

ActiveAssist - the assistance system for multi-variant assembly tasks

1.0





The freely configurable all-in-one system: modular, networked, interactive

With the ActiveAssist interactive assembly system, Rexroth concentrates its years of experience in the fields of lean production and ergonomic workstation design – and is expanding on this with pioneering Industry 4.0 intelligence. At the heart of ActiveAssist is a freely configurable software that connects physical assembly workstations with the virtual world: completely networked, modularly extendable, easily integrated, and above all, extremely quick and easy to learn.



Contents

1

4	ActiveAssist advantages
6	ActiveAssist software
8	ActiveAssist networking
9	ActiveAssist product overview
10	ActiveAssist product structure
13	ActiveAssist modules
14	ActiveAssist basic set
16	ActiveAssist projection module
19	ActiveAssist hand-tracking module
23	ActiveAssist extension modules
24	Tool control unit extension module
26	Product identification, bar code scanner
27	ActiveAssist accessories
28	Label projection 45°
29	HEAP connection kit
30	Input unit push button
31	Technical data
32	Sample configurations
33	Material number overview, Index

How can you assemble, order pick and produce multiple variants easily today?

How do you ensure productivity with a batch size of 1? With steadily increasing variant diversity? How do you respond to poor process reliability during manual assembly? The answer: through flexible production systems with extremely short conversion times. Systems that guide employees according to their individual skills precisely through the individual work steps, and point out their errors, thus enabling “one-piece-flow” production and ensuring the highest degree of efficiency from planning through to implementation – even with short-term product changes.



ActiveAssist

In essence, a software that delivers an all-in-one solution

1

Your advantages at a glance

► Increased process reliability

Quickly and easily create standardized processes that are constantly checked by the software and documented at the same time. The product can also identify itself. This gives you maximum process reliability, even with a high degree of product variation – key factors for cost-efficient assembly.

► Easy configuration

Web-based and no programming skills needed, so you can just get started: with a significantly shorter implementation time compared to classic pick-to-light sensors.

► Precise interaction

The intuitive step-by-step guidance guides employees safely and precisely even through more demanding assembly tasks. By incorporating touchscreens, 3D cameras and projectors, various interactive assistance functions can be realized: from the projection of work instructions and light pulse guidance right through to the integration of tightening systems.

► Optimum networking

Thanks to the web-based software with standardized interfaces, ActiveAssist is a completely flexible and open system. This enables you to seamlessly network all systems and assembly stations. And gives you worldwide access to your data within a network. Assembly 4.0, so to speak.

► Improved ergonomics

The intuitive operation and individual support given to employees increase motivation, performance and efficiency. This reduces stress, errors, and downtimes. And improves both the quality of the work and the product.

► Built-in future-proof functionality

The modular design with continuously expandable functions ensures you also have the flexibility to address all the future requirements of tomorrow.

► Summed up: higher efficiency

At last you can also produce manual assembly batch sizes of 1 economically. With minimized waste and maximum quality.



Assembly assistance 4.0: Reach your target faster with the ActiveAssist software



The development of ActiveAssist was based on everyday practice. The sophisticated software will enable you to quickly achieve a highly flexible and easy-to-use step by step assistance system for your employees. A web-based configurator allows for the intuitive teaching in of assembly processes without any programming effort. ActiveAssist supports you throughout all phases, from creating users through to compiling interactive work instructions – the perfect assistant for assembly workers and production planners. And all this is already included in the basic set.

Creating work plans

- ▶ Create, modify, and copy work plans for the simplest variant documentation
- ▶ Insert media data such as photos, videos, drawings, and PDFs
- ▶ Create, configure, and place illuminated marks on the work surface using drag and drop

