.2)	16.8 (5.7) / 14.6 (5)	21.4 (7.3) / 19.2 (6.6)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	2.4 (0.8)		
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	6.1 (2.1)		
Max. force Fydynmax	N (lbf)	4215 (947.6)		
Max. force Fzdynmax	N (lbf)	4215 (947.6)		
Max. force Mydynmax	Nm (lbf*in)	148 (1310)	388 (3434.1)	724 (6407.9)
Max. force Mzdynmax	Nm (lbf*in)	110 (973.6)	290 (2566.7)	543 (4806)
Max. force Mxdynmax related on distance (di) between axis bodies	Nm (lbf*in)	280 (2478.2) (at di=140 mm (5.5 in))		
Mass 0 stroke axis	kg (lb)	10.2 (22.5) / 8.6 (19)	11.2 (24.7) / 9.6 (21.2)	13.2 (29.1) / 11.6 (25.6)

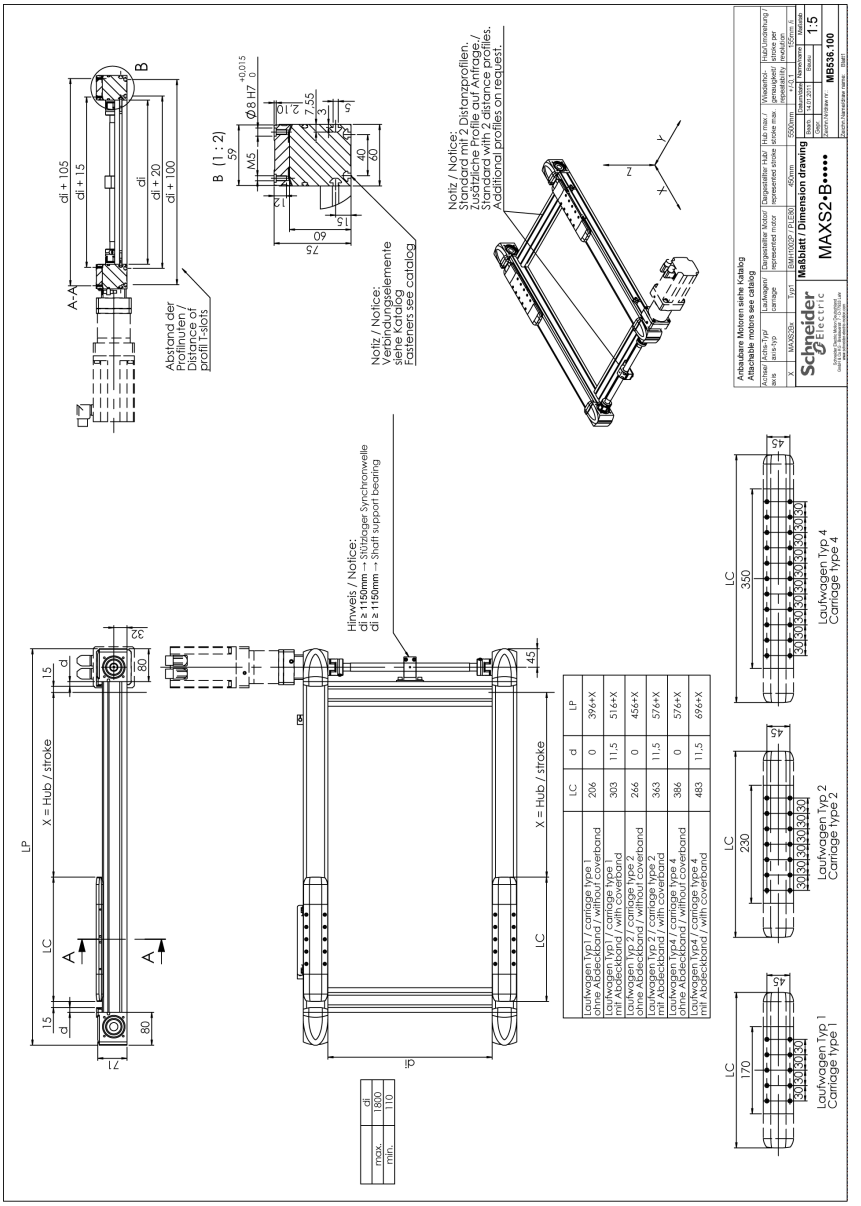
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS2BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Mass synchronous shaft and distance profiles per m	kg/m (lb/in)	6.2 (13.7)		
Mass of additional pair of carriage (with axis body)	kg (lb)	5.8 (12.8) / 4.4 (9.7)	6.8 (15) / 5.4 (12)	8.8 (19.4) / 7.4 (16.3)
Mass per m of stroke	kg/m (lb/in)	11.2 (24.7)		
Moving mass pair of carriage	kg (lb)	2.4 (5.3) / 2.0 (4.4)	2.8 (6.1) / 2.4 (5.3)	3.6 (7.9) / 3.2 (7.1)
Maximum stroke	mm (in)	5540 (218.1) / 5660 (222.8)	5480 (215.7) / 5600 (220.5)	5360 (211) / 5480 (215.7)
Minimum stroke[2)]	mm (in)	9 (0.35)		
Minimum distance (di) between axis bodies	mm (in)	110 (4.33)		
Maximum distance (di) between axis bodies	mm (in)	1800 (70.86)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		
Diameter motor shaft	mm (in)	6.35...20 (0.25...0.79)		
Cross section axis bodies (W x H)	mm (in)	60 x 60 (2.36 x 2.36)		
Axial area moment of inertia (Ix / Iy)	mm^4 (in^4)	870780 (34282.6) / 1303220 (51307.7)		
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)		
Load rating linear guide Cstat	N (lbf)	96800 (21761.51)		
Load rating linear guide Cdyn	N (lbf)	56800 (12769.15)		
Service Life	km (mi)	30000 (18641)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.100-R/L



	LC	d	LP
Laufwagen Typ1 / carriage type 1 ohne Abdeckband / without coverband	206	0	394+X
Laufwagen Typ1 / carriage type 1 mit Abdeckband / with coverband	303	11.5	516+X
Laufwagen Typ 2 / carriage type 2 ohne Abdeckband / without coverband	266	0	456+X
Laufwagen Typ 2 / carriage type 2 mit Abdeckband / with coverband	363	11.5	576+X
Laufwagen Typ4 / carriage type 4 ohne Abdeckband / without coverband	386	0	576+X
Laufwagen Typ4 / carriage type 4 mit Abdeckband / with coverband	483	11.5	696+X

	di
max.	1800
min.	110

MAXS3•BR•••• and MAXS3•BB••••

Technical Data - MAXS3•BR••••

See dimensional drawing MB536.110-R/L.

Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXS3BR		
		Carriage type 1	Carriage type 2	Carriage type 4
Toothed belt drive	–	30HTD-5M		
Guide type	–	Roller guide		
Typical payload	kg (lb)	50 (110.23)		
Carriage length	mm (in)	364 (14.33) / 244 (9.60)	434 (17.09) / 314 (12.36)	574 (22.6) / 454 (17.87)
Feed constant	mm/rev. (in/rev.)	205 (8.07)		
Effective diameter toothed belt pulley	mm (in)	65.254 (2.57)		
Maximum feed force Fx_{max}	N (lbf)	1650 (371)		
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)		
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	54 (478)		
Breakaway torque 0-stroke axis	Nm (lbf*in)	5 (44.25)		
Breakaway torque per additional pair of carriage	Nm (lbf*in)	0.6 (5.31)		
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	74.1 (25.32) / 64.3 (21.97)	84.0 (28.70) / 75.2 (25.7)	106.2 (36.29) / 94.4 (32.26)
Moment of inertia synchronous shaft per m	kg*cm²/m (lb*in²/in)	4.37 (1.5)		
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	48.8 (16.68) / 40.2 (13.74)	58.4 (19.96) / 49.8 (17.02)	77.8 (26.59) / 69.2 (23.65)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	5.0 (1.7)		
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	10.7 (3.65)		
Max. force Fydynmax	N (lbf)	2640 (593.5)		
Max. force Fzdynmax	N (lbf)	1560 (350.7)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS3BR		
		Carriage type 1	Carriage type 2	Carriage type 4
Max. torque Mydynmax	Nm (lbf*in)	102 (902.77)	174 (1540.03)	320 (2832.24)
Max. torque Mzdynmax	Nm (lbf*in)	129 (1141.75)	220 (1947.17)	405 (3584.55)
Max. torque Mxdynmax related on distance (di) between axis body	Nm (lbf*in)	125 (1106.34) (at di=160 mm (6.3 in))		
Mass 0 stroke axis	kg (lb)	21.2 (46.7) / 17.8 (39.24)	23.2 (51.15) / 19.8 (43.65)	27.2 (60) / 23.8 (52.5)
Mass synchronous shaft and distance profiles per m	kg/m (lb/in)	12.2 (26.9)		
Mass per additional pair of carriage (with axis body)	kg (lb)	10.4 (22.93) / 7.6 (16.76)	12.4 (27.34) / 9.6 (21.16)	16.4 (36.15) / 13.6 (29.98)
Mass per m of stroke	kg/m (lb/in)	16.0 (35.27)		
Moving mass pair of carriage	kg (lb)	4.6 (10.14) / 3.8 (8.38)	5.6 (12.35) / 4.8 (10.58)	7.4 (16.31) / 6.6 (14.55)
Maximum stroke	mm (in)	5450 (214.57) / 5600 (220.5)	5380 (211.81) / 5530 (217.7)	5240 (206.3) / 5390 (212.2)
Minimum stroke[2)]	mm (in)	175 (6.89)		
Minimum distance (di) between axis body	mm (in)	120 (4.72)		
Maximum distance (di) between axis body	mm (in)	2300 (90.6)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		
Diameter motor shaft	mm (in)	12...25 (0.47 ... 0.98)		
Cross section axis body (W x H)	mm (in)	80 x 80 (3.14 x 3.14)		
Axial area moment of inertia (Ix / Iy)	mm^4 (in^4)	2570520 (101201.3) / 3734420 (147024)		
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)		
Load rating linear guide Cstat	N (lbf)	19400 (4361.3)		
Load rating linear guide Cdyn	N (lbf)	34000 (7643.5)		
Service Life	km (mi)	30000 (18641)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXS3•BB••••

See dimensional drawing MB536.110-R/L.

Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXS3BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Toothed belt drive	–	30HTD-5M		
Guide type	–	Ball bearing guide		
Typical payload	kg (lb)	180 (396.8)		
Carriage length	mm (in)	364 (14.3) / 244 (9.60)	434 (17.1) / 314 (12.36)	574 (22.6) / 454 (17.87)
Feed constant	mm/rev. (in/rev.)	205 (8.07)		
Effective diameter toothed belt pulley	mm (in)	65.254 (2.45)		
Maximum feed force Fx_{max}	N (lbf)	1650(371)		
Maximum velocity[1)]	m/s (ft/s)	5 (16.4)		
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)		
Maximum driving torque M_{max}	Nm (lbf*in)	54 (478)		
Breakaway torque 0-stroke axis	Nm (lbf*in)	7 (62)		
Breakaway torque per additional pair of carriage	Nm (lbf*in)	2.6 (23)		
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	78.0 (26.7) / 69.2 (23.6)	86.0 (29.4) / 77.2 (26.4)	104.8 (35.8) / 96.0 (32.8)
Moment of inertia synchronous shaft per m	kg*cm²/m (lb*in²/in)	4.37 (1.5)		
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	52.4 (17.9) / 43.8 (15)	60.4 (20.6) / 51.8 (17.7)	79.8 (27.3) / 71.2 (24.3)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	5.0 (1.7)		
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	10.7 (3.65)		
Max. force Fydynmax	N (lbf)	6615 (1487.1)		
Max. force Fzdynmax	N (lbf)	6615 (1487.1)		
Max. force Mydynmax	Nm (lbf*in)	324 (2867.64)	758 (6947.83)	1374 (12160.92)
Max. force Mzdynmax	Nm (lbf*in)	243 (2150.7)	568 (5027)	1030 (9116.3)
Max. force Mxdynmax related on distance (di) between axis bodies	Nm (lbf*in)	530 (4690.89) (at di=160 mm (6.3 in))		

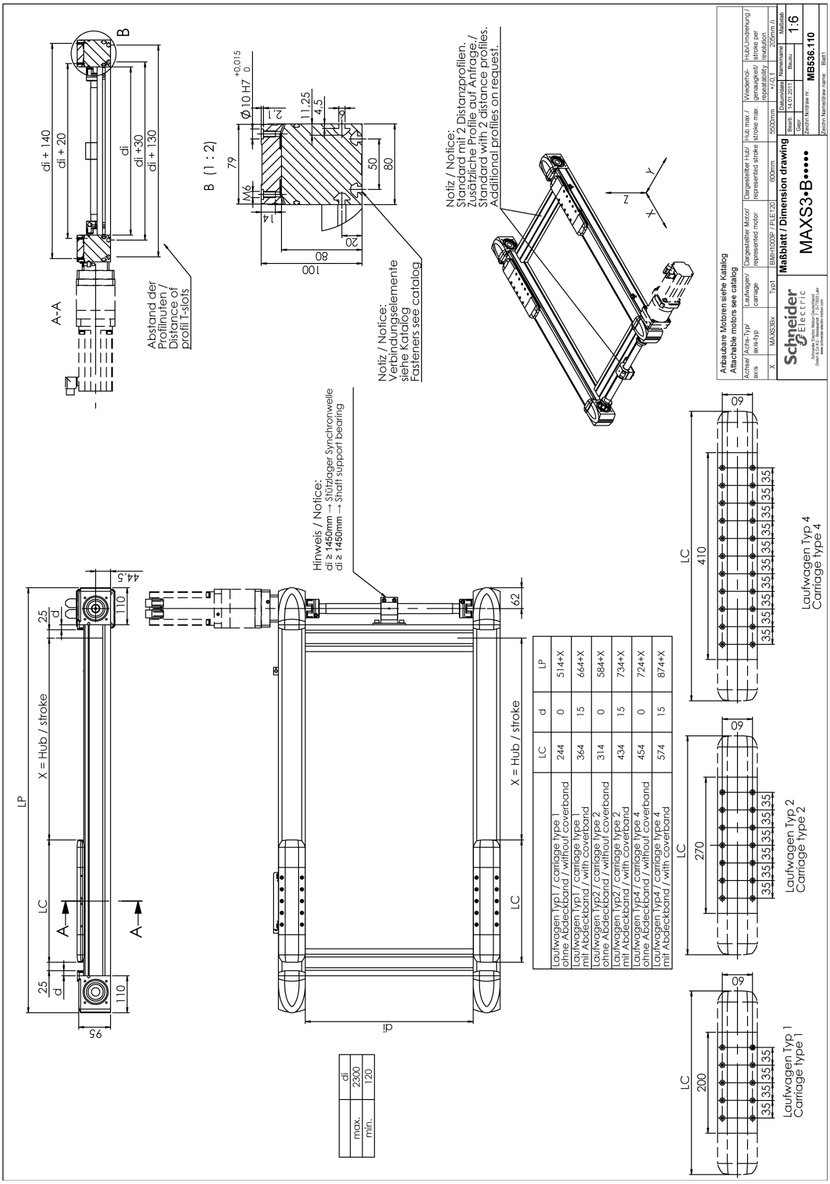
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS3BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Mass 0 stroke axis	kg (lb)	23.6 (52.3) / 19.8 (43.7)	25.2 (55.6) / 21.4 (47.2)	29.2 (64.4) / 25.4 (55.6)
Mass synchronous shaft and distance profiles per m	kg/m (lb/ft)	12.2 (26.9)		
Mass of additional pair of carriage (with axis body)	kg (lb)	11.8 (26) / 8.6 (18.95)	14.0 (30.9) / 10.8 (23.80)	18.2 (40.1) / 15.0 (33.06)
Mass per m of stroke	kg/m (lb/ft)	19 (41.9)		
Moving mass pair of carriage	kg (lb)	5.0 (11) / 4.2 (9.25)	5.8 (12.8) / 5.0 (11.02)	7.6 (16.8) / 6.8 (14.99)
Maximum stroke	mm (in)	5450 (214.6) / 5600 (220.5)	5380 (211.8) / 5530 (217.7)	5240 (206.3) / 5390 (212.2)
Minimum stroke[2)]	mm (in)	11 (0.43)		
Minimum distance (di) between axis bodies	mm (in)	120 (4.72)		
Maximum distance (di) between axis bodies	mm (in)	2300 (90.6)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		
Diameter motor shaft	mm (in)	12...25 (0.47...0.98)		
Cross section axis bodies (W x H)	mm (in)	80 x 80 (3.14 x 3.14)		
Axial area moment of inertia (Ix / Iy)	mm^4 (in^4)	2570520 (101201.3) / 3734420 (147024)		
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)		
Load rating linear guide Cstat	N (lbf)	153600 (34530.65		
Load rating linear guide Cdyn	N (lbf)	89200 (20053)		
Service Life	km (mi)	30000 (18641)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.110-R/L



MAXS4•BB••••

Technical Data - MAXS4•BB••••

See dimensional drawing MB536.120-R/L.

Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXS44BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Toothed belt drive	–	50HTD-8M		
Guide type	–	Ball bearing guide		
Typical payload	kg (lb)	300 (661.39)		
Carriage length	mm (in)	470 (18.50) / 310 (12.20)	560 (22.05) / 400 (15.75)	740 (29.13) / 580 (22.83)
Feed constant	mm/rev. (in/rev.)	264 (10.4)		
Effective diameter toothed belt pulley	mm (in)	84.034 (3.31)		
Maximum feed force Fx_{max}	N (lbf)	3900 (876.75)		
Maximum velocity[1)]	m/s (ft/s)	5 (16.4)		
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)		
Maximum driving torque M_{max}	Nm (lbf*in)	165 (1460.37)		
Breakaway torque 0-stroke axis	Nm (lbf*in)	9 (79.66)		
Breakaway torque per additional pair of carriage	Nm (lbf*in)	4.2 (37.17)		
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	264.1 (90.25) / 231.9 (79.24)	295.7 (101.05) / 263.5 (90.04)	360.1 (123.05) / 327.9 (112.05)
Moment of inertia synchronous shaft per m	kg*cm²/m (lb*in²/in)	11.65 (83.0)		
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	179.2 (61.24) / 147.0 (50.23)	210.8 (72.03) / 178.6 (61.03)	275.2 (94.04) / 243.0 (83.04)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	22.4 (7.65)		
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	17.7 (6.05)		
Max. force Fydynmax	N (lbf)	9405 (2114.33)		

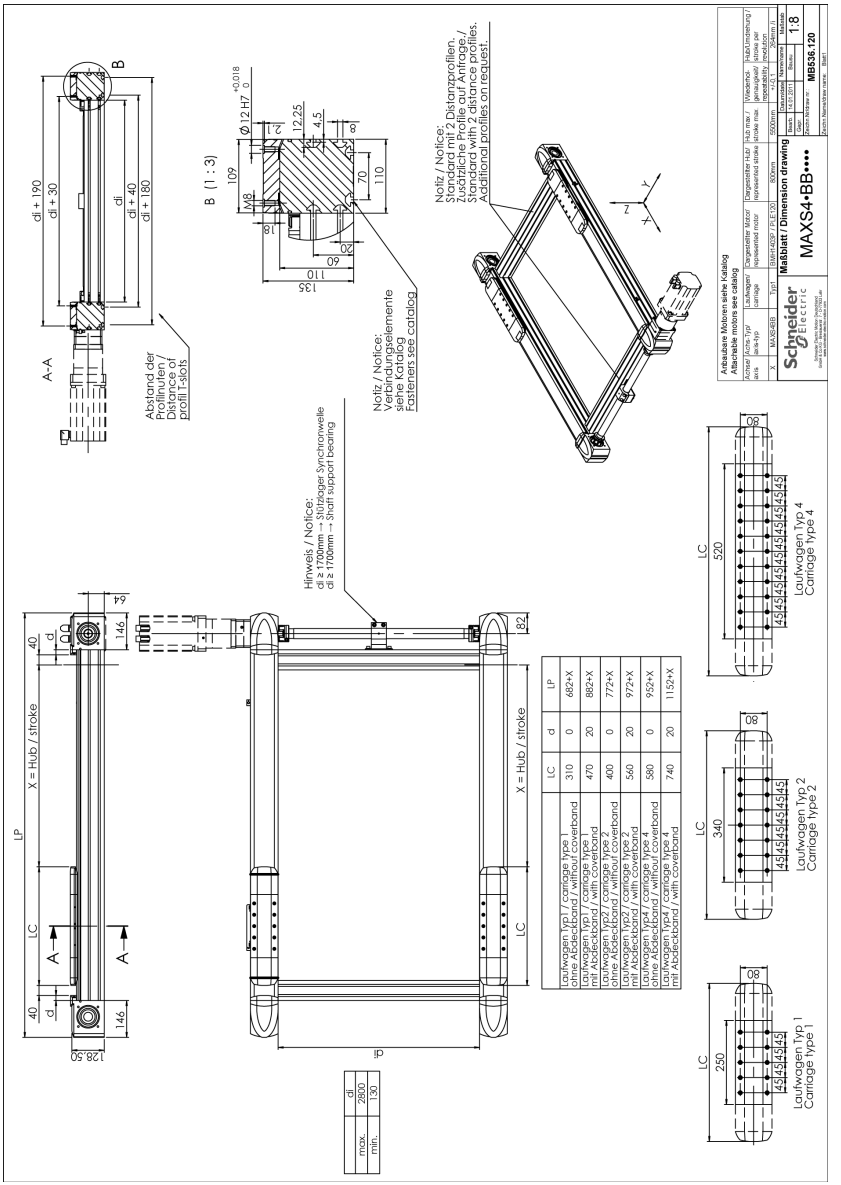
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS44BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Max. force Fzdynmax	N (lbf)	9405 (2114.33)		
Max. force Mydynmax	Nm (lbf*in)	512 (4531.58)	1310 (11594.48)	2418 (21401.11)
Max. force Mzdynmax	Nm (lbf*in)	384 (3398.69)	982 (8691.44)	1813 (16046.41)
Max. force Mxdynmax related on distance (di) between axis bodies	Nm (lbf*in)	910 (8054.18) (at di=180 mm (7.09 in))		
Mass 0 stroke axis	kg (lb)	50.8 (112) / 42 (92.6)	55.6 (122.6) / 46.8 (103.2)	65 (143.3) / 56.2 (123.9)
Mass synchronous shaft and distance profiles per m	kg/m (lb/ft)	19.4 (43.43)		
Mass of additional pair of carriage (with axis body)	kg (lb)	25.8 (56.88) / 18.6 (41.0)	36.6 (80.69) / 23.4 (51.59)	40.2 (88.63) / 33.0 (72.75)
Mass per m of stroke	kg/m (lb/in)	33.8 (74.52)		
Moving mass pair of carriage	kg (lb)	10.2 (22.49) / 8.4 (34.39)	12.0 (18.52) / 10.2 (22.49)	15.6 (26.46) / 13.8 (30.42)
Maximum stroke	mm (in)	5310 (209.05) / 5510 (216.93)	5220 (205.51) / 5420 (213.39)	5040 (198.42) /5240 (206.3)
Minimum stroke[2)]	mm (in)	13 (0.51)		
Minimum distance (di) between axis bodies	mm (in)	130 (5.11)		
Maximum distance (di) between axis bodies	mm (in)	2800 (110.24)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		
Diameter motor shaft	mm (in)	12...32 (0.47...)		
Cross section axis bodies (W x H)	mm (in)	110 x 110 (4.33 x 4.33)		
Axial area moment of inertia (Ix / Iy)	mm^4 (in^4)	9426980 (371139.8) / 13249380 (521627.6)		
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)		
Load rating linear guide Cstat	N (lbf)	209600 (47119.95)		
Load rating linear guide Cdyn	N (lbf)	126800 (28505.78)		
Service Life	km (mi)	30000 (18641)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.12-R/L



LC	di	LP
310	0	682+X
470	20	882+X
400	0	772+X
560	20	972+X
580	0	952+X
740	20	1152+X

	di
max.	2800
min.	130

Section 3.4
Mechanical Data of the Lexium MAXH• Series

What Is in This Section?

This section contains the following topics:

MAXH1•BR••••

Technical Data - MAXH1•BR••••

See dimensional drawing MB536.010-R/L.

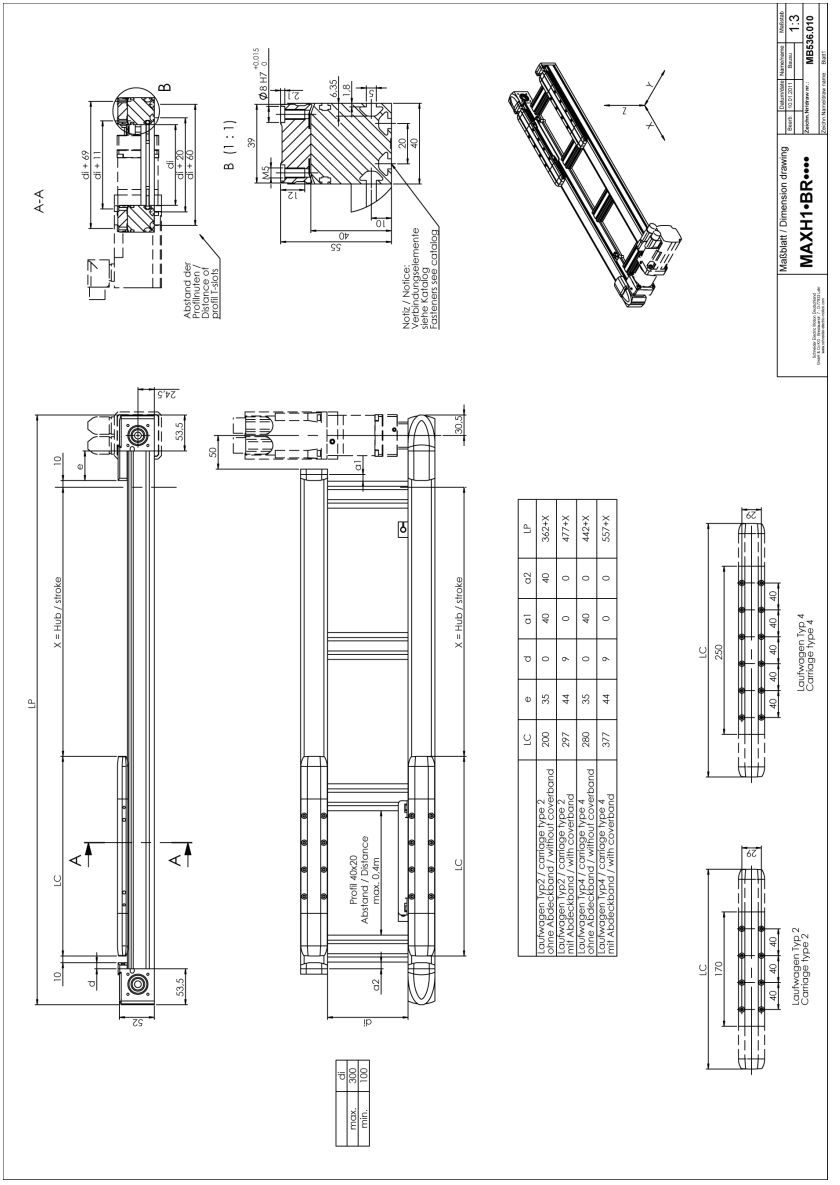
Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXH1BR	
		Carriage type 2	Carriage type 4
Toothed belt drive	–	15HTD-3M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	12 (26.5)	
Carriage length	mm (in)	297 (11.69) / 200 (7.9)	377 (14.84) / 280 (11.1)
Feed constant	mm/rev. (in/rev.)	84 (3.3)	
Effective diameter toothed belt pulley	mm (in)	26.738 (1.1)	
Maximum feed force Fx_{max}	N (lbf)	300 (67.4)	
Maximum velocity[1)]	m/s (ft/s)	8 (26.3)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	4 (35.4)	
Breakaway torque 0-stroke axis	Nm (lbf*in)	0.4 (3.5)	
Breakaway torque per additional pair of carriage	Nm (lbf*in)	0.2 (1.8)	
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	2.2 (0.8) / 1.8 (0.6)	2.6 (0.89) / 2.2 (0.8)
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	2.0 (0.68) / 1.6 (0.55)	2.4 (0.82) / 2.0 (0.68)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	0.1 (0.03)	
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	1.8 (0.6)	
Max. force Fydynmax	N (lbf)	990 (222.6)	
Max. force Fzdynmax	N (lbf)	645 (145)	
Max. force Mydynmax	Nm (lbf*in)	22 (4.9)	56 (12.6)
Max. force Mzdynmax	Nm (lbf*in)	17 (3.8)	43 (9.7)
Max. force Mxdynmax related on distance (di) between axis body	Nm (lbf*in)	35 (309.8) (at di=120 mm (4.72 in))	
Mass 0 stroke axis	kg (lb)	3.7 (8.16) / 2.9 (6.4)	4.1 (9.04) / 3.3 (7.3)

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXH1BR	
		Carriage type 2	Carriage type 4
Mass per additional pair of carriage (with axis body)	kg (lb)	2.6 (5.73) / 1.8 (4.0)	3.2 (7.05) / 2.4 (5.3)
Mass per m of stroke	kg/m (lb/in)	4.5 (9.8)	
Moving mass pair of carriage	kg (lb)	1.2 (2.6) / 1.0 (2.2)	1.4 (3.1) / 1.2 (2.6)
Maximum stroke	mm (in)	2880 (113.39) / 3000 (118.1)	2800 (110.24) / 2920 (115)
Minimum stroke[2)]	mm (in)	125 (4.9)	
Minimum distance (di) between axis body	mm (in)	100 (3.94)	
Maximum distance (di) between axis body	mm (in)	300 (11.81)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	
Diameter motor shaft	mm (in)	6.35 ... 14 (0.25 ... 0.55)	
Cross section axis body (W x H)	mm (in)	40 x 40 (1.6 x 1.6)	
Axial area moment of inertia (Ix / Iy)	mm^4 (in^4)	153280 (6034.6) / 217860 (8577.1)	
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)	
Load rating linear guide Cstat	N (lbf)	8920 (2005.3)	
Load rating linear guide Cdyn	N (lbf)	8920 (2005.3)	
Service life	km (mi)	30000 (18641)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide



	LC	e	d	o1	o2	LP
Laufwagen Typ2 / carriage type 2 ohne Abdeckband / without coverband	200	35	0	40	40	362+X
Laufwagen Typ2 / carriage type 2 mit Abdeckband / with coverband	297	44	9	0	0	477+X
Laufwagen Typ4 / carriage type 4 ohne Abdeckband / without coverband	280	35	0	40	0	442+X
Laufwagen Typ4 / carriage type 4 mit Abdeckband / with coverband	377	44	9	0	0	557+X

	dl
max.	300
min.	100

MAXH2•BR•••• and MAXH2•BB••••

Technical Data - MAXH2•BR••••

See dimensional drawing MB536.020-R/L.

Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXH2BR		
		Carriage type 1	Carriage type 2	Carriage type 4
Toothed belt drive	–	25HTD-5M		
Guide type	–	Roller guide		
Typical payload	kg (lb)	20 (44.1)		
Carriage length	mm (in)	303 (11.93) / 206 (8.11)	363 (14.29) / 266 (10.5)	483 (19.02) / 386 (15.2)
Feed constant	mm/rev. (in/rev.)	155 (6.10)		
Effective diameter toothed belt pulley	mm (in)	49.338 (1.9)		
Maximum feed force Fx_{max}	N (lbf)	800 (179.9)		
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)		
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	20 (4.5)		
Breakaway torque 0-stroke axis	Nm (lbf*in)	1.4 (0.3)		
Breakaway torque per additional pair of carriage	Nm (lbf*in)	0.4 (3.5)		
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	15.3 (5.23) / 13.1 (4.48)	18.0 (6.15) / 15.8 (5.4)	23.6 (8.06) / 21.4 (7.31)
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	13.0 (4.44) / 10.8 (3.7)	15.8 (5.4) / 13.6 (4.65)	21.4 (7.31) / 19.2 (6.56)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	1.2 (0.41)		
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	6.1 (2.08)		
Max. force Fydynmax	N (lbf)	990 (222.6)		
Max. force Fzdynmax	N (lbf)	645 (145)		
Max. force Mydynmax	Nm (lbf*in)	36 (318.6)	62 (548.8)	112 (991.3)
Max. force Mzdynmax	Nm (lbf*in)	28 (247.8)	48 (424.8)	87 (770)

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXH2BR		
		Carriage type 1	Carriage type 2	Carriage type 4
Max. force Mxdynmax related on distance (di) between axis body	Nm (lbf*in)	45 (398.3) (at di=140 mm (5.5 in))		
Mass 0 stroke axis	kg (lb)	8.0 (17.63) / 7.0 (15.4)	9.5 (20.95) / 8.0 (17.6)	11.5 (25.35) / 10.0 (22.1)
Mass per additional pair of carriage (with axis body)	kg (lb)	5.0 (11.02) / 3.8 (8.4)	6.0 (13.23) / 4.8 (10.6)	7.8 (17.2) / 6.6 (14.6)
Mass per m of stroke	kg/m (lb/in)	9.2 (20.3)		
Moving mass pair of carriage	kg (lb)	2.2 (4.85) / 1.8 (4.0)	2.6 (5.73) / 2.4 (5.3)	3.6 (7.94) / 3.2 (7.1)
Maximum stroke	mm (in)	5540 (218.11) / 5660 (222.8)	5480 (215.7) / 5600 (220.5)	5360 (211.02) / 5480 (215.7)
Minimum stroke[2)]	mm (in)	130 (5.11)		
Minimum distance (di) between axis body	mm (in)	110 (4.33)		
Maximum distance (di) between axis body	mm (in)	400 (15.75)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		
Diameter motor shaft	mm (in)	6.35 ... 20 (0.25 ... 0.79)		
Cross section axis body (W x H)	mm (in)	60 x 60 (2.36 x 2.36)		
Axial area moment of inertia (Ix / Iy)	mm^4 (in^4)	870780 (34282.6) / 1303220 (51307.7)		
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)		
Load rating linear guide Cstat	N (lbf)	8920 (2005.3)		
Load rating linear guide Cdyn	N (lbf)	15840 (3561)		
Service life	km (mi)	30000 (18641)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXH2•BB••••

See dimensional drawing MB536.020-R/L.

Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXH2BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Toothed belt drive	–	25HTD-5M		
Guide type	–	Ball bearing guide		
Typical payload	kg (lb)	65 (143.3)		
Carriage length	mm (in)	303 (11.93) / 206 (8.11)	363 (14.29) / 266 (10.5)	483 (19.02) / 386 (15.2)
Feed constant	mm/rev. (in/rev.)	155 (6.10)		
Effective diameter toothed belt pulley	mm (in)	49.338 (1.9)		
Maximum feed force Fx_{max}	N (lbf)	800 (179.9)		
Maximum velocity[1)]	m/s (ft/s)	5 (16.4)		
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)		
Maximum driving torque M_{max}	Nm (lb*in)	20 (4.5)		
Breakaway torque 0-stroke axis	Nm (lbf*in)	2.6 (23.01)		
Breakaway torque per additional pair of carriage	Nm (lbf*in)	1.6 (14.16)		
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	16.9 (5.78) / 14.7 (5.02)	19.0 (6.49) /16.8 (5.75)	24.6 (8.4) / 22.4 (7.65)
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	14.6 (5.0) / 12.4 (4.24)	16.8 (5.75) / 14.6 (5.0)	22.4 (7.66) / 20.2 (6.9)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	1.2 (0.41)		
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	6.1 (2.08)		
Max. force Fydynmax	N (lbf)	4215 (947.56)		
Max. force Fzdynmax	N (lbf)	4215 (947.56)		
Max. force Mydynmax	Nm (lbf*in)	148 (1309.9	388 (3434.1)	724 (6407.9)
Max. force Mzdynmax	Nm (lbf*in)	74 (654.95)	194 (1717.04)	362 (3203.96)
Max. force Mxdynmax related on distance (di) between axis body	Nm (lbf*in)	280 (2478.2) (at di=140 mm (5.5 in))		
Mass 0 stroke axis	kg (lb)	9.5 (21.0) / 7.8 (17.2)	10.5 (23.14) /8.8 (19.4)	12.5 (27.56) / 10.8 (23.8)

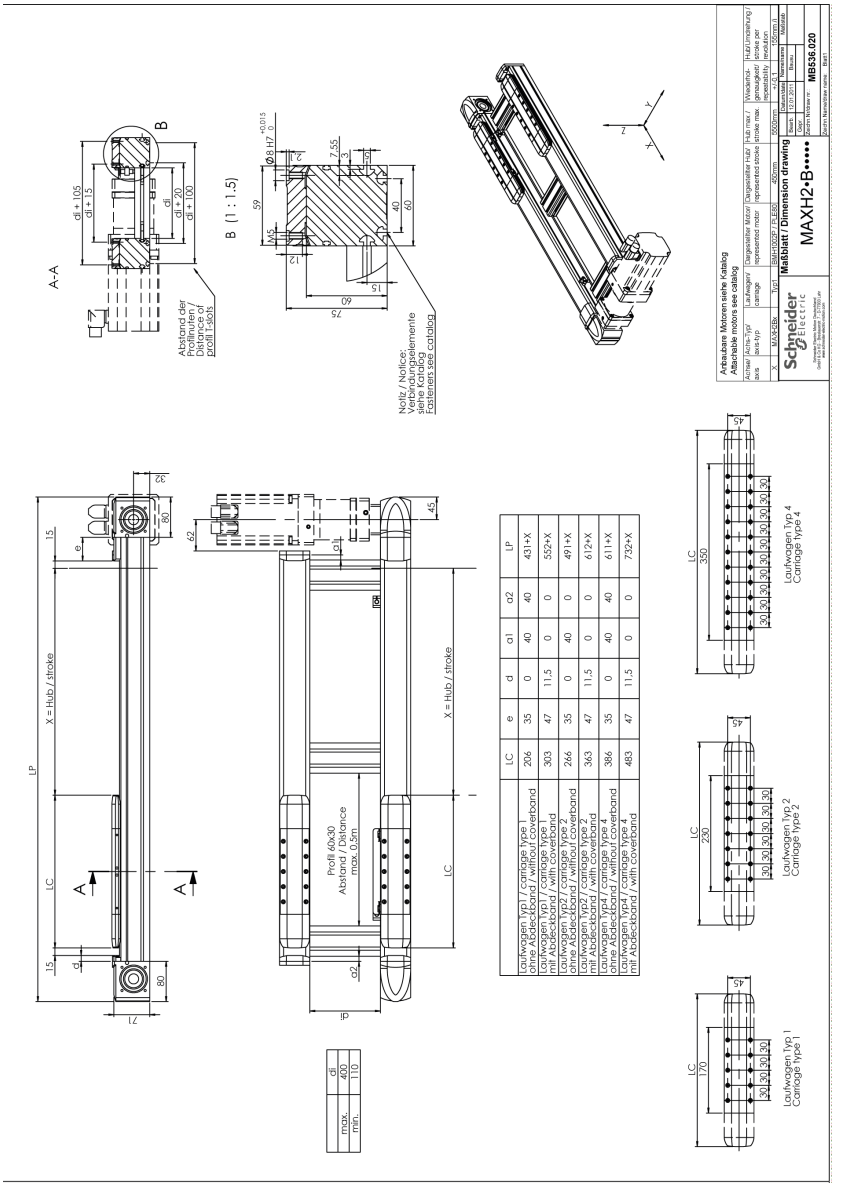
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXH2BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Mass per additional pair of carriage (with axis body)	kg (lb)	5.8 (12.8) / 4.4 (9.7)	6.8 (15.0) / 5.4 (11.9)	8.8 (19.04) / 7.4 (16.3)
Mass per m of stroke	kg/m (lb/in)	11.2 (2.2)		
Moving mass pair of carriage	kg (lb)	2.4 (5.3) / 2.0 (4.4)	2.8 (6.17) / 2.4 (5.3)	3.6 (7.94) / 3.2 (7.1)
Maximum stroke	mm (in)	5360 (211.02) / 5660 (222.8)	5480 (215.75) / 5600 (220.5)	5540 (218.11) / 5480 (215.7)
Minimum stroke[2)]	mm (in)	9 (0.35)		
Minimum distance (di) between axis body	mm (in)	110 (4.33)		
Maximum distance (di) between axis body	mm (in)	400 (15.75)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		
Diameter motor shaft	mm (in)	6.35...20 (0.25...0.79)		
Cross section axis body (W x H)	mm (in)	60 x 60 (2.36 x 2.36)		
Axial area moment of inertia (Ix / Iy)	mm^4 (in^4)	651.610		
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)		
Load rating linear guide Cstat	N (lbf)	24200 (5440.37)		
Load rating linear guide Cdyn	N (lbf)	14200 (3192.28)		
Service life	km (mi)	30000 (18641)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.020-R/L



	LC	e	d	o1	o2	LP
Laufwagen Typ1 / carriage type 1 ohne Abdeckband / without coverband	206	35	0	40	40	431+X
Laufwagen Typ1 / carriage type 1 mit Abdeckband / with coverband	303	47	11,5	0	0	552+X
Laufwagen Typ2 / carriage type 2 ohne Abdeckband / without coverband	266	35	0	40	0	491+X
Laufwagen Typ2 / carriage type 2 mit Abdeckband / with coverband	363	47	11,5	0	0	612+X
Laufwagen Typ4 / carriage type 4 ohne Abdeckband / without coverband	386	35	0	40	40	611+X
Laufwagen Typ4 / carriage type 4 mit Abdeckband / with coverband	483	47	11,5	0	0	732+X

	di
max.	400
min.	110

MAXH3•BR•••• and MAXH3•BB••••

Technical Data - MAXH3•BR••••

See dimensional drawing MB536.030-R/L.

Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXH3BR		
		Carriage type 1	Carriage type 2	Carriage type 4
Toothed belt drive	–	30HTD-5M		
Guide type	–	Roller guide		
Typical payload	kg (lb)	40 (88.18)		
Carriage length	mm (in)	364 (14.33) / 244 (9.6)	434 (17.08) / 314 (12.36)	574 (22.60) / 454 (17.87)
Feed constant	mm/rev. (in/rev.)	205 (8.07)		
Effective diameter toothed belt pulley	mm (in)	65.254 (2.56)		
Maximum feed force Fx_{max}	N (lbf)	1100 (839.17)		
Maximum velocity[1)]	m/s (ft/s)	8 (26.3)		
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)		
Maximum driving torque M_{max}	Nm (lb*in)	36 (318.62)		
Breakaway torque 0-stroke axis	Nm (lbf*in)	2.8 (24.78)		
Breakaway torque per additional pair of carriage	Nm (lbf*in)	0.6 (5.31)		
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	58.1 (19.9) / 49.4 (702.63)	67.7 (23.13) / 59.0 (839.17)	88.0 (30.07) / 78.3 (1113.68)
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	48.8 (16.7) / 40.2 (13.73)	58.2 (19.9) / 49.8 (17.01)	77.6 (26.51) / 69.2 (23.58)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	2.5 (0.85)		
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	10.7 (3.65)		
Max. force Fydynmax	N (lbf)	2640 (593.49)		
Max. force Fzdynmax	N (lbf)	1560 (3507.01)		
Max. force Mydynmax	Nm (lbf*in)	102 (902.77)	174 (1540.02)	320 (2832.23)

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXH3BR		
		Carriage type 1	Carriage type 2	Carriage type 4
Max. force Mzdynmax	Nm (lbf*in)	86 (761.16)	148 (1309.91)	271(2398.55)
Max. force Mxdynmax related on distance (di) between axis body	Nm (lbf*in)	125 (1106.34) (at di=160 mm (6.3 in))		
Mass 0 stroke axis	kg (lb)	18.8 (41.45) / 15.4 (33.95)	20.8 (45.9) /17.4(38.36)	24.8 (54.67) / 21.4 (47.17)
Mass per additional pair of carriage (with axis body)	kg (lb)	10.4 (23.0) / 7.6 (16.75)	12.4 (27.33) / 9.6 (21.16)	16.4 (36.16) / 13.6 (29.98)
Mass per m of stroke	kg/m (lb/in)	15.8 (35.3)		
Moving mass pair of carriage	kg (lb)	4.6 (10.14) / 3.8 (8.37)	5.6 (12.35) / 4.8 (10.58)	7.4 (16.31) / 6.6 (14.55)
Maximum stroke	mm (in)	5450 (214.57) / 5600 (220.5)	5380 (211.81) / 5530 (217.71)	5240 (206.3) / 5390 (212.20)
Minimum stroke[2)]	mm (in)	175 (6.88)		
Minimum distance (di) between axis body	mm (in)	120 (6.72)		
Maximum distance (di) between axis body	mm (in)	500 (15.75)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		
Diameter motor shaft	mm (in)	12...25 (0.47...0.98)		
Cross section axis body (W x H)	mm (in)	80 x 80 (3.14 x 3.14)		
Axial area moment of inertia (Ix / Iy)	mm^4 (in^4)	2570520 (101201.3) / 3734420 (147024)		
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)		
Load rating linear guide Cstat	N (lbf)	19400 (4361.3)		
Load rating linear guide Cdyn	N (lbf)	34000 (7643.5)		
Service life	km (mi)	30000 (18641)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXH3•BB••••

See dimensional drawing MB536.030-R/L.

Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXH3BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Toothed belt drive	–	30HTD-5M		
Guide type	–	Ball bearing guide		
Typical payload	kg (lb)	150 (330.69)		
Carriage length	mm (in)	364 (14.33) / 244 (9.60)	434 (17.08) / 314 (12.36)	574 (22.6) / 454 (17.87)
Feed constant	mm/rev. (in/rev.)	205 (8.07)		
Effective diameter toothed belt pulley	mm (in)	65.254 (2.45)		
Maximum feed force Fx_{max}	N (lbf)	1100 (247.28)		
Maximum velocity[1)]	m/s (ft/s)	5 (16.4)		
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)		
Maximum driving torque M_{max}	Nm (lb*in)	36 (318.62)		
Breakaway torque 0-stroke axis	Nm (lbf*in)	4.8 (42.48)		
Breakaway torque per additional pair of carriage	Nm (lbf*in)	2.6 (23.01)		
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	61.7 (21.08) / 53.0 (18.11)	69.7 (23.82) / 61.0 (20.84)	90.1 (30.79) / 80.6 (27.54)
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	52.4 (17.91) / 43.8 (14.96)	60.4 (20.64) / 51.8 (17.7)	79.9 (27.30) / 71.4 (24.39)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	2.5 (0.85)		
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	10.7 (3.65)		
Max. force Fydynmax	N (lbf)	6615 (1487.1)		
Max. force Fzdynmax	N (lbf)	6615 (1487.1)		
Max. force Mydynmax	Nm (lbf*in)	324 (2867.64)	758 (6947.83)	1374 (12160.92)
Max. force Mzdynmax	Nm (lbf*in)	162 (1433.82)	379 (3354.43)	687 (6080.46)
Max. force Mxdynmax related on distance (di) between axis body	Nm (lbf*in)	530 (4690.89) (at di=160 mm (6.3 in))		
Mass 0 stroke axis	kg (lb)	20.7 (45.64) / 16.9 (37.25)	22.7 (50.04) / 18.9 (41.66)	26.7 (58.86) / 22.9 (50.48)

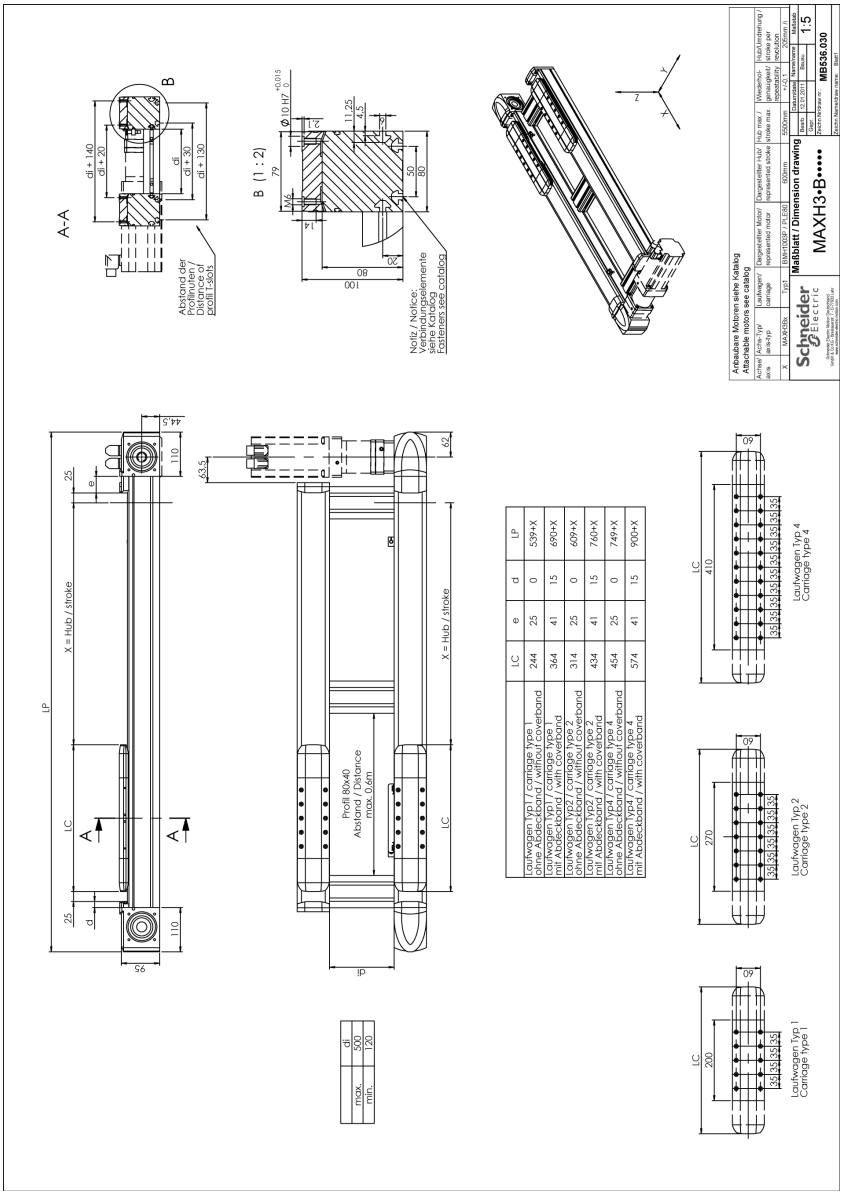
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXH3BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Mass per additional pair of carriage (with axis body)	kg (lb)	11.8 (26.01) / 8.6 (18.95)	14.0 (30.86) / 10.8 (23.80)	18.2 (40.12) / 15.0 (33.06)
Mass per m of stroke	kg/m (lb/in)	19 (41.88)		
Moving mass pair of carriage	kg (lb)	5.0 (11.02) / 4.2 (9.25)	5.8 (12.79) / 5.0 (11.02)	7.6 (16.76) / 6.8 (14.99)
Maximum stroke	mm (in)	5240 (206.3) / 5600 (220.5)	5380 (211.81) / 5530 (217.7)	5450 (214.57) / 5390 (212.2)
Minimum stroke[2)]	mm (in)	11 (0.43)		
Minimum distance (di) between axis body	mm (in)	120 (4.72)		
Maximum distance (di) between axis body	mm (in)	500 (19.68)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		
Diameter motor shaft	mm (in)	12...25 (0.47...0.98)		
Cross section axis body (W x H)	mm (in)	80 x 80 (3.14 x 3.14)		
Axial area moment of inertia (Ix / Iy)	mm^4 (in^4)	2570520 (101201.3) / 3734420 (147024)		
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)		
Load rating linear guide Cstat	N (lbf)	38400 (8632.66)		
Load rating linear guide Cdyn	N (lbf)	22300 (5013.23)		
Service life	km (mi)	30000 (18641)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.030-R/L



	LC	e	d	LP
Laufwagen Typ1 / carriage type 1 ohne Abdeckband / without coverband	244	25	0	539+X
Laufwagen Typ1 / carriage type 1 mit Abdeckband / with coverband	344	41	15	690+X
Laufwagen Typ2 / carriage type 2 ohne Abdeckband / without coverband	314	25	0	609+X
Laufwagen Typ2 / carriage type 2 mit Abdeckband / with coverband	434	41	15	740+X
Laufwagen Typ4 / carriage type 4 ohne Abdeckband / without coverband	454	25	0	749+X
Laufwagen Typ4 / carriage type 4 mit Abdeckband / with coverband	574	41	15	900+X

	di
max.	450
min.	120

MAXH4•BB••••

Technical Data - MAXH4•BB••••

See dimensional drawing MB536.040-R/L.

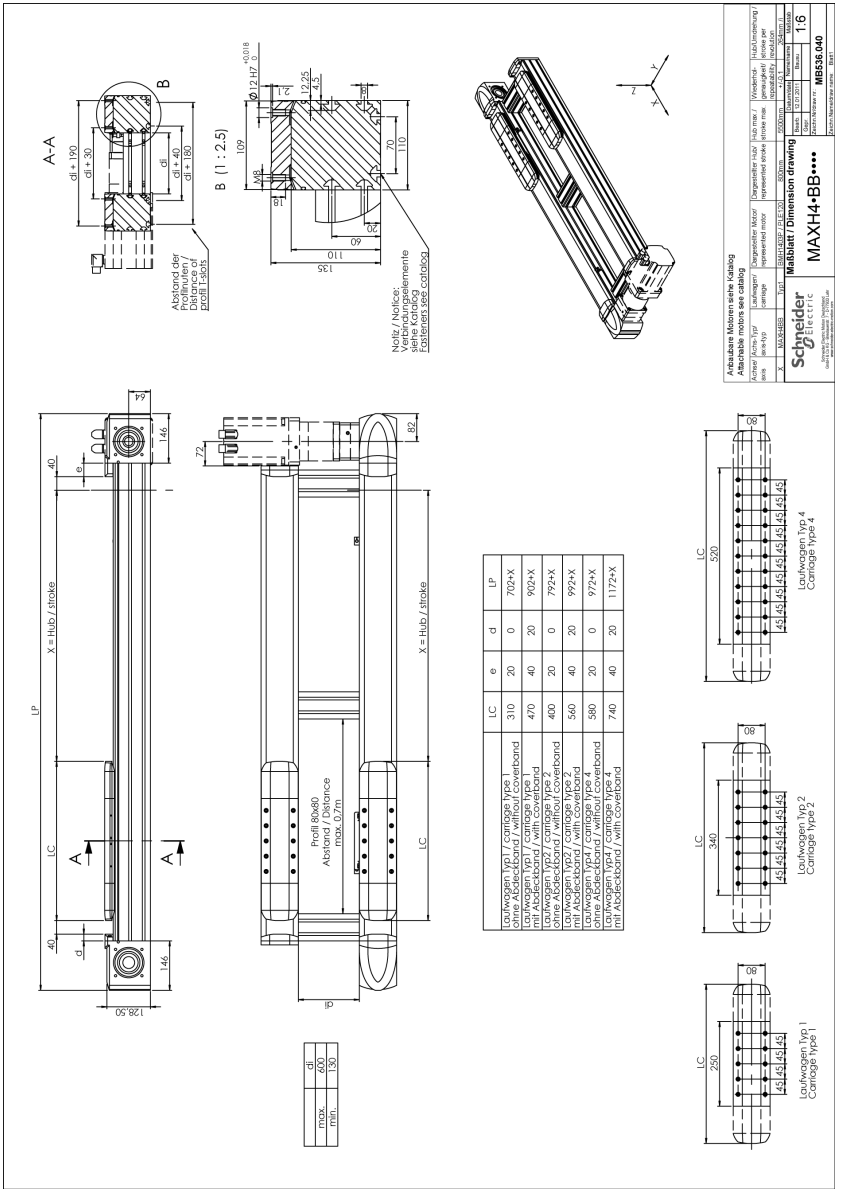
Value pairs with / without cover strip are separated by “/”

Parameter	Unit	MAXH4BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Toothed belt drive	–	50HTD-8M		
Guide type	–	Ball bearing guide		
Typical payload	kg (lb)	250 (551.15)		
Carriage length	mm (in)	470 (18.5) / 310 (12.20)	560 (22.05) / 400 (15.74)	740 (29.13) / 580 (22.83)
Feed constant	mm/rev. (in/rev.)	264 (10.39)		
Effective diameter toothed belt pulley	mm (in)	84.034 (3.3)		
Maximum feed force Fx_{max}	N (lbf)	2600 (584.50)		
Maximum velocity[1)]	m/s (ft/s)	5 (16.4)		
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)		
Maximum driving torque M_{max}	Nm (lb*in)	110 (973.58)		
Breakaway torque 0-stroke axis	Nm (lbf*in)	6.6 (58.41)		
Breakaway torque per additional pair of carriage	Nm (lbf*in)	4.2 (37.17)		
Moment of inertia 0-stroke axis	kg*cm² (lb*in²)	210.8 (72.03) / 178.6 (61.03)	242.4 (82.83) / 210.2 (71.83)	306.8 (104.84) / 274.6 (93.84)
Moment of inertia per additional pair of carriage	kg*cm² (lb*in²)	179.2 (61.24) / 147.0 (50.23)	210.8 (72.03) / 178.6 (61.03)	275.2 (94.04) / 243.0 (83.03)
Moment of inertia per m stroke	kg*cm²/m (lb*in²/in)	11.2 (3.82)		
Moment of inertia per kg payload	kg*cm²/kg (lb*in²/lb)	17.7 (6.04)		
Max. force Fydynmax	N (lbf)	9405 (2114.32)		
Max. force Fzdynmax	N (lbf)	9405 (2114.32)		
Max. force Mydynmax	Nm (lbf*in)	512 (4531.58)	1310 (11594.47)	2418 (21401.10)

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXH4BB		
		Carriage type 1	Carriage type 2	Carriage type 4
Max. force Mzdynmax	Nm (lbf*in)	256 (2265.79)	655 (5797.23)	1209 (10700.55)
Max. force Mxdynmax related on distance (di) between axis body	Nm (lbf*in)	910 (7169.10) (at di=180 mm (7.1 in))		
Mass 0 stroke axis	kg (lb)	46.1 (101.63) / 37.4 (82.45)	50.9 (112.22) / 42.2 (93.03)	60.4 (133.16) / 51.7 (113.97)
Mass per additional pair of carriage (with axis body)	kg (lb)	25.8 (56.88) / 18.6 (41.0)	30.6 (67.46) / 23.4 (51.58)	40.2 (88.63) / 33.0 (72.75)
Mass per m of stroke	kg/m (lb/in)	33.8 (74.52)		
Moving mass pair of carriage	kg (lb)	10.2 (22.48) / 8.4 (18.51)	12.0 (26.46) / 10.2 (22.48)	15.6 (34.39) / 13.8 (30.42)
Maximum stroke	mm (in)	5310 (209.05) / 5510 (216.92)	5220 (205.51) /5420 (213.38)	5040 (198.42) / 5420 (213.38)
Minimum stroke[2)]	mm (in)	13 (0.5)		
Minimum distance (di) between axis body	mm (in)	130 (5.1)		
Maximum distance (di) between axis body	mm (in)	600 (23.62)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		
Diameter motor shaft	mm (in)	12...32 (0.47...1.25)		
Cross section axis body (W x H)	mm (in)	110 x 110 (433 x 433)		
Axial area moment of inertia (Ix / Iy)	mm^4 (in^4)	9426980 (371139.8) / 13249380 (521627.6)		
Modulus of elasticity	N/mm^2 (psi)	72000 (10442717.1)		
Load rating linear guide Cstat	N (lbf)	52400 (11779.98)		
Load rating linear guide Cdyn	N (lbf)	31700 (7126.44)		
Service life	km (mi)	30000 (18641)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide



	LC	e	d	LP
Laufwagen Typ1 / carriage type 1 ohne Abdeckband / wilfloul coverband	310	20	0	702+X
Laufwagen Typ1 / carriage type 1 mit Abdeckband / with coverband	470	40	20	902+X
Laufwagen Typ2 / carriage type 2 ohne Abdeckband / wilfloul coverband	400	20	0	792+X
Laufwagen Typ2 / carriage type 2 mit Abdeckband / with coverband	560	40	20	992+X
Laufwagen Typ4 / carriage type 4 ohne Abdeckband / wilfloul coverband	580	20	0	972+X
Laufwagen Typ4 / carriage type 4 mit Abdeckband / with coverband	740	40	20	1172+X

	di
max.	600
min.	130

Section 3.5
Mechanical Data of the Lexium MAXP• Series

What Is in This Section?

This section contains the following topics:

MAXP12•-H41BR••••-C31BC••••

Technical Data - MAXP12•-H41BR••••-C31BC••••

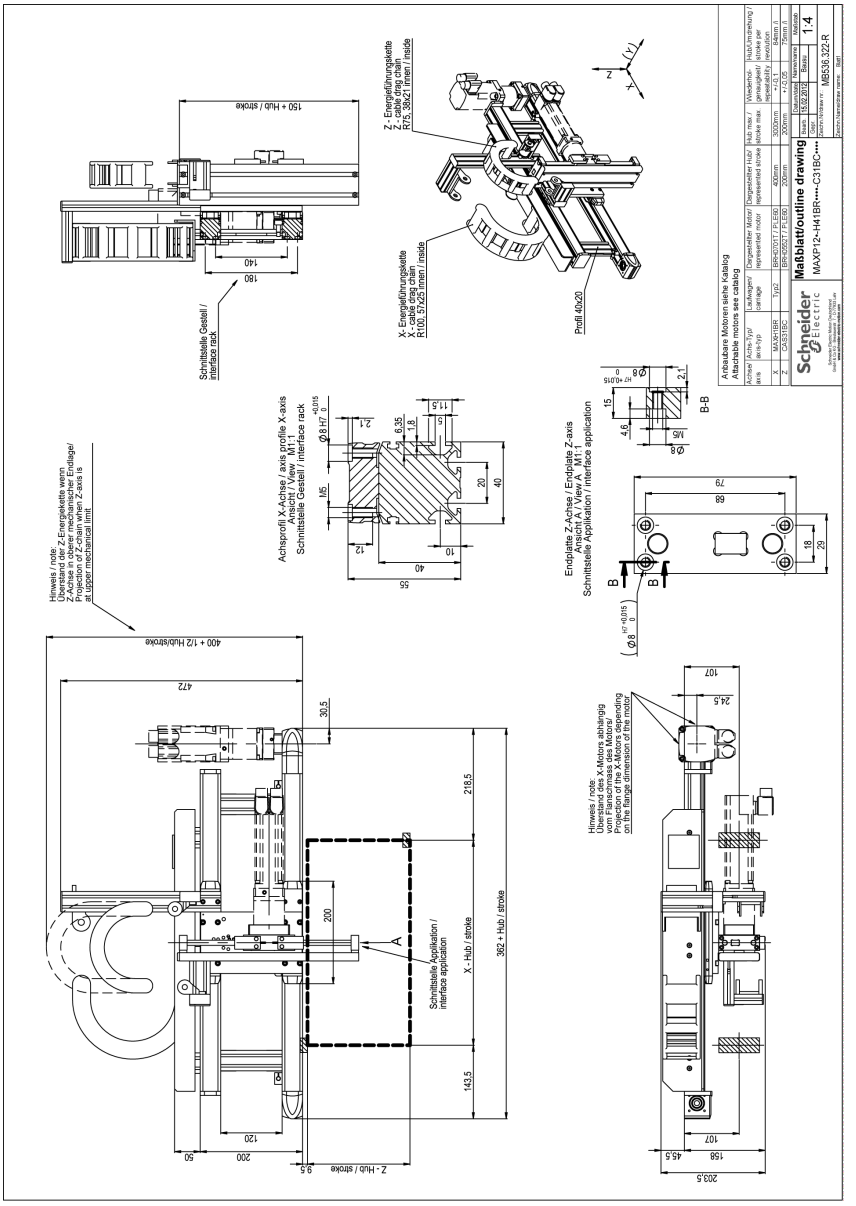
See dimensional drawing MB536.322-R/L.

