

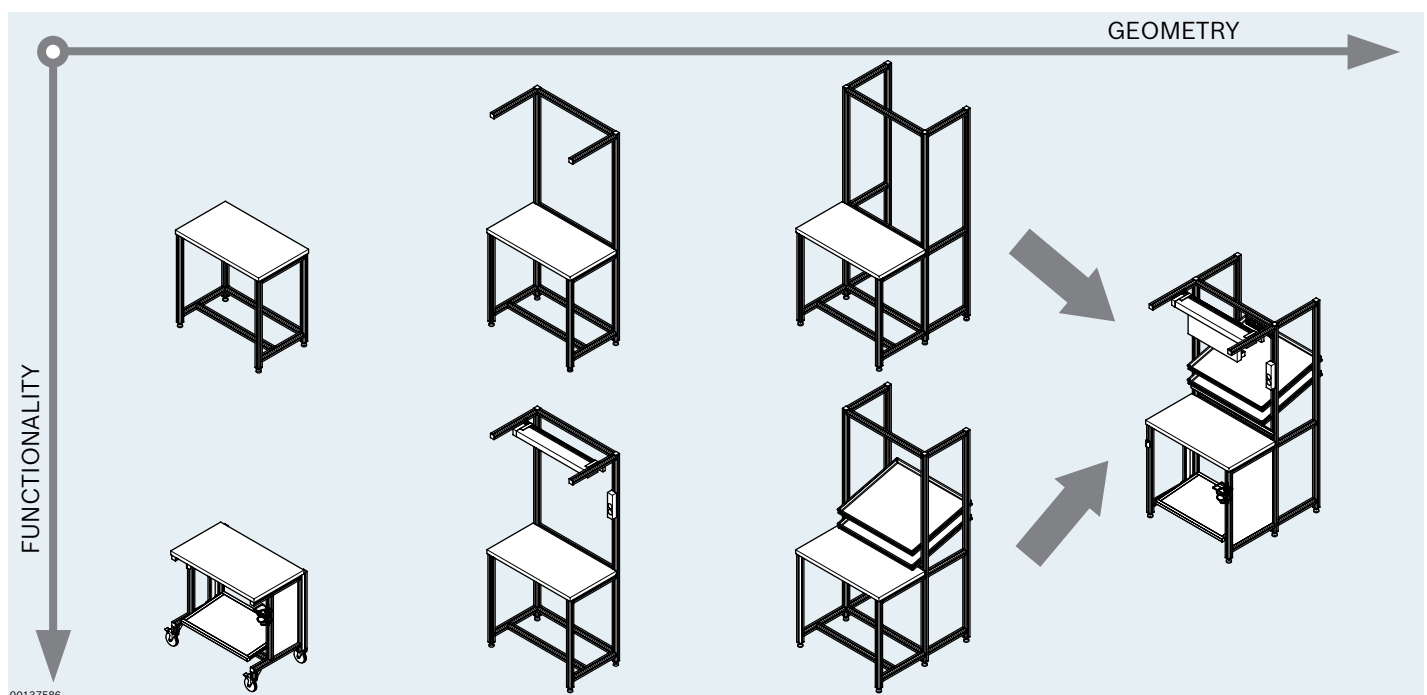
# Workstations

Workstation design must take account of the product itself, the process required for that product, and the actual human being doing the work. The design must give equal priority to the minimization of process waste and to providing employees with an ergonomic work environment.

This is why geometry and functionality are important in the layout of the workstation. The product being fabricated and the person doing the work are the benchmarks in defining the workstation height, width and depth as well as for positioning lighting and material supply equipment. Support accessories such as information boards are then added to ensure that the right information is available at the right place.

## Ergonomics

A basic facet of workstation design involves the encouragement of alternating, dynamic activity. Static activity inhibits blood circulation and oxygen supply to the muscles. Alternating physical exertion reduces stress on the employee and increases performance. Alternating exertion is seen, for example, where combined