**Make your variant
management better
and more convenient**

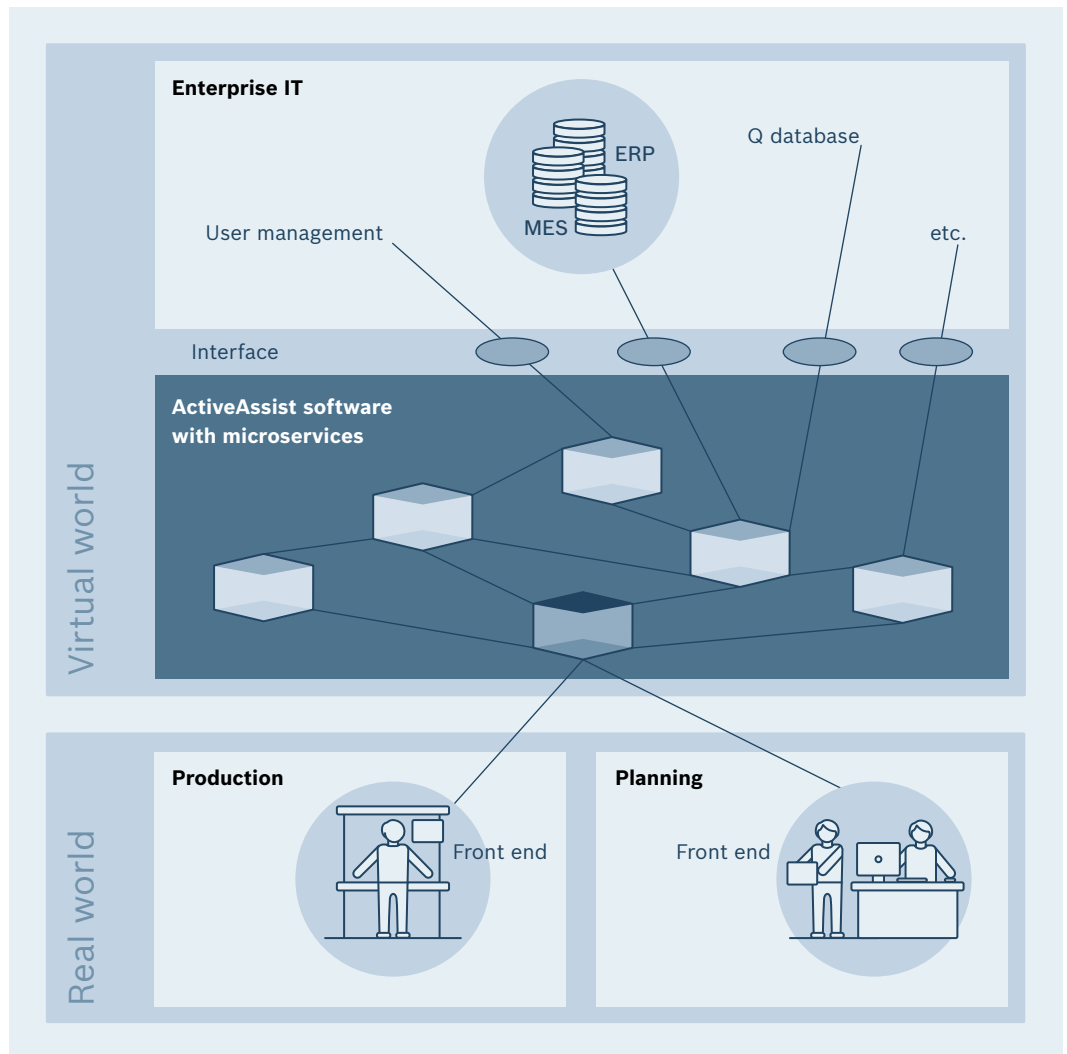
Employee guidance

- ▶ The correct variant documentation for the product is always available
- ▶ The employee is interactively and precisely guided through the process step by step
- ▶ The content and depth of the work instruction information can be individually adapted to the complexity of the process

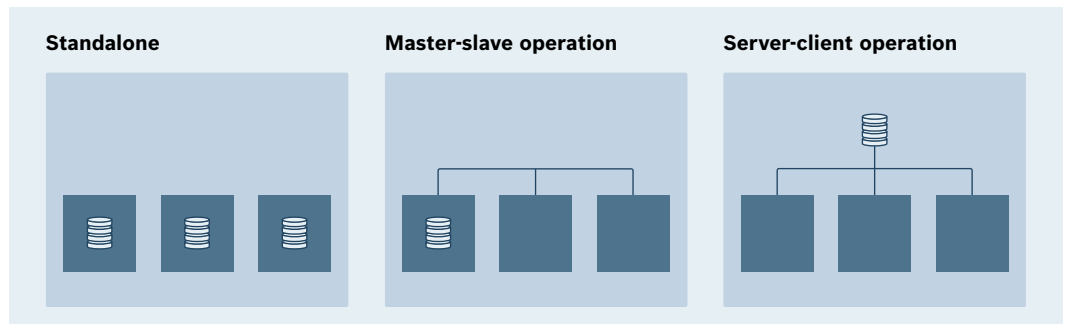
The result:
**interactive assembly assistance that is perfectly adapted
to the individual requirements**

Completely networked: for improved planning, administration, and assembly

More productive data flow:
the ActiveAssist software
connects the real world of
manual production with the
virtual world of IT systems.
Fast, easy, comfortable.



Operating modes:
ActiveAssist can be used as
a standalone system as well
as a networked solution
(master-slave operation,
server-client operation).



ActiveAssist product overview

Configure the all-in-one system according to your individual requirements: be it with just the basic module, with extensions for visualization and hand-tracking, or with additional function modules for tracking, identification and tightening. You have free reign.



Interactive work instruction



Visualization



Hand-tracking



Tool control unit



Bar code scanner



Product identification HF



Pick-to-light



ActiveAssist product structure



Modular design

Start module

With complete software functionality – you can get started straight away!

ActiveAssist basic set

Interactive work instruction



Optional plus ActiveAssist modules:

ActiveAssist projection module

Visualization



ActiveAssist hand-tracking module

Hand-tracking



Extension modules

Tool control unit

Tool control unit



Product identification

Bar code scanner



Product identification HF



Accessories

ActiveAssist hardware and software

ActiveAssist basic set	3 842 557 968	Complete ActiveAssist software, control cabinet, incl. industrial PC, touchscreen 23", monitor bracket (swivel fastening)
ActiveAssist projection module	3 842 558 335	Projector unit
ActiveAssist hand-tracking module	3 842 558 436	3D camera module
Tool control unit extension module	3 842 558 447	Tool control unit
Bar code scanner product ident 433 Bar code scanner product ident BT	3 842 558 437 3 842 558 578	based on 433 MHz based on Bluetooth
		on request
Label projection 45° Input unit push button HEAP connection kit	3 842 558 560 3 842 558 439 3 842 558 344	Button unit with three push buttons



ActiveAssist modules

2

ActiveAssist basic set	14
ActiveAssist projection module	16
ActiveAssist hand-tracking module	19

ActiveAssist basic set



The ActiveAssist basic set is the basis for every ActiveAssist system. The ActiveAssist basic set is used for the digitization and standardization of manual assembly processes.

