5 Order information and mounting positions

5.1 Order information

INFORMATION

The following information, along with the mounting position, is required for R, F, K, S, and W gearmotors when placing an order.

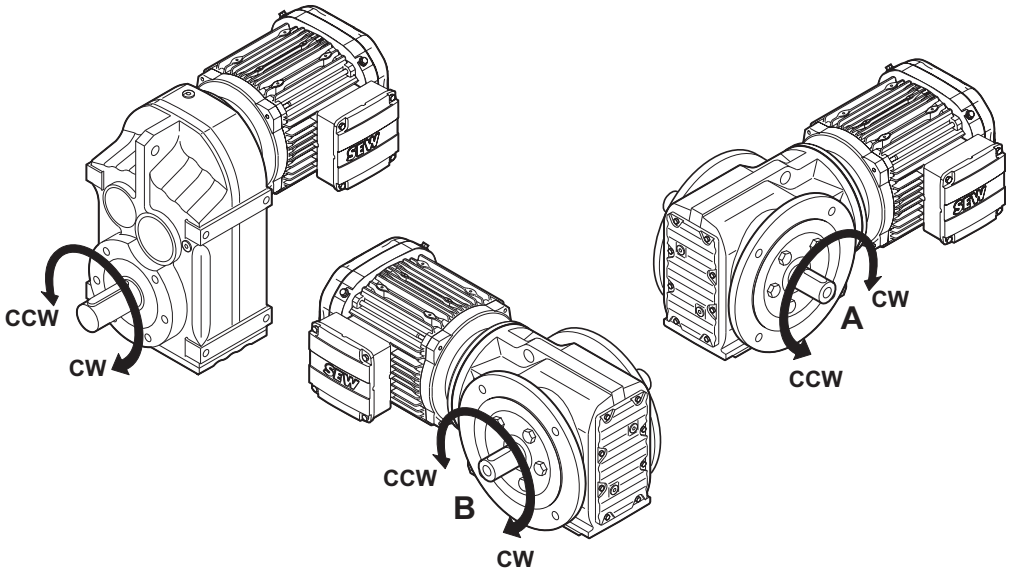
This information is also required for gearmotors that do not depend on a particular mounting position.

5.1.1 Direction of rotation

The purpose of a backstop is to prevent unwanted direction of rotation. During operation, the backstop allows rotation only in the specified direction.

The direction of rotation is specified when looking into the output shaft (also known as low speed shaft, LSS):

- CW rotation
- CCW rotation



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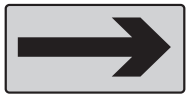
For right-angle gearmotors with a hollow shaft or with a double output shaft (with solid shaft ends at both A and B), the direction is specified as looking into side A.

For units without a backstop, the direction of rotation may be reversed simply by switching any two motor power wires.

The allowable direction of rotation is indicated by an arrow on the housing:



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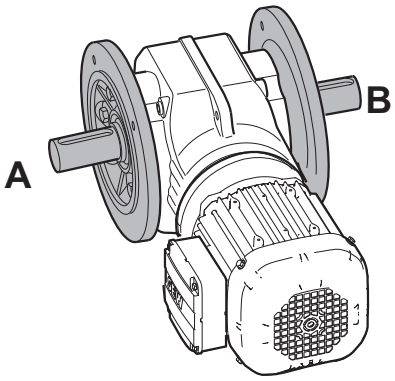
5.1.2 Output shaft and output flange positions

In right-angle gear units, you also have to indicate the position of the output shaft and the output flange:

- A, B, or AB
- AB indicates both sides



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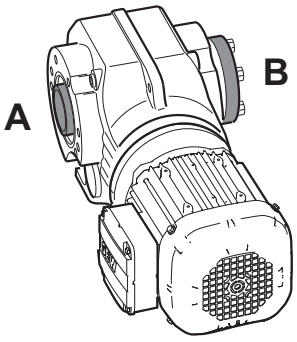
5.1.3 Output shaft entry position

For shaft mounted right-angle gear units with either a shrink disk (ex. KH) or TorqLOC® (ex. KT). You must indicate whether A or B is the entry so that the clamping collar is placed on the correct side. The entry is the side that the customer's solid shaft first enters during installation. Therefore, it is the side closest to the customer's machine. The clamping collar is always located opposite the entry side. Thus, in the figure below, the entry side is A. So, the clamping collar is placed at B.

NOTE: On gear units with a TorqLOC® shaft (ex. KT, ST, FT), a symmetrical shaft is available so that the customer's shaft may enter on either side. Designation = **AB**.

For hollow shaft units with key (ex. KA, SA), stating the entry side allows SEW to correctly install the internal snapring on the opposite side of shaft entry.



4579730955

INFORMATION

For the permitted mounting surfaces (= hatched area), refer to the mounting position pages (→ 🗎 75).

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5.1.4 Motor terminal box and cable entry position

Footed motor (without gear unit):

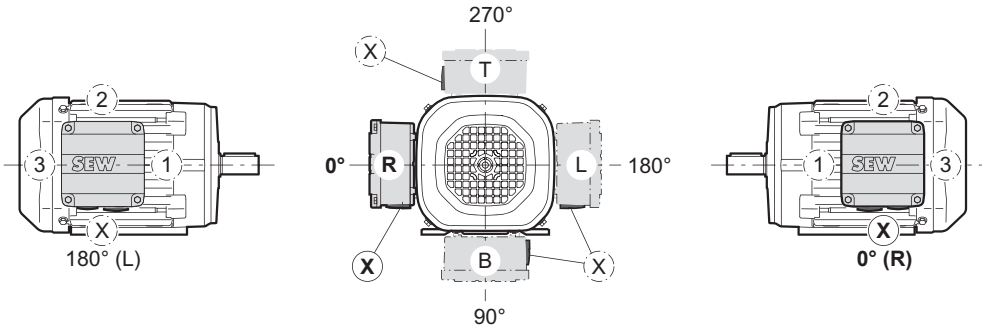
The position of the motor terminal box was previously specified as 0°, 90°, 180°, or 270° when looking into the fan guard. However, a change in the product standard EN 60034 now specifies the following positions:

- Positions pertain to the view when looking **into the output shaft** of a motor in mounting position B3 (or M1)
- Positions are designated as R (right), B (bottom), L (left) and T (top).
- Cable entry position is specified with X, 1, 2, 3, as shown in the figure below.

At first glance, R and L may appear to be backwards in the figure below. However, the view below is looking into the fan guard. When looking into the output shaft, R and L are correct.

Gearmotors:

- The position of motor terminal box is determined by looking **into the fan guard** when the gearmotor is in M1 mounting position.
- The position of the terminal box is specified with 0°, 90°, 180° or 270°, as shown in the figure below.
- For mounting positions other than M1, the terminal box positions rotate with the feet of gear unit.
- Cable entry position is specified with x, 1, 2, 3, as shown in the figure below.



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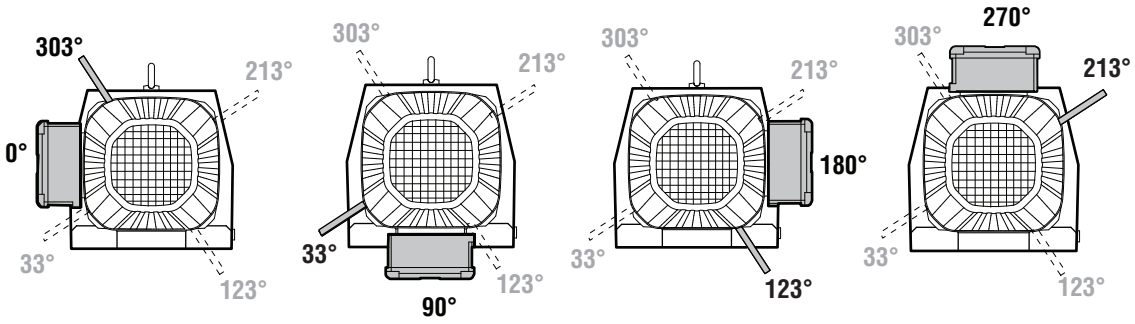
INFORMATION

Unless indicated otherwise in your order, you will receive the terminal box type 0° with "x" cable entry for all gearmotors.

5.1.5 Brake hand release and conduit box positions

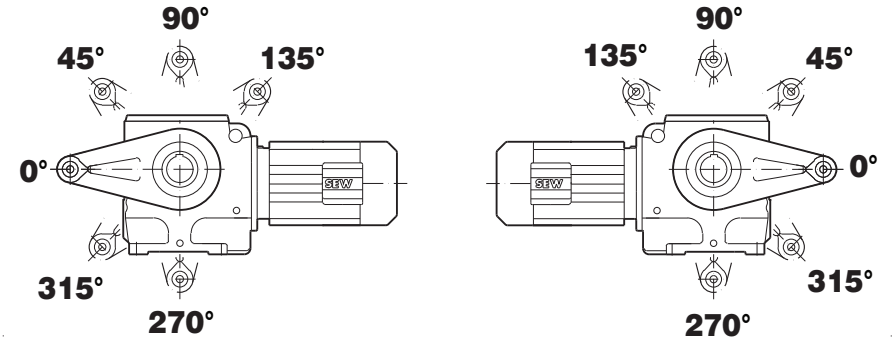
The conduit box and brake release use the same coordinate system, where 0° is the same as 9:00 (o-clock) when looking into the back of the gearmotor in an M1 mounting position (feet on bottom). Degrees increase in the CCW direction. You may place the hand release in any one of the four positions shown below, regardless of the conduit box location. However, if you do not specify otherwise, SEW assembles the hand release CW from the conduit box, as shown in bold.



CB_HR

5.1.6 Torque arm position

The following illustration shows the possible torque arm positions for helical-worm gear units, K..9 helical-bevel gear units, and SPIROPLAN® gear units (135° position not possible with SPIROPLAN® gear units). As a standard, SEW-EURODRIVE supplies the torque arm loosely. Therefore, the customer must specify the desired angle if factory mounting is required.



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5.1.7 Example orders

Model Type	Mounting position	Shaft position	Flange position	Terminal box position	Cable entry position	Output direction of rotation
K47DRS71M4/RS	M2	A	-	0°	"X"	Clockwise
SF77DRN90L4	M6	AB	AB	90 °	"3"	-
KA97DRN132M4	M4	B	-	270 °	"2"	-
KH107DRN160M4	M1	A	-	180 °	"3"	-
KT47DRN90M4	M2	AB	-	0°	"X"	-

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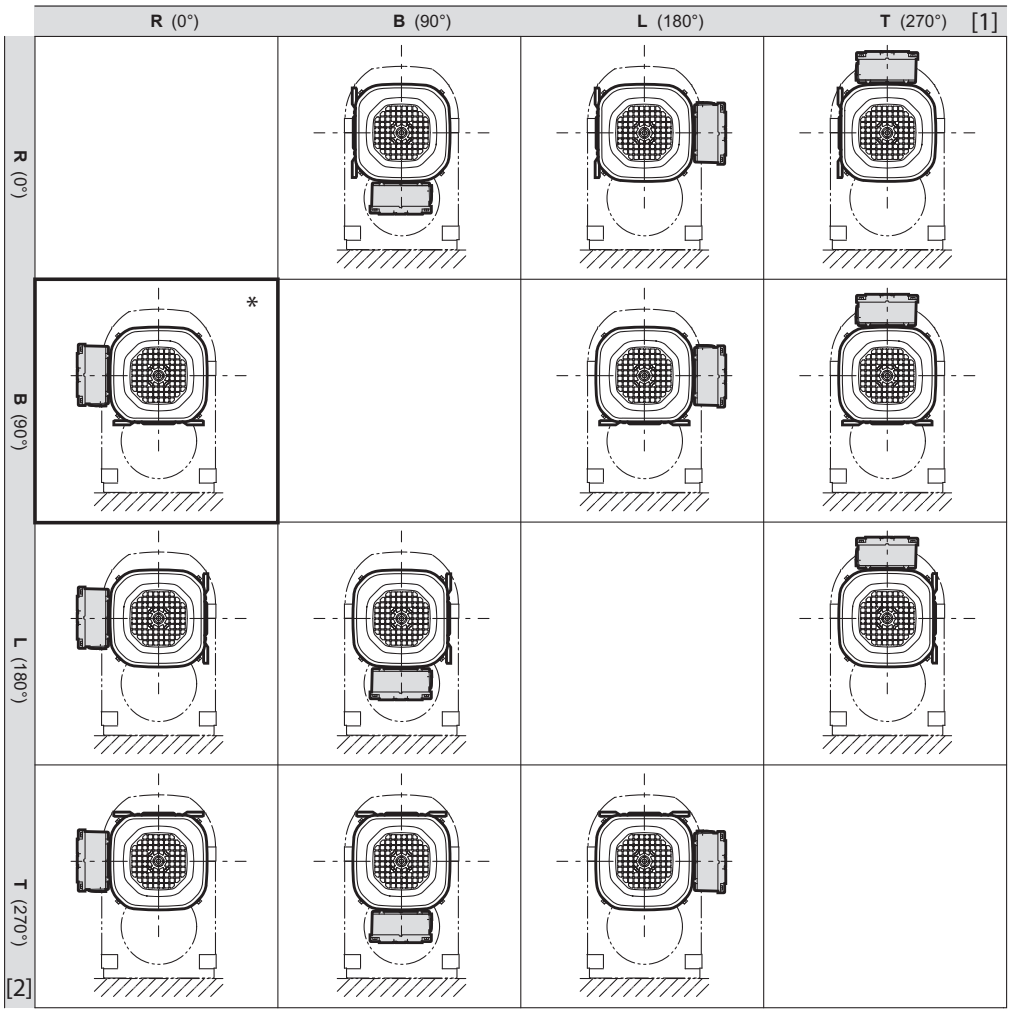
5.1.8 Option /FM - Motor terminal box and foot positions

With gearmotors, the motor is designed as flange-mounted motor for mounting to gear units. It is also possible to provide the motor with feet that can be used for customer components. The load values of the feet are available from SEW-EURODRIVE on request. The position of the foot must be specified in the order.

The following figure shows the possible positions of the terminal box and the feet for gearmotors with motor option /FM.



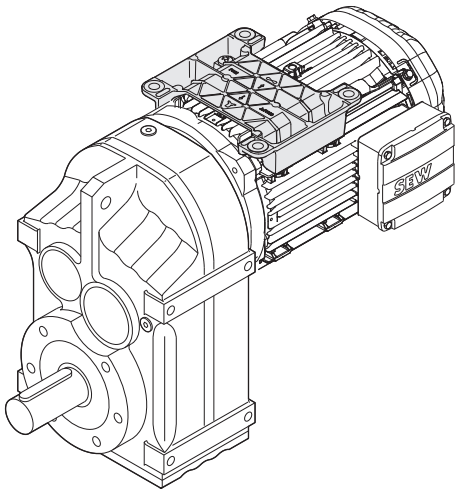
[1] Terminal box positions [2] Foot positions

*) If not specified otherwise in the order, the gearmotor is delivered with foot position B (90°) and terminal box position R (0°).