Parameter	Unit	MAXH41BR X-Axis	C31BC Z-Axis
Toothed belt drive	–	15HTD-3M	10T-5
Guide type	–	Roller guide	Ball guide
Typical payload	kg (lb)	2 (4.41)	
Carriage type	–	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	84 (3.31)	75 (2.95)
Effective diameter toothed belt pulley	mm (in)	26.738 (1.053)	23.873 (0.938)
Maximum feed force Fx_{max}	N (lbf)	300 (67.44)	125 (28.1)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}	Nm (lb*in)	4 (35.4)	1.5 (13.28)
Mass 0 stroke axis	kg (lb)	4.5 (9.92)	1.9 (4.19)
Mass per m of stroke	kg/m (lb/in)	6.5 (14.33)	3.9 (8.6)
Maximum stroke	mm (in)	3000 (118.11)	200 (7.87)
Minimum stroke[2)]	mm (in)	125 (4.92)	8 (0.31)
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.322-R/L



MAXP12•-H41BR••••-C41BR••••

Technical Data - MAXP12•-H41BR••••-C41BR••••

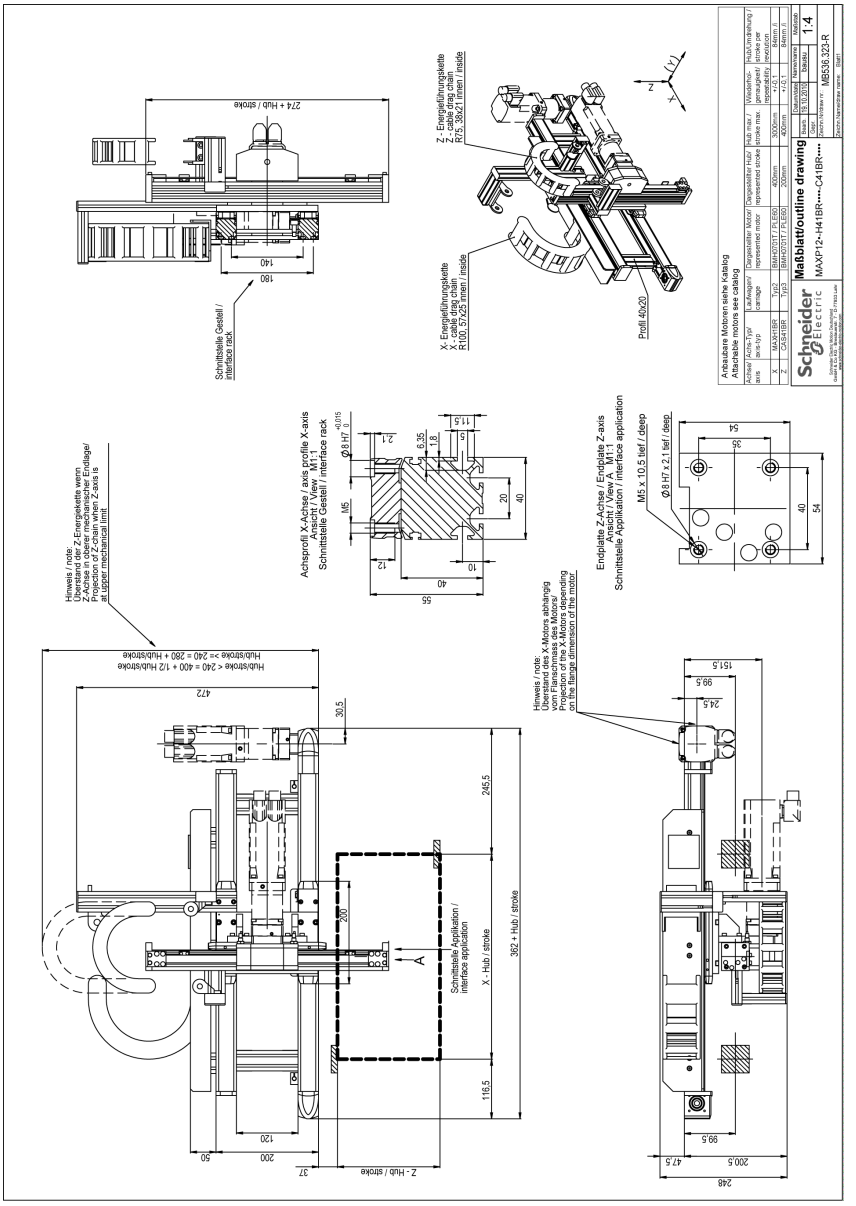
See dimensional drawing MB536.323-R/L.

Parameter	Unit	MAXH41BR X-Axis	C41BR Z-Axis
Toothed belt drive	–	15HTD-3M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	4 (8.82)	
Carriage type	–	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	84 (3.31)	
Effective diameter toothed belt pulley	mm (in)	26.738 (1.053)	
Maximum feed force Fx_{max}	N (lbf)	300 (67.44)	250 (56.20)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}	Nm (lb*in)	4 (35.4)	3.5 (30.98)
Mass 0 stroke axis	kg (lb)	4.8 (10.58)	3.0 (6.61)
Mass per m of stroke	kg/m (lb/in)	6.5 (14.33)	2.7 (5.95)
Maximum stroke	mm (in)	3000 (118.11)	400 (15.75)
Minimum stroke[2)]	mm (in)	125 (4.92)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.323-R/L



MAXP22•-H42BR••••-C32BC•••• and MAXP22•-H42BB••••-C32BC••••

Technical Data - MAXP22•-H42BR••••-C32BC••••

See dimensional drawing MB536.325-R/L.

Parameter	Unit	MAXH42BR X-Axis	C32BC Z-Axis
Toothed belt drive	–	25HTD-5M	20AT-5
Guide type	–	Roller guide	Ball guide
Typical payload	kg (lb)	4 (8.82)	
Carriage type	–	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	155 (6.10)	100 (2.95)
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)	31.831 (1.252)
Maximum feed force Fx_{max}	N (lbf)	800 (179.85)	435 (97.79)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}[1)]	Nm (lb*in)	20 (177.01)	7.0 (61.95)
Mass 0 stroke axis	kg (lb)	11.0 (24.25)	4.8 (10.58)
Mass per m of stroke	kg/m (lb/in)	11.6 (25.57)	5.3 (11.68)
Maximum stroke	mm (in)	4000 (157.47)	300 (11.81)
Minimum stroke[2)]	mm (in)	130 (5.12)	10 (0.4)
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXP22•-H42BB••••-C32BC••••

See dimensional drawing MB536.325-R/L.

Parameter	Unit	MAXH42BB X-Axis	C32BC Z-Axis
Toothed belt drive	–	25HTD-5M	20AT-5
Guide type	–	Ball guide	
Typical payload	kg (lb)	5 (11.2)	
Carriage type	–	Type 2	Type 3

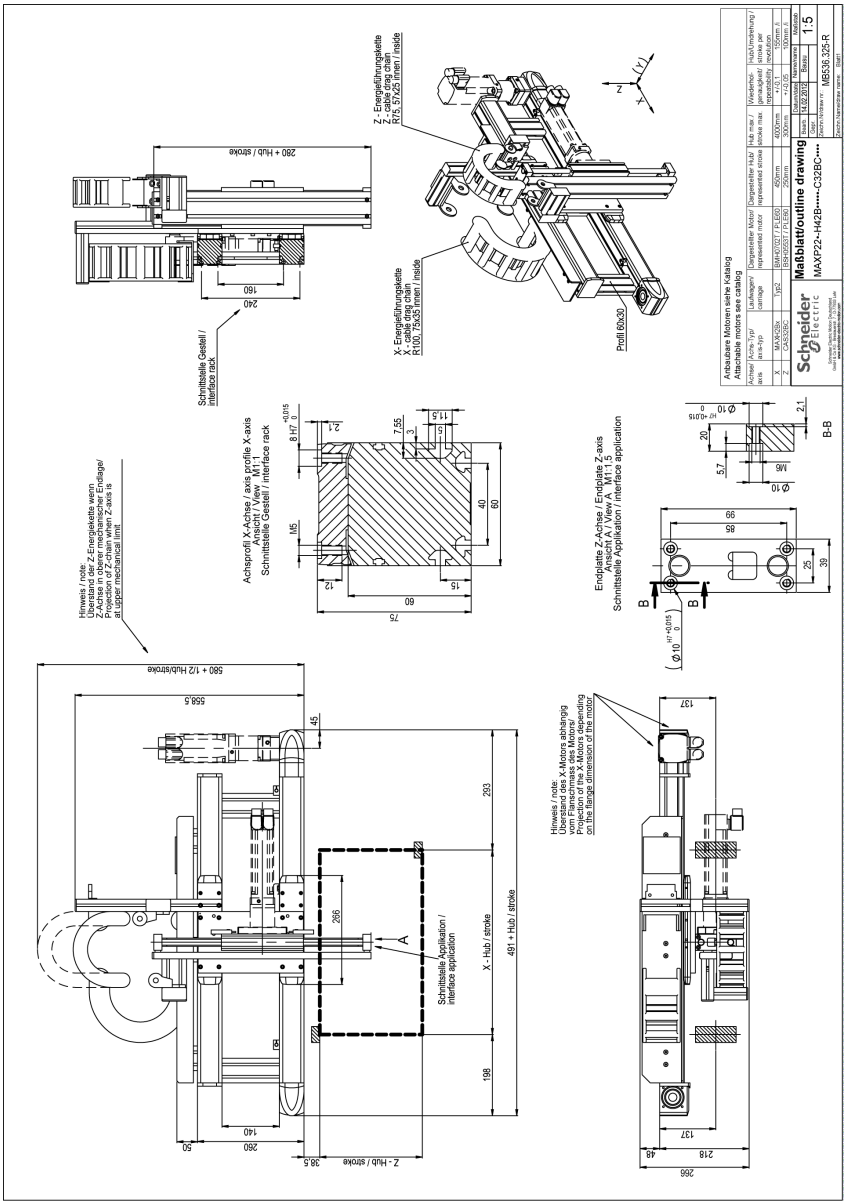
1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXH42BB X-Axis	C32BC Z-Axis
Feed constant	mm/rev. (in/rev.)	155 (6.10)	100 (2.95)
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)	31.831 (1.252)
Maximum feed force Fx_{max}	N (lbf)	800 (179.85)	435 (97.79)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}[1)]	Nm (lb*in)	20 (177.01)	7.0 (61.95)
Mass 0 stroke axis	kg (lb)	11.8 (26.02)	4.8 (10.58)
Mass per m of stroke	kg/m (lb/in)	13.6 (30.0)	5.3 (11.68)
Maximum stroke	mm (in)	4000 (157.47)	300 (11.81)
Minimum stroke[2)]	mm (in)	9 (0.35)	10 (0.4)
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.325-R/L



MAXP22•-H42BR••••-C42BR•••• and MAXP22•-H42BB••••-C42BB••••

Technical Data - MAXP22•-H42BR••••-C42BR••••

See dimensional drawing MB536.326-R/L.

Parameter	Unit	MAXH42BR X-Axis	C42BR Z-Axis
Toothed belt drive	–	25HTD-5M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	6 (13.23)	
Carriage type	–	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	155 (6.10)	
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)	
Maximum feed force Fx_{max}	N (lbf)	800 (179.85)	650 (146.13)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}[1)]	Nm (lb*in)	20 (177.01)	16.0 (141.61)
Mass 0 stroke axis	kg (lb)	11.6 (25.57)	7.9 (17.41)
Mass per m of stroke	kg/m (lb/in)	11.6 (25.57)	5.0 (11.02)
Maximum stroke	mm (in)	4000 (157.47)	600 (23.62)
Minimum stroke[2)]	mm (in)	130 (5.12)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXP22•-H42BB••••-C42BB••••

See dimensional drawing MB536.326-R/L.

Parameter	Unit	MAXH42BB X-Axis	C42BB Z-Axis
Toothed belt drive	–	25HTD-5M	
Guide type	–	Ball guide	
Typical payload	kg (lb)	15 (33.6)	
Carriage type	–	Type 2	Type 3

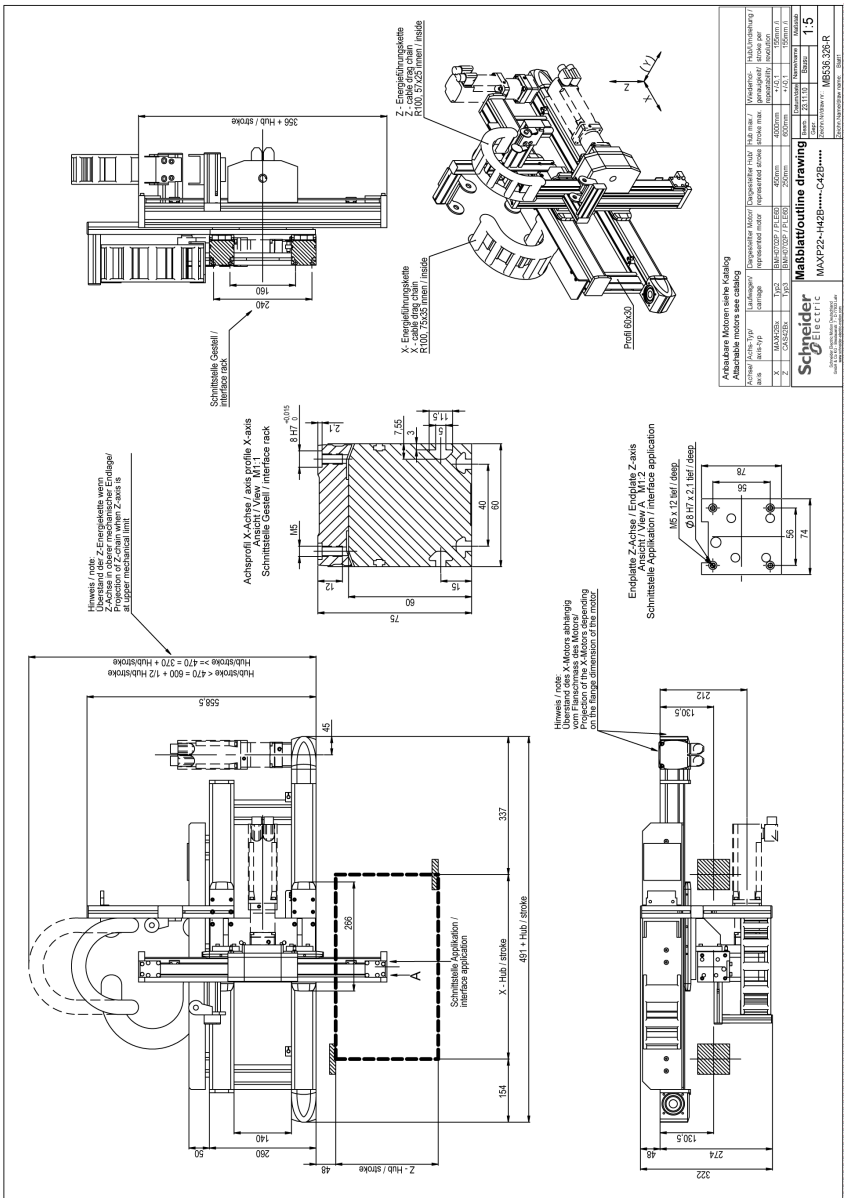
1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXH42BB X-Axis	C42BB Z-Axis
Feed constant	mm/rev. (in/rev.)	155 (6.10)	
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)	
Maximum feed force Fx_{max}	N (lbf)	800 (179.85)	650 (146.13)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}[1)]	Nm (lb*in)	20 (177.01)	16.0 (141.61)
Mass 0 stroke axis	kg (lb)	12.4 (27.34)	8.4 (18.52)
Mass per m of stroke	kg/m (lb/in)	13.6 (30.0)	6.0 (13.22)
Maximum stroke	mm (in)	4000 (157.47)	600 (23.62)
Minimum stroke[2)]	mm (in)	9 (0.35)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.326-R/L



MAXP32•-H43BR••••-C34BC•••• and MAXP32•-H43BB••••-C34BC••••

Technical Data - MAXP32•-H43BR••••-C34BC••••

See dimensional drawing MB536.328-R/L.

Parameter	Unit	MAXH43BR X-Axis	C34BC Z-Axis
Toothed belt drive	–	30HTD-5M	32AT-5
Guide type	–	Roller guide	Ball guide
Typical payload	kg (lb)	14 (30.86)	
Carriage type	–	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	205 (8.07)	100 (3.94)
Effective diameter toothed belt pulley	mm (in)	65.25 (2.67)	31.83 (1.25)
Maximum feed force Fx_{max}	N (lbf)	1100 (247.29)	705 (158.5)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}	Nm (lb*in)	36 (318.63)	11.5 (101.78)
Mass 0 stroke axis	kg (lb)	22.8 (50.26)	8.0 (17.64)
Mass per m of stroke	kg/m (lb/in)	18.6 (41.01)	7.6 (16.76)
Maximum stroke	mm (in)	5500 (216.53)	500 (19.68)
Minimum stroke[2)]	mm (in)	175 (6.89)	14 (0.55)
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXP32•-H43BB••••-C34BC••••

See dimensional drawing MB536.328-R/L.

Parameter	Unit	MAXH43BB X-Axis	C34BC Z-Axis
Toothed belt drive	–	30HTD-5M	32AT-5
Guide type	–	Ball guide	
Typical payload	kg (lb)	18 (39.7)	
Carriage type	–	Type 2	Type 3

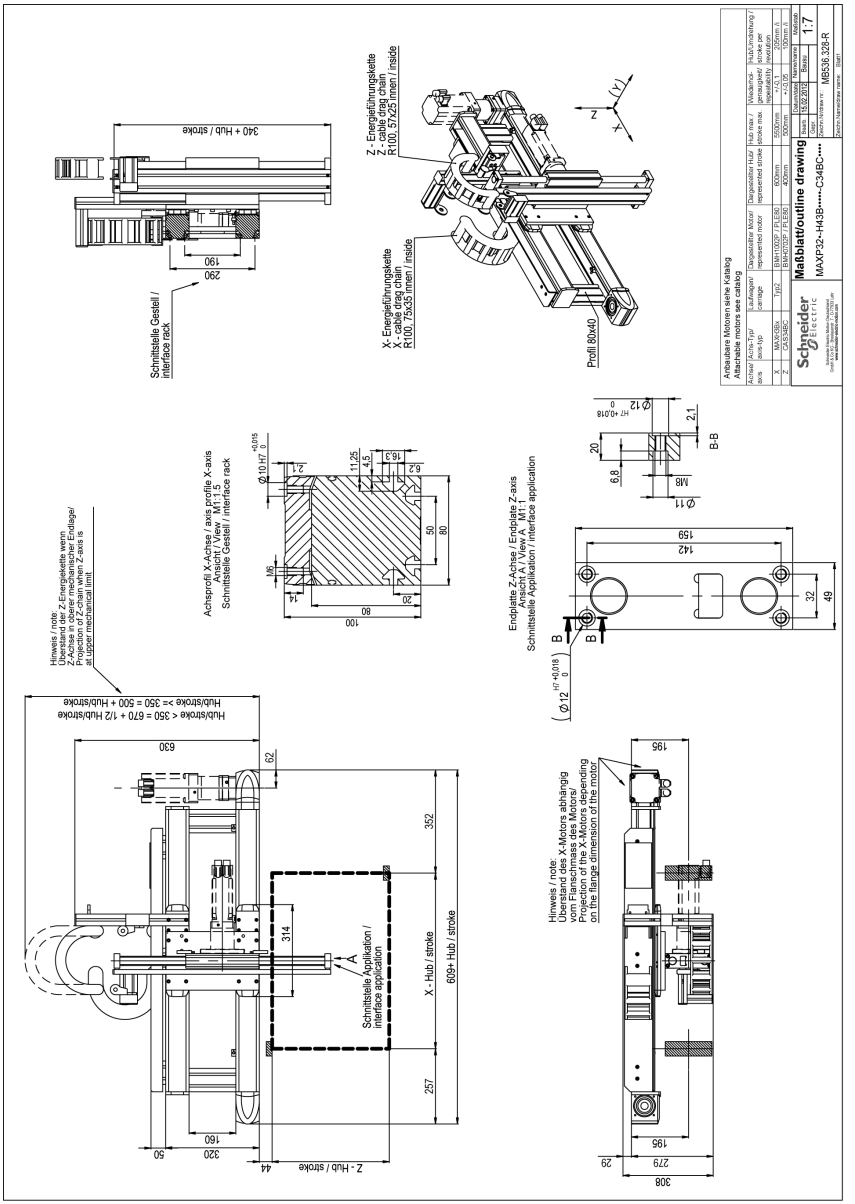
1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXH43BB X-Axis	C34BC Z-Axis
Feed constant	mm/rev. (in/rev.)	205 (8.07)	100 (3.94)
Effective diameter toothed belt pulley	mm (in)	65.25 (2.67)	31.83 (1.25)
Maximum feed force Fx_{max}	N (lbf)	1100 (247.29)	705 (158.5)
Maximum velocity[1)]	m/s (ft/s)	5 (16.40)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}	Nm (lb*in)	36 (318.63)	11.5 (101.78)
Mass 0 stroke axis	kg (lb)	24.3 (53.57)	8.0 (17.64)
Mass per m of stroke	kg/m (lb/in)	21.6 (47.62)	7.6 (16.76)
Maximum stroke	mm (in)	5500 (216.53)	500 (19.68)
Minimum stroke[2)]	mm (in)	11 (0.43)	14 (0.55)
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.328-R/L



MAXP32•-H43BR••••-C43BR•••• and MAXP32•-H43BB••••-C43BB••••

Technical Data - MAXP32•-H43BR••••-C43BR••••

See dimensional drawing MB536.329-R/L.

Parameter	Unit	MAXH43BR X-Axis	C43BR Z-Axis
Toothed belt drive	–	30HTD-5M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	9 (19.84)	
Carriage type	–	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	205 (8.07)	
Effective diameter toothed belt pulley	mm (in)	65.254 (2.569)	
Maximum feed force Fx_{max}	N (lbf)	1100 (247.29)	900 (202.32)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}	Nm (lb*in)	36 (318.63)	30 (265.52)
Mass 0 stroke axis	kg (lb)	23.8 (52.47)	14.4 (31.75)
Mass per m of stroke	kg/m (lb/in)	18.6 (41.01)	8.6 (18.96)
Maximum stroke	mm (in)	5500 (216.53)	800 (31.5)
Minimum stroke[2)]	mm (in)	175 (6.89)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXP32•-H43BB••••-C43BB••••

See dimensional drawing MB536.329-R/L.

Parameter	Unit	MAXH43BB X-Axis	C43BB Z-Axis
Toothed belt drive	–	30HTD-5M	
Guide type	–	Ball guide	
Typical payload	kg (lb)	25 (55.12)	
Carriage type	–	Type 2	Type 3

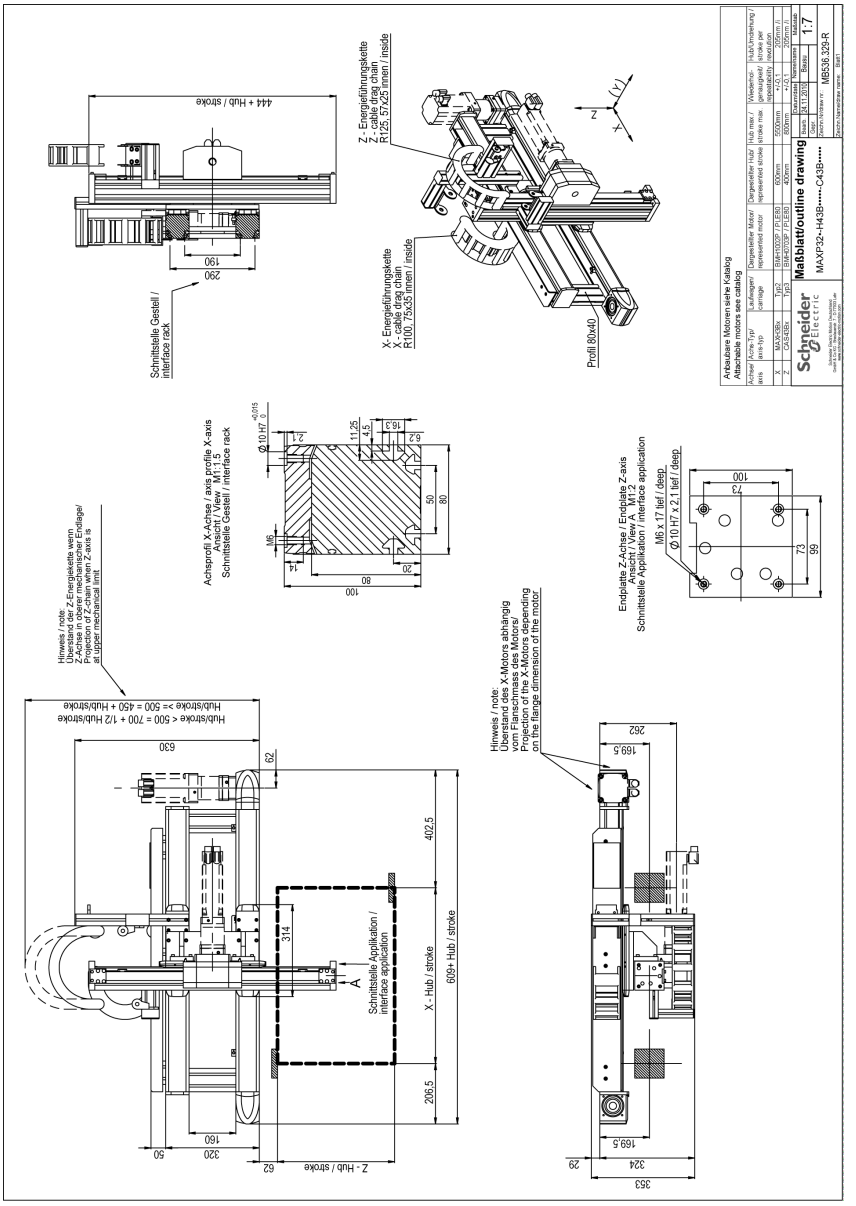
1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXH43BB X-Axis	C43BB Z-Axis
Feed constant	mm/rev. (in/rev.)	205 (8.07)	
Effective diameter toothed belt pulley	mm (in)	65.254 (2.569)	
Maximum feed force Fx_{max}	N (lbf)	1000 (224.81)	900 (202.33)
Maximum velocity[1)]	m/s (ft/s)	5 (16.40)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}	Nm (lb*in)	36 (318.63)	30 (265.52)
Mass 0 stroke axis	kg (lb)	25.3 (55.78)	15.0 (33.07)
Mass per m of stroke	kg/m (lb/in)	21.6 (47.62)	10.1 (22.27)
Maximum stroke	mm (in)	5500 (216.53)	800 (31.5)
Minimum stroke[2)]	mm (in)	11 (0.43)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.329-R/L



MAXP42•-H44BB••••-C44BB••••

Technical Data - MAXP42•-H44BB••••-C44BB••••

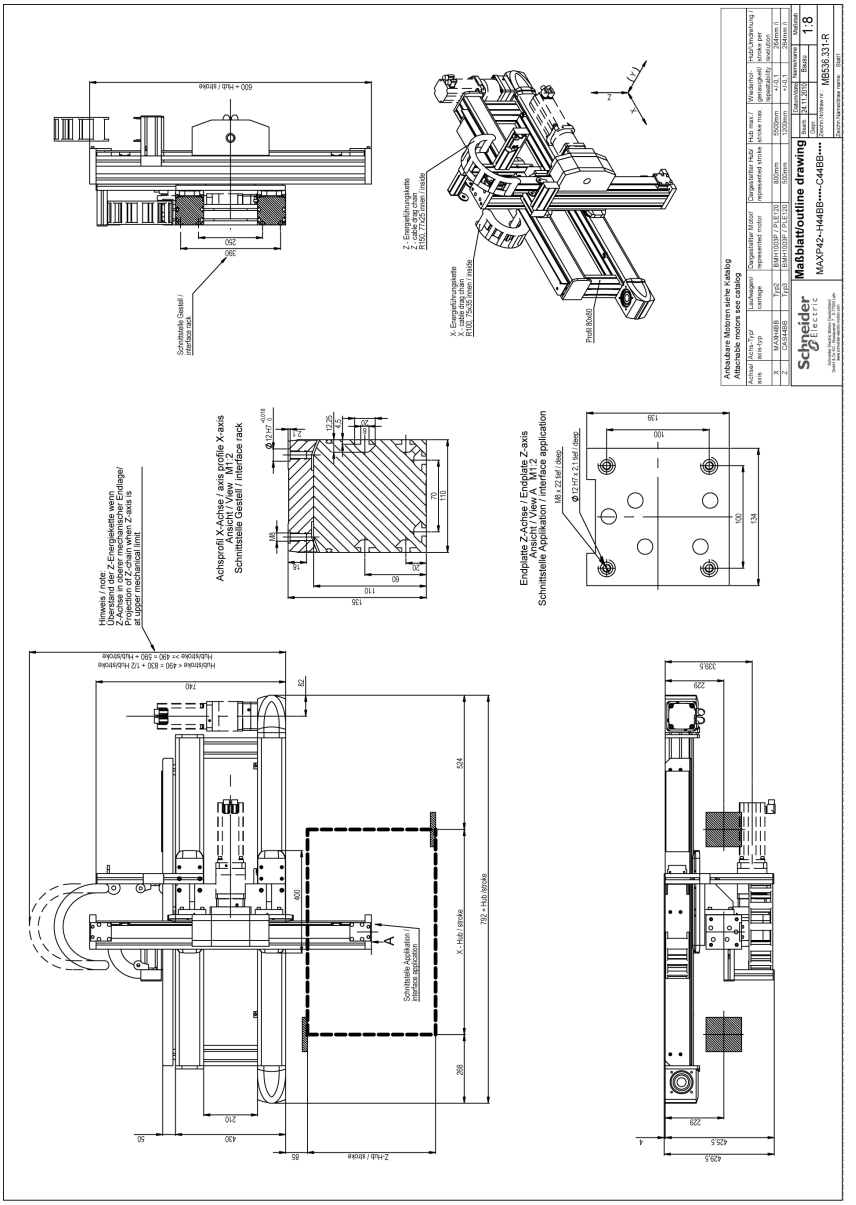
See dimensional drawing MB536.331-R/L.