Accessories

Required accessories

- ▶ Country-specific mains cable

Delivery notes

Scope of delivery

- ▶ ActiveAssist software key for Release 1.0
- ▶ Control cabinet (incl. Industrial PC)
- ▶ 23" touchscreen incl. monitor bracket
- ▶ Data bar (3x USB ports, 2x USB chargers, 2x network connections)
- ▶ Incl. required cables

- ▶ For setting up the software and managing the assembly workstation using a planning menu:
 - User management
 - Order management
 - Device manager
 - Assembly management
- ▶ Work plans created in the planning menu are displayed to the production employee as step-by-step instructions on the supplied touchscreen
- ▶ Process steps can be manually confirmed by touching the monitor or using the input unit push button
- ▶ Operation and configuration is performed via the supplied touchscreen
- ▶ With a Modbus interface for integrating sensors, such as pick-to-light modules (available on request, technology: Modbus TCP, PNP switching)

Notice:

- ▶ Unless otherwise specified, the ActiveAssist software is only compatible with hardware components from Bosch Rexroth
- ▶ The ActiveAssist basic set comes with Release 1.0 of the ActiveAssist software. Future versions are not included in the product scope
- ▶ The latest version of the ActiveAssist software can be downloaded in the product download area

Recommended accessories

- ▶ Input unit push button
- ▶ For comfortable operation, a keyboard / mouse combination is recommended (not included in the scope of delivery)

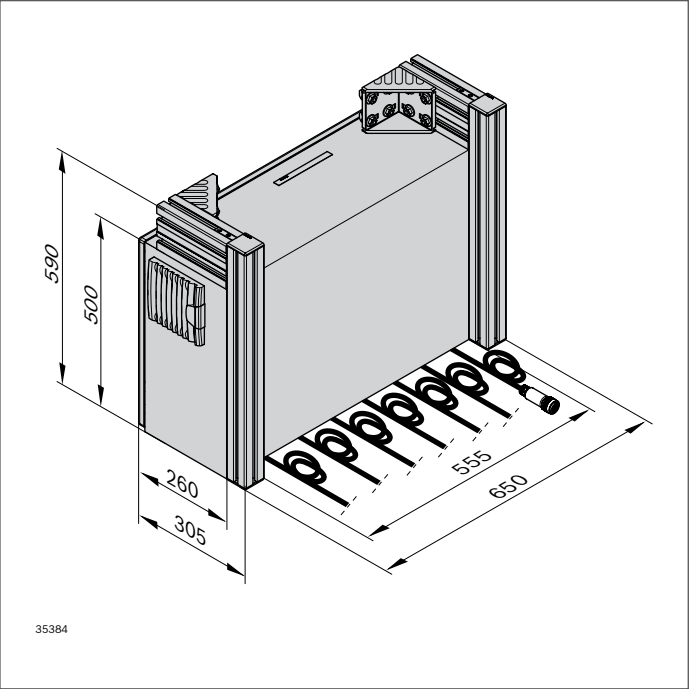
Ordering information

Product designation			Material number
ActiveAssist basic set			3 842 557 968

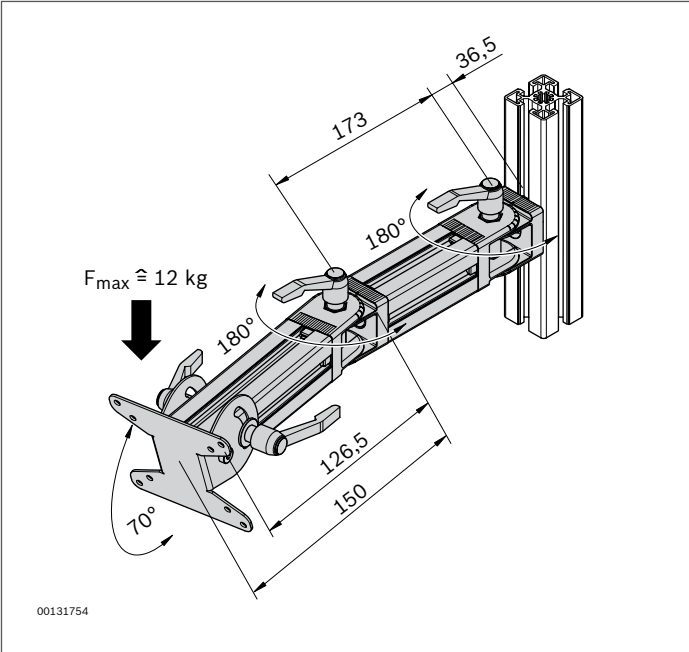
Product designation	Country	L (m)	Material number
Mains cable*	D/F	5	3 842 517 045
	GB	5	3 842 522 585
	CH	5	3 842 523 910
	Open end	5	3 842 517 201

* HD mains cables can be found in the Manual Production Systems catalog

Technical data



Material number		3 842 557 968
Control cabinet properties		
Weight	kg	27.4
Control cabinet dimensions		
Width	mm	650
Height	mm	500
Depth	mm	260
Slot		10
Monitor properties		
Weight	kg	6.5
Monitor dimensions		
Screen diagonal	"	23
Width	mm	517.5
Height	mm	313.5
Depth	mm	65
Slot		10
Additional information		
Certification		CE



ActiveAssist – the perfect start to your production

You need help with setting up the ActiveAssist system or would like customized training? Contact us or your sales partner under: www.boschrexroth.com

Customized support

- ▶ Setting up ActiveAssist
- ▶ ActiveAssist training
- ▶ Networking
- ▶ Integrating RFID and pick-to-light systems

ActiveAssist projection module



The ActiveAssist projection module guides the employee through the assembly process by means of light pulses / illuminated marks.