INFORMATION

The foot on the motor is not suited to attach a complete gearmotor.

Example: Gearmotor with motor option /FM:



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Order information on mounting position of the complete drive, foot positions, terminal box and cable entry:

Mounting position complete drive:	M1
Terminal box position:	R (0°)
Cable entry:	X
Foot position:	T (270°)

5.1.9 Changing mounting position

Please observe the following information when installing the gearmotor in a mounting position other than the one indicated on the order:

- Adjust the lubricant fill quantity to the changed mounting position.
- Adjust the position of the breather valve.
- When changing the mounting position to M4: Contact SEW-EURODRIVE. Depending on the drive's operating mode, an oil expansion tank might be necessary (see chapter "Oil expansion tank" (→ 🗎 21)).
- For helical-bevel gearmotors: Contact SEW-EURODRIVE if you want to change to mounting position M5 or M6, regardless of the initial mounting position.
- For helical-worm gearmotors: Contact the SEW-EURODRIVE when changing to mounting position M2 or M3.

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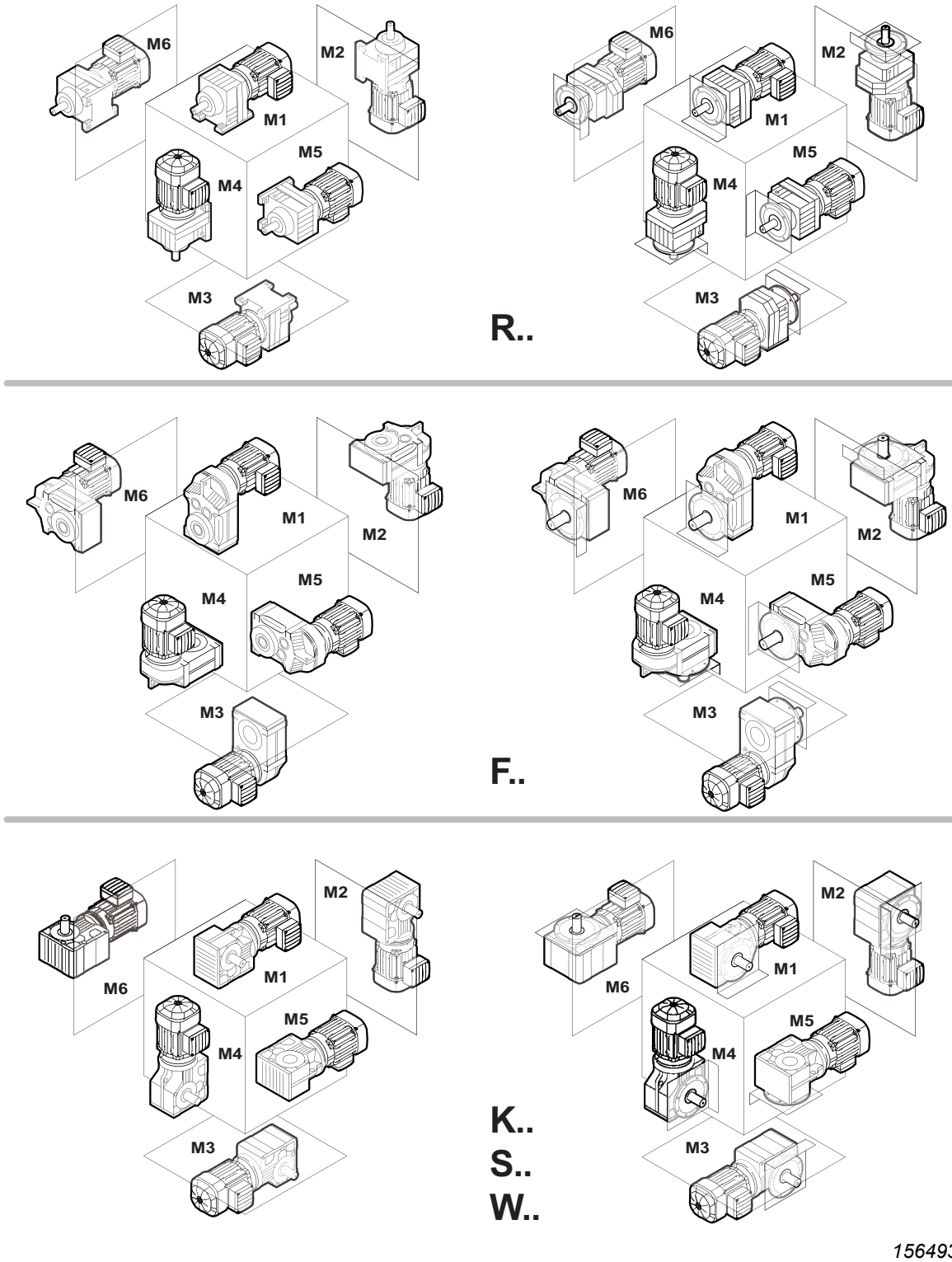
5.2 Mounting position information

5.2.1 Overview

The following illustration is an overview of mounting positions M1 – M6.



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INFORMATION

The positions of the breather valve, oil level plug, and oil drain plug specified in the mounting position sheets are binding and comply with the assembly specifications.

The motors are only depicted symbolically on the mounting position sheets.

INFORMATION

For gear units with solid shaft: The displayed shaft is always on the A-side.

For shaft-mounted gear units: The shaft with dashed lines represents the customer shaft. The output end (= shaft position) is always shown on the A-side.

INFORMATION

SPIROPLAN® gearmotors are not dependent on the mounting position, except for W..37 and W..47 gearmotors in mounting position M4. However, mounting positions M1 to M6 are also shown for SPIROPLAN® gearmotors to assist you in working with this documentation.

INFORMATION

SPIROPLAN® gearmotors W..10 to W..30 cannot be equipped with breather valves, oil level plugs or oil drain plugs.

SPIROPLAN® gear units W..37 and W..47 are equipped with breather valves in mounting position M4 and with oil drain plugs in mounting position M2.

INFORMATION

Some gear units can be supplied in mounting position M0. In this case, the gear unit is delivered in a universal mounting position and can be adjusted to various mounting positions by the customer. It may be necessary to contact SEW-EURODRIVE.

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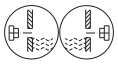
5.2.2 Symbols used

The following table shows the symbols used in the mounting position pages:

Icon	Designation
	Breather valve
	Oil level plug[1)]
	Oil drain plug

1) Does not apply to the 1st gear unit (large gear unit) of compound gear units.

5.2.3 Churning losses

* (→ 🗎 X)

Some gearmotors are marked with an asterisk (*) in the mounting position pages. Churning losses may occur for gearmotors in those mounting positions. Thus, additional measures may be needed to protect against heat. Please contact SEW-EURODRIVE.

Mounting position	Gear unit type	Gear unit size	Input speed [rpm]
M2, M4	R	97 – 107	> 3600
		> 107	>1800
M2, M3, M4, M5, M6	F	97 – 107	> 3600
		> 107	>1800
	K	77 – 107	> 3600
		> 107	>1800
	S	77 – 97	> 3600

INFORMATION

PT Pilot considers churning losses when providing selections for both gear units and gearmotors. It adds synthetic oil and FKM seals as necessary for proper heat protection. To obtain valid selections that include churning loss calculations and sump oil temperature, please visit PT Pilot.

→ **www.ptpilot.com**

5.2.4 Breather valve/oil drain plug in motor flange

As shown in the mounting position pages, the placement of the breather valve and oil drain plug depend on the gearmotor mounting position.

The following table summarizes their location:

Mounting position	Breather valve position	Oil drain plug position
M1, M3, M5, M6	In the gear unit housing	In the gear unit housing
M4	**In the motor flange @ 90**	In the gear unit housing
M2	In the gear unit housing	**In the motor flange (varies with terminal box)**

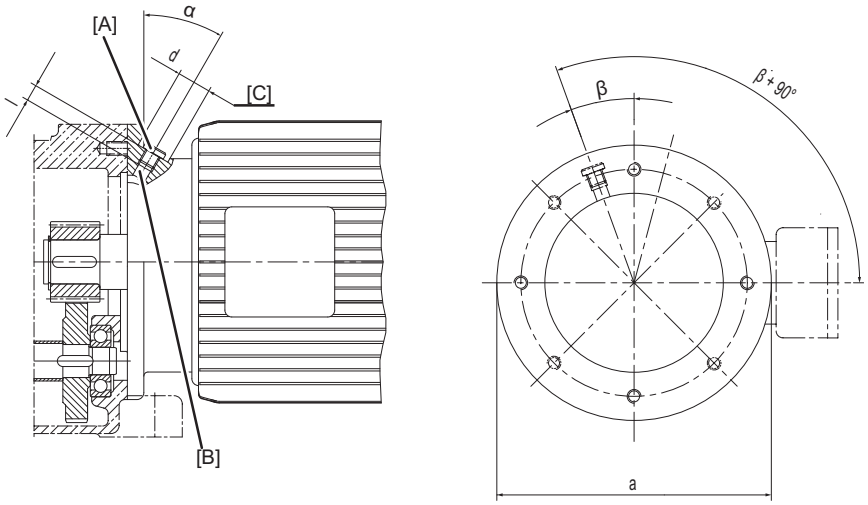
INFORMATION

The position of the oil drain plug in the mounting position pages always refers to the standard terminal box position 0°.

When the breather valve is placed in the motor flange for M4 mounting, its position does not change with the terminal box. Rather, it is always placed near **90°** (by gearmotor feet) to minimize oil seepage and spitting. See (→ 🗎 65) for 90°.

When the oil drain plug is placed in the motor flange for M2 mounting, its position depends on the terminal box location (90°, 180°, 270°), as shown below.

The following illustration shows the exact position of the oil drain plug in the motor flange.



13066345867

[A] Position of breather valve/oil drain plug
[B] Continuous core drilling
[C] Counterbored bore
[α] Drill angle
[d] Diameter of the countersinking
[l] Thread length
[a] Flange diameter
[β] Position angle

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5.2.5 Breather dimensions

The following table contains the dimensions and information for the breather valve and the oil drain plug, depending on the motor size.

Motor Size	a [mm]	α [°]	β [°]	Thread designation	Ø d [mm]	l [mm]
DR63	120	30	45	M10x1	15	10
	160		22.5			
	200			M12x1.5	18	12
DRS71	120	0	45	M10x1	15	10
	160	30	22.5			
	200			M12x1.5	18	12
	250					
	300	90		M22×1.5	28	14
DRN80	120	30	22.5	M10x1	15	10
	160					
	200			M12x1.5	18	12
	250					
	300	90		M22×1.5	28	14
DRN90	120	30	22.5	M10x1	15	12
	160					
	200			M12x1.5	15	16
	250				18	12
	300			M22×1.5	28	
DRN100	120	30	22.5	M10x1	15	10
	160					12
	200			M12x1.5	18	
	250					
	300			M22×1.5	28	14
	350					
DRN112M DRN132S	160	30	22.5	M10x1	15	10
	200			M12x1.5	18	12
	250					
	300			M22×1.5	28	14
	350					
	400	45				10
	450			M33x2	40	16
DRN132M/L	160	30	22.5	M10x1	15	10
	200	15		M12x1.5	18	14
	250	30				
	300			M22×1.5	28	12
	350					14
	400					13
	450	75		M33x2	40	16
	550	90		M42x2	50	18
DRN160	200	30	22.5	M10x1	15	17
	250			M12x1.5	18	15
	300			M22×1.5	28	12
	350					
	400					16
	450			M33x2	40	
	550	90		M42x2	50	

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Motor Size	a [mm]	α [°]	β [°]	Thread designation	Ø d [mm]	l [mm]
DRN180	250	30	22.5	M12x1.5	18	15
	300			M22×1.5	28	
	350					
	400					16
	450			M33x2	40	
	550	90		M42x2	50	17
DRN200	250	30	22.5	M12x1.5	18	15
	300			M22×1.5	28	
	350					14
	400					16
	450			M33x2	40	
	550			M42x2	50	19
DRN225	300	30	22.5	M22×1.5	28	15
	350					14
	400					16
	450			M33x2	40	17
	550			M42x2	50	29
DRN250 DRN280	350	15	22.5	M22×1.5	28	14
	400		21			
	450		22.5	M33x2	40	16
	550			M42x2	50	
DRN315	450	30	22.5	M33x2	40	30
	550		11.25	M42x2	50	20

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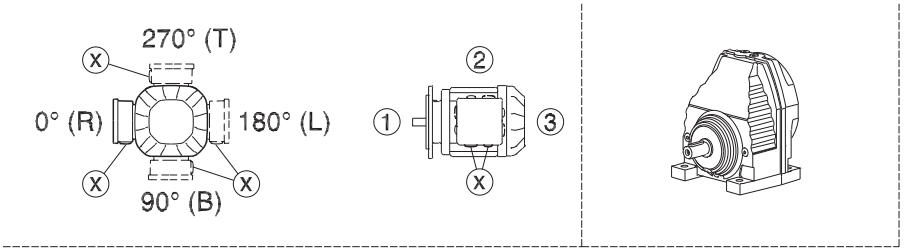
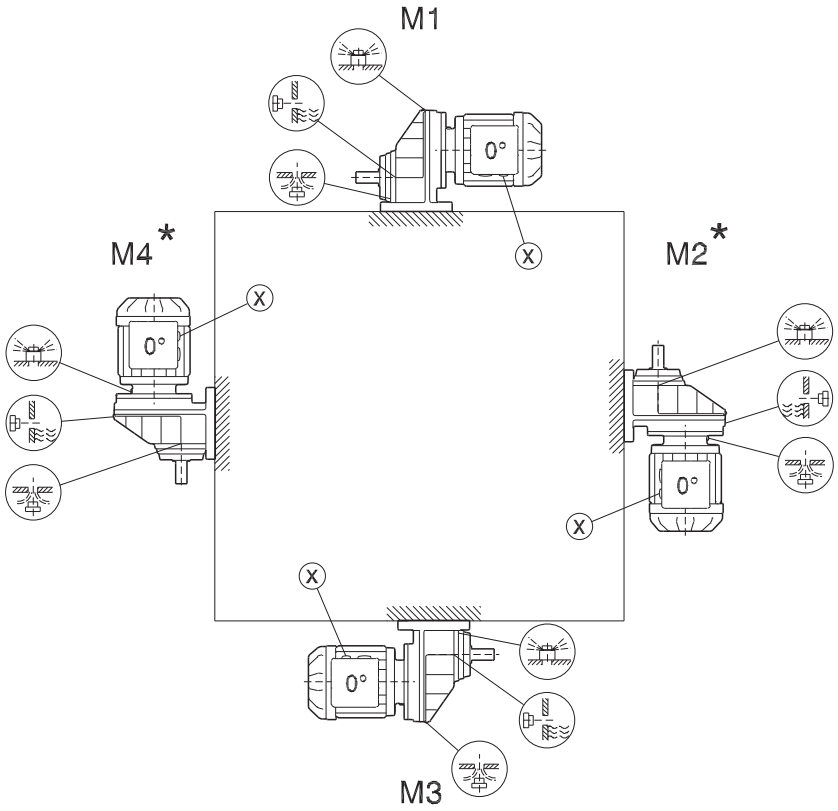
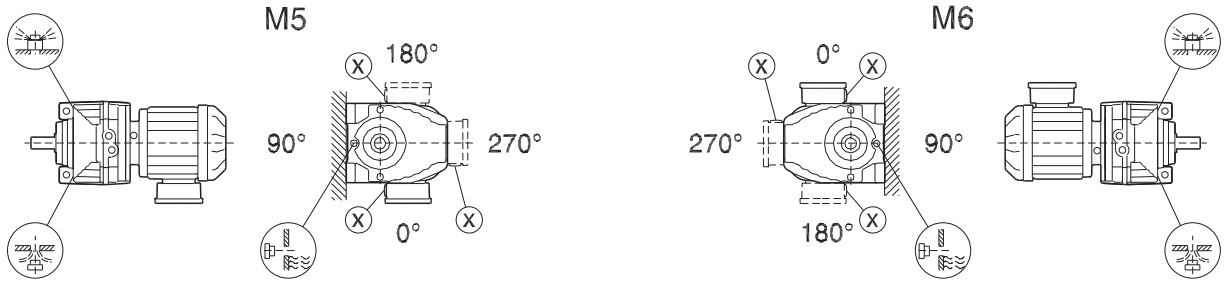
5.3 Mounting positions – Helical gearmotors