Parameter	Unit	MAXH44BB X-Axis	C44BB Z-Axis
Toothed belt drive	–	50HTD-8M	
Guide type	–	Ball guide	
Typical payload	kg (lb)	50 (110.23)	
Carriage type	–	Type 2	Type 3
Feed per revolution	mm/rev. (in/rev.)	264 (10.39)	
Effective diameter toothed belt pulley	mm (in)	84.034 (3.31)	
Maximum feed force Fx_{max}	N (lbf)	2600 (584.50)	2150 (483.34)
Maximum velocity[1)]	m/s (ft/s)	5 (16.40)	3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)	
Maximum driving torque M_{max}	Nm (lb*in)	110 (973.58)	90 (796.57)
Mass 0 stroke axis	kg (lb)	53.4 (117.73)	35.6 (78.48)
Mass per m of stroke	kg/m (lb/in)	36.5 (80.47)	17.1 (37.7)
Maximum stroke	mm (in)	5500 (216.53)	1200 (47.24)
Minimum stroke[2)]	mm (in)	13 (0.51)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load and stroke
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.331-R/L



Section 3.6
Mechanical Data of the Lexium MAXR•2 Series

What Is in This Section?

This section contains the following topics:

MAXR12•-S41BR••••-P41BR••••

Technical Data - MAXR12•-S41BR••••-P41BR••••

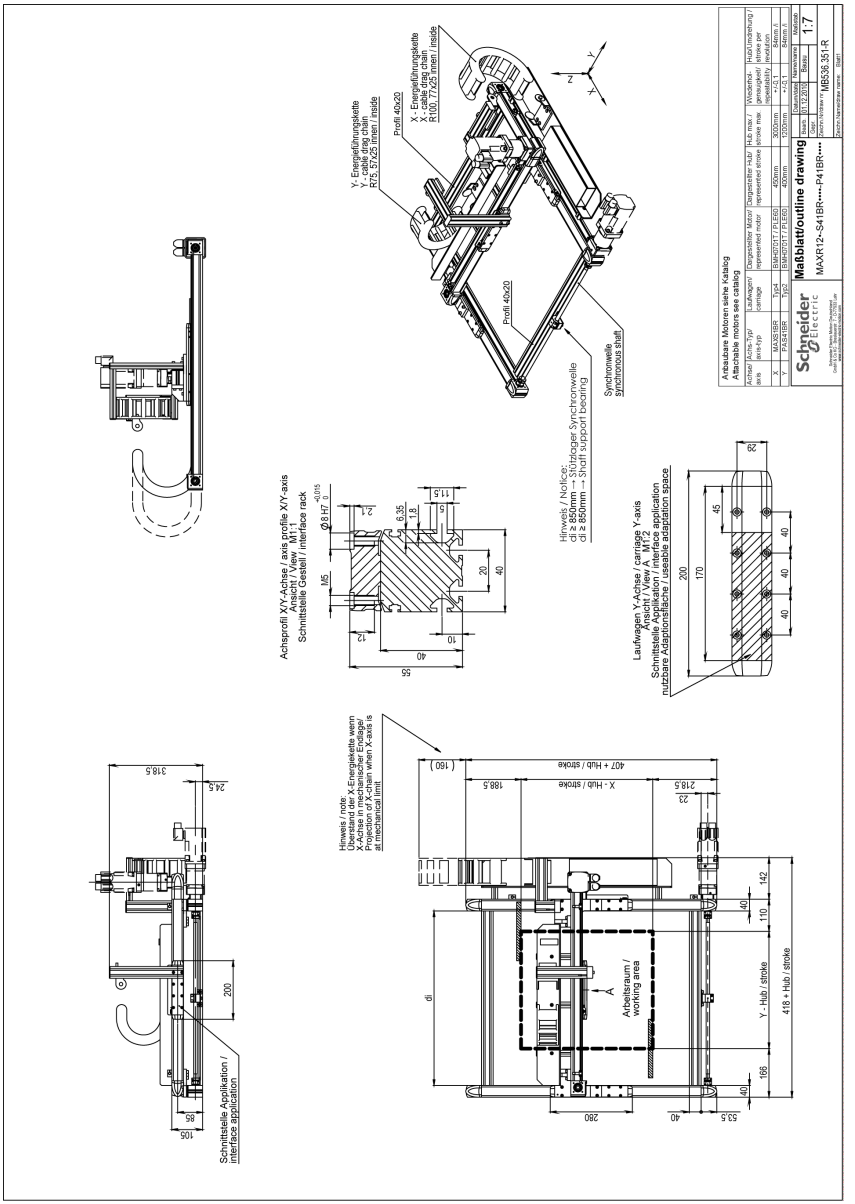
See dimensional drawing MB536.351-R/L.

Parameter	Unit	MAXS41BR X-Axis	MAXP41BR Y-Axis
Toothed belt drive	–	15HTD-3M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	5 (11.0)	
Carriage type	–	Type 4	Type 2
Feed constant	mm/rev. (in/rev.)	84 (3.3)	
Effective diameter toothed belt pulley	mm (in)	26.738 (1.05)	
Maximum feed force Fx_{max}	N (lbf)	450 (101.6)	300 (67.4)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	6 (53.1)	4 (35.4)
Mass 0 stroke axis	kg (lb)	9.2 (20.3)	2.9 (6.4)
Mass per m of stroke	kg/m (lb/in)	7.0 (15.4)	4.3 (9.8)
Maximum stroke	mm (in)	3000 (118.1)	1200 (47.2)
Minimum stroke[2)]	mm (in)	125 (4.9)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.351-R/L



MAXR12•-S41BR••••-H41BR••••

Technical Data - MAXR12•-S41BR••••-H41BR••••

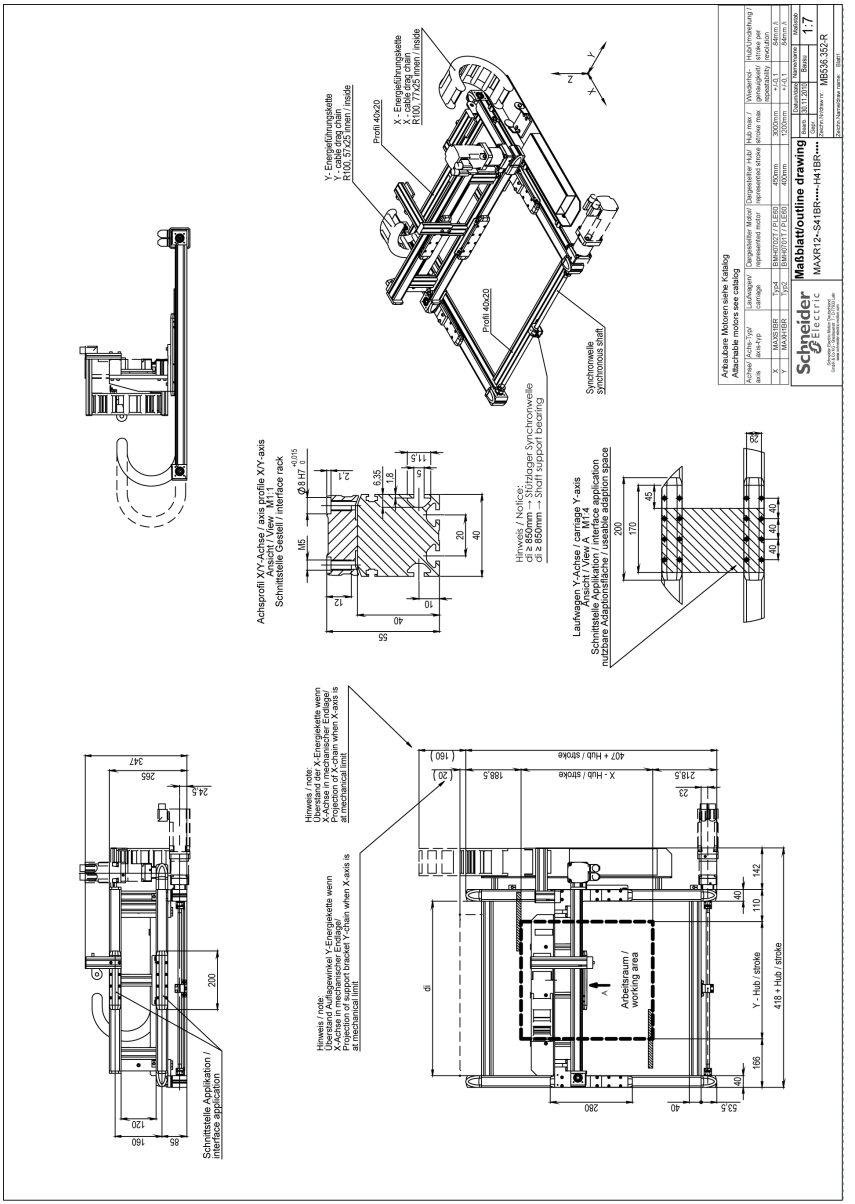
See dimensional drawing MB536.352-R/L.

Parameter	Unit	MAXS41BR X-Axis	MAXH41BR Y-Axis
Toothed belt drive	–	15HTD-3M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	8 (17.6)	
Carriage type	–	Type 4	Type 2
Feed constant	mm/rev. (in/rev.)	84 (3.3)	
Effective diameter toothed belt pulley	mm (in)	26.738 (1.053)	
Maximum feed force Fx_{max}	N (lbf)	450 (101.6)	300 (67.4)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	6 (53.1)	4 (35.4)
Mass 0 stroke axis	kg (lb)	10 (22.1)	4.1 (9.1)
Mass per m of stroke	kg/m (lb/in)	7.0 (15.4)	6.6 (14.6)
Maximum stroke	mm (in)	3000 (118.1)	1200 (47.2)
Minimum stroke[2)]	mm (in)	125 (4.9)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.352-R/L



MAXR22•-S42BR••••-P42BR•••• and MAXR22•-S42BB••••-P42BB••••

Technical Data - MAXR22•-S42BR••••-P42BR••••

See dimensional drawing MB536.355-R/L

Parameter	Unit	MAXS42BR X-Axis	MAXP42BR Y-Axis
Toothed belt drive	–	25HTD-5M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	5 (11.0)	
Carriage type	–	Type 4	Type 2
Feed constant	mm/rev. (in/rev.)	155 (6.1)	
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)	
Maximum feed force Fx_{max}	N (lbf)	1200 (269.8)	800 (179.9)
Maximum velocity[1)]	m/s (ft/s)	8 (26.3)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}[1)]	Nm (lb*in)	30 (265.5)	20 (177.0)
Mass 0 stroke axis	kg (lb)	21.6 (47.6)	6.5 (14.3)
Mass per m of stroke	kg/m (lb/in)	12.0 (26.5)	6.9 (15.2)
Maximum stroke	mm (in)	5500 (216.5)	1500 (59.1)
Minimum stroke[2)]	mm (in)	130 (5.1)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	
1) Depending on load, stroke and length of synchronous shaft **2)** Minimum stroke required for lubrication of the linear guide			

Technical Data - MAXR22•-S42BB••••-P42BB••••

See dimensional drawing MB536.355-R/L

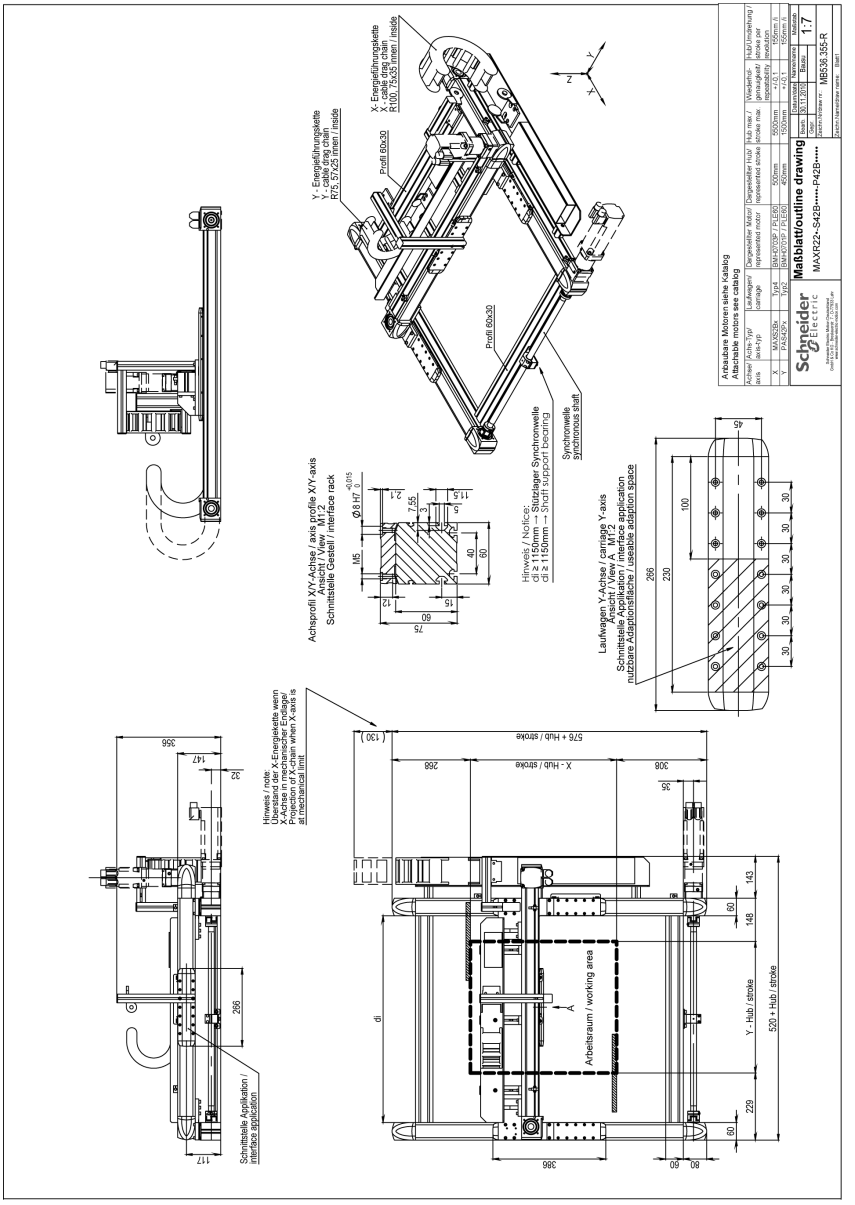
Parameter	Unit	MAXS42BB X-Axis	MAXP42BB Y-Axis
Toothed belt drive	–	25HTD-5M	
Guide type	–	Ball guide	
Typical payload	kg (lb)	12 (26.5)	
Carriage type	–	Type 4	Type 2
1) Depending on load, stroke and length of synchronous shaft **2)** Minimum stroke required for lubrication of the linear guide			

Parameter	Unit	MAXS42BB X-Axis	MAXP42BB Y-Axis
Feed constant	mm/rev. (in/rev.)	155 (6.1)	
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)	
Maximum feed force Fx_{max}	N (lbf)	1200 (269.8)	300 (67.4)
Maximum velocity[1)]	m/s (ft/s)	5 (16.4)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	30 (265.5)	20 (177.0)
Mass 0 stroke axis	kg (lb)	22.4 (49.4)	6.9 (15.2)
Mass per m of stroke	kg/m (lb/in)	14.0 (30.9)	7.9 (17.4)
Maximum stroke	mm (in)	5500 (216.5)	1500 (59.1)
Minimum stroke[2)]	mm (in)	9 (0.4)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.355-R/L



MAXR22•-S42BR••••-H42BR•••• and MAXR22•-S42BB••••-H42BB••••

Technical Data - MAXR22•-S42BR••••-H42BR••••

See dimensional drawing MB536.356-R/L.

Parameter	Unit	MAXS42BR X-Axis	MAXH42BR Y-Axis
Toothed belt drive	–	25HTD-5M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	15 (33.1)	
Carriage type	–	Type 4	Type 2
Feed constant	mm/rev. (in/rev.)	155 (6.1)	
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)	
Maximum feed force Fx_{max}	N (lbf)	1200 (269.8)	800 (179.9)
Maximum velocity[1)]	m/s (ft/s)	8 (26.3)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	30 (265.5)	20 (177.0)
Mass 0 stroke axis	kg (lb)	23.2 (51.2)	10 (22.1)
Mass per m of stroke	kg/m (lb/in)	12.0 (26.5)	11.6 (25.6)
Maximum stroke	mm (in)	5500 (216.5)	1500 (59.1)
Minimum stroke[2)]	mm (in)	130 (5.1)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXR22•-S42BB••••-H42BB••••

See dimensional drawing MB536.356-R/L.

Parameter	Unit	MAXS42BB X-Axis	MAXH42BB Y-Axis
Toothed belt drive	–	25HTD-5M	
Guide type	–	Ball guide	
Typical payload	kg (lb)	30 (66.1)	
Carriage type	–	Type 4	Type 2

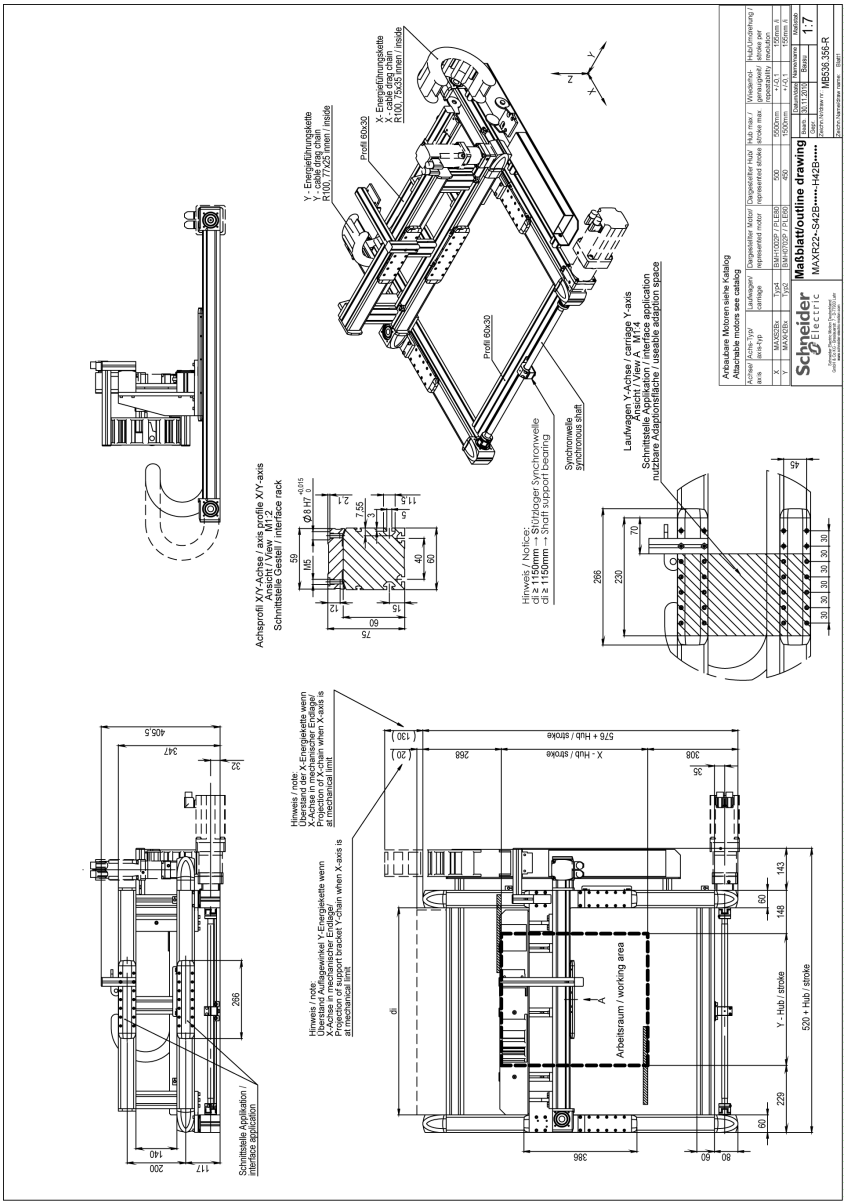
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS42BB X-Axis	MAXH42BB Y-Axis
Feed constant	mm/rev. (in/rev.)	155 (6.1)	
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)	
Maximum feed force Fx_{max}	N (lbf)	1200 (269.8)	800 (179.9)
Maximum velocity[1)]	m/s (ft/s)	5 (16.4)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	30 (265.5)	20 (177.0)
Mass 0 stroke axis	kg (lb)	24 (52.9)	10.8 (23.8)
Mass per m of stroke	kg/m (lb/in)	14.0 (30.9)	13.6 (30)
Maximum stroke	mm (in)	5500 (216.5)	1500 (59.1)
Minimum stroke[2)]	mm (in)	9 (0.4)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.356-R/L



MAXR32•-S43BR••••-P43BR•••• and MAXR32•-S43BB••••-P43BB••••

Technical Data - MAXR32•-S43BR••••-P43BR••••

See dimensional drawing MB536.359-R/L.

Parameter	Unit	MAXS43BR X-Axis	MAXP43BR Y-Axis
Toothed belt drive	–	30HTD-5M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	11 (24.3)	
Carriage type	–	Type 4	Type 2
Feed constant	mm/rev. (in/rev.)	205 (8.1)	
Effective diameter toothed belt pulley	mm (in)	65.254 (2.6)	
Maximum feed force Fx_{max}	N (lbf)	1650 (370.9)	1100 (247.3)
Maximum velocity[1)]	m/s (ft/s)	8 (26.3)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	54 (477.9)	36 (318.6)
Mass 0 stroke axis	kg (lb)	43.7 (96.3)	12.7 (28)
Mass per m of stroke	kg/m (lb/in)	19.0 (41.9)	10.6 (23.4)
Maximum stroke	mm (in)	5500 (216.5)	1500 (59.1)
Minimum stroke[2)]	mm (in)	175 (6.9)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXR32•-S43BB••••-P43BB••••

See dimensional drawing MB536.359-R/L.

Parameter	Unit	MAXS43BB X-Axis	MAXP43BB Y-Axis
Toothed belt drive	–	30HTD-5M	
Guide type	–	Ball guide	
Typical payload	kg (lb)	30 (66.1)	
Carriage type	–	Type 4	Type 2

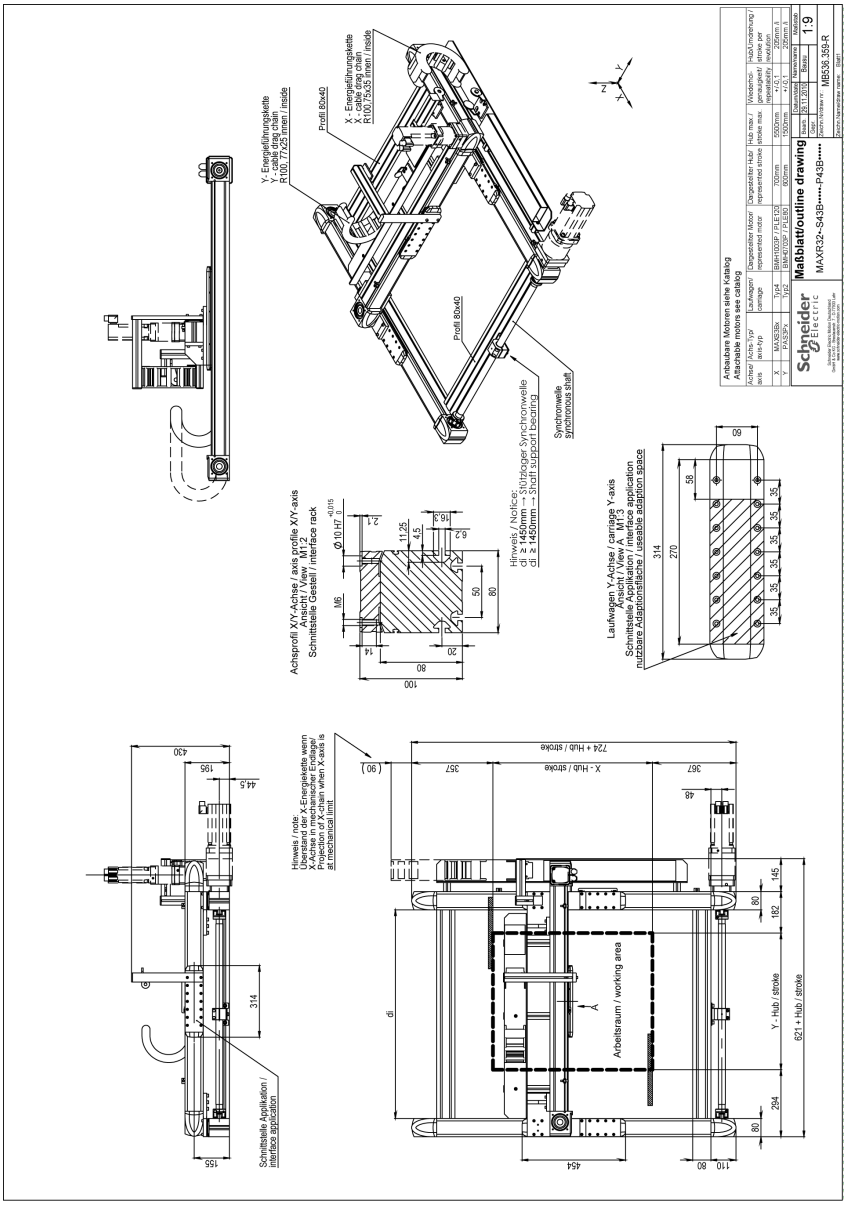
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS43BB X-Axis	MAXP43BB Y-Axis
Feed constant	mm/rev. (in/rev.)	205 (8.1)	
Effective diameter toothed belt pulley	mm (in)	65.254 (2.569)	
Maximum feed force Fx_{max}	N (lbf)	1650 (370.9)	1100 (247.3)
Maximum velocity[1)]	m/s (ft/s)	5 (16.4)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	54 (477.9)	36 (318.6)
Mass 0 stroke axis	kg (lb)	45.3 (99.9)	13.5 (29.8)
Mass per m of stroke	kg/m (lb/in)	22.0 (48.5)	12.1 (26.7)
Maximum stroke	mm (in)	5500 (216.5)	1500 (59.1)
Minimum stroke[2)]	mm (in)	11 (0.4)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.359-R/L



MAXR32•-S43BR••••-H43BR•••• and MAXR32•-S43BB••••-H43BB••••

Technical Data - MAXR32•-S43BR••••-H43BR••••

See dimensional drawing MB536.360-R/L.

Parameter	Unit	MAXS43BR X-Axis	MAXH43BR Y-Axis
Toothed belt drive	–	30HTD-5M	
Guide type	–	Roller guide	
Typical payload	kg (lb)	40 (88.2)	
Carriage type	–	Type 4	Type 2
Feed constant	mm/rev. (in/rev.)	205 (8.1)	
Effective diameter toothed belt pulley	mm (in)	65.254 (2.569)	
Maximum feed force Fx_{max}	N (lbf)	1650 (370.9)	1100 (247.3)
Maximum velocity[1)]	m/s (ft/s)	8 (26.3)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	54 (177.0)	36 (318.6)
Mass 0 stroke axis	kg (lb)	46.7 (102.95)	20.4 (45)
Mass per m of stroke	kg/m (lb/in)	19.0 (41.9)	18.5 (40.8)
Maximum stroke	mm (in)	5500 (216.5)	1500 (59.1)
Minimum stroke[2)]	mm (in)	175 (6.9)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXR32•-S43BB••••-H43BB••••

See dimensional drawing MB536.360-R/L.

Parameter	Unit	MAXS43BB X-Axis	MAXH43BB Y-Axis
Toothed belt drive	–	30HTD-5M	
Guide type	–	Ball guide	
Typical payload	kg (lb)	80 (176.4)	
Carriage type	–	Type 4	Type 2

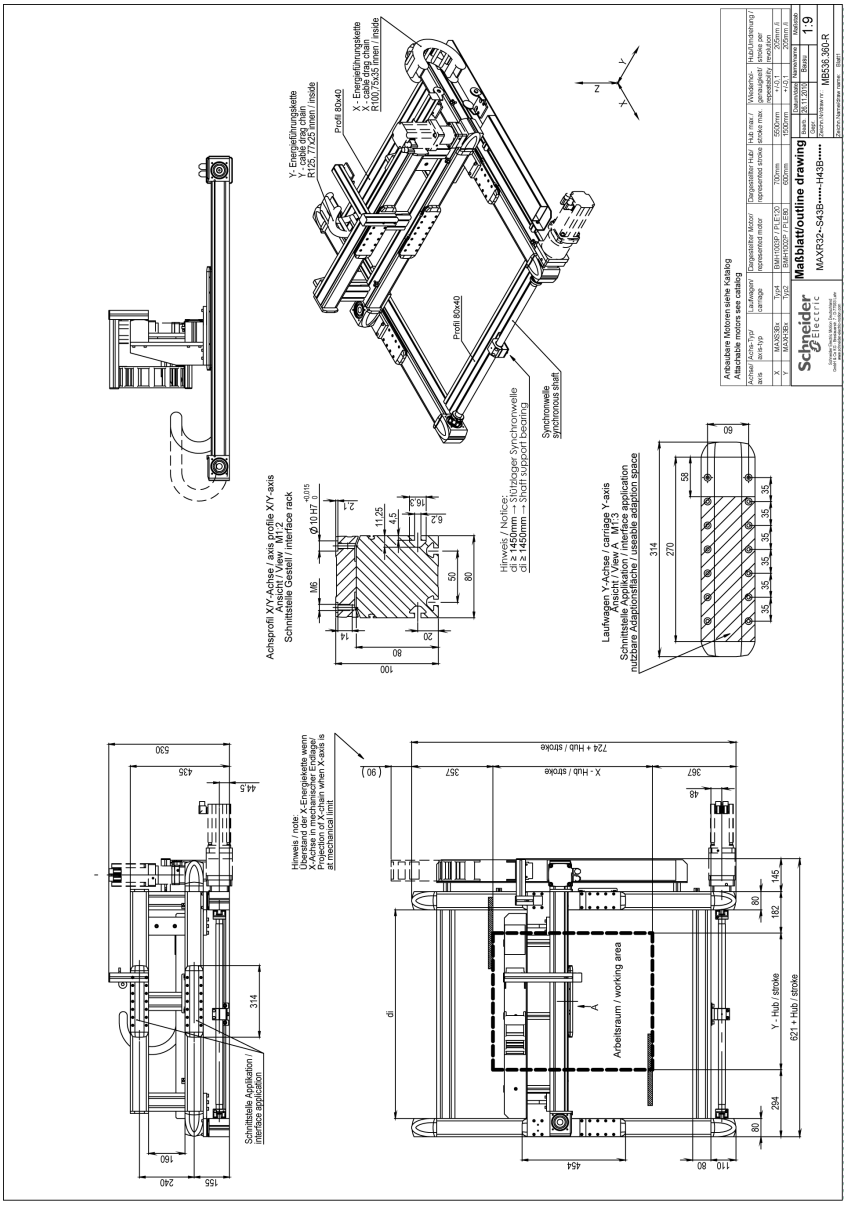
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS43BB X-Axis	MAXH43BB Y-Axis
Feed constant	mm/rev. (in/rev.)	205 (8.1)	
Effective diameter toothed belt pulley	mm (in)	65.254 (2.569)	
Maximum feed force Fx_{max}	N (lbf)	1650 (370.)	1100 (247.3)
Maximum velocity[1)]	m/s (ft/s)	5 (16.40)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	54 (477.9)	36 (318.6)
Mass 0 stroke axis	kg (lb)	48.3 (106.5)	21.9 (48.3)
Mass per m of stroke	kg/m (lb/in)	22.0 (48.5)	21.5 (47.4)
Maximum stroke	mm (in)	5500 (216.5)	1500 (59.1)
Minimum stroke[2)]	mm (in)	11 (0.4)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.360-R/L



MAXR42•-S44BB••••-H44BB••••

Technical Data - MAXR42•-S44BB••••-H44BB••••

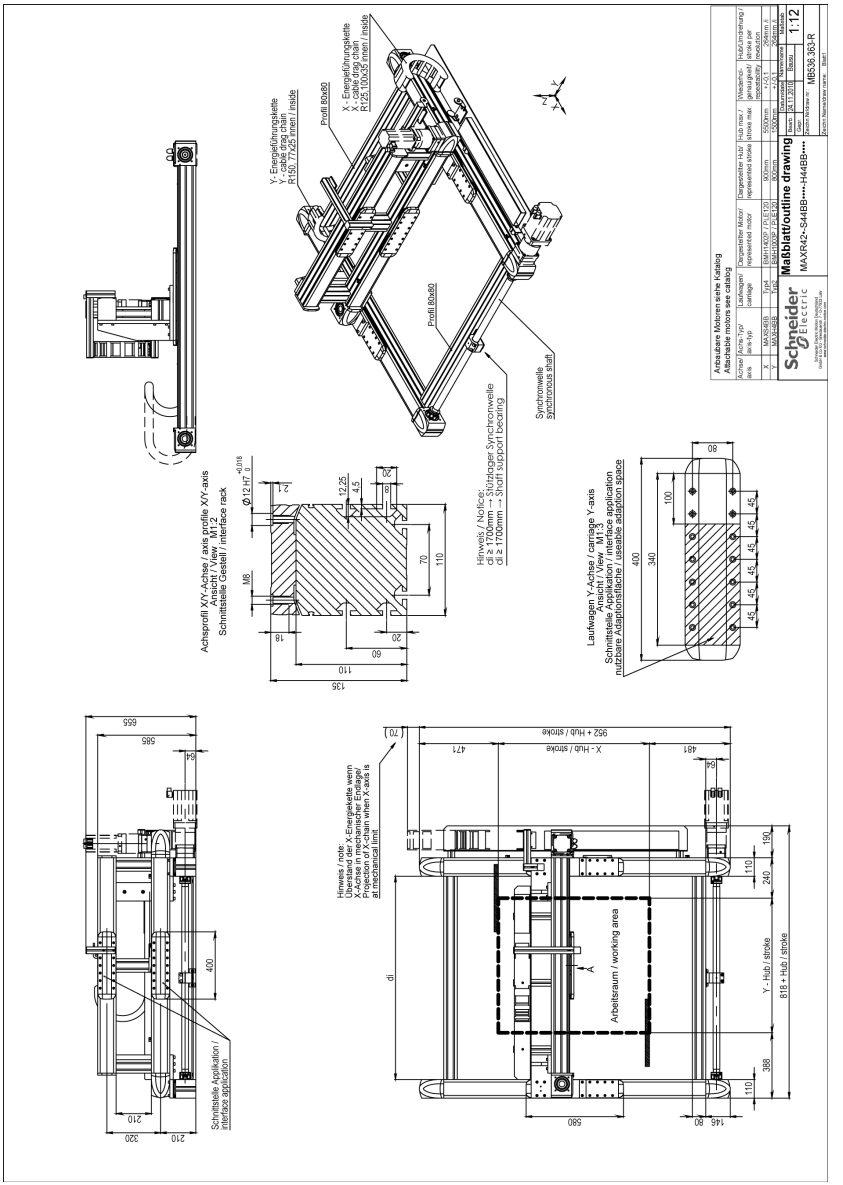
See dimensional drawing MB536.363-R/L.