Accessories

Required accessories

- ▶ ActiveAssist basic set

- ▶ In addition to the touch monitor, work steps are projected directly onto the table surface by the projection module, thus ensuring optimum ergonomics in the workstation
- ▶ Illuminated marks show, for example, the mounting or tightening positions and thus give the employee the correct process sequence
- ▶ The color and shape of the illuminated marks are freely selectable and can be scaled and placed in the work area using drag and drop
- ▶ The quantity of parts to be taken from the grab containers can be displayed on labels projection 45° (see Section ActiveAssist accessories)
- ▶ The work steps are manually confirmed by touching the monitor or using the input unit push button (accessories)
- ▶ In cooperation with the hand-tracking module, the correct grab containers from which the material is to be grabbed are illuminated

Recommended accessories

- ▶ Input unit push button
- ▶ Label projection 45°

Delivery notes

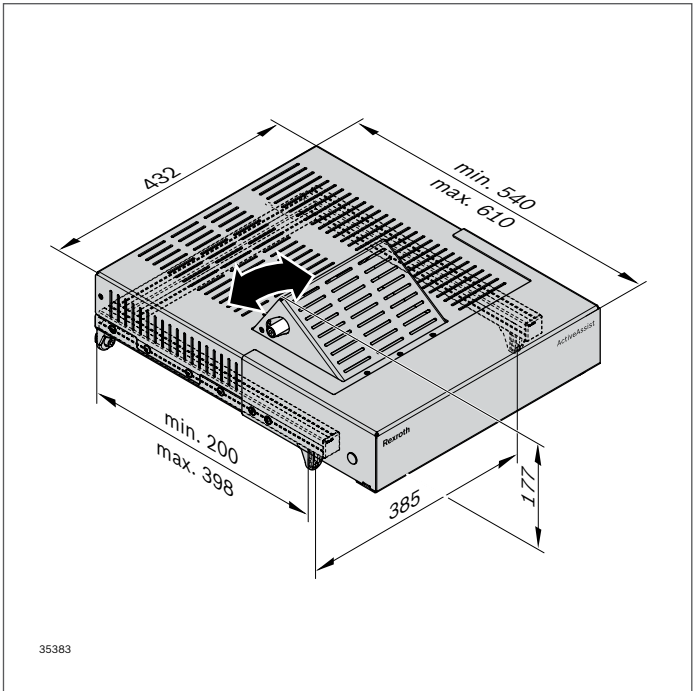
Scope of delivery

- ▶ Projection module incl. fastening kit and required cables

Ordering information

Product designation	Material number
ActiveAssist projection module	3 842 558 335

Technical data



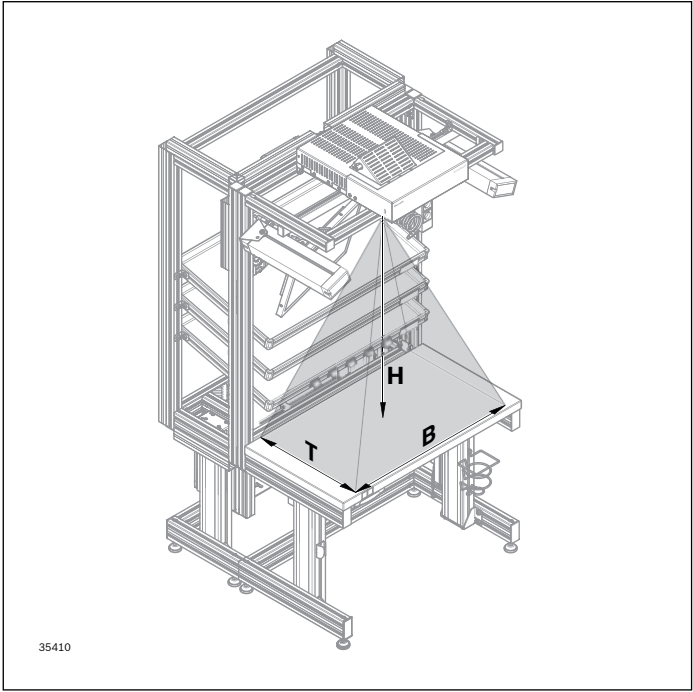
Notice:

The ActiveAssist system can be used on a height-adjustable workstation. Since the areas projected by the projector are always taught in at a certain height, it is important that the table surface and the parts storage (accessory upright) or the roller sections with the boxes are always adjusted simultaneously and at a height relative to the projection module. If, for example, the height of the projection module remains the same and the table surface and accessory upright are adjusted after teaching the projections, the geometry of the projections will be incorrect and the system will have to be reconfigured.