RX57-RX107

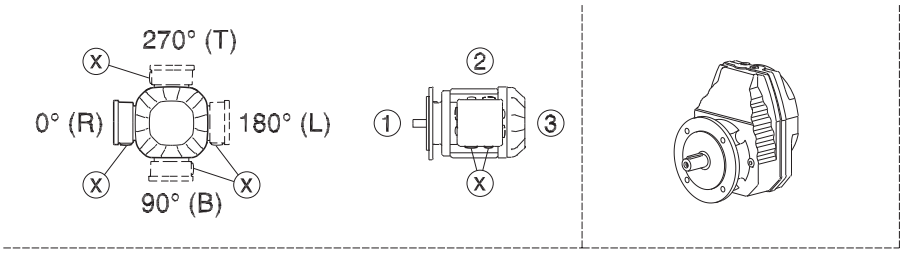


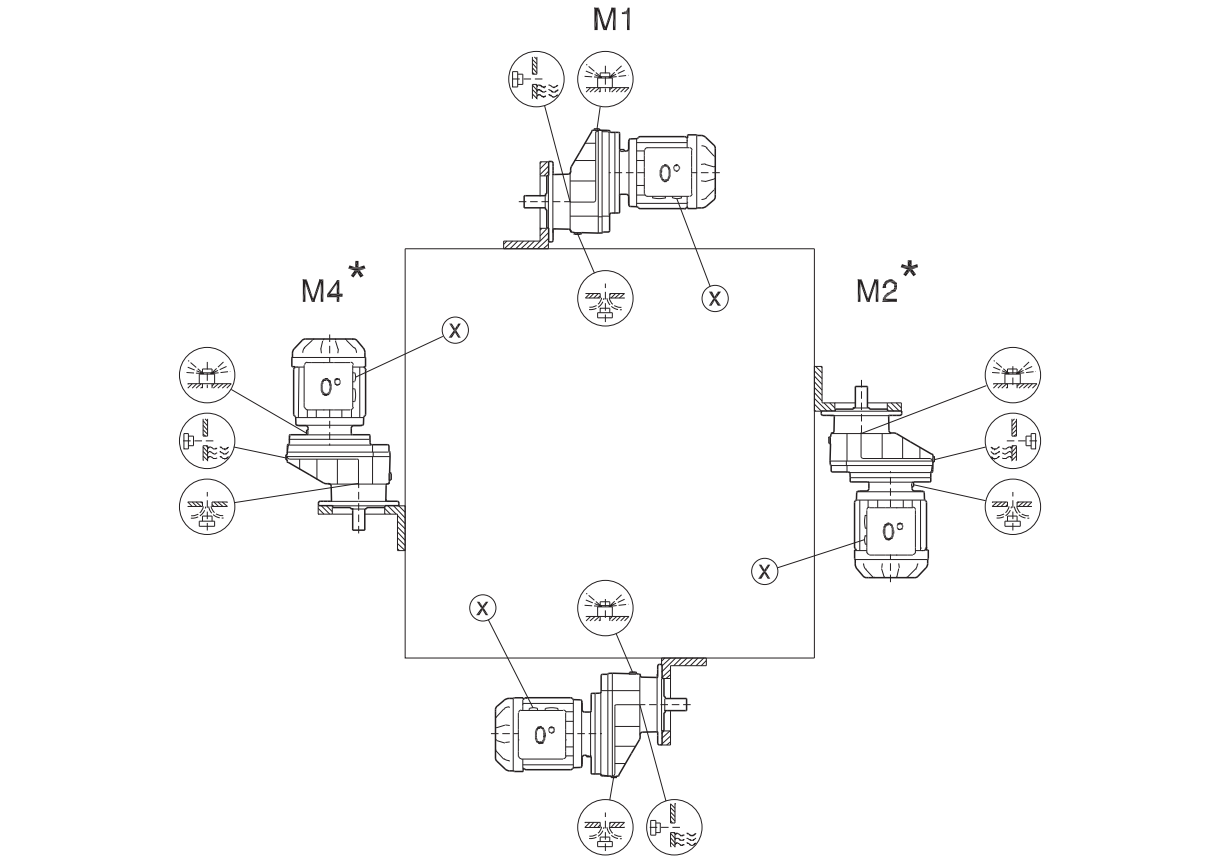




* (→ 🗎 71)

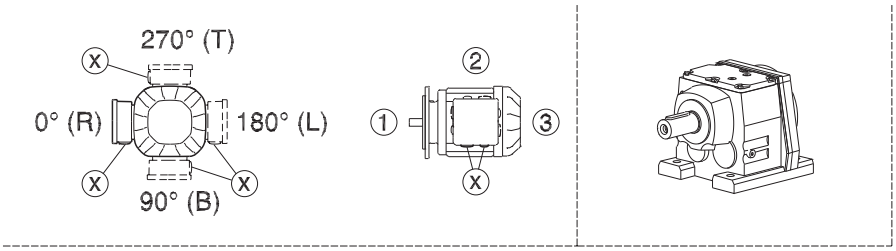
RXF57-RXF107

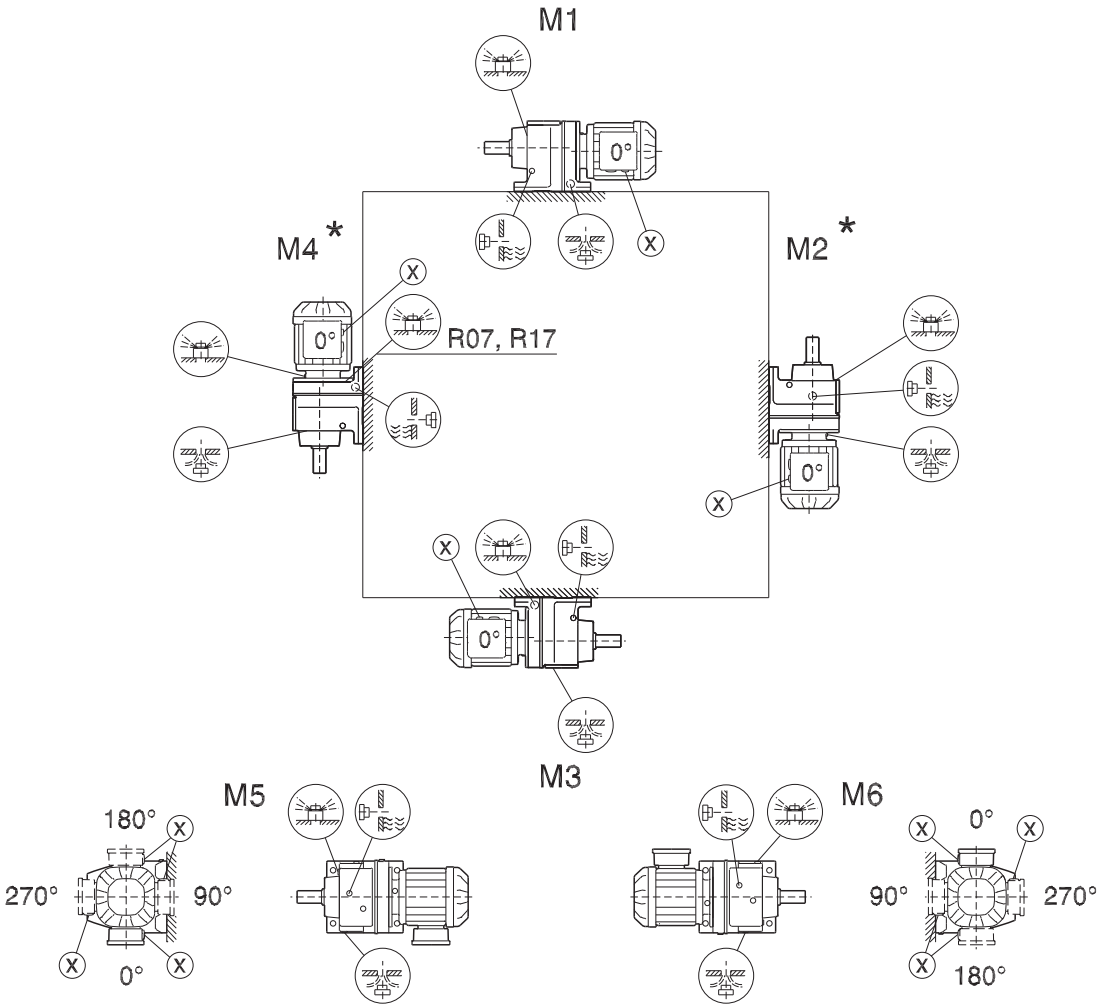




* (→ 🗎 71)

R07-R167





R07	M1, M2, M3, M5, M6
R17, R27	M1, M3, M5, M6
R07, R17, R27	
R47, R57	M5

* (→ 🗎 71)

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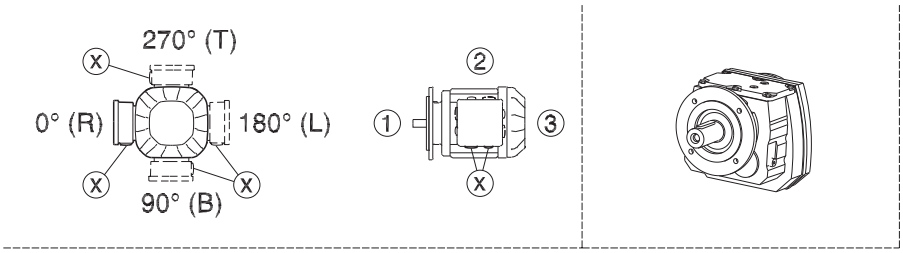
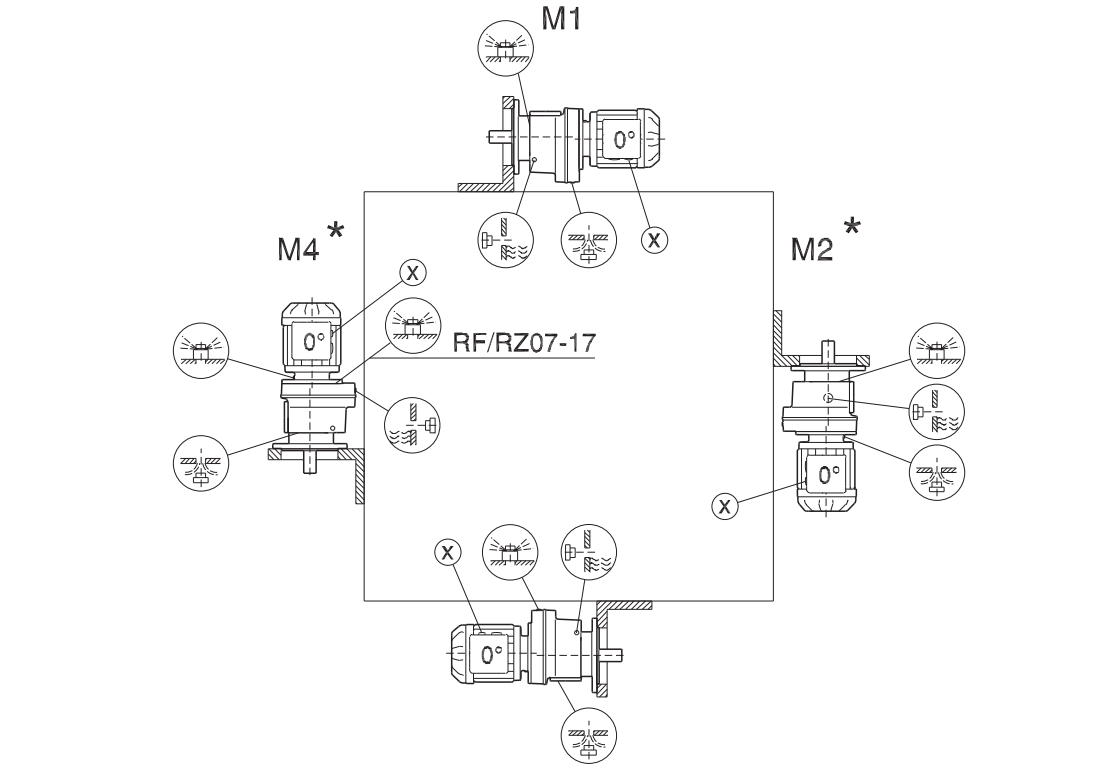
RF07-RF167, RZ07-RZ87



04 041 04 00



RF/RZ07	⊗	M1, M2, M3, M5, M6
RF/RZ17, 27	⊗	M1, M3, M5, M6
RF/RZ07, 17, 27	⊗ ⊗	
RF/RZ47, 57	⊗	M5

* (→ 🗎 71)