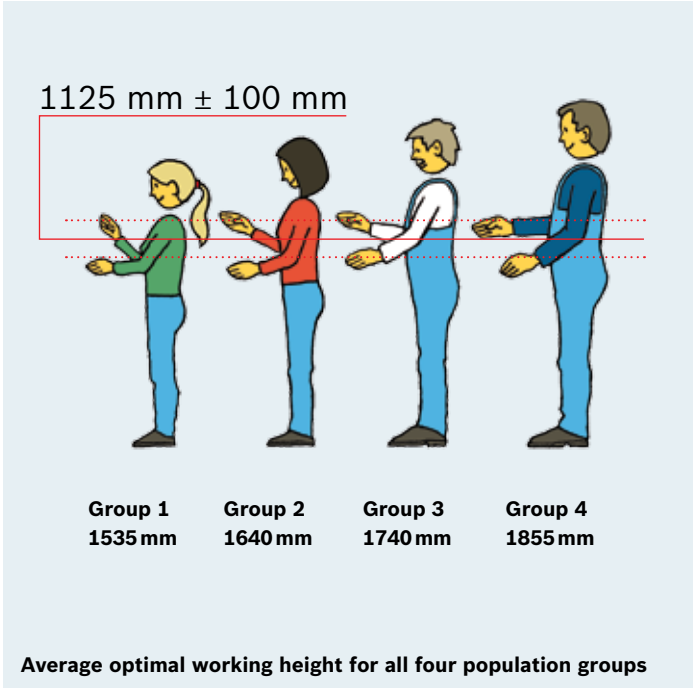


stand-up/moving or sit-down/stand-up workstations are integrated into the workflow. Many workstations are used for multiple shifts. This means that these workstations need to be designed for employees of different height. The optimum working height is based on the body height range and the type of activity to be performed. If you take all body heights into consideration, the average optimum working height for average requirements is 1125 mm for sit-down/stand-up workstations. The ability to separately adjust the material feed height and the working height means that these height-adjustable workstations can be adapted to both different products and different workers. This is the key to creating an ergonomically optimized workplace. Information on further aspects of ergonomic workstation design, such as the optimal grab area or recommended working heights, is available in our Ergonomics brochure (3 842 523 943).

Work contents	Working heights			
	Group 1	Group 2	Group 3	Group 4
<b>High standards for</b> Visual inspection Fine motor skills	1100	1200	1250	1350
<b>Moderate standards for</b> Visual inspection Fine motor skills	1000	1100	1150	1250
<b>Low standards for</b> Visual inspection <b>High standards for</b> Freedom of arm movement	900	1000	1050	1150
Average optimal working height = 1125				

MTpro

For workstation design and planning, we recommend MTpro! See pages 12 and 13 for more information.



# Height-adjustable workstation



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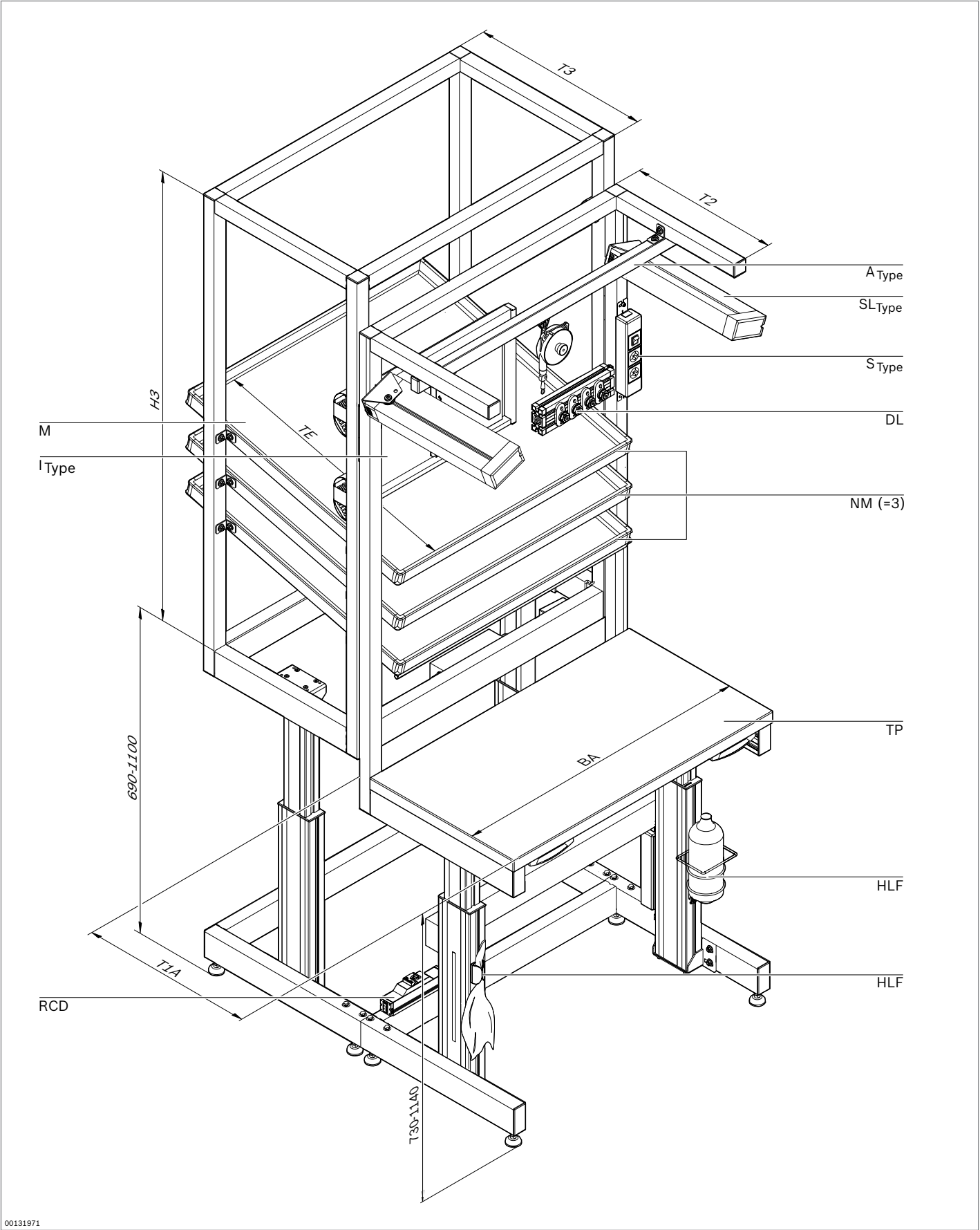
- ▶ Large number of adjustment options for high versatility
- ▶ Freely selectable geometry and functionality
- ▶ Independent adjustment of material feed and table top heights
- ▶ Available as ESD-conductive version
- ▶ Fully assembled or as a kit for self-assembly
- ▶ Allows for the addition of any desired modules, including cross ties and conveyor tracks as well as individual components