2

Material number		3 842 558 335
Features		
Weight	kg	8.8
Optical properties		
Projection adjustment range	°	±5
Dimensions		
Slot		8; 10
Additional information		
Certification		CE

Project planning notes



Projection range

	$T \approx 0.5 \times H + 65$	$B \approx 0.9 \times H + 100$
H (mm)	T (mm)	B (mm)
700	445	721
800	499	810
900	553	899
1000	607	988
1100	662	1077
1200	716	1166
1300	770	1255
1400	824	1344
1500	878	1433

- H** Height of projection area (vertical distance to the projector)
- T** Depth of projection area
- B** Width of projection area

ActiveAssist hand-tracking module



2



- By means of the 3D camera's depth sensor, the hand-tracking module checks the correct grip in the material supply or the correct hand position of the production employee in the assembly area. This thus determines whether the process sequence is running according to the work plan/specification and, if desired, automatically forwards the part to the next process step
- With the aid of freely scalable and placeable virtual buttons on the work surface, process steps are confirmed by a gesture and the next step is automatically visually displayed in the work plan

The ActiveAssist hand-tracking module increases process reliability by matching the employee's hand movements with the specified work plans.

Accessories

Required accessories

- ActiveAssist basic set
- ActiveAssist projection module

Recommended accessories

- Label projection 45°

Delivery notes

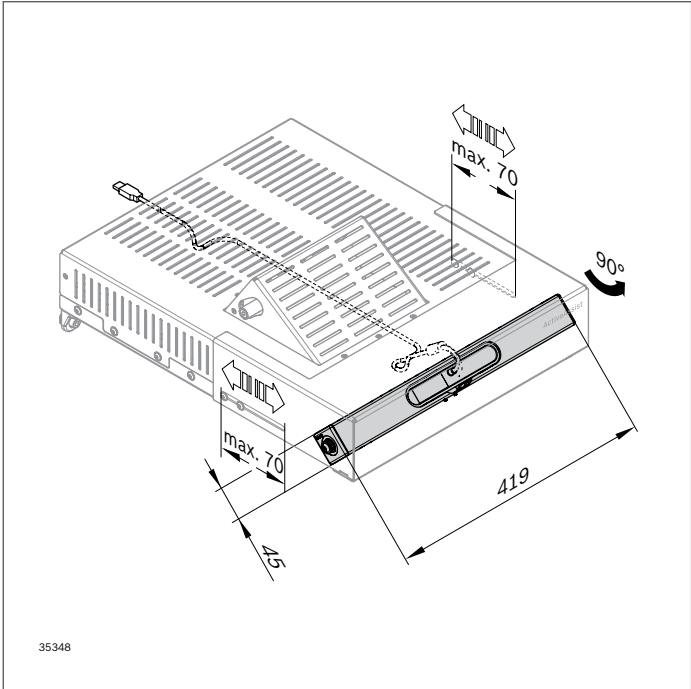
Scope of delivery

- Hand-tracking module incl. fastening kit and required cables

Ordering information

Product designation	Material number
ActiveAssist hand-tracking module	3 842 558 436

Technical data

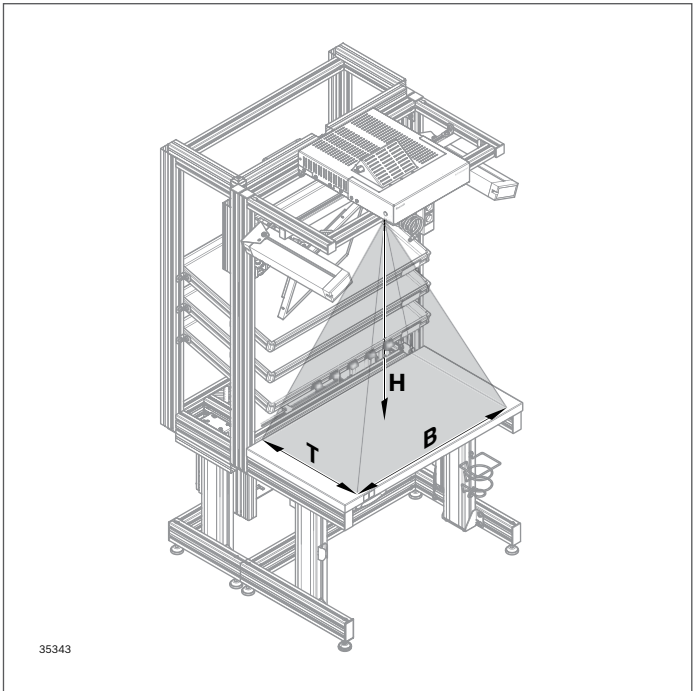


Notice:

The ActiveAssist system can be used on a height-adjustable workstation. Since the areas checked by the depth-sensing camera are always taught in at a certain height, it is important that the table surface and the parts storage (accessory upright) or the roller sections with the boxes are always adjusted simultaneously and at a height relative to the hand-tracking module. If, for example, the height of the hand-tracking module remains the same and the table surface and accessory upright are adjusted after teaching in the coordinates, the depth coordinates will be incorrect and the system will have to be reconfigured.