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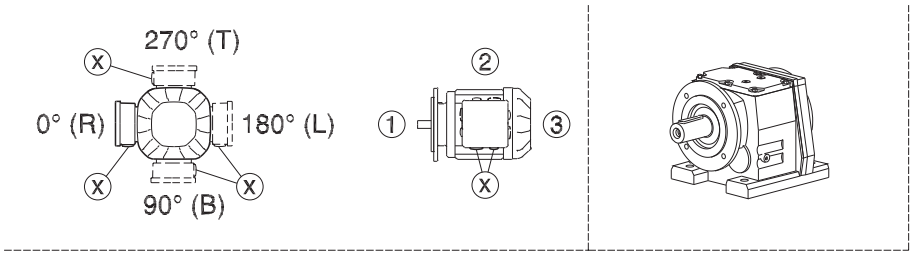
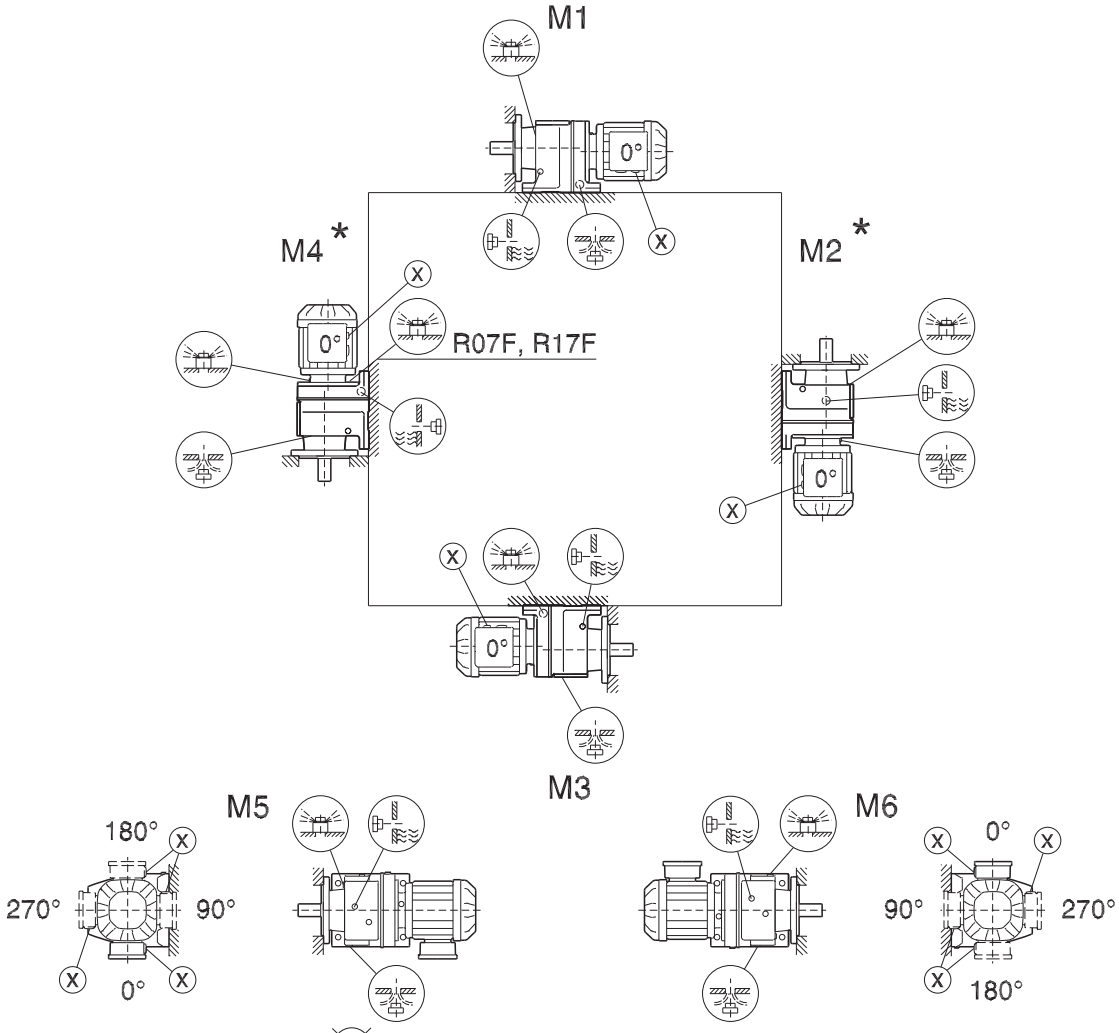
R07F-R87F





R07F	M1, M2, M3, M5, M6
R17F, R27F	M1, M3, M5, M6
R07F, R17F, R27F	
R47F, R57F	M5

* (→ 🗎 71)

Proper alignment must be ensured when two mounting surfaces are used. Also, the OHL and F_{Ra} shown in the selection tables is reduced 50% if torque transmission occurs via the mounting flange. (→ 🗎 53)

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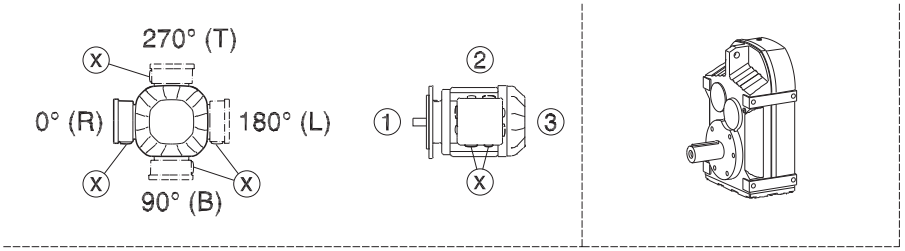
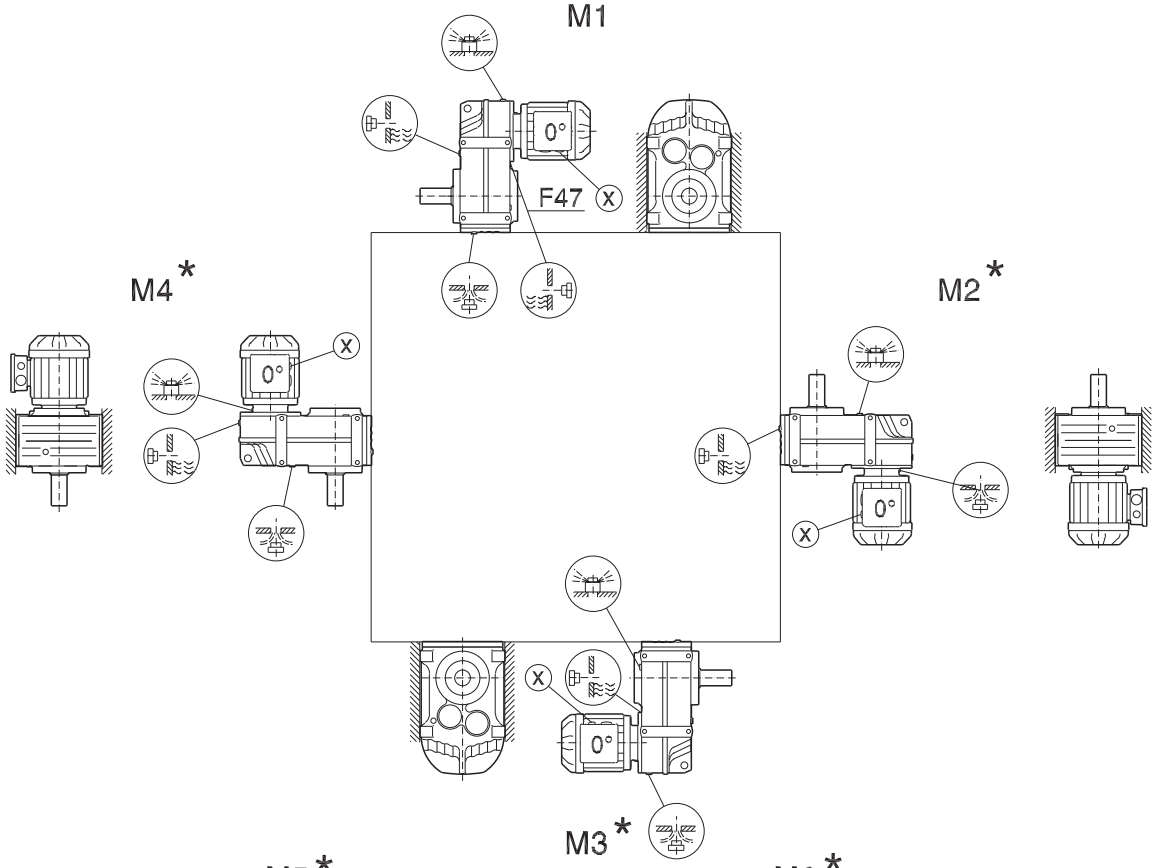
5.4 Mounting positions – theSnuggler

F/FA..B/FH27B-157B, FV27B-107B

42 042 04 00





F..27		M1, M3, M5, M6
F..27		M1 - M6
F..27		M1, M3, M5, M6

* (→ 🗎 71)

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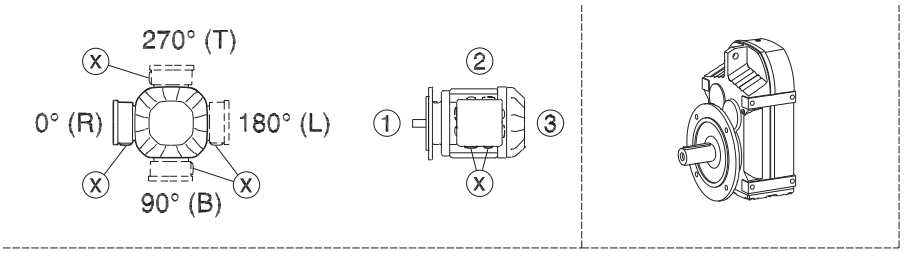
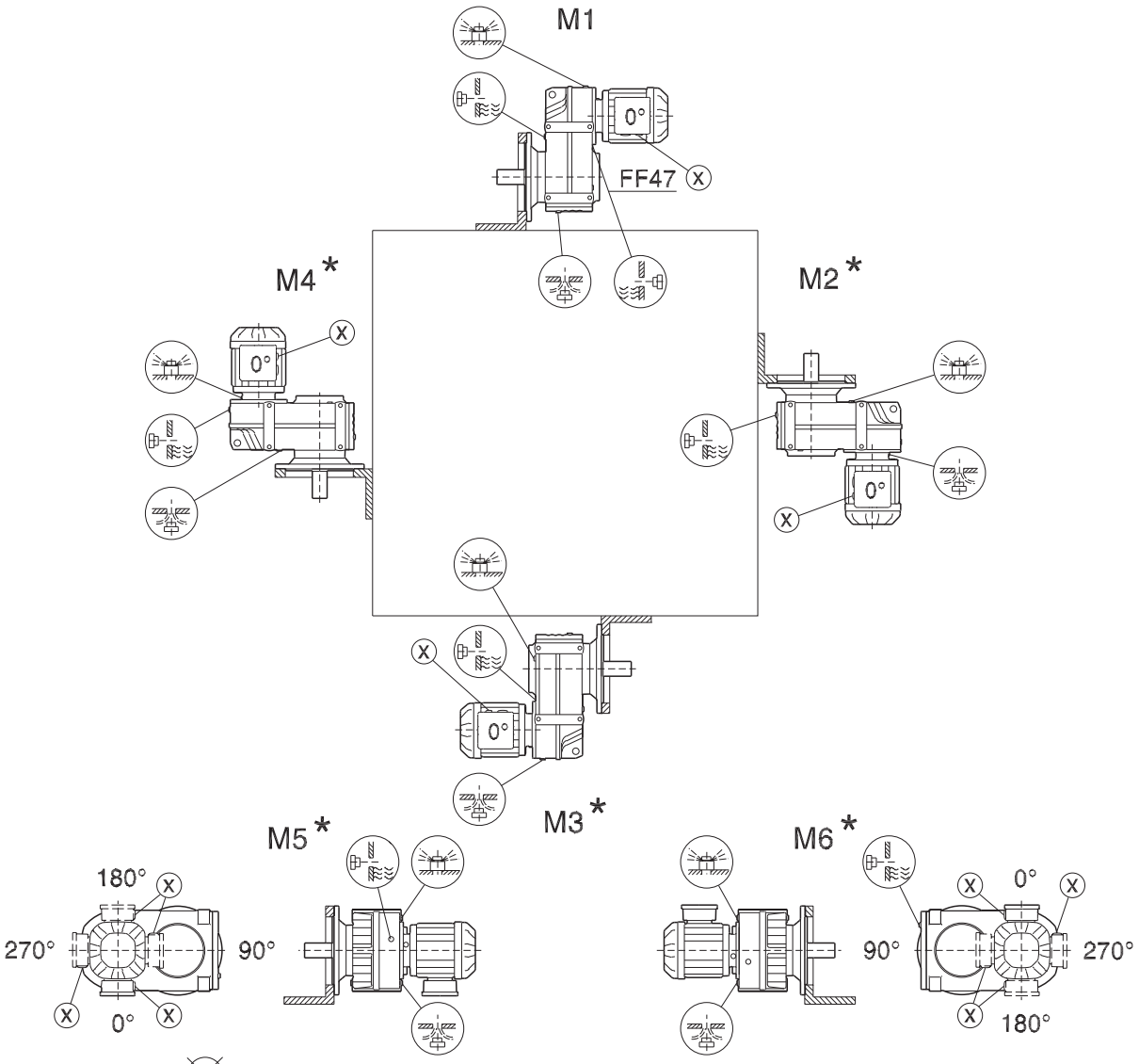
FF/FAF/FHF/FZ/FAZ/FHZ27-157, FVF/FVZ27-107





F..27		M1, M3, M5, M6
F..27		M1 - M6
F..27		M1, M3, M5, M6

* (→ 🗎 71)