Parameter	Unit	MAXS44BB X-Axis	MAXH44BB Y-Axis
Toothed belt drive	–	50HTD-8M	
Guide type	–	Ball guide	
Typical payload	kg (lb)	130 (286.6)	
Carriage type	–	Type 4	Type 2
Feed per revolution	mm/rev. (in/rev.)	264 (10.4)	
Effective diameter toothed belt pulley	mm (in)	84.034 (3.3)	
Maximum feed force Fx_{max}	N (lbf)	3900 (876.8)	2600 (584.5)
Maximum velocity[1)]	m/s (ft/s)	5 (16.4)	
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.6)	
Maximum driving torque M_{max}	Nm (lb*in)	165 (1460.4)	110 (973.6)
Mass 0 stroke axis	kg (lb)	97.1 (214.1)	45.2 (99.6)
Mass per m of stroke	kg/m (lb/in)	37.2 (82.0)	36.2 (79.8)
Maximum stroke	mm (in)	5500 (216.5)	1500 (59.1)
Minimum stroke[2)]	mm (in)	13 (0.5)	
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)	

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.363-R/L



Section 3.7
Mechanical Data of the Lexium MAXR•3 Series

What Is in This Section?

This section contains the following topics:

MAXR13•-S41BR••••-H41BR••••-C31BC••••

Technical Data - MAXR13•-S41BR••••-H41BR••••-C31BC••••

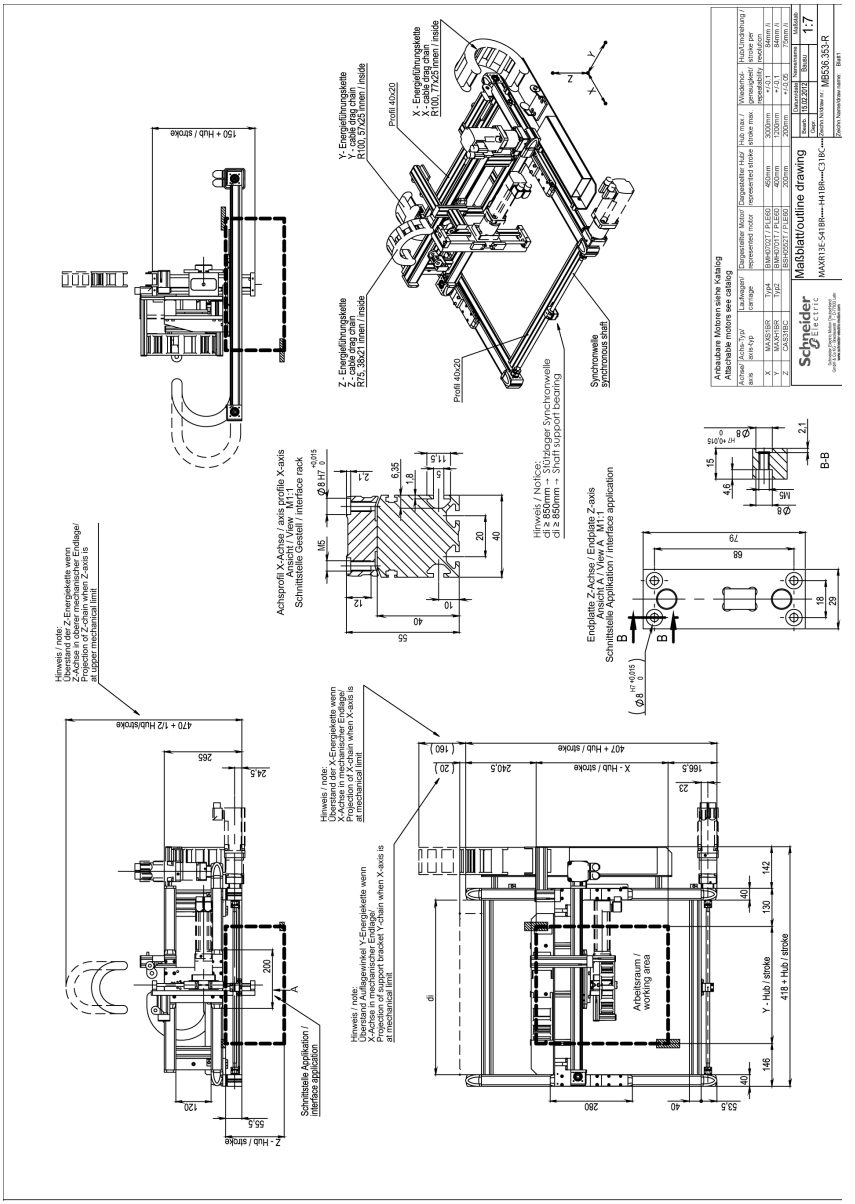
See dimensional drawing MB536.353-R/L.

Parameter	Unit	MAXS41BR X-Axis	MAXH41BR Y-Axis	C31BC Z-Axis
Toothed belt drive	–	15HTD-3M		10T-5
Guide type	–	Roller guide		Ball guide
Typical payload	kg (lb)	2 (4.41)		
Carriage type	–	Type 4	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	84 (3.31)		75 (2.95)
Effective diameter toothed belt pulley	mm (in)	26.738 (1.053)		23.873 (0.938)
Maximum feed force Fx_{max}	N (lbf)	450 (101.64)	300 (67.44)	125 (28.1)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	6 (53.1)	4 (35.4)	1.5 (13.28)
Mass 0 stroke axis	kg (lb)	10.0 (22.05)	4.9 (10.80)	1.9 (4.19)
Mass per m of stroke	kg/m (lb/in)	7.0 (15.43)	6.6 (14.55)	3.9 (8.6)
Maximum stroke	mm (in)	3000 (118.11)	1200 (47.24)	200 (7.87)
Minimum stroke[2)]	mm (in)	125 (4.92)		8 (0.31)
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.353-R/L



MAXR13•-S41BR••••-H41BR••••-C41BR••••

Technical Data - MAXR13•-S41BR••••-H41BR••••-C41BR••••

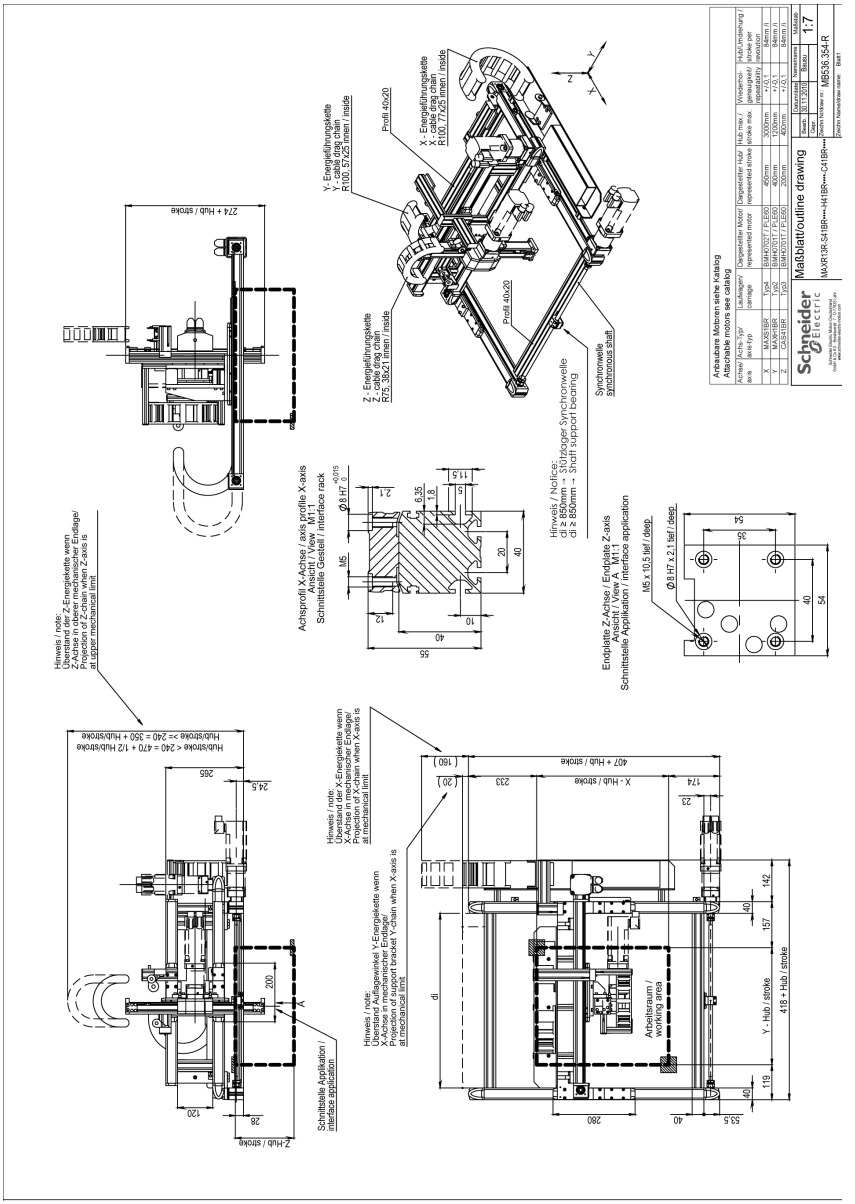
See dimensional drawing MB536.354-R/L.

Parameter	Unit	MAXS41BR X-Axis	MAXH41BR Y-Axis	C41BR Z-Axis
Toothed belt drive	–	15HTD-3M		
Guide type	–	Roller guide		
Typical payload	kg (lb)	4 (8.82)		
Carriage type	–	Type 4	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	84 (3.31)		
Effective diameter toothed belt pulley	mm (in)	26.738 (1.053)		
Maximum feed force Fx_{max}	N (lbf)	450 (101.64)	300 (67.44)	250 (56.20)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	6 (53.1)	4 (35.4)	3.5 (30.98)
Mass 0 stroke axis	kg (lb)	10.0 (22.05)	5.2 (11.46)	3.0 (6.61)
Mass per m of stroke	kg/m (lb/in)	7.0 (15.43)	6.6 (14.55)	2.7 (5.95)
Maximum stroke	mm (in)	3000 (118.11)	1200 (47.24)	400 (15.75)
Minimum stroke[2)]	mm (in)	125 (4.92)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.354-R/L



MAXR23•-S42BR••••-H42BR••••-C32BC•••• and MAXR23•-S42BB••••-H42BB••••-C32BC••••

Technical Data - MAXR23•-S42BR••••-H42BR••••-C32BC••••

See dimensional drawing MB536.357-R/L.

Parameter	Unit	MAXS42BR X-Axis	MAXH42BR Y-Axis	C32BC Z-Axis
Toothed belt drive	–	25HTD-5M		20AT-5
Guide type	–	Roller guide		Ball guide
Typical payload	kg (lb)	4 (8.82)		
Carriage type	–	Type 4	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	155 (6.10)		100 (2.95)
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)		31.831 (1.252)
Maximum feed force Fx_{max}	N (lbf)	1200 (269.77)	800 (179.85)	435 (97.79)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}[1)]	Nm (lb*in)	30 (265.52)	20 (177.01)	7.0 (61.95)
Mass 0 stroke axis	kg (lb)	23.2 (51.15)	11.3 (24.91)	4.8 (10.58)
Mass per m of stroke	kg/m (lb/in)	12.0 (26.45)	11.6 (25.57)	5.3 (11.68)
Maximum stroke	mm (in)	5500 (216.53)	1500 (59.05)	300 (11.81)
Minimum stroke[2)]	mm (in)	130 (5.12)		10 (0.4)
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXR23•-S42BB••••-H42BB••••-C32BC••••

See dimensional drawing MB536.357-R/L.

Parameter	Unit	MAXS42BB X-Axis	MAXH42BB Y-Axis	C32BC Z-Axis
Toothed belt drive	–	25HTD-5M		20AT-5
Guide type	–	Ball guide		
Typical payload	kg (lb)	5 (11.02)		

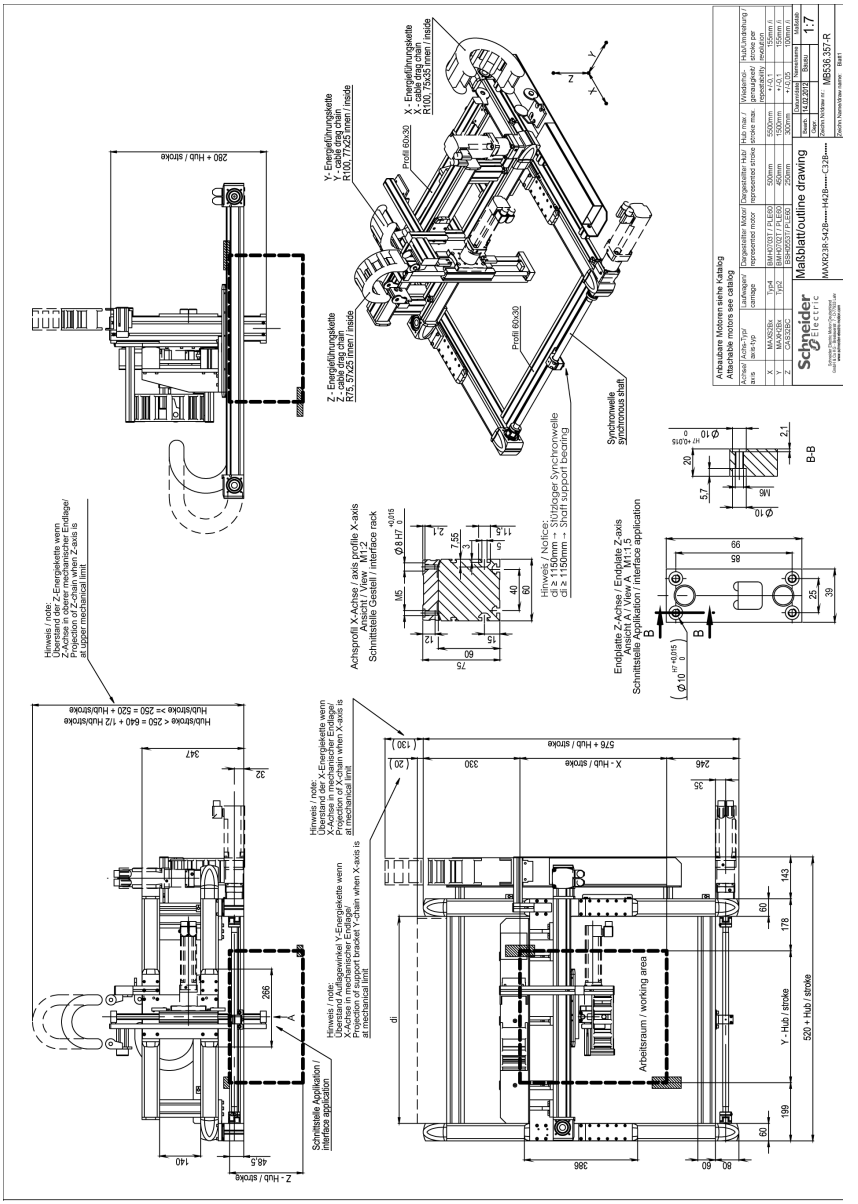
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS42BB X-Axis	MAXH42BB Y-Axis	C32BC Z-Axis
Carriage type	–	Type 4	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	155 (6.10)		100 (3.94)
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)		31.831 (1.252)
Maximum feed force Fx_{max}	N (lbf)	1200 (269.77)	800 (179.85)	435 (97.8)
Maximum velocity[1)]	m/s (ft/s)	5 (16.40)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	30 (265.52)	20 (177.01)	7.0 (61.96)
Mass 0 stroke axis	kg (lb)	24 (52.91)	12.1 (26.68)	4.8 (10.58)
Mass per m of stroke	kg/m (lb/in)	14.0 (30.86)	13.6 (30.0)	5.3 (11.68)
Maximum stroke	mm (in)	5500 (216.53)	1500 (59.05)	300 (11.81)
Minimum stroke[2)]	mm (in)	9 (0.35)		10 (0.4)
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.357-R/L



MAXR23•-S42BR••••-H42BR••••-C42BR•••• and MAXR23•-S42BB••••-H42BB••••-C42BB••••

Technical Data - MAXR23•-S42BR••••-H42BR••••-C42BR••••

See dimensional drawing MB536.358-R/L.

Parameter	Unit	MAXS42BR X-Axis	MAXH42BR Y-Axis	C42BR Z-Axis
Toothed belt drive	–	25HTD-5M		
Guide type	–	Roller guide		
Typical payload	kg (lb)	6 (13.23)		
Carriage type	–	Type 4	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	155 (6.10)		
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)		
Maximum feed force Fx_{max}	N (lbf)	1200 (269.77)	800 (179.85)	650 (146.13)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	30 (265.52)	20 (177.01)	16 (141.61)
Mass 0 stroke axis	kg (lb)	23.2 (51.15)	11.3 (26.01)	7.9 (17.42)
Mass per m of stroke	kg/m (lb/in)	12.0 (26.45)	11.6 (25.57)	5.0 (11.02)
Maximum stroke	mm (in)	5500 (216.53)	1500 (59.05)	600 (23.62)
Minimum stroke[2)]	mm (in)	130 (5.12)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXR23•-S42BB••••-H42BB••••-C42BB••••

See dimensional drawing MB536.358-R/L.

Parameter	Unit	MAXS42BB X-Axis	MAXH42BB Y-Axis	C42BB Z-Axis
Toothed belt drive	–	25HTD-5M		
Guide type	–	Ball guide		
Typical payload	kg (lb)	15 (33.06)		

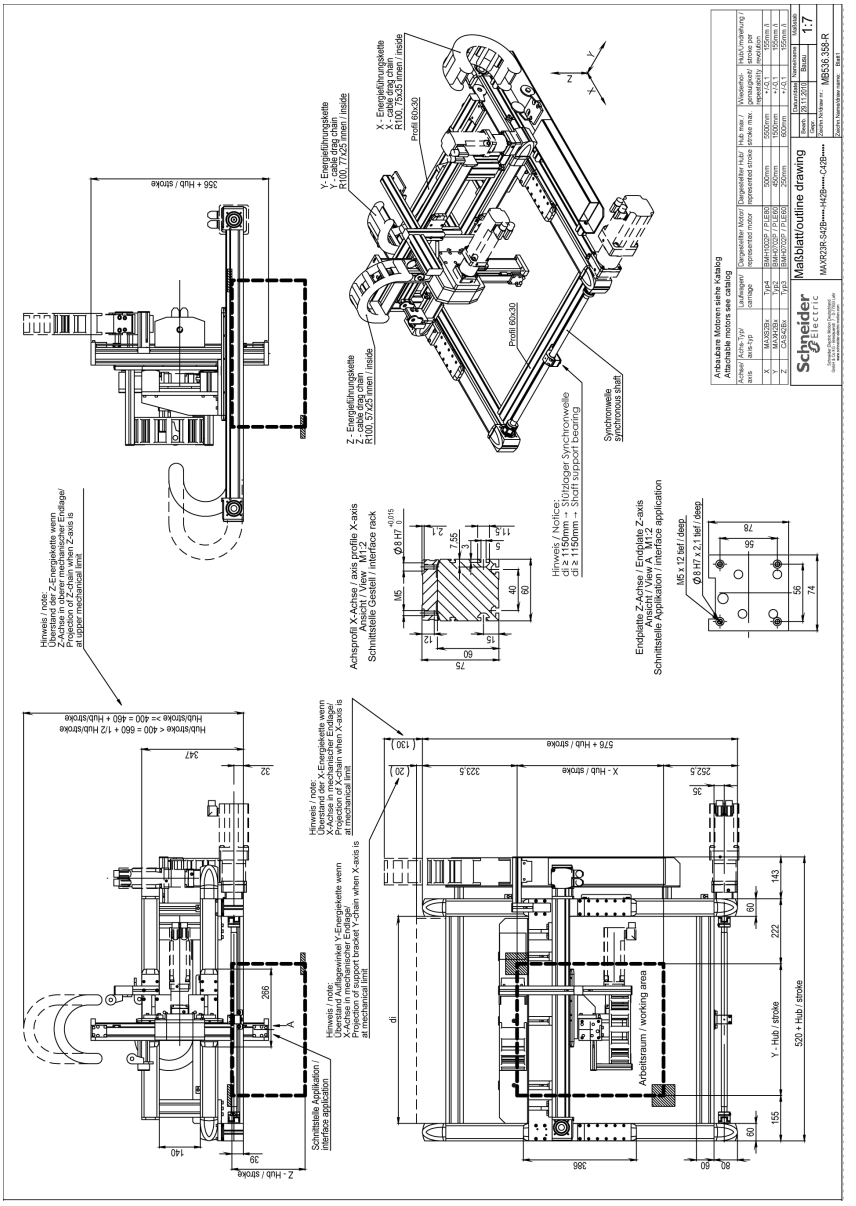
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS42BB X-Axis	MAXH42BB Y-Axis	C42BB Z-Axis
Carriage type	–	Type 4	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	155 (6.10)		
Effective diameter toothed belt pulley	mm (in)	49.338 (1.942)		
Maximum feed force Fx_{max}	N (lbf)	1200 (269.77)	800 (179.85)	650 (146.13)
Maximum velocity[1)]	m/s (ft/s)	5 (16.40)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	30 (265.52)	20 (177.01)	16 (141.61)
Mass 0 stroke axis	kg (lb)	24 (52.91)	12.6 (27.78)	8.4 (18.52)
Mass per m of stroke	kg/m (lb/in)	14.0 (30.86)	13.6 (29.98)	6.0 (13.22)
Maximum stroke	mm (in)	5500 (216.53)	1500 (59.05)	600 (23.62)
Minimum stroke[2)]	mm (in)	9 (0.35)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.358-R/L



MAXR33•-S43BR••••-H43BR••••-C34BC•••• and MAXR33•-S43BB••••-H43BB••••-C34BC••••

Technical Data - MAXR33•-S43BR••••-H43BR••••-C34BC••••

See dimensional drawing MB536.361-R/L.

Parameter	Unit	MAXS43BR X-Axis	MAXH43BR Y-Axis	C34BC Z-Axis
Toothed belt drive	–	30HTD-5M		32AT-5
Guide type	–	Roller guide		Ball guide
Typical payload	kg (lb)	14 (30.86)		
Carriage type	–	Type 4	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	205 (8.07)		100 (3.94)
Effective diameter toothed belt pulley	mm (in)	65.254 (2.569)		31.831 (1.253)
Maximum feed force Fx_{max}	N (lbf)	1650 (370.93)	1100 (247.29)	705 (158.5)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	54 (477.94)	36 (318.63)	11.5 (101.78)
Mass 0 stroke axis	kg (lb)	46.7 (102.96)	23.1 (50.93)	8.0 (17.64)
Mass per m of stroke	kg/m (lb/in)	19.0 (41.9)	18.5 (40.79)	7.6 (16.76)
Maximum stroke	mm (in)	5500 (216.53)	1500 (59.05)	500 (19.68)
Minimum stroke[2)]	mm (in)	175 (6.89)		14 (0.55)
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXR33•-S43BB••••-H43BB••••-C34BC••••

See dimensional drawing MB536.361-R/L.

Parameter	Unit	MAXS43BB X-Axis	MAXH43BB Y-Axis	C34BC Z-Axis
Toothed belt drive	–	30HTD-5M		32AT-5
Guide type	–	Ball guide		
Typical payload	kg (lb)	18 (39.7)		

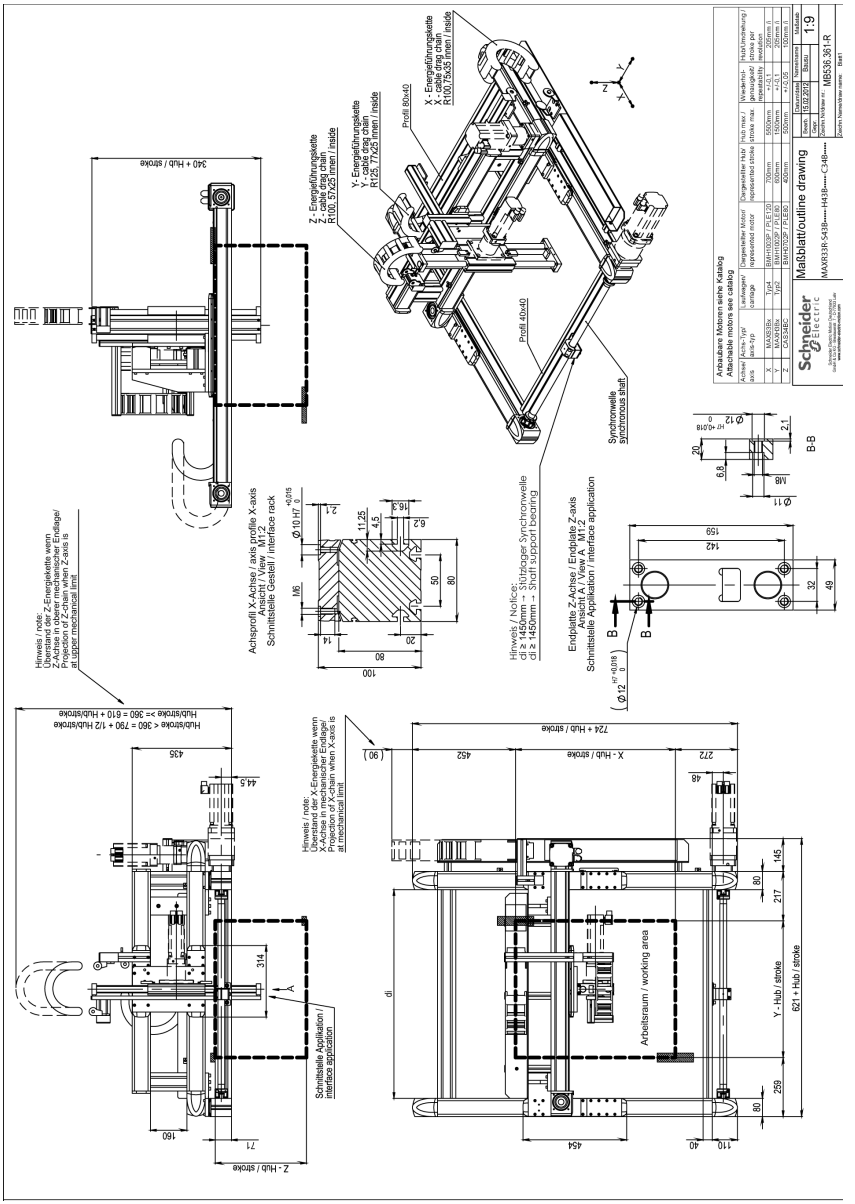
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS43BB X-Axis	MAXH43BB Y-Axis	C34BC Z-Axis
Carriage type	–	Type 4	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	205 (8.07)		100 (3.94)
Effective diameter toothed belt pulley	mm (in)	65.254 (2.569)		31.831 (1.253)
Maximum feed force Fx_{max}	N (lbf)	1650 (370.93)	1100 (247.29)	705 (158.49)
Maximum velocity[1)]	m/s (ft/s)	5 (16.40)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	54 (477.94)	36 (318.63)	11.5 (101.78)
Mass 0 stroke axis	kg (lb)	48.3 (106.48)	24.6 (54.23)	8.0 (17.64)
Mass per m of stroke	kg/m (lb/in)	22.0 (48.5)	21.5 (47.40)	7.6 (16.76)
Maximum stroke	mm (in)	5500 (216.53)	1500 (59.05)	500 (19.68)
Minimum stroke[2)]	mm (in)	11 (0.43)		14 (0.55)
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.361-R/L



MAXR33•-S43BR••••-H43BR••••-C43BR•••• and MAXR33•-S43BB••••-H43BB••••-C43BB••••

Technical Data - MAXR33•-S43BR••••-H43BR••••-C43BR••••

See dimensional drawing MB536.362-R/L.

Parameter	Unit	MAXS43BR X-Axis	MAXH43BR Y-Axis	C43BR Z-Axis
Toothed belt drive	–	30HTD-5M		
Guide type	–	Roller guide		
Typical payload	kg (lb)	9 (19.84)		
Carriage type	–	Type 4	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	205 (8.07)		
Effective diameter toothed belt pulley	mm (in)	65.254 (2.569)		
Maximum feed force Fx_{max}	N (lbf)	1650 (370.93)	1100 (247.29)	900 (202.32)
Maximum velocity[1)]	m/s (ft/s)	8 (26.25)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	54 (177.01)	36 (318.63)	30 (66.14)
Mass 0 stroke axis	kg (lb)	46.7 (1020.96)	24.1 (53.13)	14.4 (31.75)
Mass per m of stroke	kg/m (lb/in)	19.0 (41.89)	18.5 (40.79)	8.6 (18.96)
Maximum stroke	mm (in)	5500 (216.53)	1500 (59.05)	800 (31.5)
Minimum stroke[2)]	mm (in)	175 (6.89)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Technical Data - MAXR33•-S43BB••••-H43BB••••-C43BB••••

See dimensional drawing MB536.362-R/L.