Material number		3 842 558 436
Features		
Weight	kg	1.8
Total weight incl. projection module	kg	10.6
Optical properties		
Camera module offset	mm	70
Rotatory adjustment range	°	90
Additional information		
Certification		CE

Project planning notes



Camera detection range

H (mm)	$T \approx 0.9 \times H$	$B \approx 1.1 \times H$
	T (mm)	B (mm)
700	663	808
800	746	924
900	839	1039
1000	993	1156
1100	1026	1270
1200	1119	1386
1300	1212	1501
1400	1306	1617
1500	1399	1732

- H** Height of detection area (vertical distance to the camera)
- T** Depth of detection area
- B** Width of detection area



ActiveAssist extension modules

3

Tool control unit extension module**24**

Product identification, bar code scanner**26**

Tool control unit extension module



- For improving process reliability through the targeted release of the correct nutrunner at the correct process step
- The torque is defined by the functionality of the nutrunner
- It is possible to control a maximum of 4 nutrunners
- As an addition to all ActiveAssist modules

The tool control unit extension module is used to integrate nutrunners and improve process reliability.

Accessories

Required accessories

- ActiveAssist basic set
- Nutrunner from the line: Bosch C-Exact

Recommended accessories

- ActiveAssist projection module

Delivery notes

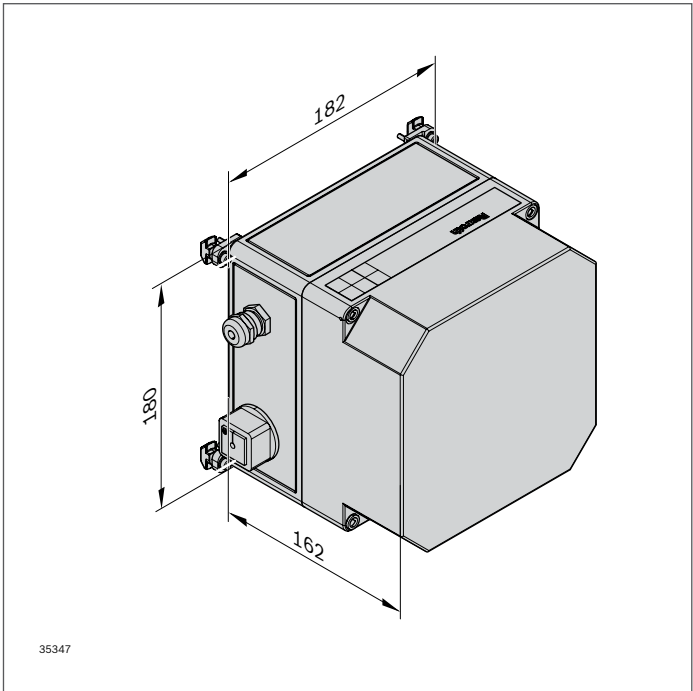
Scope of delivery

- Tool control unit incl. fastening kit

Ordering information

Product designation	Material number
Tool control unit extension module	3 842 558 447

Technical data



3

Material number		3 842 558 447
Features		
Weight	kg	3.2
Type		
Line voltage	V AC	100 ... 240
Mains frequency	Hz	50/60
Connection		4 x M25 (36 V DC)
Dimensions		
Slot		10
Additional information		
Certification		CE

Product identification, bar code scanner



- ▶ Product identification ensures that the correct variant work plan (with the correct process data) starts
 - ▶ The accumulated process data is stored in the production data base
- ▶ The following technologies can be used for product identification:
 - Teaching in RFID tags (available on request)
 - Scanning in of bar or data matrix codes using a bar code scanner



Bar code scanner

- ▶ Determines the product variant by scanning in bar codes (bar and data matrix codes)
- ▶ Automatically retrieves the correct work plan (variant documentation)
- ▶ Plug-and-play commissioning due to the predefined system configuration
- ▶ Different frequency ranges are available:
 - Bar code scanning based on a frequency of 433 MHz
 - Bar code scanning based on Bluetooth technology
- ▶ As an addition to all ActiveAssist modules

Delivery notes

Scope of delivery

- ▶ Bar code scanner incl. charging cradle

Ordering information

Product designation	Material number
Bar code scanner product ident 433	3 842 558 437
Bar code scanner product ident Bluetooth	3 842 558 578

Technical data

Material number	3 842 558 437	3 842 558 578
Additional information		
Frequency	MHz	433
		Bluetooth



ActiveAssist accessories

4

Label projection 45°	28
HEAP connection kit	29
Input unit push button	30

Label projection 45°



- For visualizing the projection of the projector on the material supply
- Can be mounted on the material shelf (in slot) or on the stop plate of the roller section (magnetic)