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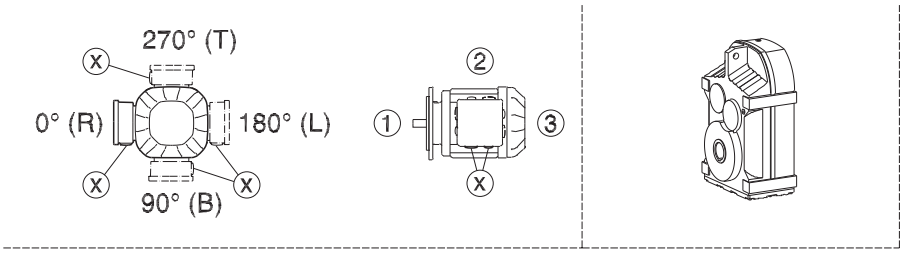
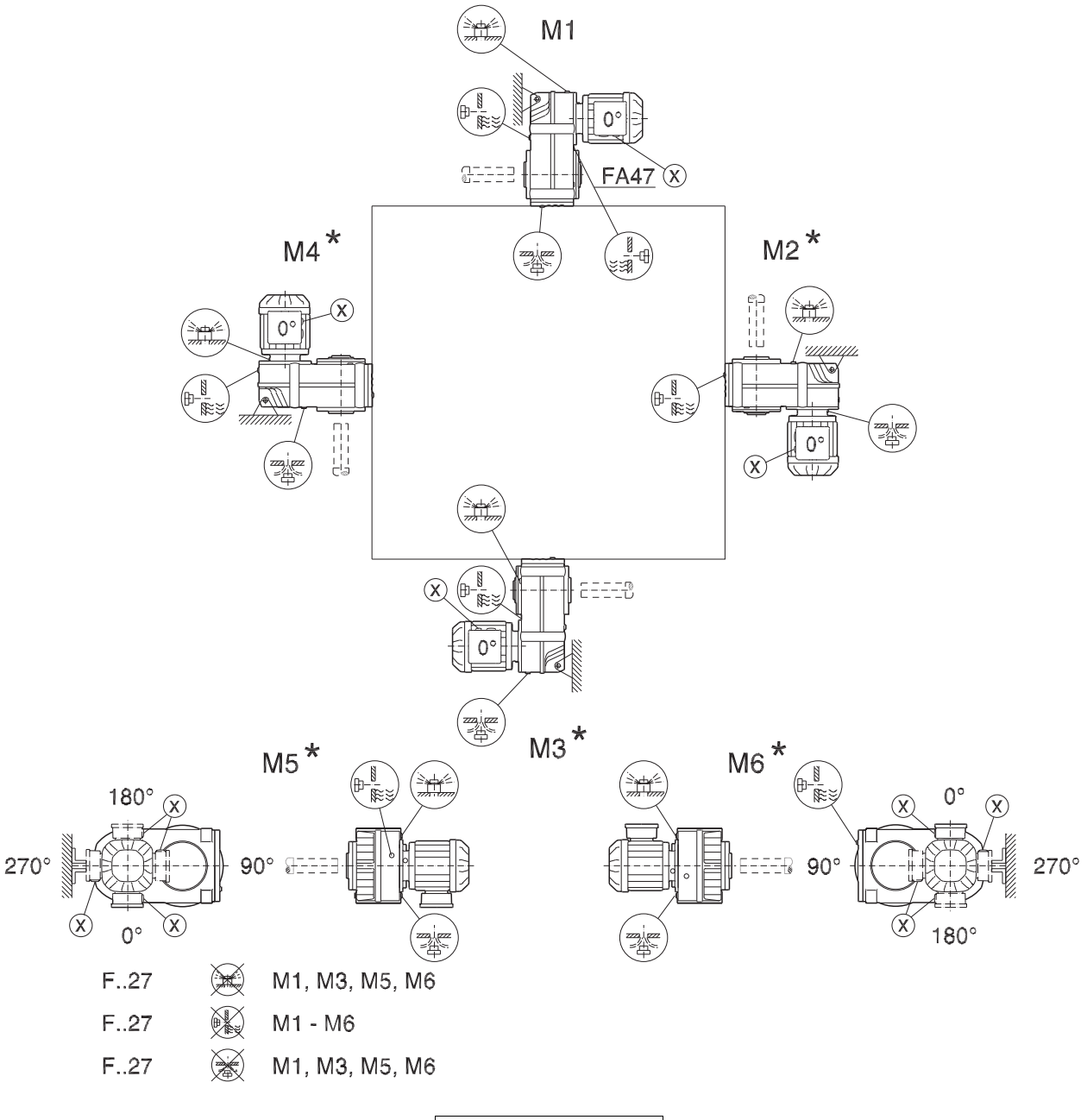
FA/FH27-157, FV27-107, FT37-97





F..27	⊗	M1, M3, M5, M6
F..27	⊗	M1 - M6
F..27	⊗	M1, M3, M5, M6

* (→ 🗎 71)

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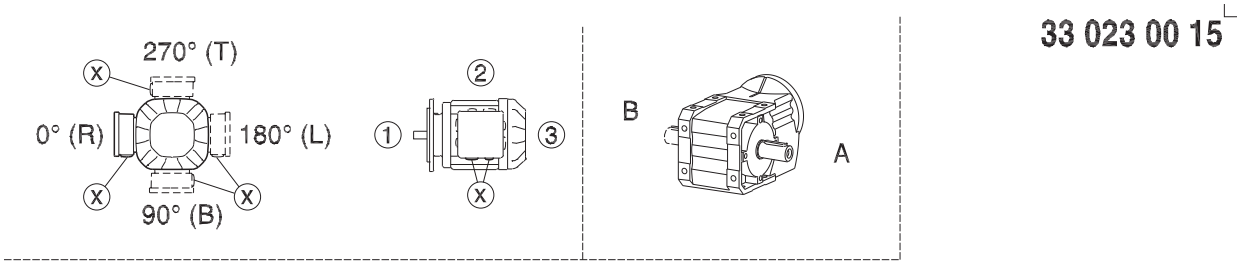
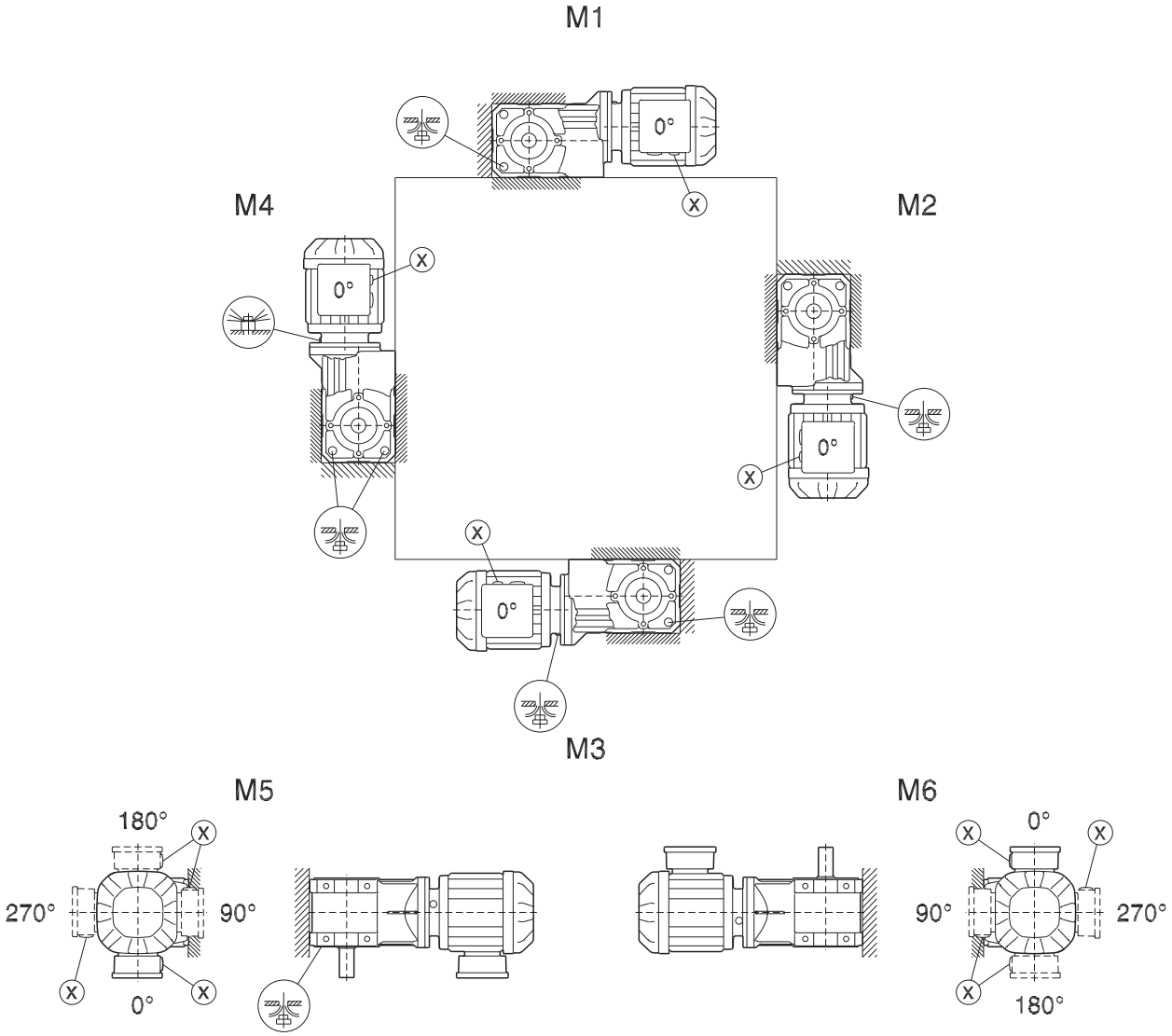
5.5 Mounting positions – Helical-bevel

K/KA..B/KH19B-29B



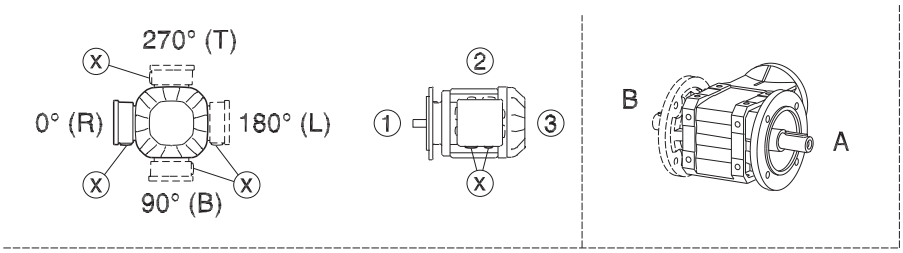


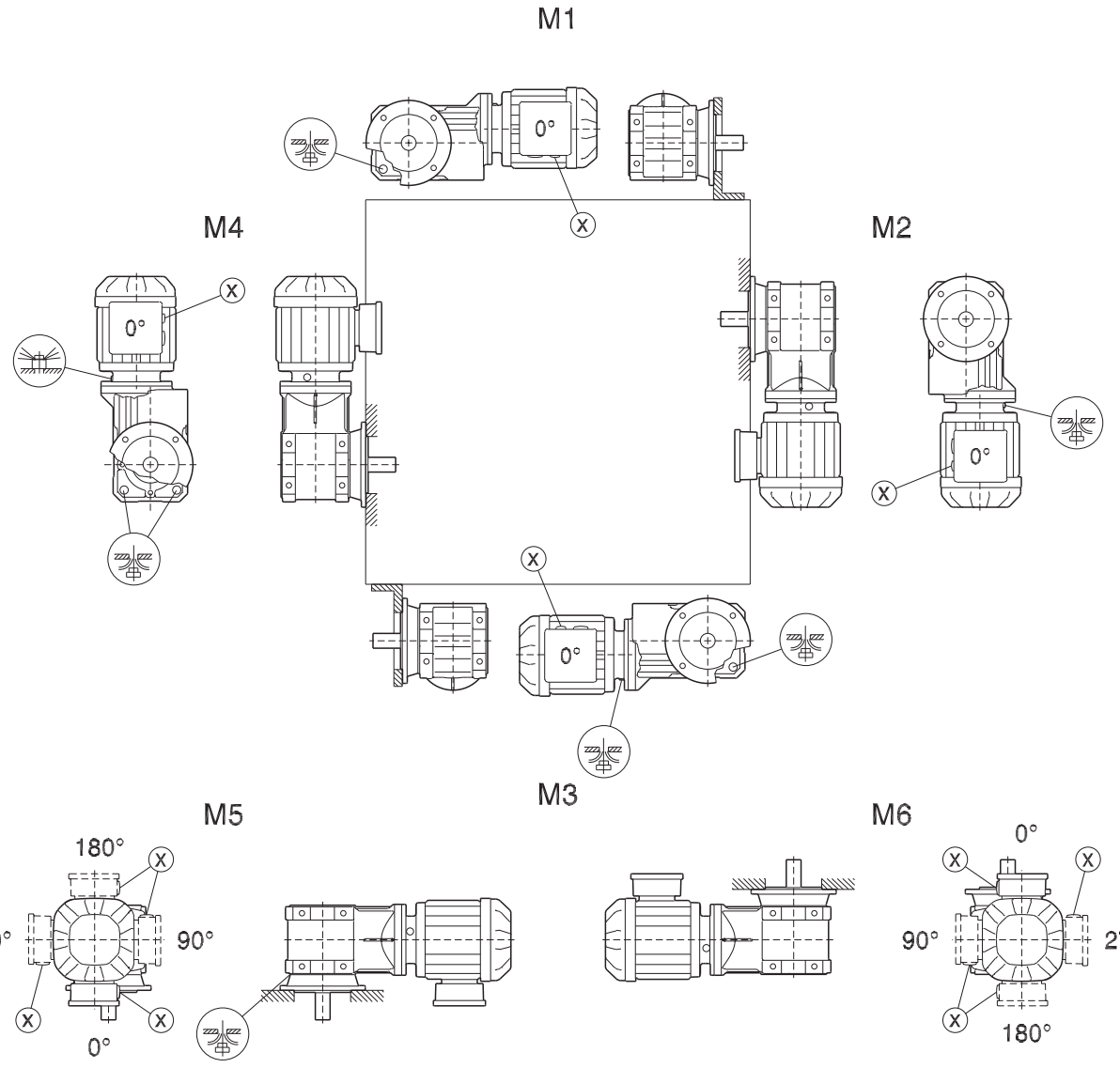
For M1, refer to the information in chapter "Allowable overhung load" (→ 🗎 53).