Parameter	Unit	MAXS43BB X-Axis	MAXH43BB Y-Axis	C43BB Z-Axis
Toothed belt drive	–	30HTD-5M		
Guide type	–	Ball guide		
Typical payload	kg (lb)	25 (55.12)		

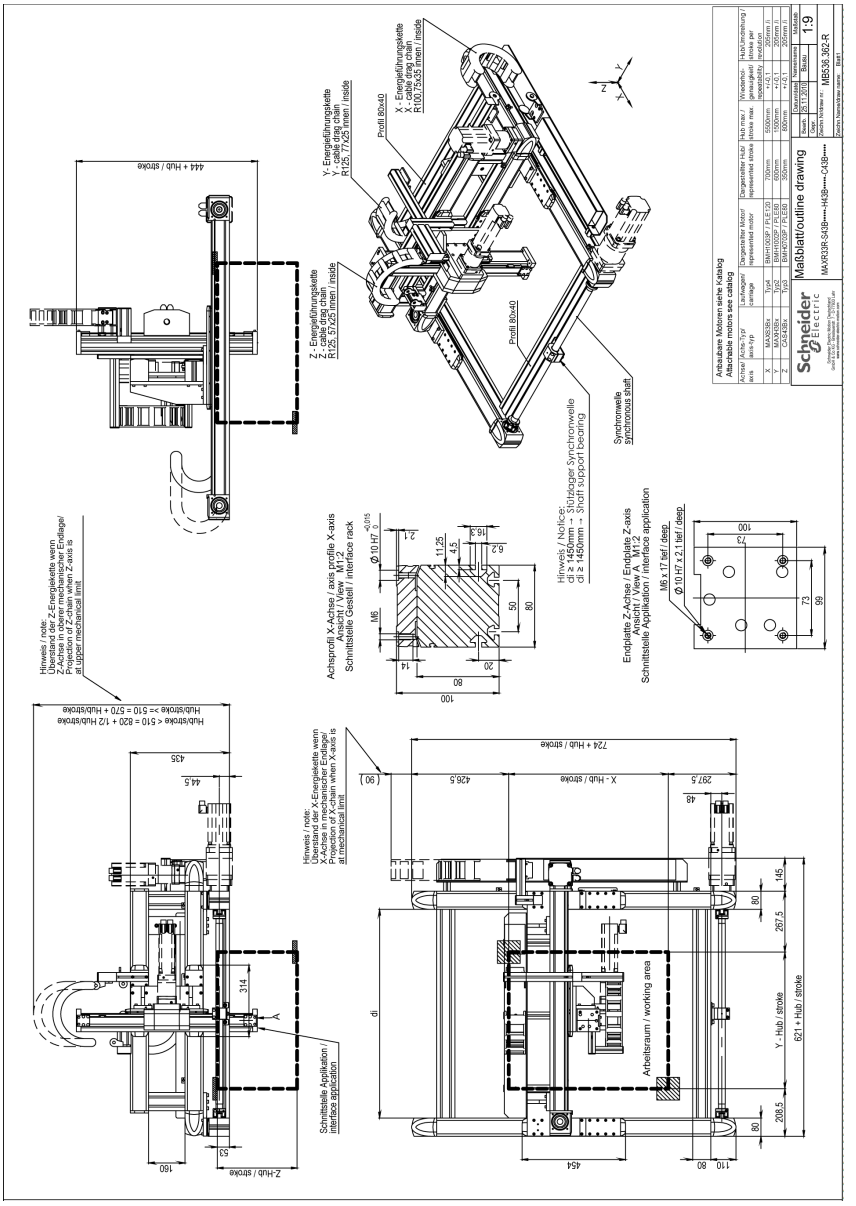
1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Parameter	Unit	MAXS43BB X-Axis	MAXH43BB Y-Axis	C43BB Z-Axis
Carriage type	–	Type 4	Type 2	Type 3
Feed constant	mm/rev. (in/rev.)	205 (8.07)		
Effective diameter toothed belt pulley	mm (in)	65.254 (2.569)		
Maximum feed force Fx_{max}	N (lbf)	1650 (370.93)	1100 (247.29)	900 (202.33)
Maximum velocity[1)]	m/s (ft/s)	5 (16.40)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	54 (477.94)	36 (318.63)	30 (265.52)
Mass 0 stroke axis	kg (lb)	48.3 (106.48)	25.6 (58.64)	15.0 (33.07)
Mass per m of stroke	kg/m (lb/in)	22.0 (48.5)	21.5 (47.40)	10.1 (22.27)
Maximum stroke	mm (in)	5500 (216.53)	1500 (59.05)	800 (31.5)
Minimum stroke[2)]	mm (in)	11 (0.43)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.362-R/L



MAXR43•-S44BB••••-H44BB••••-C44BB••••

Technical Data - MAXR43•-S44BB••••-H44BB••••-C44BB••••

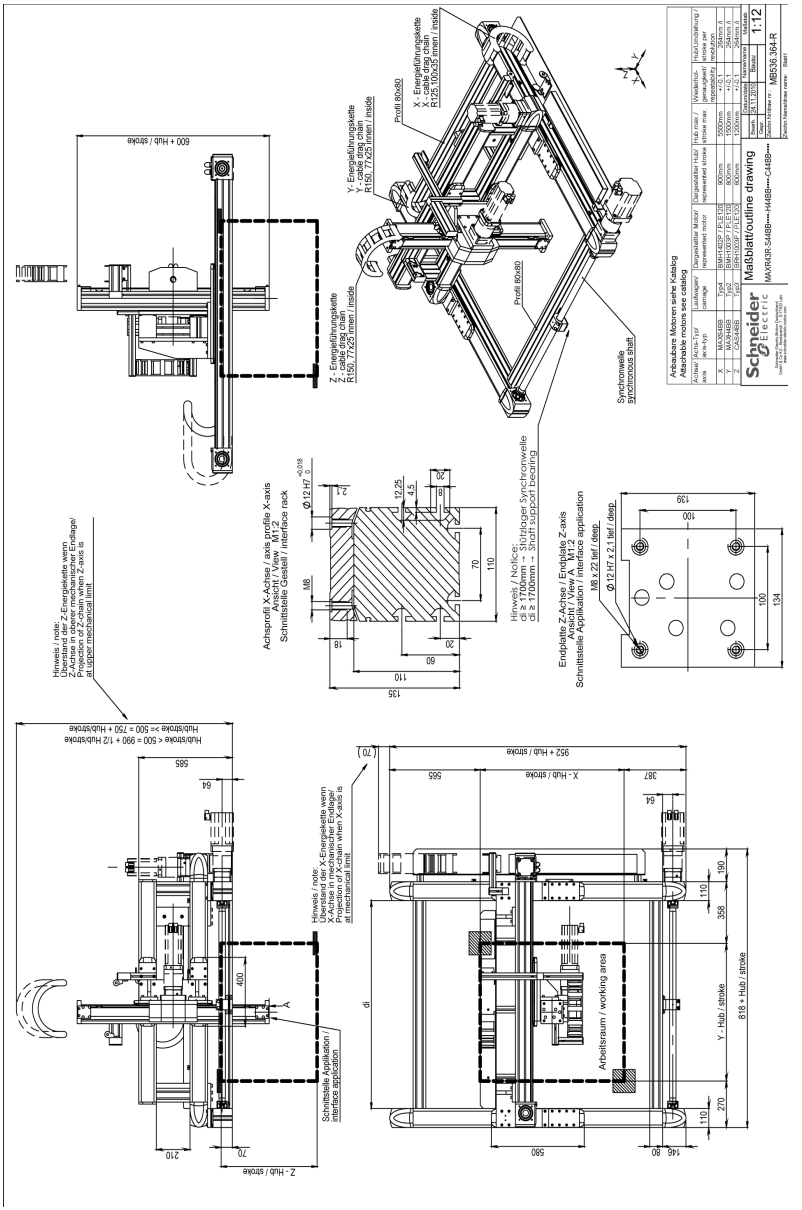
See dimensional drawing MB536.364-R/L.

Parameter	Unit	MAXS44BB X-Axis	MAXH44BB Y-Axis	C44BB Z-Axis
Toothed belt drive	–	50HTD-8M		
Guide type	–	Ball guide		
Typical payload	kg (lb)	50 (110.23)		
Carriage type	–	Type 4	Type 2	Type 3
Feed per revolution	mm/rev. (in/rev.)	264 (10.39)		
Effective diameter toothed belt pulley	mm (in)	84.034 (3.31)		
Maximum feed force Fx_{max}	N (lbf)	3900 (876.75)	2600 (584.50)	2150 (483.34)
Maximum velocity[1)]	m/s (ft/s)	5 (16.40)		3 (9.84)
Maximum acceleration[1)]	m/s^2 (ft/s)	20 (65.62)		
Maximum driving torque M_{max}	Nm (lb*in)	165 (1460.37)	110 (973.58)	90 (796.57)
Mass 0 stroke axis	kg (lb)	97.1 (217.06)	53.4 (117.72)	35.6 (78.48)
Mass per m of stroke	kg/m (lb/in)	37.2 (82.01)	36.2 (79.81)	17.1 (37.7)
Maximum stroke	mm (in)	5500 (216.53)	1500 (59.05)	1200 (47.24)
Minimum stroke[2)]	mm (in)	13 (0.51)		
Repeatability[1)]	mm (in)	+/- 0.10 (0.004)		

1) Depending on load, stroke and length of synchronous shaft
2) Minimum stroke required for lubrication of the linear guide

Dimensional Drawing

MB536.364-R/L



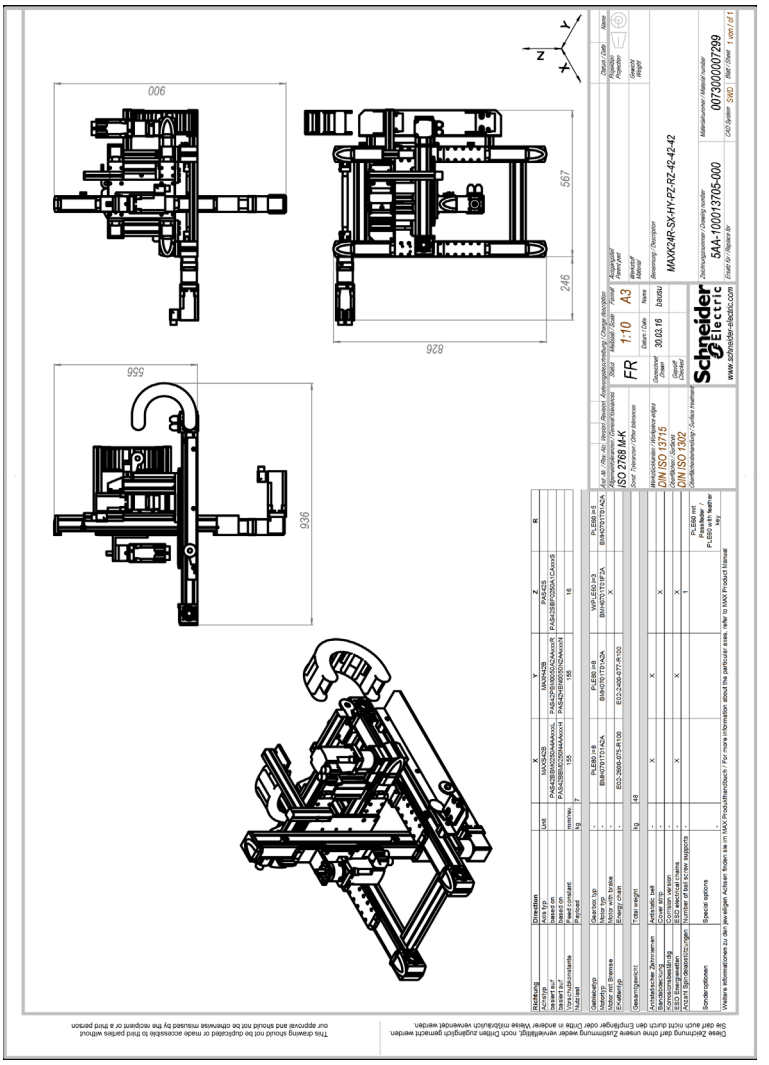
Section 3.8
Mechanical Data of the Lexium MAXK• Series

Lexium MAXK•

Technical Data - Lexium MAXK•

The Lexium MAXK• modules are customized applications. All information about technical data can be found in the delivered product data sheet and the according product manuals of the CAS, PAS or TAS axes *(see page 10)*.

Example for a delivered product data sheet of a customized Lexium MAXK• system:



Chapter 4
Transport and Installation

What Is in This Chapter?

This chapter contains the following sections:

Section 4.1
Transport and Unpacking of the Lexium MAX

What Is in This Section?

This section contains the following topics:

Transport and Storage

Transport Conditions

The Lexium MAX products must be handled with care. Shocks and impacts may damage the portal robot. They may lead to reduced running accuracy, reduced service life, or a complete breakdown.

The portal robot is mounted before transport.

The portal robot is transported in a cardboard box or a wooden container. The wooden container is treated according to the IPPC standard. The cardboard box or container dimensions vary according to the dimensions of the portal robot.

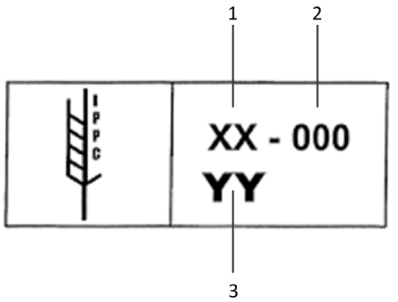
NOTE: You can find the total weight of your application on the Typeplate *(see page 65)* or in the corresponding Technical Data *(see page 67)*.

NOTICE
SHOCKS AND VIBRATIONS DURING TRANSPORT ● Avoid heavy shocks and/or vibrations during transport. ● Check the units for visible transport damage and inform the shipping company immediately if necessary. **Failure to follow these instructions can result in equipment damage.**

NOTE: In case of transport damages, contact your Schneider Electric partner.

IPPC Logo

The IPPC logo is placed on each side of the wooden container.

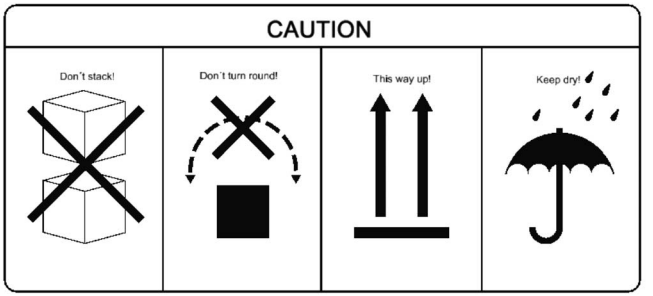


1 Country code
2 Facility number
3 Treatment type

NOTE: Before unpacking and installing the portal robot, make sure that the lifting capacity of the lifting devices (forklift truck and crane) is sufficient to lift the portal robot. For this, the weight of the portal robot is the appropriate indicator. Find the weight on the container and in the transport documents.

Warning Logo

The fragile logo is placed on each side of the cardboard box and the container packaging. Follow the placed handling instructions.



Storage

When the portal robot is not installed immediately, it can be stored inside the container or unpacked. In both cases, ensure that it is stored in a roofed and dry place. Avoid humidity which can have corrosive effects on the portal robot.

NOTE: When the portal robot is stored unpacked, ensure a plane surface.

Unpacking and Positioning

Unpacking

Step	Action
1	Use a forklift truck to discharge the portal robot in its transport packaging and move it as close as possible to the installation site.
2	In case of a wooden transport container, unscrew the bolts on the lid of the container. In case of a cardboard transport packaging, open the box with appropriate tools.
3	Open the packaging.
4	Check the portal robot for completeness.
5	Check the portal robot for damage.

NOTE: In case of any transport damages, contact your Schneider Electric Partner.

Transport Locking Devices

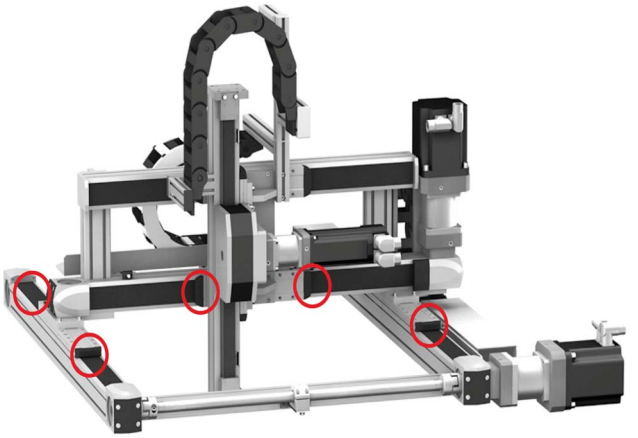
During transport the portal robot is secured by:

- Transport locking devices mounted in front and at the backside of the carriages of the x- and the y-axes.
- Clamping claws transport safety devices (only in wooden container)
- Wooden transport safety devices (option)

The transport locking devices at the carriages help to prevent a motion of the x- and / or the y-axes during transport.

The clamping claws transport safety devices help to prevent a motion of the system in the wooden container.

The following graphic is an example for the position of the transport locking devices on a MAXR•3 system.



NOTE: Remove the transport locking devices only when the portal robot is installed to an installation surface.

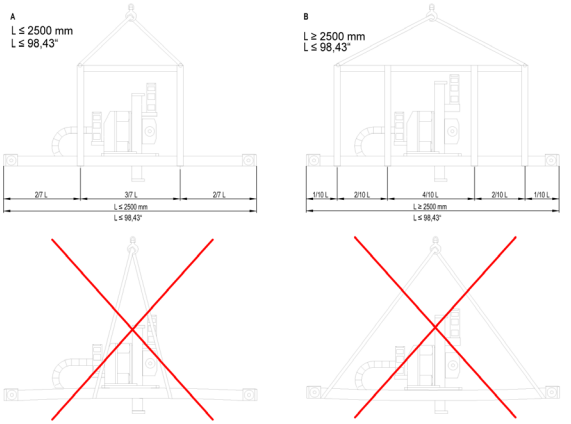
Lifting Out from the Container

Before starting to lift out and position the portal robot via a crane, pay special attention to the accident prevention regulations and the safety regulations.

Only authorized personnel is allowed to operate the crane.

⚠ WARNING
FALLING, HEAVY LOADS Only attach the lifting straps to the x- axis body. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

Step	Action
1	Remove the transport safety device out of the opened container. **NOTE:** Do not remove the carriage lock on the x- and the y-axes.
2	Before you attach the lifting straps of the crane to the provided loops, ensure that the straps are not knotted or twisted.

Step	Action
3	When you attach the lifting straps, act according to the following graphic which provides an example for Lexium MAXR•3. When the length of the portal robot does not exceed 2500 mm (98.43 in), refer to picture A. In any other cases, refer to picture B.  **NOTE:** Do not attach the lifting straps close to the middle or at the driving unit of the x-axis body. This can cause a deflection of the structure and can lead to a reduced running accuracy.
4	Carefully lift out the portal robot from the container.

NOTE: Before installing the portal robot ensure, that the installation surface is horizontal and the planarity of the surface does not exceed 0.1 mm/m (0.004 in/ft).

Positioning to the Installation Surface Via a Crane

⚠ WARNING
HANGING LOADS Do not stand under hanging loads. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

Step	Action
1	Carefully position the portal robot on its installation surface.
2	To install the portal robot to the installation surface either use slot nuts or clamping claws. Make sure that the portal robot is sufficiently stabilized by support points and leveling rods. For more information about installation, refer to Installing the Lexium MAX• to an Installation Surface *(see page 174)*.

Step	Action
3	Remove the lifting straps only after the portal robot is sufficiently stabilized.

Section 4.2
Mechanical Installation

What Is in This Section?

This section contains the following topics:

Information About Installation

Overview

Proceed with care during the following steps and take all precautions described in order to help prevent:

- Injuries and material damage
- Incorrect installation of components
- Incorrect operation of components
- Use of non-authorized cables or modified components

For further Information, refer to *Specific Safety Information* *(see page 13)*.

⚠ WARNING

INCORRECT INSTALLATION

Ensure a correct installation and maintenance of the system according to this manual.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Supporting Frame

The Lexium MAX Series robots are designed for horizontal installation. For other positions, or special applications, please contact your Schneider Electric Partner.

NOTE: Consider the overall load height when factoring in the installation height of the robot.

NOTE: During the design of the robot frame consider the possible change of load heights. If necessary, select longer z-axis stroke length.

The robot accuracy in the application is also determined by the frame. Frame deformations causes inaccuracies and vibration at the operating location.

Basic Frame Requirements

The frame must not only withstand the requirements of the application permanently, but also have sufficient rigidity so that deformations and vibrations do not lead to large deviation at the load point.

Ensure that the supporting frame has sufficient transverse rigidity. If necessary adjust the level.

Forces and torques imposed on the frame during normal operation:

- By changing the stroke length, the forces and moment in the frame change. This must be observed by the customer.
- The configuration of the robot mechanism, the speed, the acceleration, as well as the connected payload, affect the total energy, and may possibly cause damage.

NOTE: Install the robot with grade 8.8 or better bolts.

Standard Tightening Torques

The table shows the maximum tightening torques (ISO4762 - 8.8) for installing the payload and fastening slot nuts, clamping claws, motor, and contact plate with hex socket screws.

Thread	Wrench size in mm	Maximum tightening torque in Nm (lb·in)
M3	2.5 (0.10)	1.1 (9.74)
M4	3 (0.12)	2.5 (22.13)
M5	4 (0.16)	5 (44.25)
M6	5 (0.20)	8.5 (75.23)
M8	6 (0.24)	21 (185.87)
M10	8 (0.31)	42 (371.73)
M12	10 (0.40)	70 (619.55)

Installing the Lexium MAX to an Installation Surface

Overview

The length of the linear axes can have an impact on the running accuracy. A long linear axis may bend more easily, which can cause a reduced running accuracy of the whole portal robot. To help prevent this, use support points and leveling rods at intervals to stabilize the linear axes.

NOTICE
INSTALLING ON INSTALLATION SURFACE ● If motors with a cross section greater than the cross section of the axis body are used, the axis must be supported or the installation surface must be cut out as required. ● The end blocks protrude beyond the axis body at the ends. The end blocks must not be the only parts supported by the installation surface. ● If the lateral T-slots are used for installation, the sensor cable cannot be routed in the T-slots. ● The greater the load or the demands on the running accuracy, the shorter the distance that must be between the slot nuts or the clamping claws. **Failure to follow these instructions can result in equipment damage.**

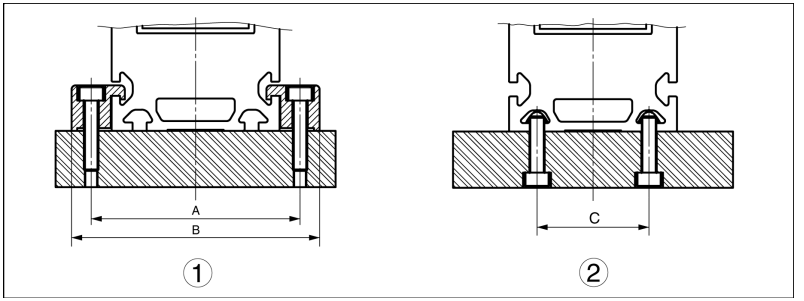
How to Install the Robot to an Installation Surface

The installation surface must be machined smooth and flat. Make sure that the planarity of the installation surface does not exceed 0.1 mm/m (0.004 in/ft).

NOTE: When installing the portal robot, keep in mind that it may have to be accessed for maintenance.

Step	Action
1	Screw the robot by using the T-slots of the x-axis onto the installation surface using the suitable clamping claws or slot nuts.
2	At the beginning, tighten the clamping claws or the slot nuts with a low tightening torque.
3	Tighten the clamping claws or slot nuts appropriately. For more information, refer to *Standard Tightening Torques* *(see page 173)*.
4	When the portal robot is installed to the installation surface, remove the transport locking devices from the x- and/or the y-axis.

For information on appropriate clamping claws and slot nuts, refer to *Spare Parts Inventory* *(see page 211)*.



1 Installation per clamping claws
2 Installation with slot nuts

Standard Dimensions for Installing the Axes of the Portal Robot

When installing the axes of the portal robot, the tapped hole distance and the maximum distance for the clamping claws or the slot nuts need to be taken into consideration.

Tapped hole distance

The table shows the dimensions of the tapped hole distances:

Tapped hole distance		Axis			
Legend item	**Unit**	**MAXS41 / MAXH41**	**MAXS42 / MAXH42**	**MAXS43 / MAXH43**	**MAXS44 / MAXH44**
A	mm (in)	54 (2.13)	74 (2.91)	96 (3.78)	130 (5.12)
B		68 (2.68)	88 (3.46)	112 (4.41)	150 (5.91)
C		20 (0.79)	40 (1.57)	50 (1.97)	70 (2.76)

Maximum distance

The table shows the maximum distances for the clamping claws or the slot nuts:

Maximum distance		Axis			
Element	**Unit**	**MAXS41 / MAXH41**	**MAXS42 / MAXH42**	**MAXS43 / MAXH43**	**MAXS44 / MAXH44**
Clamping claws	mm (in)	400 (15.75)	600 (23.62)	800 (31.50)	1000 (39.37)
Slot nuts		400 (15.75)	600 (23.62)	800 (31.50)	1000 (39.37)

NOTE: The values indicated are per side at medium loads.

The values differ for the Lexium MAXK• Series. For further information, refer to the according product manual of the CAS, PAS and TAS axes *(see page 10)*.

Motor and Gearbox

Overview

When the portal robot is delivered, the motors and the gearboxes are installed.

Installation Position of the Motor and Gearbox

In case of motor or gearbox replacement, it is possible to install the new motor or gearbox to either side of the two end blocks of the linear axis. The motor and the gearbox can be mounted in different arrangements (turned in increments of 4 x 90°).

NOTE: The maximum mass of the installed parts is limited by the torque at the end block.

For further information on motor and gearbox installation, refer to the according product manuals of the CAS, PAS or TAS axes *(see page 10)*.

Third-Party Motors and Gearboxes

When choosing a third-party motor, take special care that the maximum drive torque is not exceeded. Otherwise the axis could be damaged or destroyed.

NOTE: The maximum mass of the installed parts is limited by the torque at the end block.

Refer to *Technical Data* *(see page 67)* and choose the appropriate axis data.

Motor Connection

For information on how to install the motor, refer to the corresponding *Motor Manual* and to the manuals of the particular axes.

Gearbox Connection

For information on how to install the gearbox, refer to the corresponding *Gearbox Manual* and to the manuals of the particular axes *(see page 10)*.

Installing the Payload

Overview

Mounting threads on the end plate of the cantilever axis or on the carriage of the double axis allow you to fasten the payload. Each thread is provided with a counterbore for a locating dowel for reproducible mounting of the payload.

For more information about the sizes of the particular threads to mount the payload, refer to *Technical Data* *(see page 67)* and to *Standard Tightening Torques* *(see page 173)*.

For more information about the particular axes, refer to CAS, PAS or TAS product manuals *(see page 10)*.

Section 4.3
Electrical Connections

Wiring

Grounding the Robot

The following components of the portal robot have to be grounded:

- motors (for more information about how to ground the motors, refer to the corresponding *Motor Manual*)
- support bracket of the cable drag chains in x- and/or y- direction
- all costumer attachments

Bolt ground cables to the ground connections at the robot (symbol IEC 60417 - 5019)

NOTE: When grounding the portal robot, use cables that respect the local standards that are on vigor, e.g. cables that conform to NEC 70 / NFPA 79 in the USA.

⚠⚠ DANGER

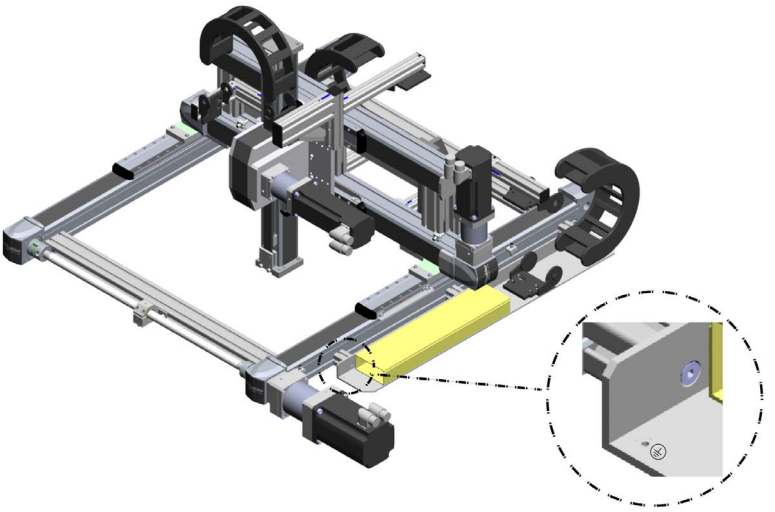
ELECTRIC SHOCK DUE TO IMPROPER GROUNDING

- Ground robot components in accordance with local standards and regulations at a single, central point.
- Verify whether the motors are connected to the central ground.
- Install external safety devices in accordance to local regulations and standards.
- When designing the safety devices, assume that the robot can not be stopped by internal logic and must necessarily be stopped by external safety devices.

Failure to follow these instructions will result in death or serious injury.

Multipoint grounding is permissible if connections are made to an equipotential ground plane dimensioned to help avoid cable shield damage in the event of power system short-circuit currents.

The following graphic is an example for the support bracket grounding position on a x-axis of a Lexium MAXR•3 system.



Cable Drag Chain

The portal robot is equipped with cable drag chains alongside the linear and cantilever axes.

These cable drag chains are used for:

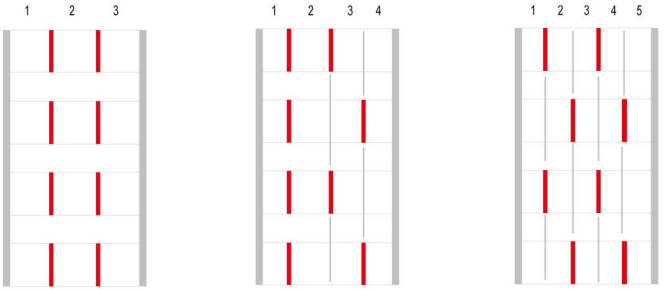
- Power supply
- Sensor function
- Encoder cable
- Customer application cable

Before installing the portal robot, there are no cables laid inside the cable drag chains.

Mounting brackets fix the ends of the cable drag chain to the axis. The cable drag chain has a rectangular cross section, inside which the cables lie. Inside the cable drag chain, there are one or two separators in each chain link to create from three up to five cable chambers. So the cables for the power supply, the sensor function and additional customized cables can be separated.

Positioning the Separators

To create from three up to five cable chambers, place the separators according to the following illustration:



NOTICE
INCORRECT PAIRING OF MOTOR AND ENCODER CABLES
Label the motor and associated encoder cables according to their pairing.
Failure to follow these instructions can result in equipment damage.

Laying Cables

Lay cables when the portal robot is installed to an installation surface. When laying cables, ensure that they are suitable for being used in cable drag chains.

⚠⚠ DANGER
LOOSE WIRING CAUSES ELECTRIC SHOCK
Tighten wiring connections in conformance with the torque specifications.
Failure to follow these instructions will result in death or serious injury.

Connecting and Grounding the Motor

Refer to the corresponding *Motor Manual* and the *Electrical Installation* for details on connecting the motor and the wiring.

Section 4.4
Wiring Position of the Lexium MAXP• Series

What Is in This Section?