Delivery notes

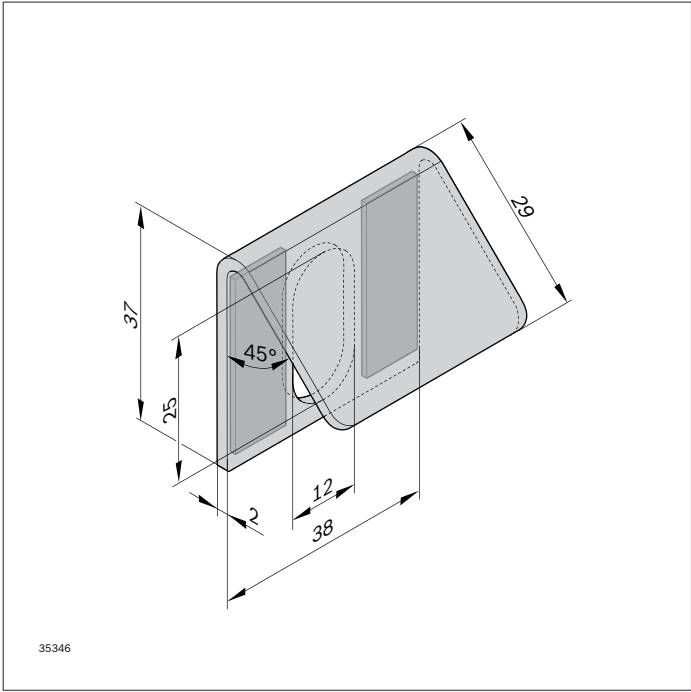
Scope of delivery

- Bracket, incl. fastening kit for material shelves and roller sections

Ordering information

Product designation	Packaging unit	Material number
Label projection 45°	10	3 842 558 560

Technical data



Material number	3 842 558 560
Features	
Material specification	Metal; powder-coated, RAL 9010

HEAP connection kit



- For the mechanical connection of work table and accessory upright (parts supply) for height-adjustable workstations

Notice:

Height-adjustable workstations may only be used if the workstation and accessory upright (parts supply) can be moved synchronously.

Delivery notes

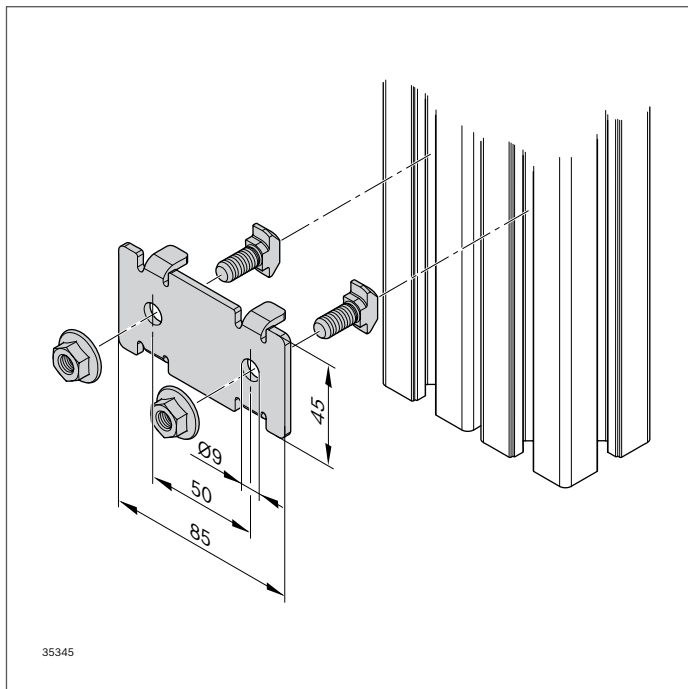
Scope of delivery

- Connection plate incl. fastening kit

Ordering information

Product designation	Packaging unit	Material number
HEAP Connection Kit	4	3 842 558 344

Technical data



35345

Material number	3 842 558 344
Dimensions	
Slot	10

Input unit push button



- For the manual confirmation of work steps in the ergonomic range of motion
- Incl. forward/backward function
- For mounting below the table top within the ergonomic range of motion of the production worker