21933480/EN-US – 04/2018

KF..B/KAF..B/KHF19B-29B

33 024 00 15

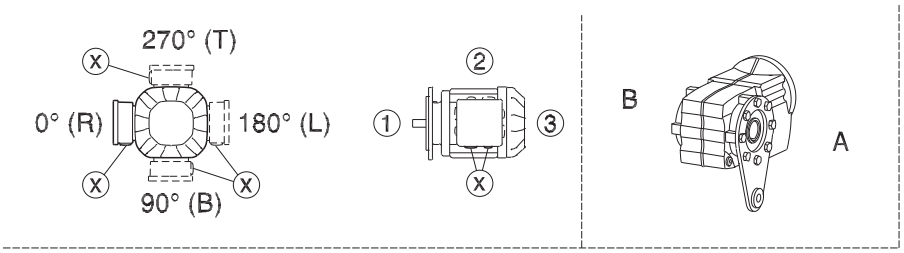


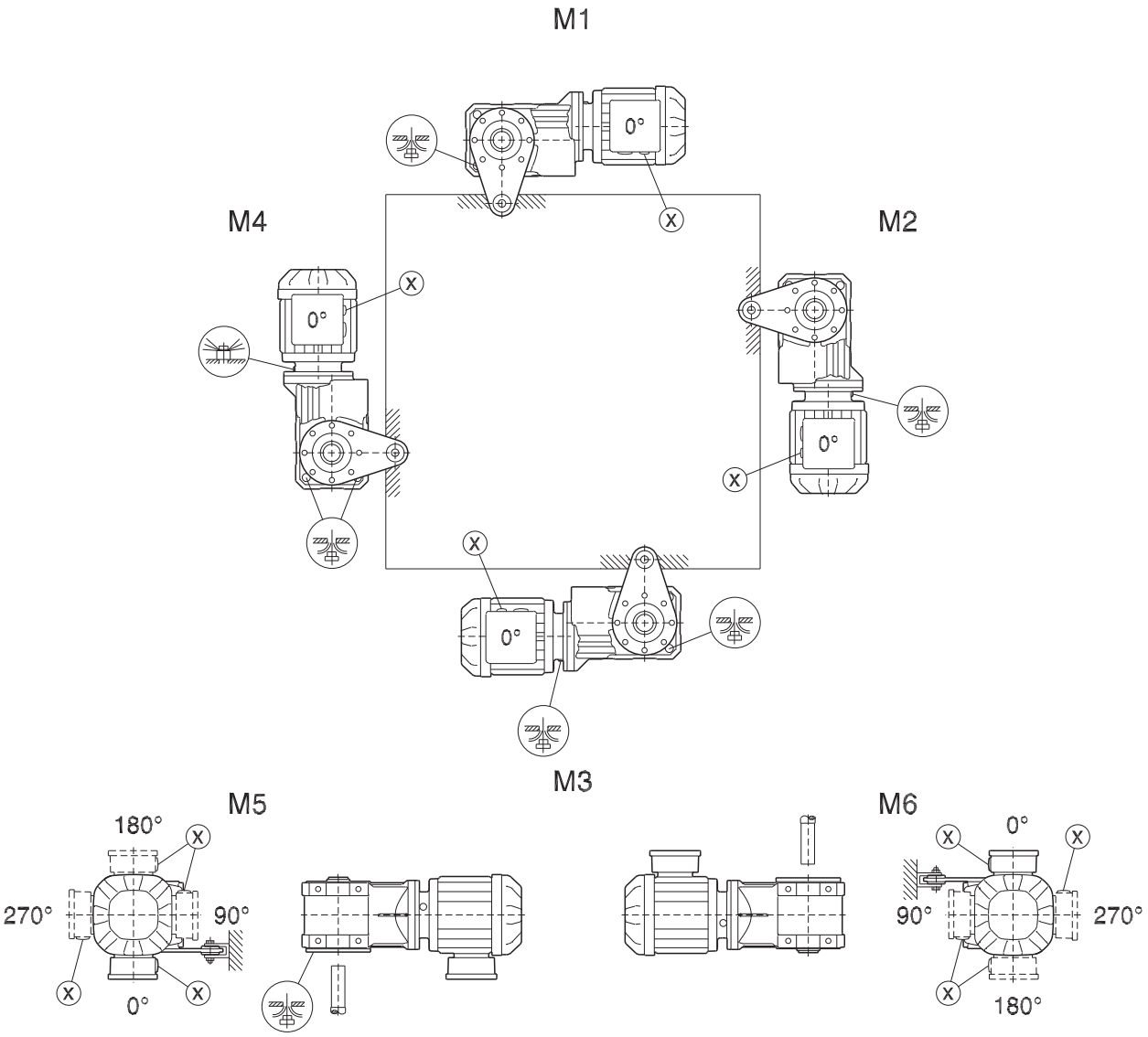


21933480/EN-US – 04/2018

KA..B/KH19B-29B

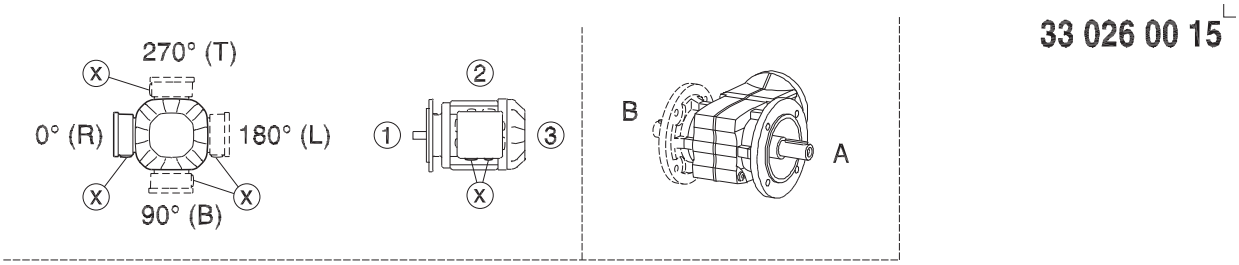
33 025 00 15

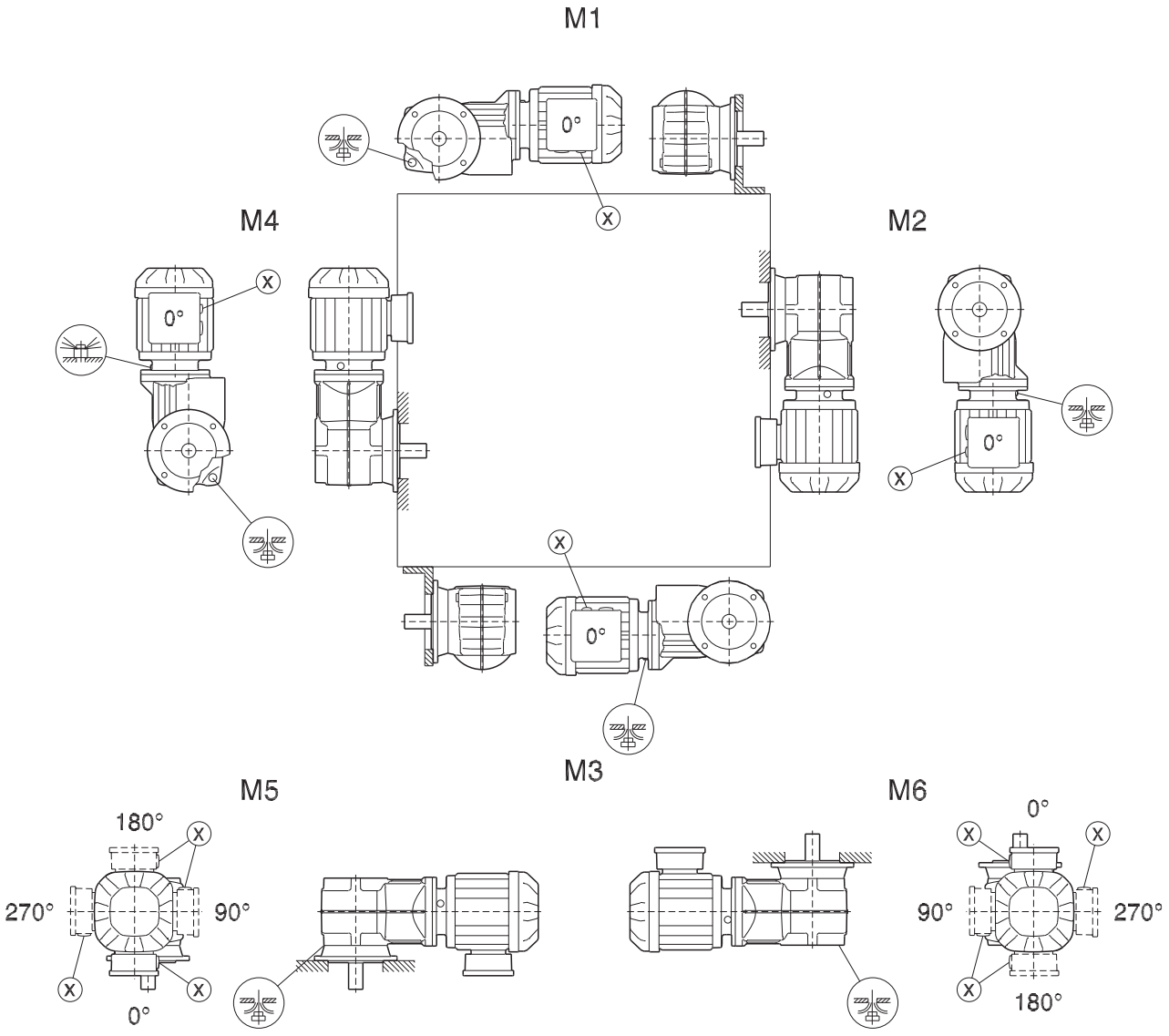




21933480/EN-US – 04/2018

KF/KAF/KHF19-29

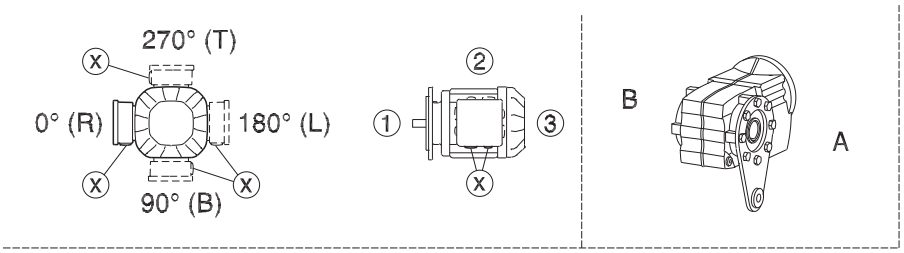