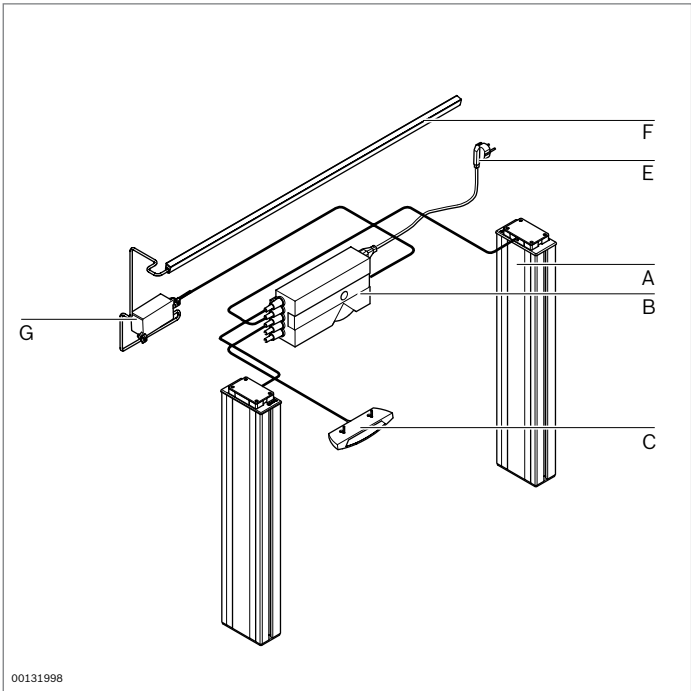


**For workstation design and planning, we recommend MTpro! See pages 12 and 13 for more information.**

See technical data (page 192)

Height-adjustable workstation		3 842 998 350
A	Design	Disassembled, assembled
ESD	Conductivity	Yes, no
LV	Load version	No. lift modules
BA	Workstation width	640 ... 2000 mm
H3	Strut extension height	Up to 1500 mm
T1A	Workstation depth	Up to 1000 mm
T2	Bracket depth	Up to 800 mm
TP	Table top type	4 different table tops
T3	Accessory upright depth	Up to 800 mm
NM	No. material shelves	0 ... 4
M	Material shelf material	3 different material shelves
TE	Material shelf depth	520 ... 1100 mm
E	Suspension profile	With, without
A <sub>typ</sub>	Type of hanger	With, without hanger Selectable spring pulls
L	Country version	D, F, GB, CH, CZ
RCD	Residual-current device	Yes, no
SL <sub>typ</sub>	Type of lamp	6 different lamps
S <sub>typ</sub>	Type of socket	4 different sockets
DL	Compressed air strip	With, without
I <sub>typ</sub>	Type of information board	7 different information boards
HLF	Cloth and bottle holder	With, without