This section contains the following topics:

Wiring Position MAXP12• Series

Overview

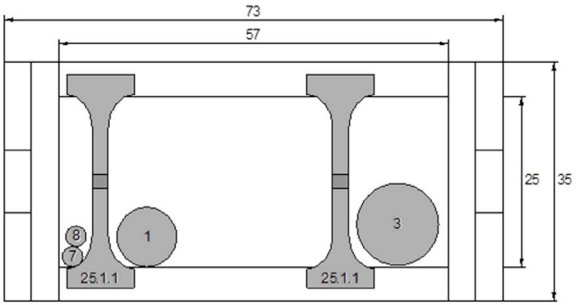
The cable drag chain type depends on the used portal robot. Due to the usage of separators, the position for wiring can be adjusted to the cable diameter inside the cable drag chain. The cable diameter refers to the original Schneider Electric cables.

Cable Drag Chain Types

Portal robot	X-Axis	Z-Axis
	MAXH4•	CAS3• / CAS4•
MAXP12•-H41BR••••-C31BC••••	E02-2400-057-R100	E02-1400-038-R075
MAXP12•-H41BR••••-C41BR••••		
Separator type	E02-2400-25.1.1	E02-1400-21.1.1

Wiring Position of X-Axis

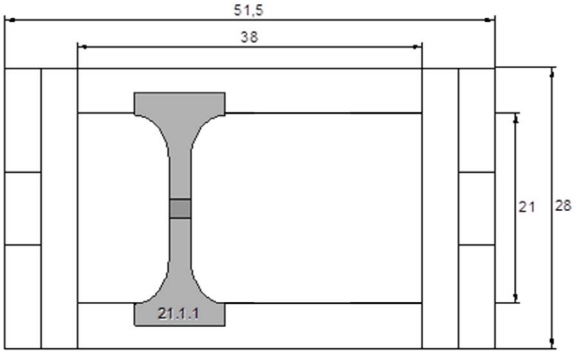
- E02-2400-057-R100



Position	Cable type	Diameter mm (in)
1	Encoder cable	8.8 (0.35)
3	Servomotor cable	12 (0.47)
7	Sensor cable	3 (0.12)
8	Sensor cable	3 (0.12)

Wiring Position of Z-Axis

- E02-1400-038-R075



The cable drag chain of the z-axis can be equipped according to customer applications.

Wiring Position of the MAXP22• and MAXP32• Series

Overview

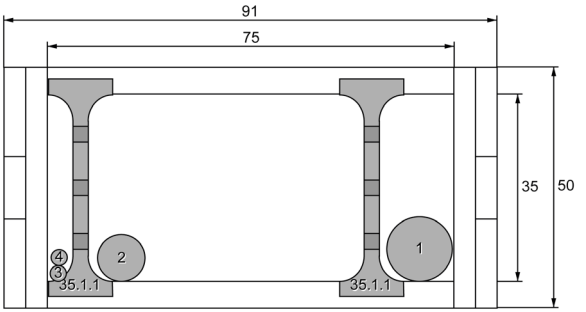
The cable drag chain type depends on the used portal robot. Due to the usage of separators, the position for wiring can be adjusted to the cable diameter inside the cable drag chain. The cable diameter refers to the original Schneider Electric cables.

Cable Drag Chain Types

Portal robot	X-Axis	Z-Axis
	MAXH4•	CAS3• / CAS4•
MAXP22•-H42BR••••-C32BC••••	E02-2600-075-R100	E02-2400-057-R075
MAXP22•-H42BB••••-C32BC••••		
MAXP22•-H42BR••••-C42BR••••		E02-2400-057-R100
MAXP22•-H42BB••••-C42BB••••		
MAXP32•-H43BR••••-C34BC••••		
MAXP32•-H43BB••••-C34BC••••		
MAXP32•-H43BR••••-C43BR••••		E02-2400-057-R125
MAXP32•-H43BB••••-C43BB••••		
Separator type	E02-2600-35.1.1	E02-2400-25.1.1

Wiring Position of X-Axis

- E02-2600-075-R100

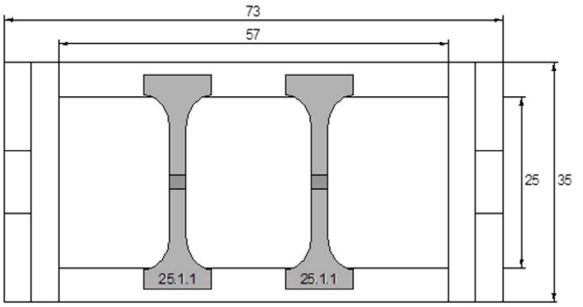


Position	Cable type	Diameter mm (in)
1	Servomotor cable	12 (0.47)
2	Encoder cable	8.8 (0.35)

Position	Cable type	Diameter mm (in)
3	Sensor cable	3 (0.12)
4	Sensor cable	3 (0.12)

Wiring Position of Z-Axis

- E02-2400-057-R075
- E02-2400-057-R100
- E02-2400-057-R125



The cable drag chain of the z-axis can be equipped according to customer applications.

Wiring Position of the MAXP42• Series

Overview

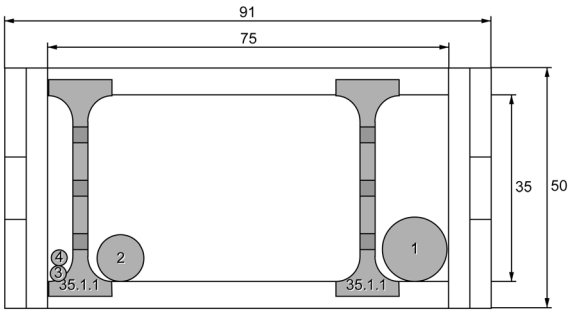
The cable drag chain type depends on the used portal robot. Due to the usage of separators, the position for wiring can be adjusted to the cable diameter inside the cable drag chain. The cable diameter refers to the original Schneider Electric cables.

Cable Drag Chain Types

Portal robot	X-Axis	Z-Axis
	MAXH4•	CAS4•
MAXP42•-H44BB••••-C44BB••••	E02-2600-077-R100	E02-2400-077-R150
Separator type	E02-2600-35.1.1	E02-2400-25.1.1

Wiring Position of X-Axis

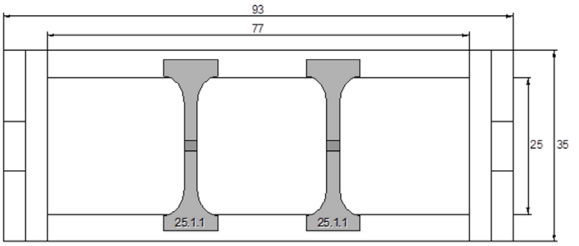
- E02-2600-075-R100



Position	Cable type	Diameter mm (in)
1	Servomotor cable	12 (0.47)
2	Encoder cable	8.8 (0.35)
3	Sensor cable	3 (0.12)
4	Sensor cable	3 (0.12)

Wiring Position of Z-Axis

- E02-2600-075-R100



The cable drag chain of the z-axis can be equipped according to customer applications.

Section 4.5
Wiring Position of the Lexium MAXR•2 Series

What Is in This Section?

This section contains the following topics:

Wiring Position MAXR12• Series

Overview

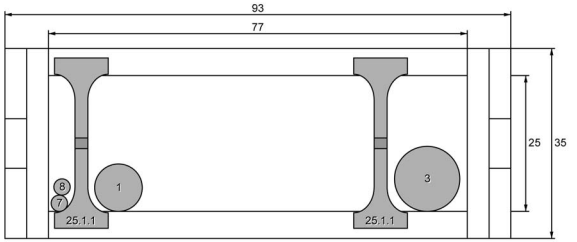
The cable drag chain type depends on the used portal robot. Due to the usage of separators, the position for wiring can be adjusted to the cable diameter inside the cable drag chain. The cable diameter refers to the original Schneider Electric cables.

Cable Drag Chain Types

Portal robot	X-Axis	Y-Axis
	MAXS4•	MAXH4• / PAS4•
MAXR12•-S41BR••••-P41BR••••	E02-2400-077-R100	E02-2400-057-R075 E02-2400-057-R100
MAXR12•-S41BR••••-H41BR••••		
Separator type	E02-2400-25.1.1	

Wiring Position of X-Axis

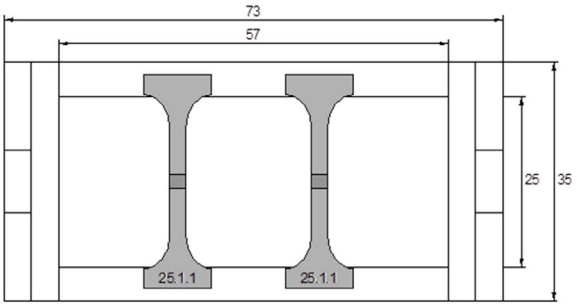
- E02-2400-077-R100



Position	Cable type	Diameter mm (in)
1	Encoder cable	8.8 (0.35)
3	Servomotor cable	12 (0.47)
7	Sensor cable	3 (0.12)
8	Sensor cable	3 (0.12)

Wiring Position of Y-Axis

- E02-2400-057-R100
- E02-2400-057-R075



The cable drag chain of the y-axis can be equipped according to customer applications.

Wiring Position MAXR22• Series

Overview

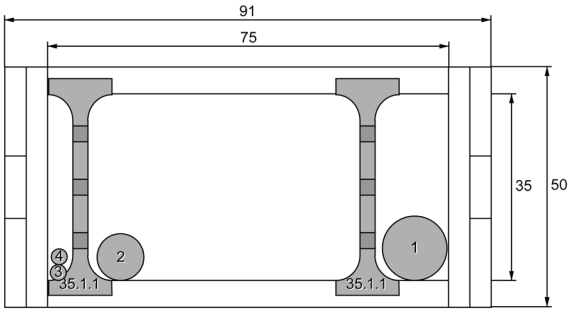
The cable drag chain type depends on the used portal robot. Due to the usage of separators, the position for wiring can be adjusted to the cable diameter inside the cable drag chain. The cable diameter refers to the original Schneider Electric cables.

Cable Drag Chain Types

Portal robot	X-Axis	Y-Axis
	MAXS4•	MAXH4• / PAS4•
MAXR22•-S42BR••••-P42BR••••	E02-2600-075-R100	E02-2400-057-R075
MAXR22•-S42BB••••-P42BB••••		
MAXR22•-S42BR••••-H42BR••••		E02-2400-077-R100
MAXR22•-S42BB••••-H42BB••••		
Separator type	E02-2600-35.1.1	E02-2400-25.1.1

Wiring Position of X-Axis

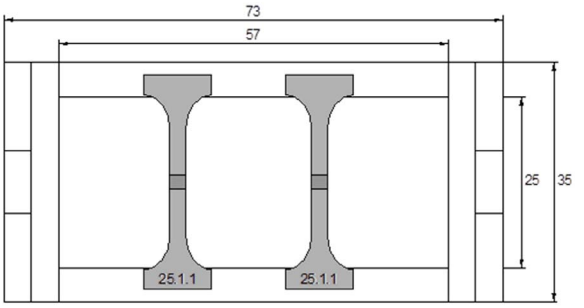
- E02-2600-075-R100



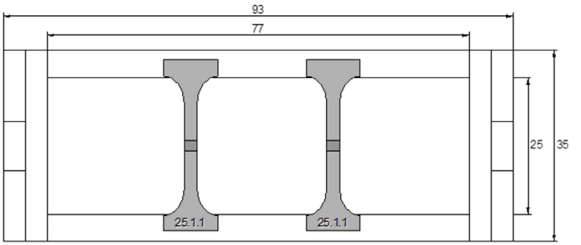
Position	Cable type	Diameter mm (in)
1	Servomotor cable	12 (0.47)
2	Encoder cable	8.8 (0.35)
3	Sensor cable	3 (0.12)
4	Sensor cable	3 (0.12)

Wiring Position of Y-Axis

- E02-2400-057-R075



- E02-2400-77-R100



The cable drag chain of the y-axis can be equipped according to customer applications.

Wiring Position MAXR32• Series

Overview

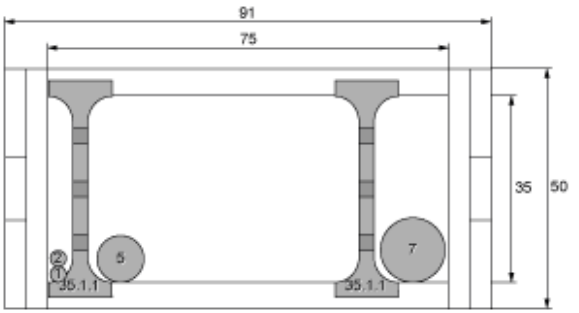
The cable drag chain type depends on the used portal robot. Due to the usage of separators, the position for wiring can be adjusted to the cable diameter inside the cable drag chain. The cable diameter refers to the original Schneider Electric cables.

Cable Drag Chain Types

Portal robot	X-Axis	Y-Axis
	MAXS4•	MAXH4• / PAS4•
MAXR32•-S43BR••••-P43BR••••	E02-2600-075-R100	E02-2400-077-R100
MAXR32•-S43BB••••-P43BB••••		
MAXR32•-S43BR••••-H43BR••••		E02-2400-077-R125
MAXR32•-S43BB••••-H43BB••••		
Separator type	E02-2600-35.1.1	E02-2400-25.1.1

Wiring Position of X-Axis

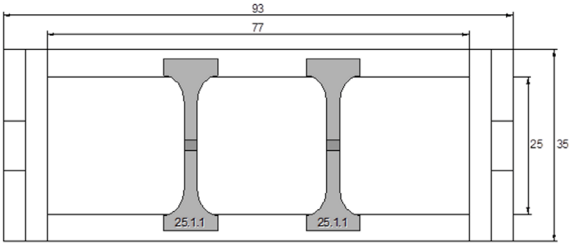
- E02-2600-075-R100



Position	Cable type	Diameter mm (in)
1	Sensor cable	3 (0.12)
2	Sensor cable	3 (0.12)
5	Encoder cable	8.8 (0.35)
7	Servomotor cable	12 (0.47)

Wiring Position of Y-Axis

- E02-2400-077-R100
- E02-2400-077-R125



The cable drag chain of the y-axis can be equipped according to customer applications.

Wiring Position MAXR42• Series

Overview

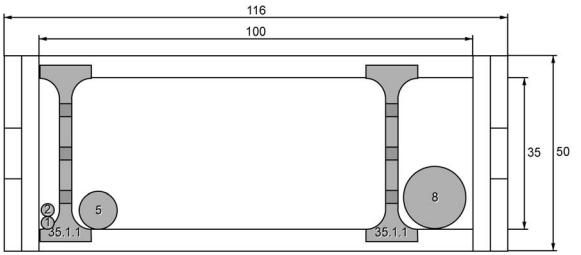
The cable drag chain type depends on the used portal robot. Due to the usage of separators, the position for wiring can be adjusted to the cable diameter inside the cable drag chain. The cable diameter refers to the original Schneider Electric cables.

Cable Drag Chain Types

Portal robot	X-Axis	Y-Axis
	MAXS4•	MAXH4•
MAXR42•-S44BB••••-H44BB••••	E02-2600-100-R125	E02-2400-077-R150
Separator type	E02-2600-35.1.1	E02-2400-25.1.1

Wiring Position of X-Axis

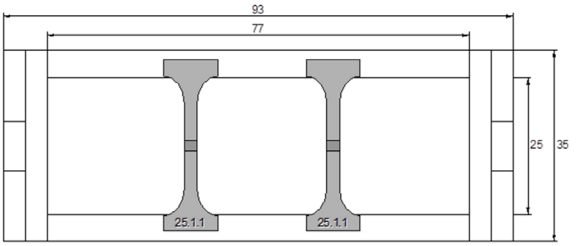
- E02-2600-100-R125



Position	Cable type	Diameter mm (in)
1	Sensor cable	3 (0.12)
2	Sensor cable	3 (0.12)
5	Encoder cable	8.8 (0.35)
8	Servomotor cable	14.3 (0.56)

Wiring Position of Y-Axis

- E02-2400-077-R150



The cable drag chain of the y-axis can be equipped according to customer applications.

Section 4.6
Wiring Positions of the Lexium MAXR•3 Series

What Is in This Section?

This section contains the following topics:

Wiring Position MAXR13• Series

Overview

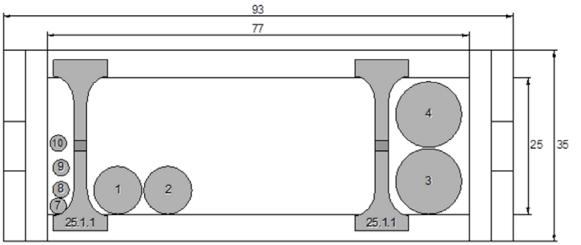
The cable drag chain type depends on the used portal robot. Due to the usage of separators, the position for wiring can be adjusted to the cable diameter inside the cable drag chain. The cable diameter refers to the original Schneider Electric cables.

Cable Drag Chain Types

Portal robot	X-Axis	Y-Axis	Z-Axis
	MAXS4•	MAXH4•	CAS3• / CAS4•
MAXR13•-S41BR••••-H41BR••••-C31BC••••	E02-2400-077-R100	E02-2400-057-R100	E02-1400-038-R075
MAXR13•-S41BR••••-H41BR••••-C41BR••••			
Separator type	E02-2400-25.1.1		E02-1400-21.1.1

Wiring Position of X-Axis

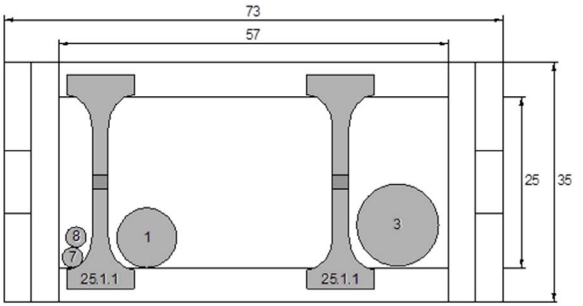
- E02-2400-077-R100



Position	Cable type	Diameter mm (in)
1	Encoder cable	8.8 (0.35)
2	Encoder cable	8.8 (0.35)
3	Servomotor cable	12 (0.47)
4	Servomotor cable	12 (0.47)
7	Sensor cable	3 (0.12)
8	Sensor cable	3 (0.12)
9	Sensor cable	3 (0.12)
10	Sensor cable	3 (0.12)

Wiring Position of Y-Axis

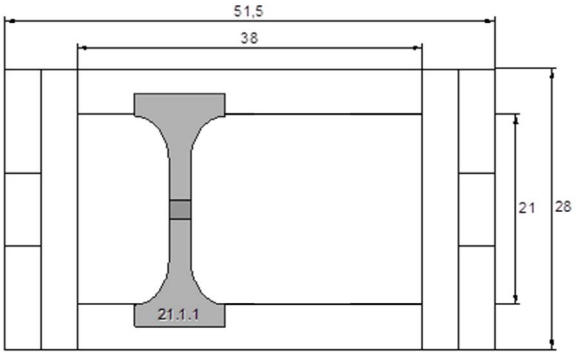
- E02-2400-057-R100



Position	Cable type	Diameter mm (in)
1	Encoder cable	8.8 (0.35)
3	Servomotor cable	12 (0.47)
7	Sensor cable	3 (0.12)
8	Sensor cable	3 (0.12)

Wiring Position of Z-Axis

- E02-1400-038-R075



The cable drag chain of the z-axis can be equipped according to customer applications.

Wiring Position MAXR23• and MAXR33• Series

Overview

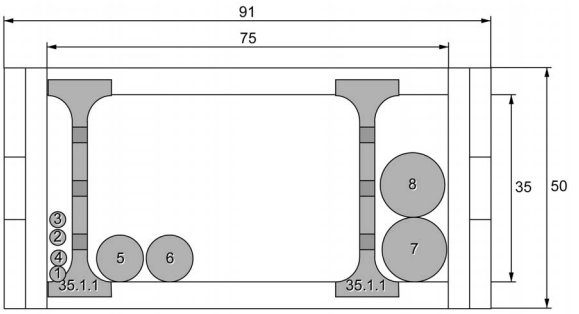
The cable drag chain type depends on the used portal robot. Due to the usage of separators, the position for wiring can be adjusted to the cable diameter inside the cable drag chain. The cable diameter refers to the original Schneider Electric cables.

Cable Drag Chain Types

Portal robot	X-Axis	Y-Axis	Z-Axis
	MAXS4•	MAXH4•	CAS3• / CAS4•
MAXR23•-S42BR••••-H42BR••••-C32BC••••	E02-2600-075-R100	E02-2400-077-R100	E02-2400-057-R075
MAXR23•-S42BB••••-H42BB••••-C32BC••••			
MAXR23•-S42BR••••-H42BR••••-C42BR••••			E02-2400-057-R100
MAXR23•-S42BB••••-H42BB••••-C42BB••••			
MAXR33•-S43BR••••-H43BR••••-C34BC••••		E02-2400-077-R125	
MAXR33•-S43BB••••-H43BB••••-C34BC••••			
MAXR33•-S43BR••••-H43BR••••-C43BR••••			E02-2400-057-R125
MAXR33•-S43BB••••-H43BB••••-C43BB••••			
Separator type	E02-2600-35.1.1	E02-2400-25.1.1	

Wiring Position of X-Axis

- E02-2600-075-R100

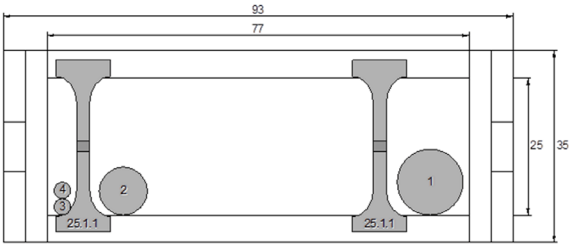


Position	Cable type	Diameter mm (in)
1	Sensor cable	3 (0.12)

Position	Cable type	Diameter mm (in)
2	Sensor cable	3 (0.12)
3	Sensor cable	3 (0.12)
4	Sensor cable	3 (0.12)
5	Encoder cable	8.8 (0.35)
6	Encoder cable	8.8 (0.35)
7	Servomotor cable	12 (0.47)
8	Servomotor cable	12 (0.47)

Wiring Position of Y-Axis

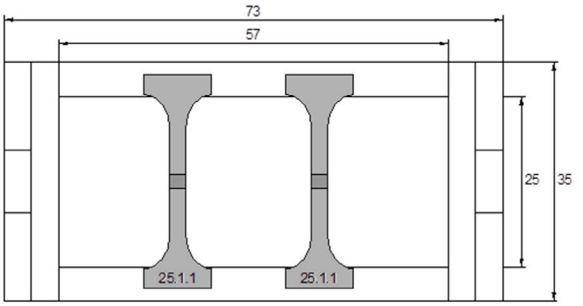
- E02-2400-077-R100
- E02-2400-077-R125



Position	Cable type	Diameter mm (in)
1	Servomotor cable	12 (0.47)
2	Encoder cable	8.8 (0.35)
3	Sensor cable	3 (0.12)
4	Sensor cable	3 (0.12)

Wiring Position of Z-Axis

- E02-2400-057-R075
- E02-2400-057-R100
- E02-2400-057-R125



The cable drag chain of the z-axis can be equipped according to customer applications.

Wiring Position MAXR43• Series

Overview

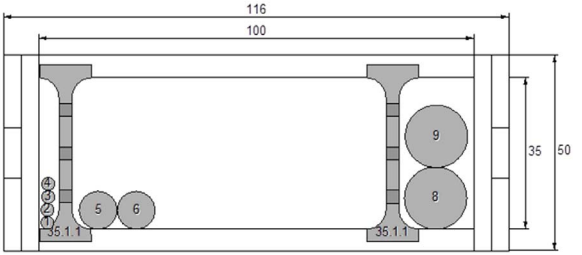
The cable drag chain type depends on the used portal robot. Due to the usage of separators, the position for wiring can be adjusted to the cable diameter inside the cable drag chain. The cable diameter refers to the original Schneider Electric cables.

Cable Drag Chain Types

Portal robot	X-Axis	Y-Axis	Z-Axis
	MAXS4•	MAXH4•	CAS4•
MAXR43•-S44BB••••-H44BB••••-C44BB••••	E02-2600-100-R125	E02-2400-077-R150	
Separator type	E02-2600-35.1.1	E02-2400-25.1.1	

Wiring Position of X-Axis

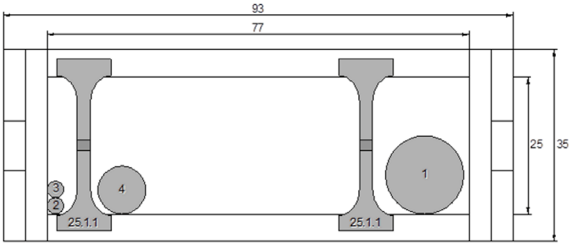
- E02-2600-100-R125



Position	Cable type	Diameter mm (in)
1	Sensor cable	3 (0.12)
2	Sensor cable	3 (0.12)
3	Sensor cable	3 (0.12)
4	Sensor cable	3 (0.12)
5	Encoder cable	8.8 (0.35)
6	Encoder cable	8.8 (0.35)
8	Servomotor cable	14.3 (0.56)
9	Servomotor cable	14.3 (0.56)

Wiring Position of Y-Axis

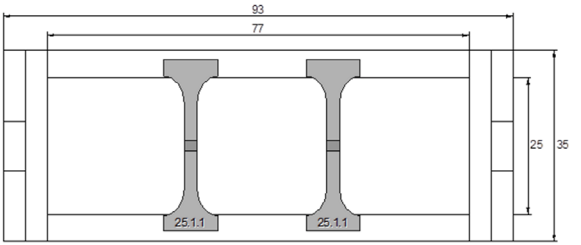
- E02-2400-077-R150



Position	Cable type	Diameter mm (in)
1	Servomotor cable	14.3 (0.56)
2	Sensor cable	3 (0.12)
3	Sensor cable	3 (0.12)
4	Encoder cable	8.8 (0.35)

Wiring Position of Z-Axis

- E02-2400-077-R150



The cable drag chain of the z-axis can be equipped according to customer applications.

Section 4.7
Connecting Sensors of the Lexium MAX Series

Connecting Sensors of the Lexium MAX Series

Overview

For information on how to connect the sensors, refer to the corresponding product manuals of the CAS, PAS or TAS axes *(see page 10)*.

Section 4.8
Initial Start-Up

What Is in This Section?

This section contains the following topics:

Check Installation

Overview

Verify that the portal robot is correctly installed. For further information, refer to *Specific Safety Information* *(see page 13)*.

Pay special attention to:

- Properly bolted mechanical parts.
- Installation and wiring of the product. Make sure that the mains connection and the 24 V connection are wired correctly.
- Connection of all protective ground conductors.
- Use of correct fuses.
- Isolation of all unused cable ends.
- Installation and connection of all cables and connectors.
- Installation of sensors.
- Function of sensors as required.
- Easy motion of the carriage with the contact plate for the sensors along the entire travel length.

Initial Start-Up

Overview

When the portal robot is operated for the first time, there is a risk of unintended equipment operation caused by possible wiring errors or unsuitable parameters.

⚠ WARNING

UNINTENDED EQUIPMENT USE

- Verify that the portal robot is properly fastened so it cannot come loose even in the case of fast acceleration.
- Take all necessary measures to ensure that the carriages of linear axes mounted in vertical or tilted positions cannot move in an unanticipated way.
- Verify that a functioning button for emergency stop is within reach.
- Verify that the system is free and ready for the movement before starting the system.
- Prevent pinch point hazard and crushing by taking appropriate precautions.
- Cover edges and angles to protect against cutting.
- Run initial tests at reduced velocity.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Starting-Up a Configured Lexium MAX

Overview

Perform a start-up in case of an already configured portal robot when it is used under changed operating conditions. For further information, refer to *Specific Safety Information* *(see page 13)*.

Pay special attention to:

- Correct installation. For more information, refer to *Transport and Installation* *(see page 163)*.
- For commissioning, respect the instructions provided in the manual of the motor used and in the manual of the drive used.
- Conformity of the actual loads to the required and engineering data before operating the product.
- Limit the maximum torque of the motor in accordance with the maximum driving torque of the linear axis.
- Function of the sensors. The integrated LED must indicate the switching state correctly.
- Distance between the sensors and the mechanical stops. The movement must be stopped by the sensors before the carriage reaches a mechanical stop.
- Performance of initial tests at reduced velocity. During these tests, verify that the controller responds correctly to the sensors in both directions of movement in x- and/or y- and/or z-direction.
- Conformity of ambient conditions and actual loads to the required and engineering data. For further information, refer to *Technical Data* *(see page 67)*.

Section 4.9
Diagnostics and Solutions

Diagnostics and Solutions

Overview

Problem	Cause	Solution
Sensor overtravelled	Detected sensor error	Adjust or replace sensors. For more information, refer to the corresponding product manual of the single axes.
	Detected controller error	Check controller.
Motor load increases, controller switches off because of overload.	Guides under mechanical tension or excessive friction caused by poor lubrication.	Contact Schneider Service.
Noise and vibrations at high velocities.	Velocity too high	Reduce velocity.
	Poor lubrication (in the case of noise).	Lubricate, for more information, refer to the corresponding product manual of the single axes.
Running inaccuracy and noise of the guides.	Poor lubrication	Lubricate, for more information, refer to the corresponding product manual of the single axes.
	Damage to the guides, for example by shock or impact on the carriage.	Replace guides, contact Schneider Service.
Carriage has backlash and positions inaccurately.	Play in guides after a collision or poor lubrication.	Contact Schneider Service.

Section 4.10
Spare Parts and Accessories

Spare Part Inventory / Accessories

Overview

Only exchange devices with identical types to help ensure compatibility.

Indicate the following information on the spare part order:

Parameter	Example value
Item name	Lexium MAX
Id no.	73000000000
Ser. No.	0000000000

This information can be found on the *Typeplate* *(see page 65)*.

List Spare Parts

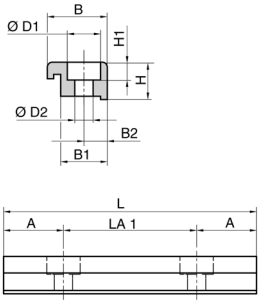
1. Clamping Claws *(see page 211)*
2. Slot Nuts *(see page 213)*
3. Locating Dowels *(see page 214)*
4. T-Slot Covers *(see page 215)*
5. Cable Drag Chain *(see page 215)*
6. Cable Drag Chain Connectors *(see page 217)*
7. Cable Drag Chain Separators *(see page 219)*

Clamping Claws

Order data

Description	Axis	Order No.
For mounting the axis body to a mounting surface. Contains 10 pieces	MAXS41 / MAXH41	VW33MF10511
	MAXS42 / MAXH42	VW33MF10512
	MAXS43 / MAXH43	VW33MF10613
	MAXS44 /MAXH44	VW33MF10814

NOTE: Only the values for the axis mounted on the frame are listed.