Accessories

Required accessories

- ActiveAssist basic set

Delivery notes

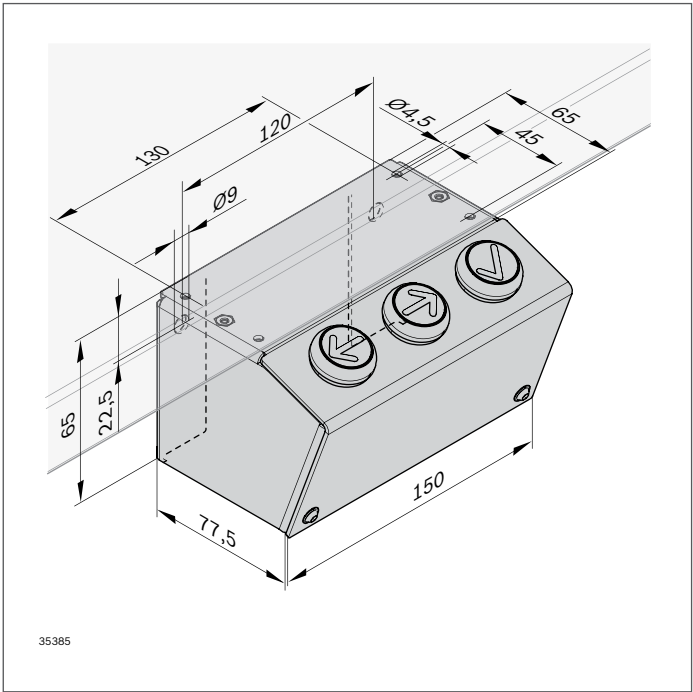
Scope of delivery

- Input unit incl. fastening kit

Ordering information

Product designation	Material number
Input unit push button	3 842 558 439

Technical data



Material number	3 842 558 439
Dimensions	
Slot	10

Technical data

5

Sample configurations

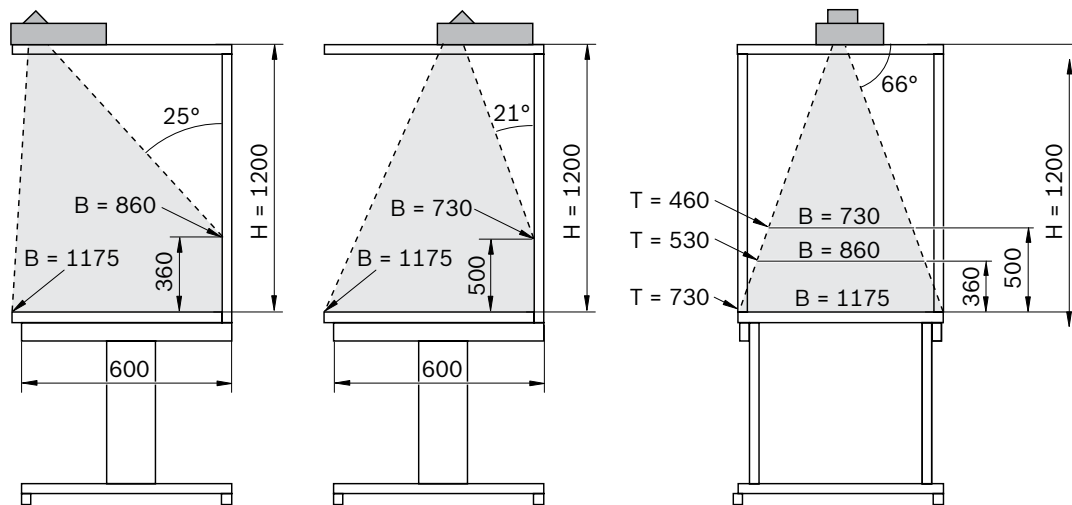
32

Sample configurations

Notice:

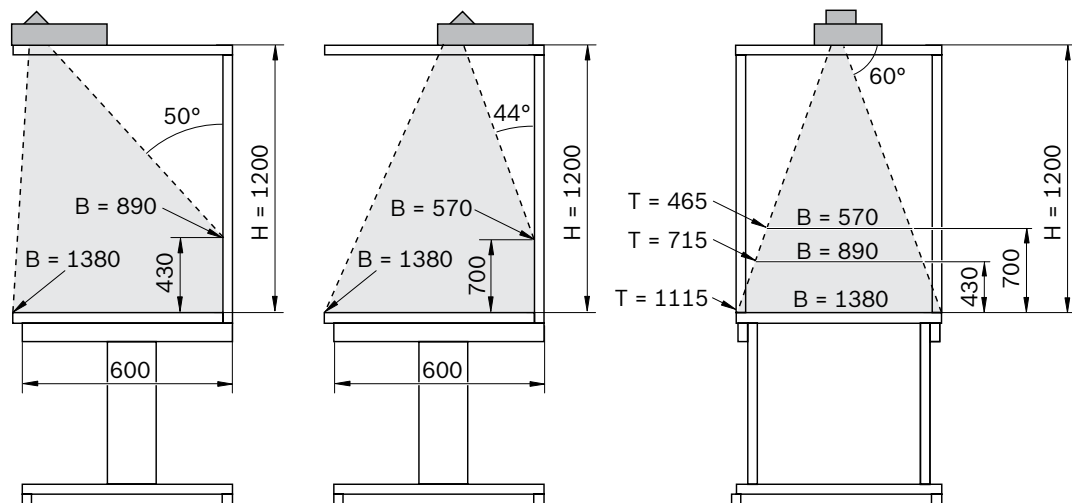
Height-adjustable workstations may only be used if the workstation and accessory upright (parts supply) can be moved synchronously.

Projection module with maximum projector zoom and middle mirror position (all dimensions in mm)



35342

Hand-tracking module (all dimensions in mm)



35344

Material number overview

3 842 517 045	15	3 842 558 335	11, 16	3 842 558 447	11, 24
3 842 517 201	15	3 842 558 344	11, 29	3 842 558 560	11, 28
3 842 522 585	15	3 842 558 436	11, 19	3 842 558 578	11, 26
3 842 523 910	15	3 842 558 437	11, 26		
3 842 557 968	11, 15	3 842 558 439	11, 30		

6

Index

► A		► B		► S	
ActiveAssist accessories	27	Bar code scanner	26	Sample configurations	32
– HEAP connection kit	29			– Hand-tracking module	32
– Input unit push button	30	► H		– Projection module	32
– Label projection 45°	28	HEAP connection kit	29		
ActiveAssist basic set	14	► I		► T	
ActiveAssist extension modules	23	Input unit push button	30	Technical data	31
– Component identification,				Tool control unit extension module	24
bar code scanner	26	► L			
– Tool control unit extension module	24	Label projection 45°	28		
ActiveAssist hand-tracking module	19	► P			
ActiveAssist modules	13	Product identification	26		
– ActiveAssist basic set	14	► R			
– ActiveAssist hand-tracking module	19	RFID tags	26		
– ActiveAssist projection module	16				
ActiveAssist product structure	10				
ActiveAssist projection module	16				

Notes

Bosch Rexroth AG

Postfach 30 02 07
70442 Stuttgart, Germany
www.boschrexroth.com

Find your local contact person here:

www.boschrexroth.com/contact