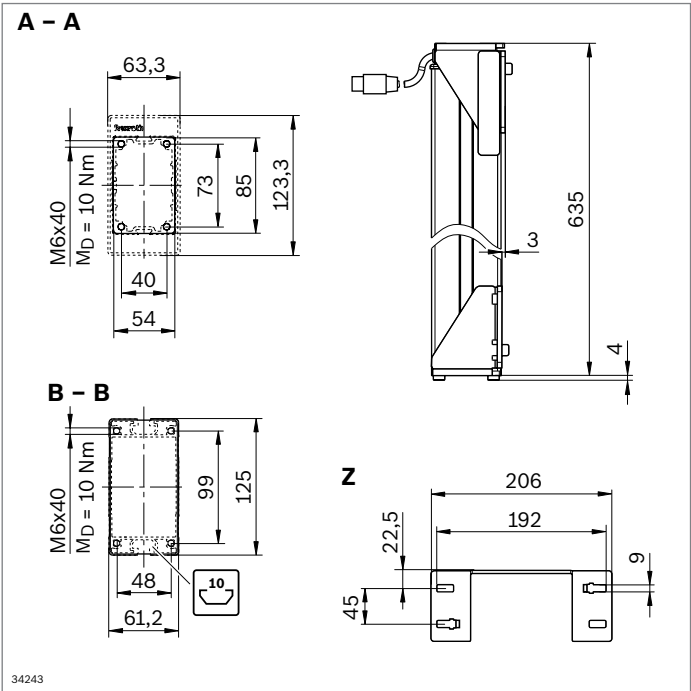
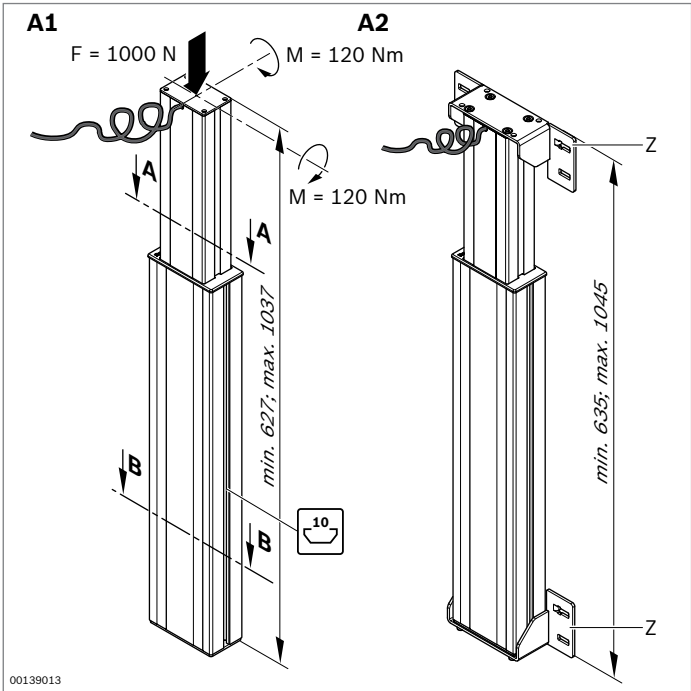