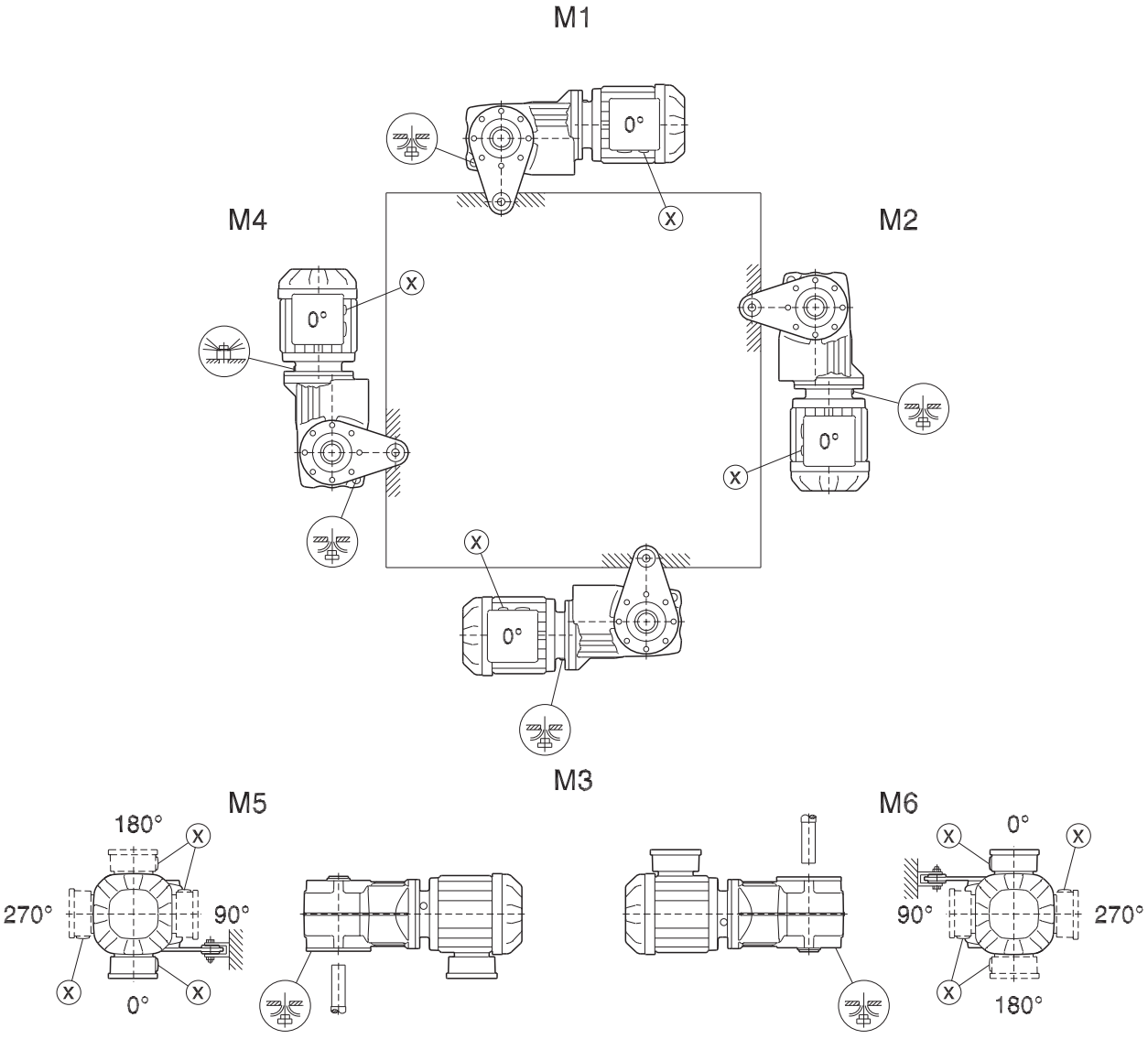


21933480/EN-US – 04/2018

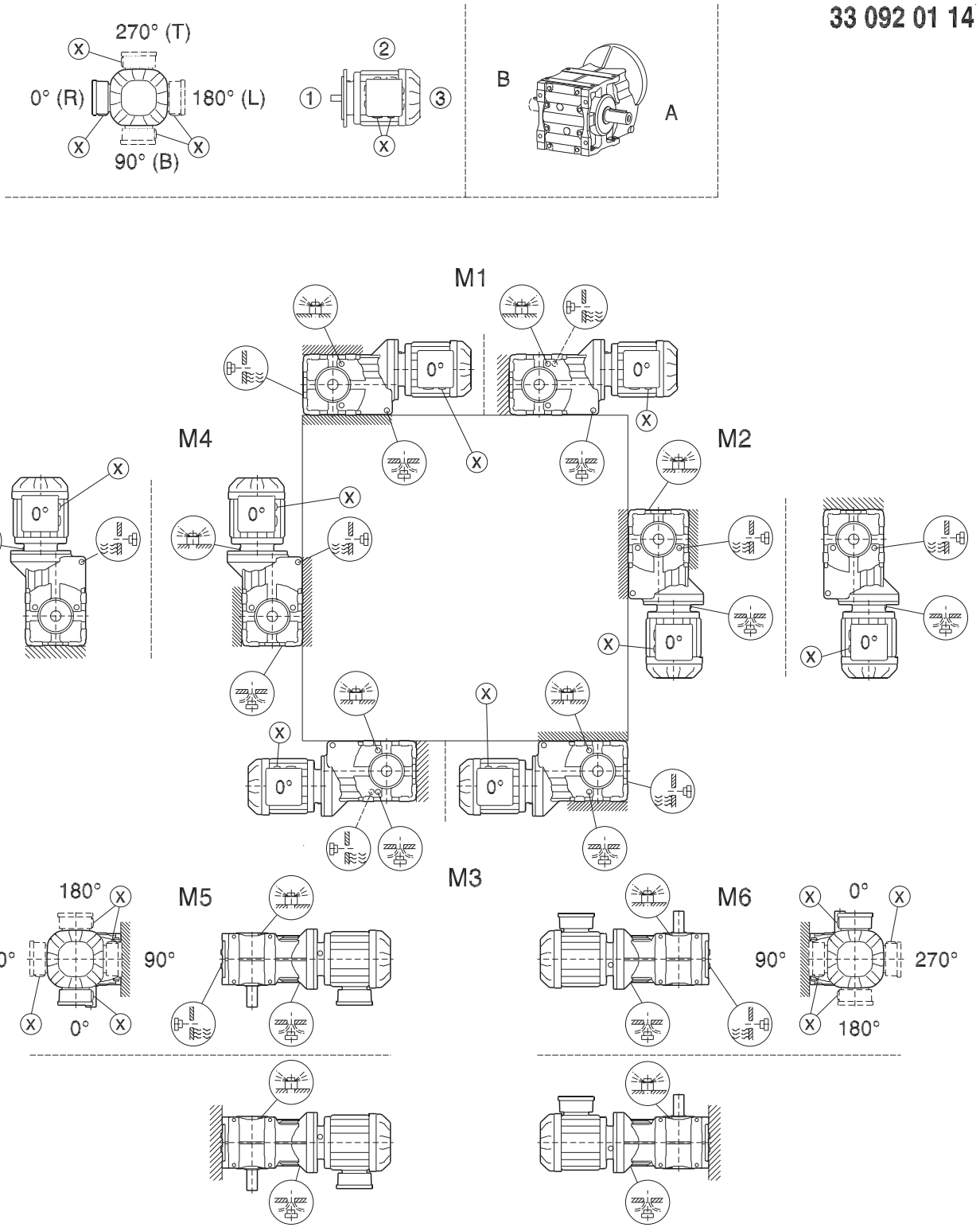
KA/KH19-29

33 027 00 15





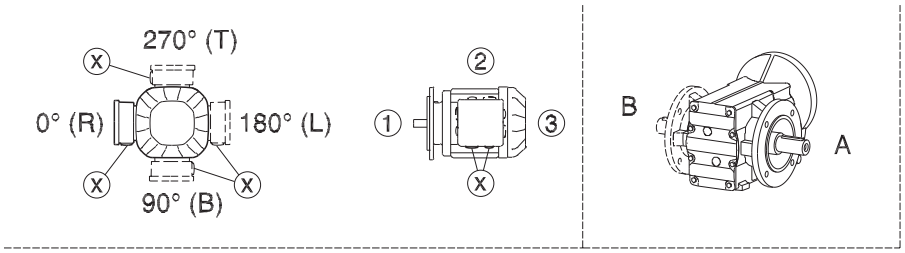
K39-49

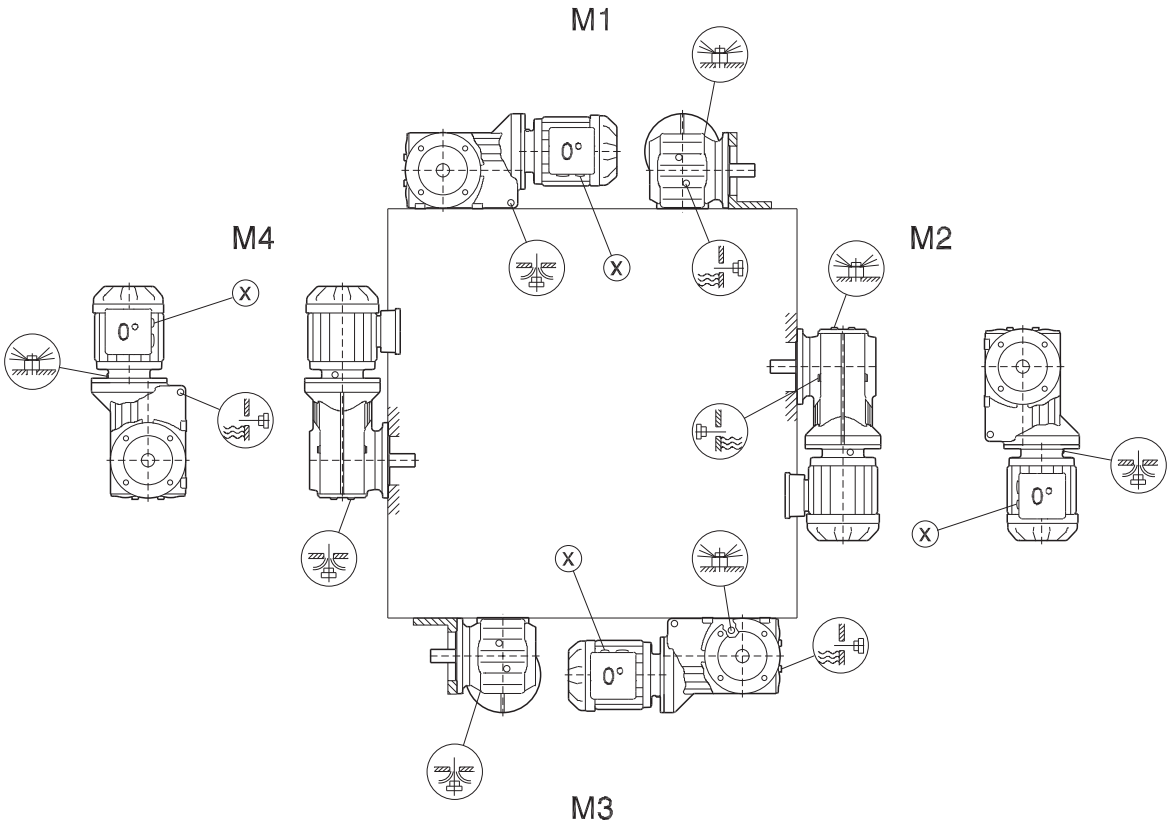


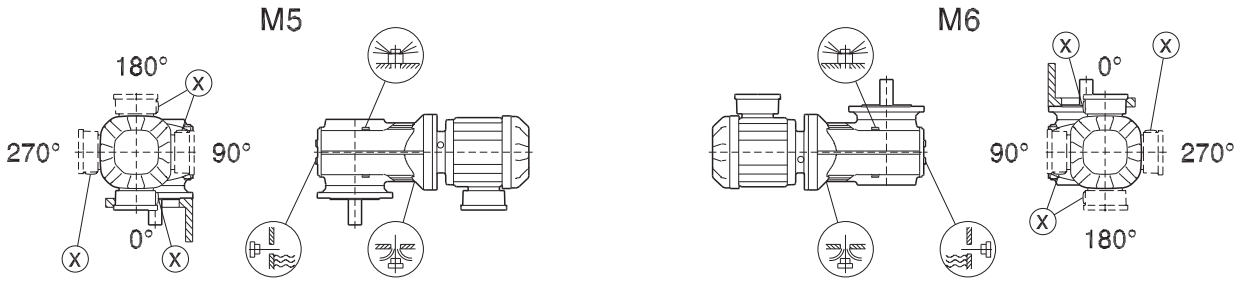
For M1, refer to the information in chapter "Allowable overhung load" (→ 🗎 53).