Dimensional drawings

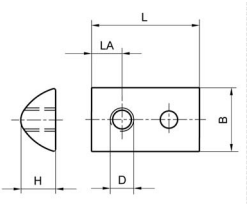
Legend item	Unit	Axis			
		MAXS41 / MAXH41	MAXS42 / MAXH42	MAXS43 / MAXH43	MAXS44 / MAXH44
A	mm (in)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)
B		18 (0.71)	19 (0.75)	24 (0.94)	28 (1.10)
B1		14 (0.55)	14 (0.55)	16 (0.63)	20 (0.79)
B2		7 (0.28)	7 (0.28)	8 (0.31)	10 (0.39)
D1		10 (0.39)	10 (0.39)	11 (0.43)	15 (0.59)
D2		5.5 (0.22)	5.5 (0.22)	6.6 (0.26)	9 (0.35)
H		11.2 (0.44)	16.2 (0.64)	21.5 (0.85)	22 (0.87)
H1		5.4 (0.21)	5.4 (0.21)	6.4 (0.25)	12 (0.47)
L		76 (2.99)	76 (2.99)	76 (2.99)	76 (2.99)
LA1		40 (1.57)	40 (1.57)	40 (1.57)	40 (1.57)

Slot Nuts

Order data

Description	Axis	Slot nut type	Order No.
The slot nuts are inserted into the T-slots of the axis body to fasten the axis or parts of the axis. Contains 10 pieces	MAXS41 / MAXH41	5 St M5	VW33MF010T5N5
	MAXS42 / MAXH42		
	MAXS43 / MAXH43	6 St M6	VW33MF010T6N6
	MAXS44 / MAXH44	8 St M6	VW33MF010T8N6
		8 St M8	VW33MF010T8N8

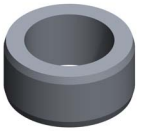
NOTE: Only the values for the axis mounted on the frame are listed.



Dimensional drawings

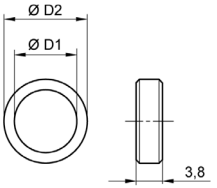
Axis	Slot nut type	Legend item in mm (in)				
		B	D	H	L	LA
MAXS41 / MAXH41	5 St M5	8 (0.31)	5 (0.20)	4 (0.16)	11.5 (0.45)	4 (0.16)
MAXS42 / MAXH42						
MAXS43 / MAXH43	6 St M6	10.6 (0.42)	6 (0.24)	6.4 (0.25)	17 (0.67)	5.5 (0.22)
MAXS44 / MAXH44	8 St M6	13.8 (0.54)	6 (0.24)	7.3 (0.29)	23 (0.91)	6.5 (0.26)
	8 St M8					7.5 (0.30)

Locating Dowels



Order data

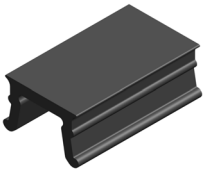
Description	Axis	Order No.
For precise and reproducible mounting of the payload, the locating dowels are inserted into the holes at the carriage. Contains 20 pieces	CAS42 MAXS41 / MAXS42 MAXH41 / MAXH42	VW33MF020LD01
	CAS32 / CAS43 MAXS43 / MAXH43	VW33MF020LD02
	CAS34 / CAS44 MAXS44 / MAXH44	VW33MF020LD03



Dimensional drawings

Legend item	Unit	Axis		
		CAS42 MAXS41 / MAXS42 MAXH41 / MAXH42	CAS32 / CAS43 MAXS43 / MAXH43	CAS34 / CAS44 MAXS44 / MAXH44
D1	mm (in)	5.5 (0.22)	6.6 (0.26)	9 (0.35)
D2 h6		8 (0.31)	10 (0.39)	12 (0.47)

T-Slot Covers



Order data

Description	Axis	T-slot size	Order No.
Length 2 m (6.6 ft) Contains 5 pieces	MAXS41 / MAXH41 / MAXS42 / MAXH42	5	VW33MC05A05
	MAXS43 / MAXH43	6	VW33MC05A06
	MAXS44 / MAXH44	8	VW33MC05A08

NOTE: Only the values for the axis mounted on the frame are listed.

Cable Drag Chain

Calculation of the required cable drag chain length:

L = Stroke/2 + K (mm/in)

For the stroke of a Lexium MAXK• or Lexium MAXR•, refer to *Typecode* *(see page 62)*.

For the stroke of Lexium MAXK•, refer to the provided product data sheet.

For the dimension K, refer to the table dimensional drawings.

The complete length L of the cable drag chain is delivered in several sections:

- Drag chain type E02-1400-xxx-xxxx = 500 mm (19.68 in) - 15 cable drag chain pieces
- Drag chain type E02-2400-xxx-xxxx = 460 mm (18.11 in) - 10 cable drag chain pieces
- Drag chain type E02-2600-xxx-xxxx = 560 mm (22.05 in) - 10 cable drag chain pieces

Calculation of the quantity of sections for ordering:

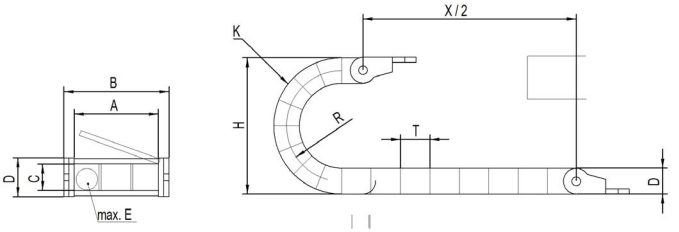
- Number of sections = roundup (L / 500 (1400 series))
- Number of sections = roundup (L / 460 (2400 series))
- Number of sections = roundup (L / 560 (2600 series))

Order data

Description	Cable drag chain type	Order number
Cable drag chain, polymer Contains a section with 15 pieces (E02-1400-xxx-xxxx) 10 pieces (E02-2400-xxx-xxxx) 10 pieces (E02-2600-xxx-xxxx) Including two or one separator per piece cable drag chain	E02-1400-038-R075	SPM3MAC1403075
	E02-2400-057-R075	SPM3MAC2405075
	E02-2400-057-R100	SPM3MAC2405100
	E02-2400-057-R125	SPM3MAC2405125
	E02-2400-077-R100	SPM3MAC2407100
	E02-2400-077-R125	SPM3MAC2407125
	E02-2400-077-R150	SPM3MAC2407150
	E02-2600-075-R100	SPM3MAC2607100
	E02-2600-100-R125	SPM3MAC2610125

For detailed information about the cable drag chain types, refer to Wiring Position *(see page 181)* of the corresponding axis.

For the order data of the Lexium MAXK•, refer to the provided product data sheet or contact your Schneider Electric partner.



Dimensional drawing - Cable drag chains

Dimensions	Unit	Cable drag chain type								
		E02-1400-038-R075	E02-2400-057-R075	E02-2400-057-R100	E02-2400-057-R125	E02-2400-077-R100	E02-2400-077-R125	E02-2400-077-R150	E02-2600-075-R100	E02-2600-100-R125
A	mm (in)	38 (1.5)	57 (2.24)	57 (2.24)	57 (2.24)	77 (3.03)	77 (3.03)	77 (3.03)	75 (2.95)	100 (3.94)
B		51.5 (2.03)	73 (2.87)	73 (2.87)	73 (2.87)	93 (3.66)	93 (3.66)	93 (3.66)	91 (3.58)	116 (4.57)
C		21 (0.83)	25 (0.98)	25 (0.98)	25 (0.98)	25 (0.98)	25 (0.98)	25 (0.98)	35 (1.38)	35 (1.38)
D		28 (1.1)	35 (1.38)	35 (1.38)	35 (1.38)	35 (1.38)	35 (1.38)	35 (1.38)	50 (1.97)	50 (1.97)
E		18 (0.71)	23 (0.91)	23 (0.91)	23 (0.91)	23 (0.91)	23 (0.91)	23 (0.91)	32 (1.26)	32 (1.26)
T		33 (1.30)	33 (1.30)	46 (1.81)	46 (1.81)	46 (1.81)	46 (1.81)	46 (1.81)	56 (2.20)	56 (2.20)
R		75 (2.95)	75 (2.95)	100 (3.94)	125 (4.92)	100 (3.94)	125 (4.92)	150 (5.91)	100 (3.94)	125 (4.92)
H		178 (7.01)	185 (7.28)	235 (9.25)	285 (11.22)	235 (9.25)	285 (11.22)	335 (13.19)	250 (9.84)	300 (11.81)
K[1]		305 (12.01)	346 (13.62)	414 (16.29)	496 (19.53)	414 (16.29)	496 (19.53)	578 (22.76)	475 (18.7)	550 (21.65)
1 Half length of the scope of the cable drag chain										

Cable Drag Chain Connectors

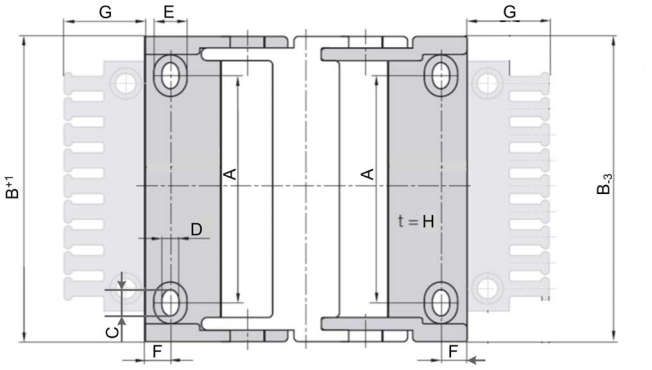
The cable drag chain connectors either posses studs or drilled holes to be connected to the cable drag chain. Contains both connectors versions.

Order data

Description	Mounting bracket type	Order number
Mounting bracket, polymer Contains full set with tiewrap plates 1x posses studs 1x drilled holes	E02-1400-038-R075	SPM3MAC1403
	E02-2400-057-R075	SPM3MAC2405
	E02-2400-057-R100	
	E02-2400-057-R125	
	E02-2400-077-R100	SPM3MAC2407
	E02-2400-077-R125	
	E02-2400-077-R150	
	E02-2600-075-R100	SPM3MAC2607
	E02-2600-100-R125	SPM3MAC2610

For detailed information about the cable drag chain types, refer to Wiring Position *(see page 181)* of the corresponding axis.

For the order data of the Lexium MAXK•, refer to the provided product data sheet or contact your Schneider Electric partner.

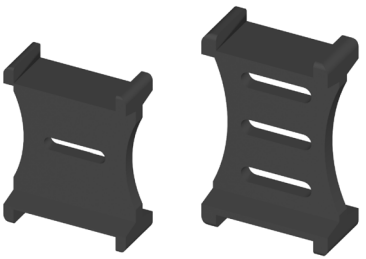


Dimensional drawings (Lexium MAXR•3 / Lexium MAXR•2 / Lexium MAXP•)

Dimensions	Unit	Cable drag chain type								
		E02-1400-038-R075	E02-2400-057-R075	E02-2400-057-R100	E02-2400-057-R125	E02-2400-077-R100	E02-2400-077-R125	E02-2400-077-R150	E02-2600-077-R100	E02-2600-100-R125
A	mm (in)	24 (0.94)	44 (1.73)			64 (2.51)			55 (2.17)	80 (3.15)
B		51.5 (2.03)	73 (2.87)			93 (3.66)			91 (3.58)	116 (4.57)
C		24 (0.94)	7 (0.28)						23 (0.91)	
D		6.4 (0.25)	6.1 (0.24)							
E		12/90° (0.47/90°)							16/90° (0.63/90°)	
F		28 (1.10)	10 (0.39)						17 (0.67)	
G		10.5 (0.41)	32 (1.26)						34 (1.34)	
H		5.5 (0.21)	7 (0.28)						8 (0.31)	

Cable Drag Chain Separators

Separators of type E02-1400 and type E02-2400 have one slot. Separators of type E02-2600 have three slots.



Order data

Description	Separator type	Order number
Separators, polymer Contains a set of 50x separators	E02-1400-038-R075	SPM3MAC14
	E02-2400-057-R075	SPM3MAC24
	E02-2400-057-R100	
	E02-2400-057-R125	
	E02-2400-077-R100	
	E02-2400-077-R125	
	E02-2400-077-R150	
	E02-2600-075-R100	SPM3MAC26
	E02-2600-100-R125	

Chapter 5
Maintenance, Lubrication and Replacing Parts

What Is in This Chapter?

This chapter contains the following sections:

Section 5.1
Maintenance, Repair, Cleaning

What Is in This Section?

This section contains the following topics:

General Information About Maintenance, Repair, Cleaning

Overview

NOTE: Observe the following instructions before carrying out maintenance on the portal robot.

The use and application of the contained information requires expertise in the fields of electronics and mechanics.

Only the machine builder or integrator, can be aware of all the conditions and factors present during installation and setup, operation, repair, and maintenance of the machine or process.

Any applicable standards and/or regulations with respect to grounding of all equipment have to be considered. Verify compliance with any safety information, different electrical requirements, and normative standards that apply to machine or process in the use of this equipment.

⚠ DANGER

ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Before performing work on the drive system:
  - Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables, or wires.
  - Place a "Do Not Turn On" or equivalent hazard label on all power switches.
  - Lock all power switches in the open (non-energized) position.
  - Wait 15 minutes to allow the DC bus capacitors to discharge.
  - Measure the voltage on the DC bus with a properly rated voltage sensing device as per the instructions in the present document and verify that the voltage is less than 42.4 Vdc.
  - Do not assume that the DC bus is voltage-free when the DC bus LED is off.
- Do not touch any connectors, contacts, terminals, unshielded components or printed circuit boards while, or if you suspect that, the equipment is under power.
- Use only electrically insulated tools.
- Block the motor shaft to prevent rotation prior to performing any type of work on the drive system.
- Insulate both ends of unused conductors of the motor cable to help prevent AC voltage from coupling to unused conductors in the motor cable.
- Do not create a short-circuit across the DC bus terminals or the DC bus capacitors.
- Replace and secure all covers, accessories, hardware, cables, and wires and confirm that a proper ground connection exists before applying power to the unit.
- Use only the specified voltage when operating this equipment and any associated products.

Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

PINCH POINT HAZARD

- Prevent pinch point hazard and crushing by taking appropriate precautions.
- Cover edges and angles to protect against cutting.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Service Address

In case of errors which cannot be resolved, contact Schneider Electric. Following details must be available:

- Nameplate (type, identification number, serial number, DOM, ...)
- Type of error
- Previous and concomitant circumstances
- Your own assumptions concerning the cause of the error

Also include this information, when returning the product for inspection or repair.

Maintenance of the Toothed Belt

Overview

For information on how to maintenance the toothed belt of the particular single axes, refer to the corresponding CAS or PAS product manuals *(see page 10)*.

Maintenance of the Motor

Overview

For information on how to maintenance the motor, refer to the corresponding *Motor Manual*.

Maintenance of the Gearbox

Overview

For information on how to maintenance the gearboxes, refer to the corresponding *Gearbox Manuals*.

Maintenance and Repairing After Collisions

Overview

Components of the linear and cantilever axes may be damaged or destroyed as a result of a collision.

NOTE: After a collision, inspect the drive elements, the linear guide, and the elastomer coupling for damage according to the instructions in the following sections.

⚠ WARNING

INOPERABLE EQUIPMENT AND FALLING PARTS

- Thoroughly inspect all components of the linear axis and all components attached to the linear axis, including the motor and the gearbox, for damage after a collision.
- Do not use the linear axis if any of the components are damaged or suspected to be damaged.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Components

Step	Action
1	Verify components for completeness. If any components are missing, locate the same and remove them from the surrounding machinery.
2	Replace damaged or missing components.

Drive Elements (Toothed Belt)

Step	Action
1	Perform a visual inspection of the toothed belt for damage to the teeth and abrasion at the sides. To perform a visual inspection, remove the toothed belt as described in the corresponding product manuals of the according single axes.

Drive Elements (Ball Screw Drive)

Step	Action
1	Inspect the linear axis for unusual noise and vibrations. Perform a visual inspection of the ball screw drive for damage as described in the corresponding product manuals of the according single axis.

Linear Guide

The linear guide consists of the guide carriage and the roller guide or the recirculating ball bearing guide.

Step	Action
1	Inspect the guide carriage for backlash. If the guide carriage has backlash, the preload has been modified. The preload of the guide carriage can only be adjusted by the manufacturer. Note the serial number of the linear axis and contact Schneider Electric
2	Perform a visual inspection, remove the toothed belt as described in the corresponding product manuals of the according single axes.
3	Manually move the axis body (without toothed belt). Inspect for irregular noise or vibration. Irregular noise or vibration indicates a deformation in the linear guide. Deformation causes rapid wear.

NOTE: A damaged linear guide must be replaced. Contact Schneider Electric.

Elastomer Coupling

Step	Action
1	Perform a visual inspection of the elastomer coupling for damage. To perform a visual inspection, remove the motor or the gearbox.

NOTE: A damaged elastomer coupling must be replaced. For detailed information, refer to the corresponding product manual of the single axes or contact Schneider Electric.

Cleaning

Overview

Due to their design, the axes of the portal robot are susceptible to the ingress of contaminants and external objects.

The guides can be located both inside and outside the axis body and are not covered.

NOTE: Depending on the operating conditions and requirements, checking and cleaning may be necessary on a more frequent basis.

How to Clean the Axes

Do not use compressed air for cleaning. Remove large particles and dirt from the surface at regular intervals. Use only neutral cleaning agents for cleaning. Use only damp, soft, and lint-free cleaning cloths to wipe the surface.

Cleaning of the Cover Strips (Option)

The Lexium PAS4• series and the Lexium CAS4• series have Teflon-coated cover strips. The friction causes abrasion on the cover strip. Remove abrasion products at regular intervals.

Contact with Cleaning Agents

NOTE: It is not possible to test in advance, the whole Schneider Electric product range on the compatibility with all cleaning agents. Take care with cleaning products as some active agents may have deleterious effects on plastics and stainless steel welds.

NOTICE
CORROSION CAUSED BY CLEANING AGENTS • Before using a cleaning agent, carry out a compatibility test in relation to the cleaning agent and the component affected. • Do not use alkaline detergent in the interior of the mechanics. • Do not use any chlorid-containing cleaning agents. • Do not use any sulphuric acid containing detergent. **Failure to follow these instructions can result in equipment damage.**

For more information about the material properties of the portal robot, contact Schneider Electric.

Section 5.2
Replacing Parts

Replacing Parts

Overview

For replacing parts of the portal robot expertise in mechanics and electronics is required.

Any applicable standards and/or regulations with respect to grounding of all equipment have to be considered. Verify compliance with any safety information, different electrical requirements, and normative standards that apply to your machine or process in the use of this equipment.

NOTE: Only replace the parts described. Any other parts may only be replaced by Schneider Electric service partners.

To replace the entire portal robot, mount the new robot as described under Installing the Lexium MAX to an Installation Surface *(see page 174)*.

Adjust and check the portal robot as described under Starting-Up a Configured Lexium MAX *(see page 209)* after replacing parts.

The robot housing heats up significantly when subjected to heavy loads and / or high performances.

⚠ WARNING

HOT SURFACES

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions.
- Wait until the surface temperature has cooled before making contact.
- Wear protective gloves when working near hot surfaces.
- Prevent incidental or accidental contact with a protective cover or touch guard.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

For more information about the particular axes, refer to CAS, PAS or TAS product manuals *(see page 10)*.

Section 5.3
Lubrication of Axes

Lubrication of Axes

Overview

Lubricant is consumed continuously during operation of the portal robot.

The axes must be lubricated at regular intervals. Incorrect lubricants may damage the axes and the whole robot.

NOTICE
INOPERABLE EQUIPMENT
Only use the specified type and volume of lubricant (grease, oil).
Failure to follow these instructions can result in equipment damage.

Lubrication Intervals Depending on Running Conditions

The lubrication system is not sealed. Therefore, small amounts of lubricants may leak.

NOTE: Always wear protective clothing when working on the system.

Insufficient lubrication or incorrect lubricants increase wear and reduce the service life.

The following factors influence the lubrication intervals:

- Dust and dirt particles
- High operating temperatures
- Heavy loads
- Heavy vibration
- Permanent short-distance positioning

For detailed information about the lubricant, contact your Schneider Electric Partner.

Appendices

Appendix A
Appendix

What Is in This Chapter?

This chapter contains the following topics:

Contact Addresses

Schneider Electric Automation GmbH

Breslauer Straße 7

77933 Lahr, Germany

Phone: +49 (0) 7821 / 946 - 0

Fax: +49 (0) 7821 / 606 - 313

Email: zentrale.lahr@schneider-electric.com

Internet: *www.schneider-electric.com*

Service and Repair

Breslauer Straße 7

77933 Lahr, Germany

Phone: +49 (0) 7821 / 946 - 606

Fax: +49 (0) 7821 / 946 - 202

Email: rslogistic@schneider-electric.com

Internet: *www.schneider-electric.com*

Additional Contact Addresses

See the homepage for additional contact addresses:

www.schneider-electric.com

Product Training Courses

Product Training Courses

Schneider Electric offers a number of product training courses.

The Schneider Electric training instructors will help you take advantage of the extensive possibilities offered by the system.

See the website (*www.schneider-electric.com*) for further information and the seminar schedule.

Disposal

Information on the Disposal of Schneider Electric Products

The Lexium MAX is delivered in a cardboard box or a wooden container. The wooden container is treated according to IPPC-Standard. The cardboard box also comprises films.

NOTE: The components consist of different materials, which can be reused and must be disposed of separately. The packaging cannot be returned to the manufacturer.

- Dispose of the packaging in accordance with the relevant national regulations.
- Dispose of the packaging at the disposal sites provided for this purpose.
- Dispose of Lexium MAX in accordance with the applicable national regulations.

NOTE: The linear axis and gear box units contain lubricants.

Declaration of Incorporation

Overview

Declaration of Incorporation

According to EC directive 2006/42/EC on machinery (Annex II B)
Document number / Month.Year: RBA2016002.00 / 05.2016
- Original Language -

We: Schneider Electric Automation GmbH
Subsidiary of Schneider Electric SE (FR 92500 Rueil-Malmaison)

Schneiderplatz 1
97828 Marktheidenfeld
Germany

herewith declare, that the partly completed machinery described below:

Trademark:	Schneider Electric
Product, Type, Function:	Robot
Models:	MAX - Series
Serial Number:	YYZZXXXXXX (YY: Year+10, e.g. 25 = 2015; ZZ: Supplier Code: XXXXXX = cont. number)

with the following references

Reference	Description
MAX H * B * * **** * * * * *** * **** / * ** * ** *	Lexium MAX H double portal axis
MAX S * B * * **** * * * * *** * **** / * ** * ** *	Lexium MAX S double portal axis
MAX P * 2 * - *** B * **** - *** B * ****	Lexium MAX P linear positioner
MAX R * 2 * - *** B * **** - *** B * ****	Lexium MAX R•2 portal robot
MAX R * 3 * - *** B * **** - *** B * **** - *** B * ****	Lexium MAX R•3 portal robot
MAX K * * * - ** - ** - ** - ** - ** - ** - ** - ** - ** - **	Lexium MAX K customized applications

* are any letters or numbers not affecting the conformity of the product

is complying with all essential requirements of the Machinery Directive 2006/42/EC, as far as the scope of delivery allows. Additional we declare that the relevant technical documentation is compiled in accordance with part B of Annex VII.

Directive	Fulfilled Requirements	Harmonized Standard
DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery, and amending Directive 95/16/EC	1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4, 1.3.7, 1.5.1, 1.5.4, 1.5.5, 1.5.6, 1.5.7, 1.5.8, 1.5.10, 1.5.13, 1.6.1, 1.7.1, 1.7.2, 1.7.3, 1.7.4	**EN ISO 10218-1:2011** Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots

We commit to transmit, in response to a reasoned request by the market surveillance authorities, relevant documents on the partly completed machinery by our documentation department. The method of transmission shall be electronic.

Name and address of the person authorised to compile the technical documentation:
Bernhard Kreitler, Schneider Electric Automation GmbH, Breslauer Straße 7, 77933 Lahr/Schwarzwald - Germany

The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of Directive 2006/42/EC on Machinery, where appropriate, and until the EC Declaration of Conformity according to Annex II A is issued.

Issued at: Marktheidenfeld - Germany, 29th April 2016

i.A. Michael Schweizer
Machine Solutions Certification Manager

Schneider Electric Automation GmbH
Schneiderplatz 1
97828 Marktheidenfeld
Telefon: 09391 606-0

Page 1/1

Units and Conversion Tables

Length

–	in	ft	yd	m	cm	mm
in	–	/ 12	/ 36	* 0.0254	* 2.54	* 25.4
ft	* 12	–	/ 3	* 0.30479	* 30.479	* 304.79
yd	* 36	* 3	–	* 0.9144	* 91.44	* 914.4
m	/ 0.0254	/ 0.30479	/ 0.9144	–	*100	*1000
cm	/ 2.54	/ 30.479	/ 91.44	/ 100	–	* 10
mm	/ 25.4	/ 304.79	/ 914.4	/ 1000	/ 10	–

Mass

–	lb	oz	slug	0.22 kg	g
lb	–	* 16	* 0.03108095	* 0.4535924	* 453.5924
oz	/ 16	–	* $1.942559*10^{-3}$	* 0.02834952	* 28.34952
slug	/ 0.03108095	/ $1.942559*10^{-3}$	–	* 14.5939	* 14593.9
0.22 kg	/ 0.45359237	/ 0.02834952	/ 14.5939	–	*1000
g	/ 453.59237	/ 28.34952	/ 14593.9	/ 1000	–

Force

–	lb	oz	p	dyne	N
lb	–	* 16	* 453.55358	* 444822.2	* 4.448222
oz	/ 16	–	* 28.349524	* 27801	* 0.27801
p	/ 453.55358	/ 28.349524	–	* 980.7	* $9.807*10^{-3}$
dyne	/ 444822.2	/ 27801	/ 980.7	–	/ $100*10^{3}$
N	/ 4.448222	/ 0.27801	/ $9.807*10^{-3}$	* $100*10^{3}$	–

Power

–	HP	W
HP	–	* 746
W	/ 746	–

Rotation

–	min^{-1}(rpm)	rad/s	deg./s
min^{-1}(rpm)	–	* π / 30	* 6
rad/s	* 30 / π	–	* 57.295
deg./s	/ 6	/ 57.295	–

Torque

–	lb•in	lb•ft	oz•in	Nm	kp•m	kp•cm	dyne•cm
lb•in	–	/ 12	* 16	* 0.112985	* 0.011521	* 1.1521	* $1.129*10^{6}$
lb•ft	* 12	–	* 192	* 1.355822	* 0.138255	* 13.8255	* $13.558*10^{6}$
oz•in	/ 16	/ 192	–	* $7.0616*10^{-3}$	* $720.07*10^{-6}$	* $72.007*10^{-3}$	* 70615.5
Nm	/ 0.112985	/ 1.355822	/ $7.0616*10^{-3}$	–	* 0.101972	* 10.1972	* $10*10^{6}$
kp•m	/ 0.011521	/ 0.138255	/ $720.07*10^{-6}$	/ 0.101972	–	* 100	* $98.066*10^{6}$
kp•cm	/ 1.1521	/ 13.8255	/ $72.007*10^{-3}$	/ 10.1972	/ 100	–	* $0.9806*10^{6}$
dyne•cm	/ $1.129*10^{6}$	/ $13.558*10^{6}$	/ 70615.5	/ $10*10^{6}$	/ $98.066*10^{6}$	/ $0.9806*10^{6}$	–

Moment of Inertia

–	$lb•in^2$	$lb•ft^2$	$kg•m^2$	$kg•cm^2$	$kg•cm^2•s^2$	$oz•in^2$
$lb•in^2$	–	/ 144	/ 3417.16	/ 0.341716	/ 335.109	* 16
$lb•ft^2$	* 144	–	/ 3	* 0.30479	* 30.479	* 304.79
$kg•m^2$	* 3417.16	/ 0.04214	–	* 0.9144	* 91.44	* 914.4
$kg•cm^2$	* 0.341716	/ 421.4	/ 0.9144	–	* 100	* 1000
$kg•cm^2•s^2$	* 335.109	/ 0.429711	/ 91.44	/ 100	–	* 10
$oz•in^2$	/ 16	/ 2304	/ 54674	/ 5.46	/ 5361.74	–

Temperature

–	°F	max	K
°F	–	(°F - 32) * 5/9	(°F - 32) * 5/9 + 273.15
max	°C * 9/5 + 32	–	°C + 273.15
K	(K - 273.15) * 9/5 + 32	K - 273.15	–

Conductor Cross-section

AWG	1	2	3	4	5	6	7	8	9	10	11	12	13
mm^2	42.4	33.6	26.7	21.2	16.8	13.3	10.5	8.4	6.6	5.3	4.2	3.3	2.6

AWG	14	15	16	17	18	19	20	21	22	23	24	25	26
mm^2	2.1	1.7	1.3	1.0	0.82	0.65	0.52	0.41	0.33	0.26	0.20	0.16	0.13

Glossary

A

Axis body

The axis body is an aluminum precision profile.

B

Breakaway torque

The breakaway torque describes the driving torque required to overcome the static friction and that initiates the transition to sliding friction.

C

Cantilever axis

In the case of a cantilever axis, the carriage is stationary while the axis body moves. Portal axes work the other way round.

D

Degree of protection

The degree of protection is a standardized specification for electrical equipment that describes the protection against the ingress of foreign objects and water (for example: IP 20).

Direction of movement

In the case of a rotary motor, direction of movement is defined in accordance with IEC 61800-7-204: Positive direction is when the motor shaft rotates clockwise as you look at the end of the protruding motor shaft.

DOM

Date of manufacturing: The nameplate of the product shows the date of manufacture in the format DD.MM.YY or in the format DD.MM.YYYY.

For example:

31.12.11 corresponds to December 31, 2011

31.12.2011 corresponds to December 31, 2011

Drive element

The drive element of the multi-axis consists of the motor and/or the gearbox.

E

Error

Discrepancy between a detected (computed, measured, or signaled) value or condition and the specified or theoretically correct value or condition.

F

Feed per revolution

The feed per revolution is the distance the carriage covers per motor or gearbox revolution. Depending on usage of a gearbox.

L

Linear guide

The linear guide consists of:

- the rollers and the guide rod which comprise the roller guide
- the guide carriage and the guide rail which comprise the recirculating ball bearing guide.

Load torque

The permissible load torques are calculated based on the service life of the carriage guide. If the load torque exceeds the specified values, the service life of the axis will be reduced.

M

Modulus of elasticity

The modulus of elasticity is used to describe the tendency of a material to deform along an axis when opposing forces are applied along this axis; it is the ratio of tensile strain and tensile stress. The higher the value, the stiffer the material.

Mounting position

The multi-axes can be installed in any desired mounting position. However, all external forces and torques must be within the ranges of permissible values.

P

Portal axis

In the case of a portal axis, the axis body is stationary while the carriage moves. Cantilever axes work the other way round.

Positioning accuracy

Positioning accuracy is the tolerance between the specified position and end position reached, measured at the carriage. To determine this value, the carriage is moved to the end position from different directions at different velocities.

R

Recirculating ball bearing

The axis body absorbs the forces and torques applied at the carriage via the recirculating ball bearing guide. The recirculating ball bearing guide can absorb high forces and torques.

Repeatability

Repeatability is the accuracy with which it is possible to move to a previous position again under the same conditions. To determine this value, the carriage is moved to the end position from the same direction at the same velocity.

Roller guide

The axis body absorbs the forces and torques applied at the carriage via the roller guide.

Running accuracy

Due to the manufacturing process, the extruded aluminum profiles have a certain tolerance in terms in straightness and twist. The tolerances are specified in EN 12020-2. To reach the desired running accuracy, the linear axis must be mounted on a precision-machined surface.

S

Sensor

Inductive proximity switches are used as sensors for limit switches or reference switches. These switches are not a safety function.

Service life

The service life is the distance in kilometers before the first signs of material fatigue can be seen on the guides, the drive elements and the bearings. Service life specifications (kilometers covered) relate to the nominal values specified in the data sheet. If the nominal values are exceeded, the service life decreases accordingly.

Stiffness

Stiffness is a measure of the ability to move and hold with high position accuracy a part to be positioned even when the load changes.

Stroke

Stroke is the maximum travel of the carriage between the switching points of the limit switches.

Stroke reserve

The stroke reserve is the distance between a limit switch and the mechanical stop.

Support axis

A support axis has linear guides, but no drive elements. A support axis carries loads that are applied asymmetrically to the carriage and improves the stability and service life of the system.

Index