Height-adjustable workstation components

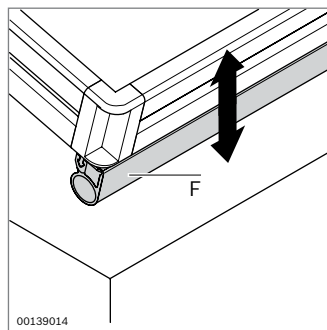
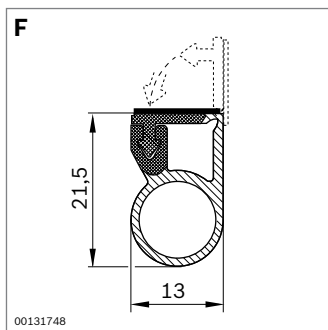
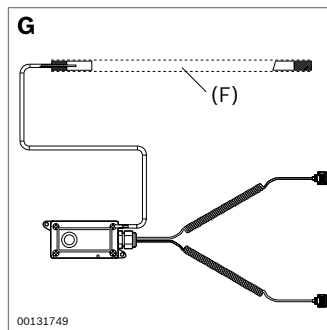
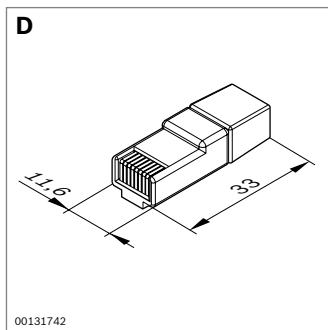
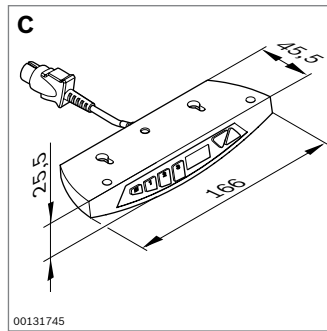
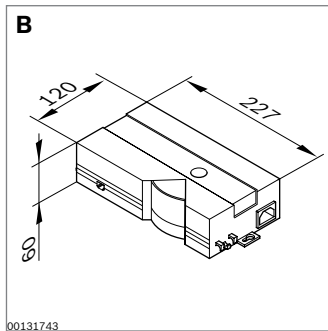
Lifting module (A)

- ▶ Lifting module for continuous workstation height adjustment
- ▶ Connected via screw hole on face sides or using the integrated 10 mm slot
- ▶ Lifting force: max. 1000 N per lifting module; suitable for compressive forces only
- ▶ Lift: 410 mm
- ▶ Lifting velocity: 25 mm/s
- ▶ Cable length: 2000 mm

See technical data (page 193)



	No.
A1 Lifting module	3 842 540 116
A2 Lifting module with bracket (Z)	3 842 542 211



### Control (B)

- Control for synchronization of 1, 2, 3 or 4 lift modules in parallel operation
- Operating time: 10%

### Hand switch (C)

- For operating the controller, with push button for height adjustment and 3 memory buttons to store the different positions, cable length 3 m

### Contact bridge (D)

- For operating the controller without collision protection

### Mains cable (E) (not shown)

- For connection to power mains

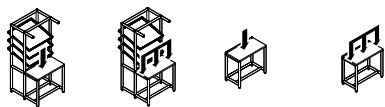
### Pressure wave control strip (F), pressure wave sensor (G)

- A pressure wave control strip (F) can be connected to the control unit (B) to protect against mechanical collisions. Even if only slight pressure is applied to the pressure wave control strip, the pressure wave sensor (G) sends a signal to the control unit and the lift modules move a few millimeters in the opposite direction. The pressure wave control strip has a self-adhesive rear side and can be individually shortened.

	L (m)	No.
<b>B</b> Control unit for 1 lift module*		<b>3 842 540 048</b>
Control unit for 2 lift modules*		<b>3 842 540 049</b>
Control unit for 3 lift modules*		<b>3 842 540 050</b>
Control unit for 4 lift modules*		<b>3 842 540 051</b>
<b>C</b> Hand switch with display		<b>3 842 540 120</b>
<b>D</b> Contact bridge		<b>3 842 540 047</b>
<b>E</b> Mains cable D	5	<b>3 842 540 195</b>
Mains cable CH	5	<b>3 842 540 197</b>
Mains cable GB	5	<b>3 842 540 199</b>
<b>F</b> Control strip	2	<b>3 842 540 129</b>
<b>G</b> Pressure wave sensor		<b>3 842 540 130</b>

\* EU; 230 V AC

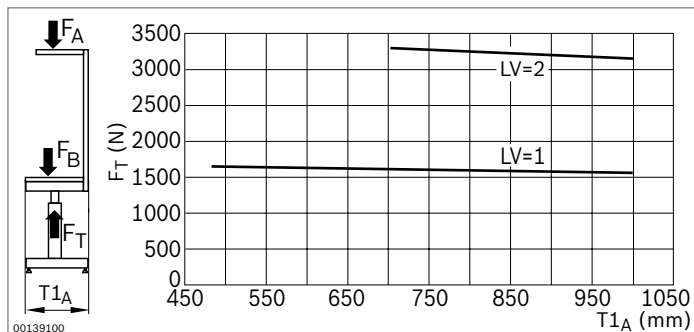
# Workstations and workstation accessories



BA (mm)	FU	$F_{\max}$ (N)	$F_{\max}$ (N)	$F_{\max}$ (N)	$F_{\max}$ (N)
≤ 1500	GF	2000	4000	2000	4000
	LR	2000	2400	2000	3000
> 1500	GF	1500	2000	1500	2000
	LR	1500	2000	1500	2000

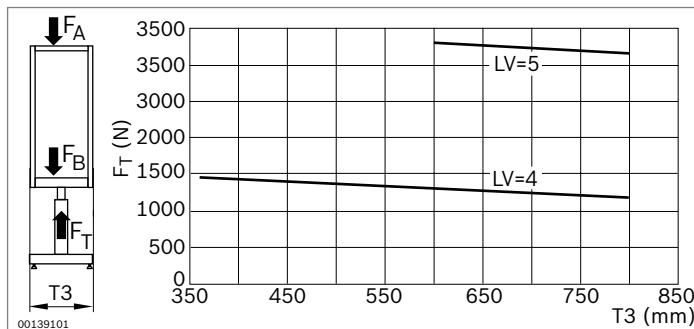
	Point load	BA	Width
		FU	Foot type
	Distributed load	GF	Leveling foot
		LR	Castor

## Workstation module



Bearing load for height-adjustable workstation where BA = 1000 mm. The bearing load decreases as the width BA increases. Standard load version LV = 1; heavy load version LV = 2; H3 = 0

## Material supply module (accessory upright)



Bearing load for height adjustable material supply where BA = 1000 mm and H3 = 1200 mm. Standard load version LV = 4; heavy load version LV = 5

## Workstations

### Point and distributed loads for workstations

In configurable workstations, these values are dependent on the width (BA), foot design (FU) and workstation design. All values apply to desk and box types.

**3 842 998 110** (see page 22)

### Point and distributed loads for height-adjustable workstations

**3 842 998 350** (see page 18)

The load carrying capacity of the workstation and material supply (accessory upright) modules is dependent on the selected load version (LV) and the respective design.

$F_B$  = Max. load (uniformly distributed load)

$F_T$  = Max. bearing load of base frame

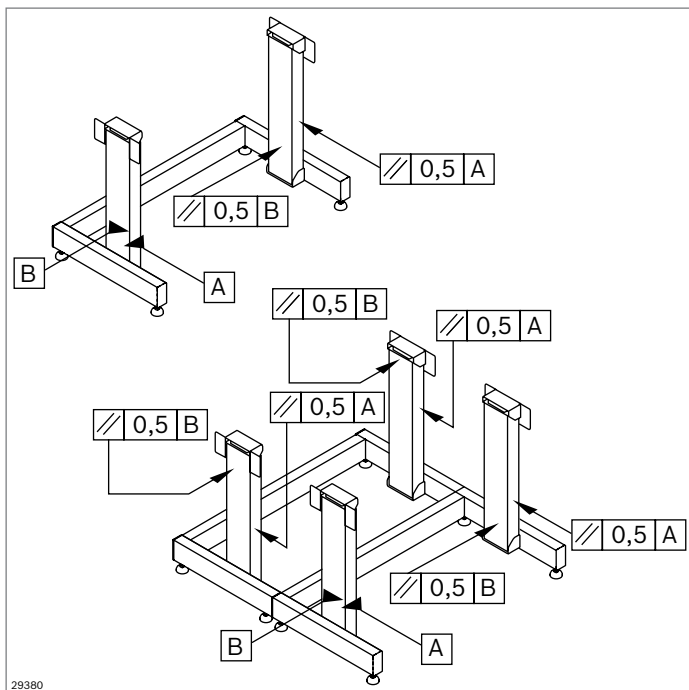
$F_A$  = System weight of fixtures

$$F_B = F_T - F_A$$

Load version type	Number of lift modules	
	Table	Accessory upright
LV=1	2	0
LV=2	4	0
LV=3	2	2
LV=4	4	2
LV=5	2	4
LV=6	4	4

The maximum load is calculated from the bearing load of the base frame minus the system weight of the fixtures (table top, brackets, material shelves, etc.).

In order to precisely determine the maximum load of your individual workstation system, please use MTpro!

**Parallelism****Height-adjustable workstation****Lifting module****3 842 540 116** (see page 20)**Lifting module with bracket****3 842 542 211** (see page 20)**Tilting moments**