21933480/EN-US – 04/2018

KF/KAF/KHF/KTF39-49

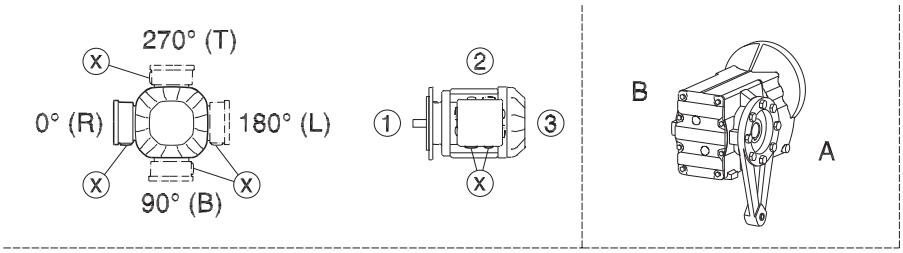


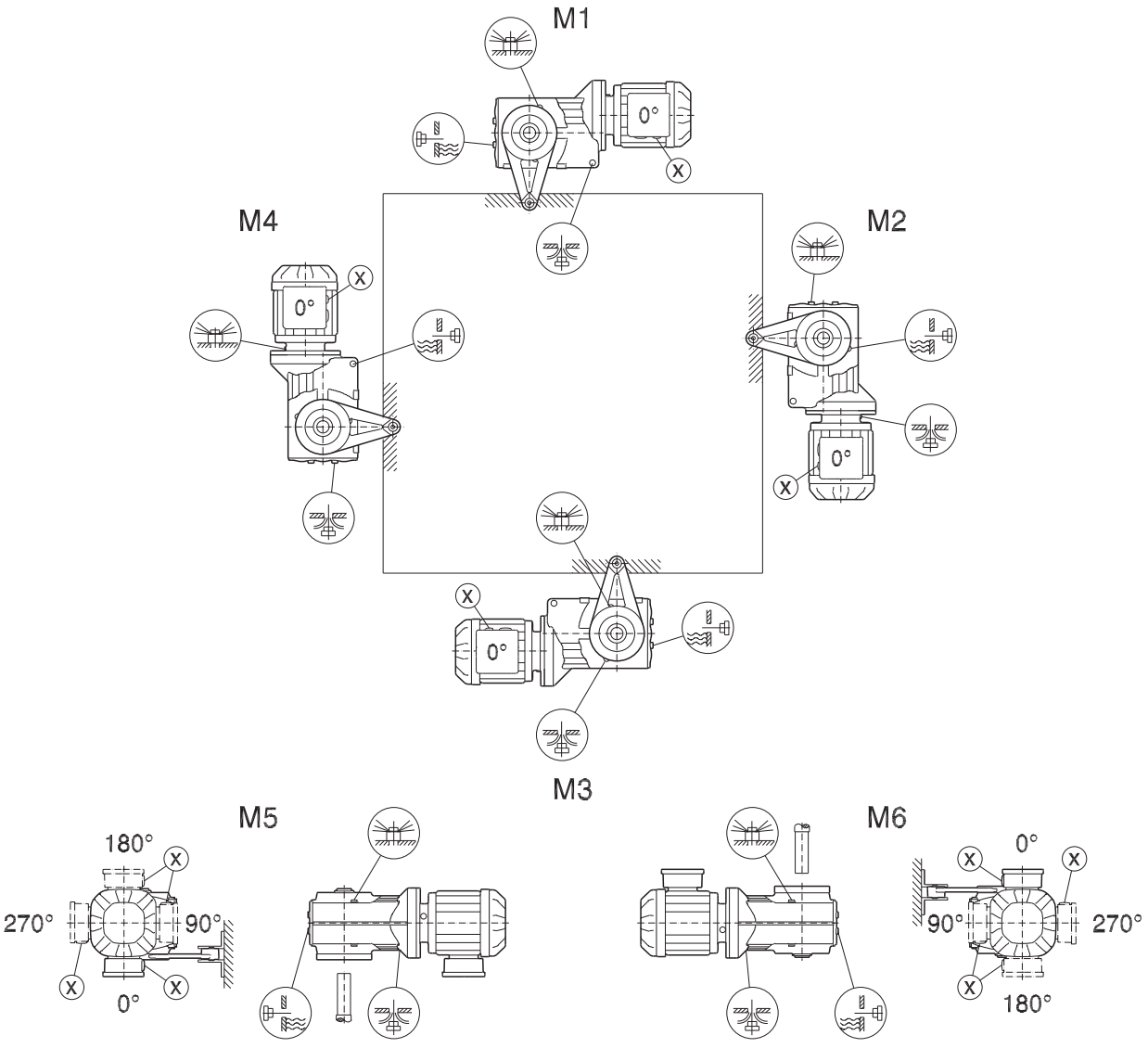




21933480/EN-US – 04/2018

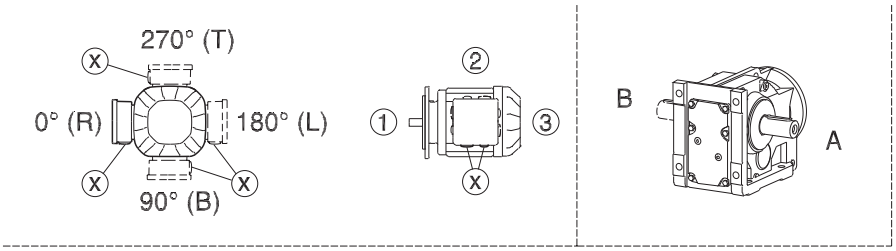
KA/KH/KT39-49

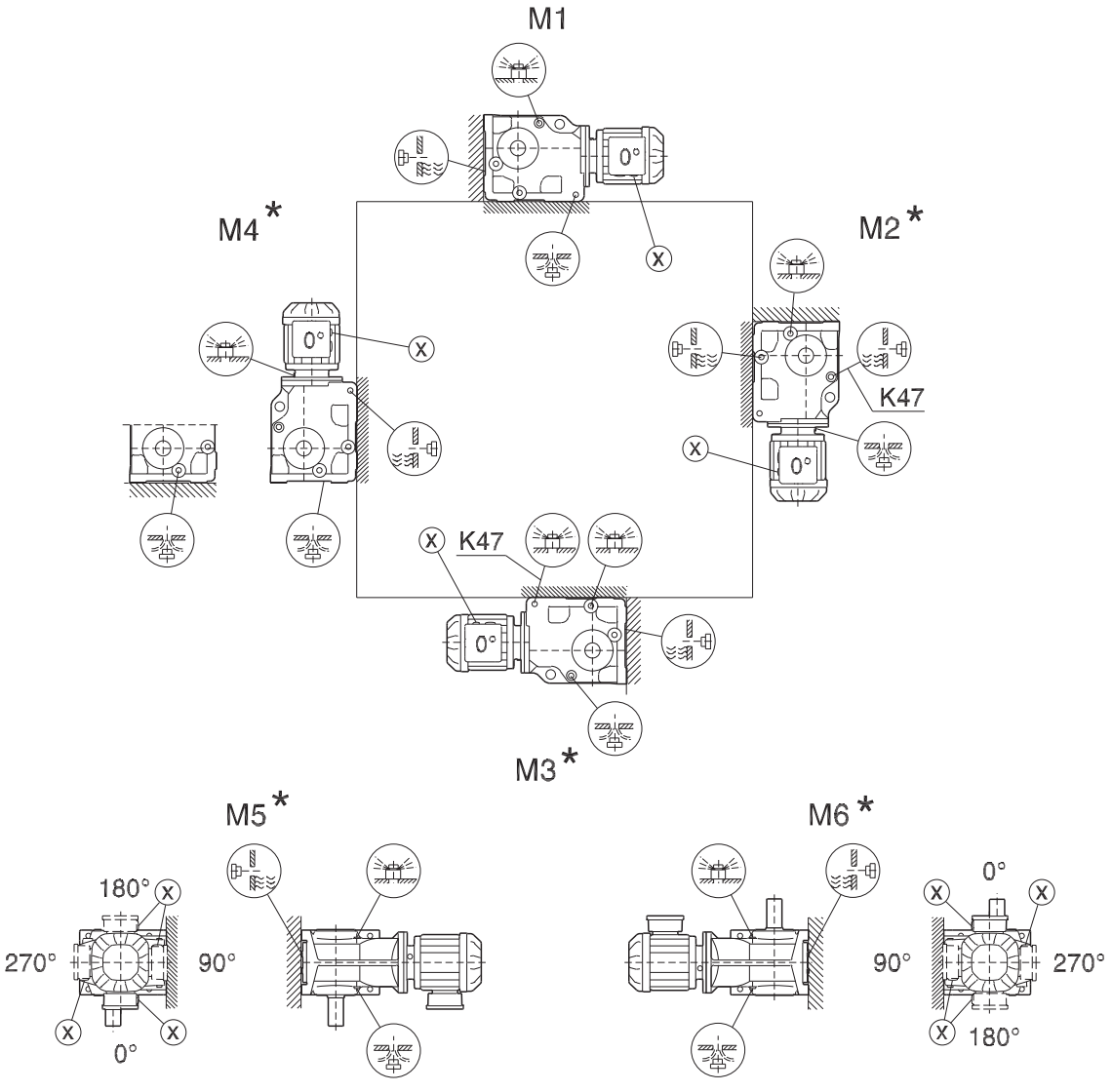




21933480/EN-US – 04/2018

K/KA..B/KH47B-157B, KV47B-107B



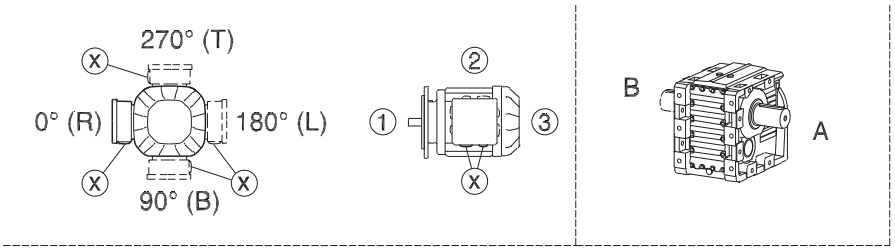


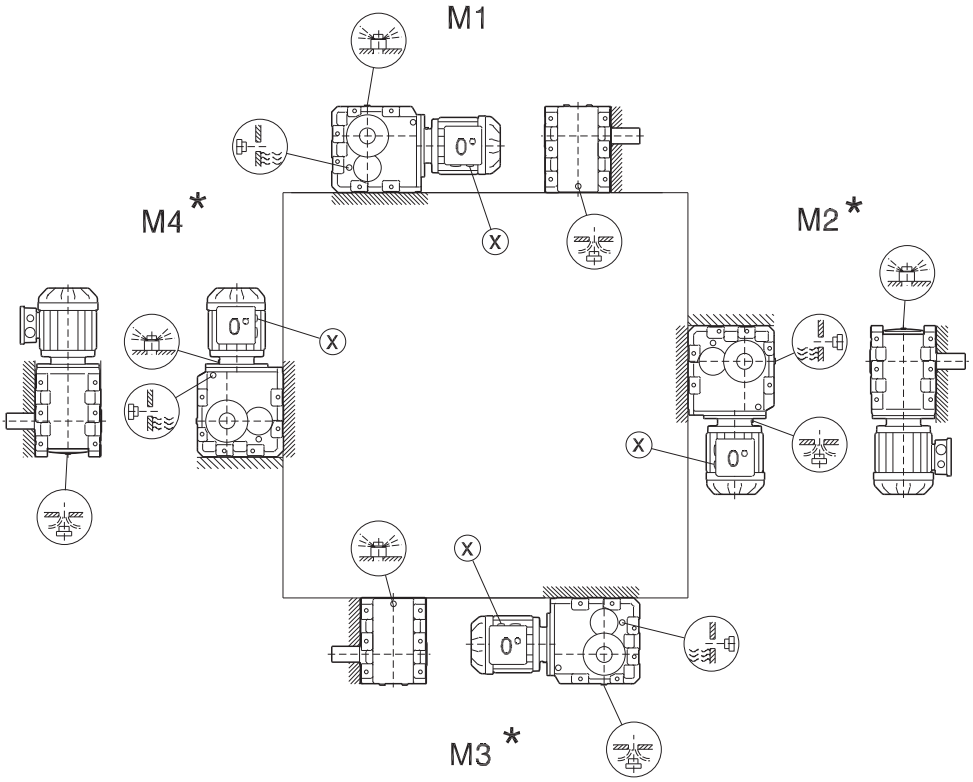
* (→ 🗎 71)

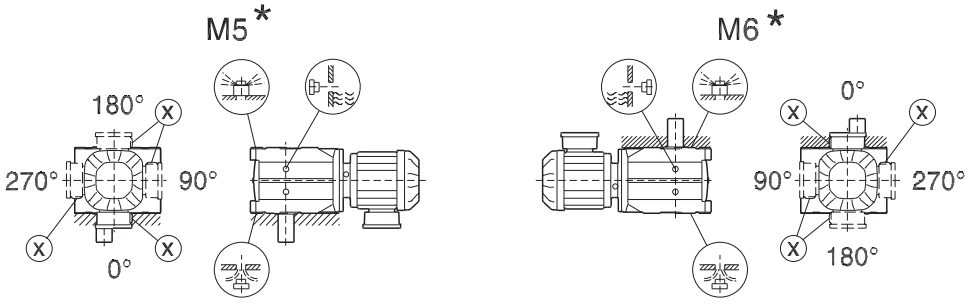
For M1, refer to the information in chapter "Allowable overhung load" (→ 🗎 53).

21933480/EN-US – 04/2018

K167-187, KH167B-187B





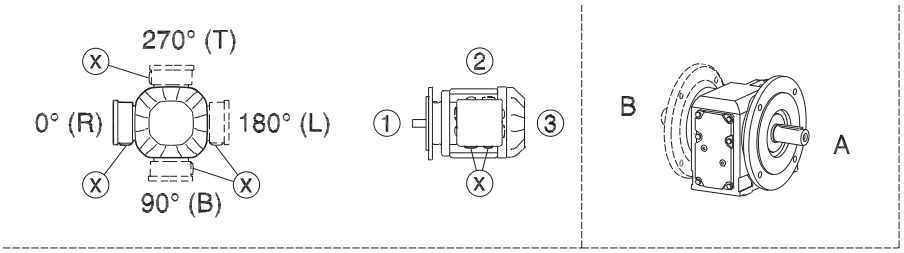


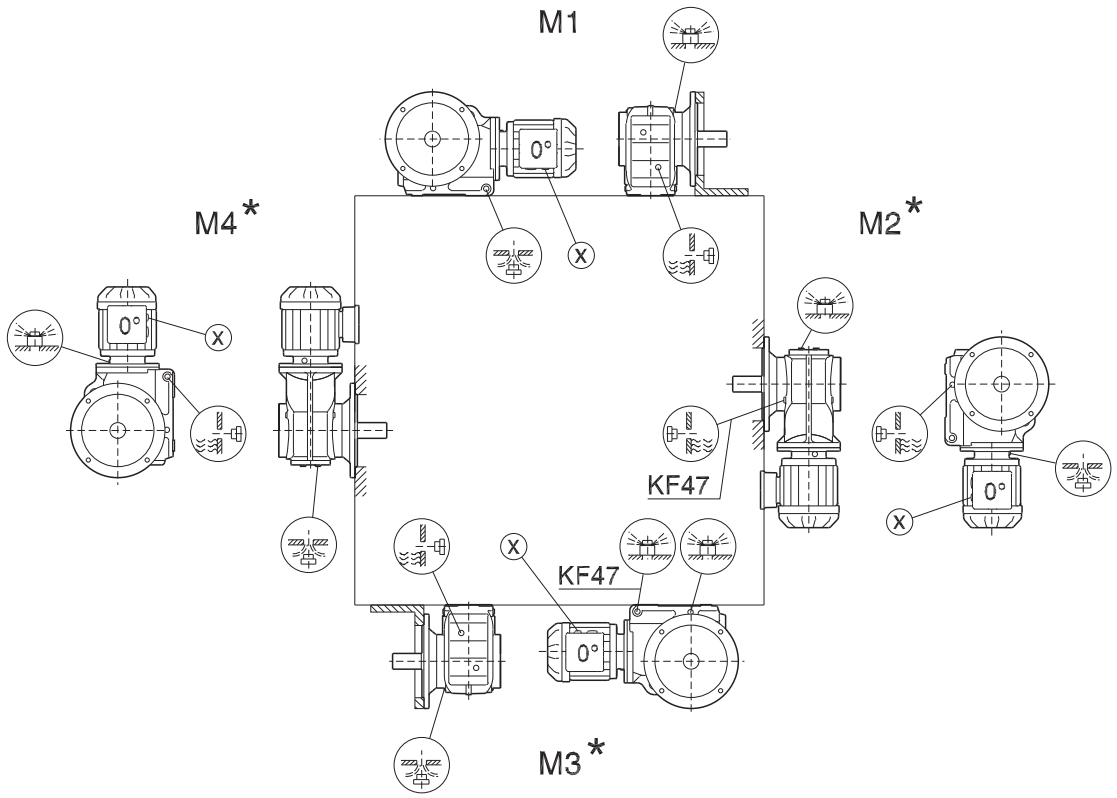
* (→ 🗎 71)

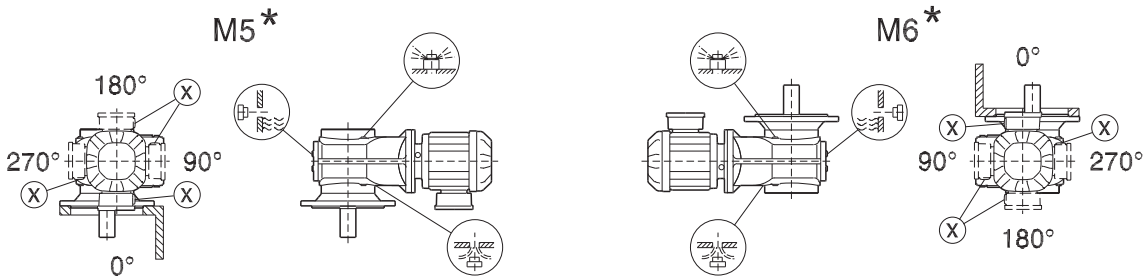
Also refer to the information in chapter "Allowable overhung load" (→ 🗎 53).

21933480/EN-US – 04/2018

KF/KAF/KHF/KZ/KAZ/KHZ37-157, KVF/KVZ37-107



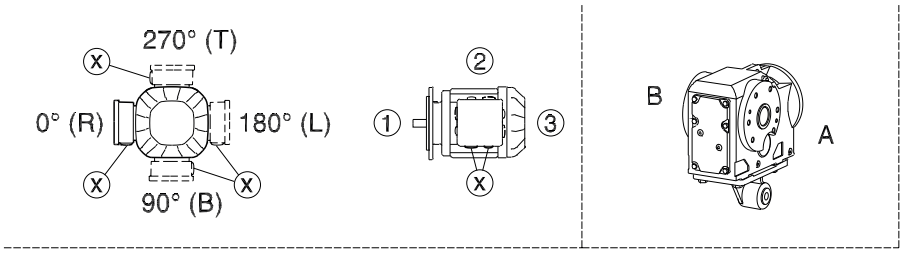




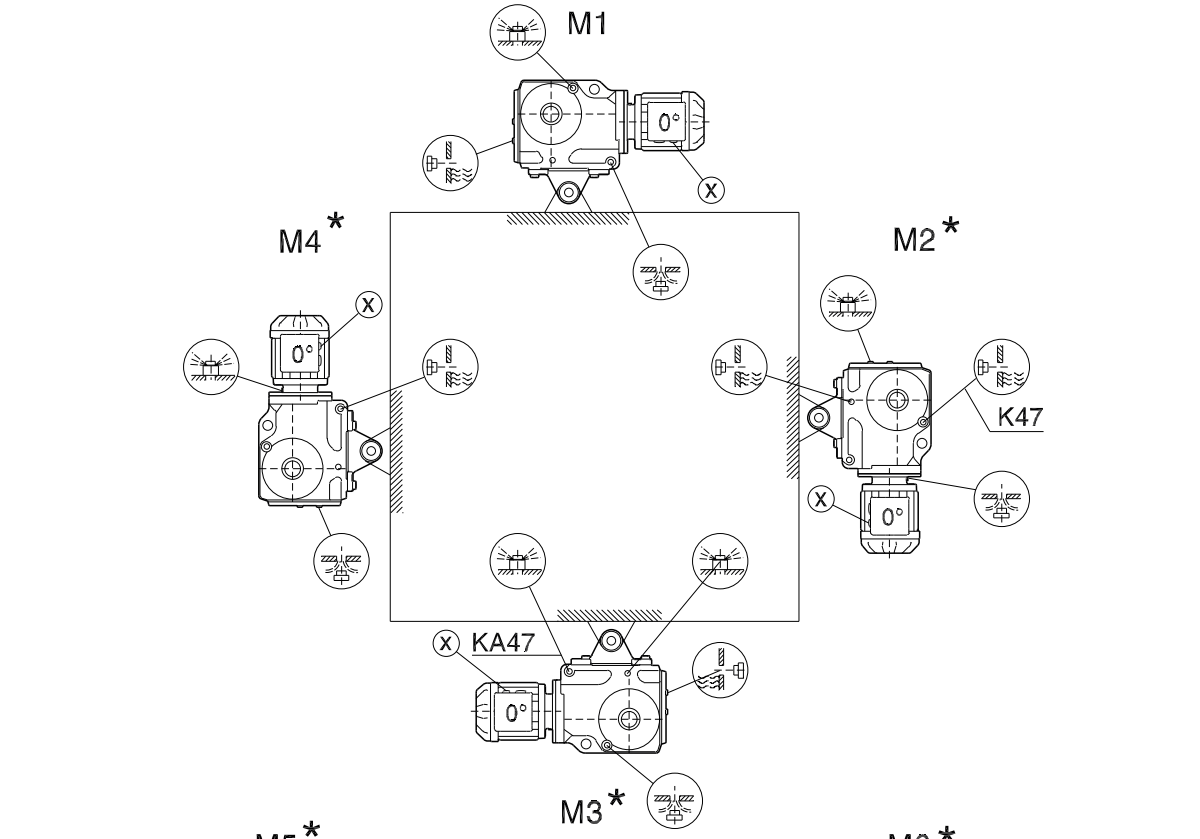
* (→ 🗎 71)

21933480/EN-US – 04/2018

KA/KH37-157, KV37-107, KT37-97



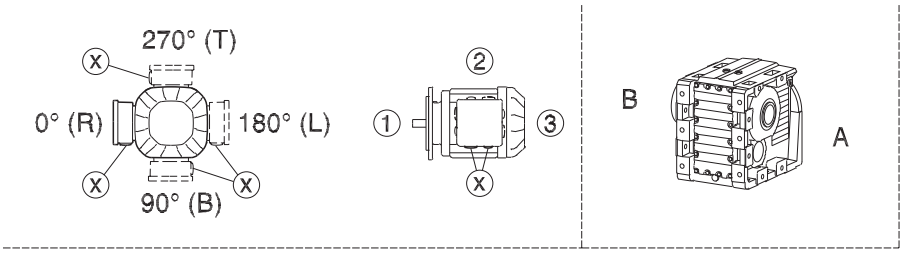
39 025 05 00

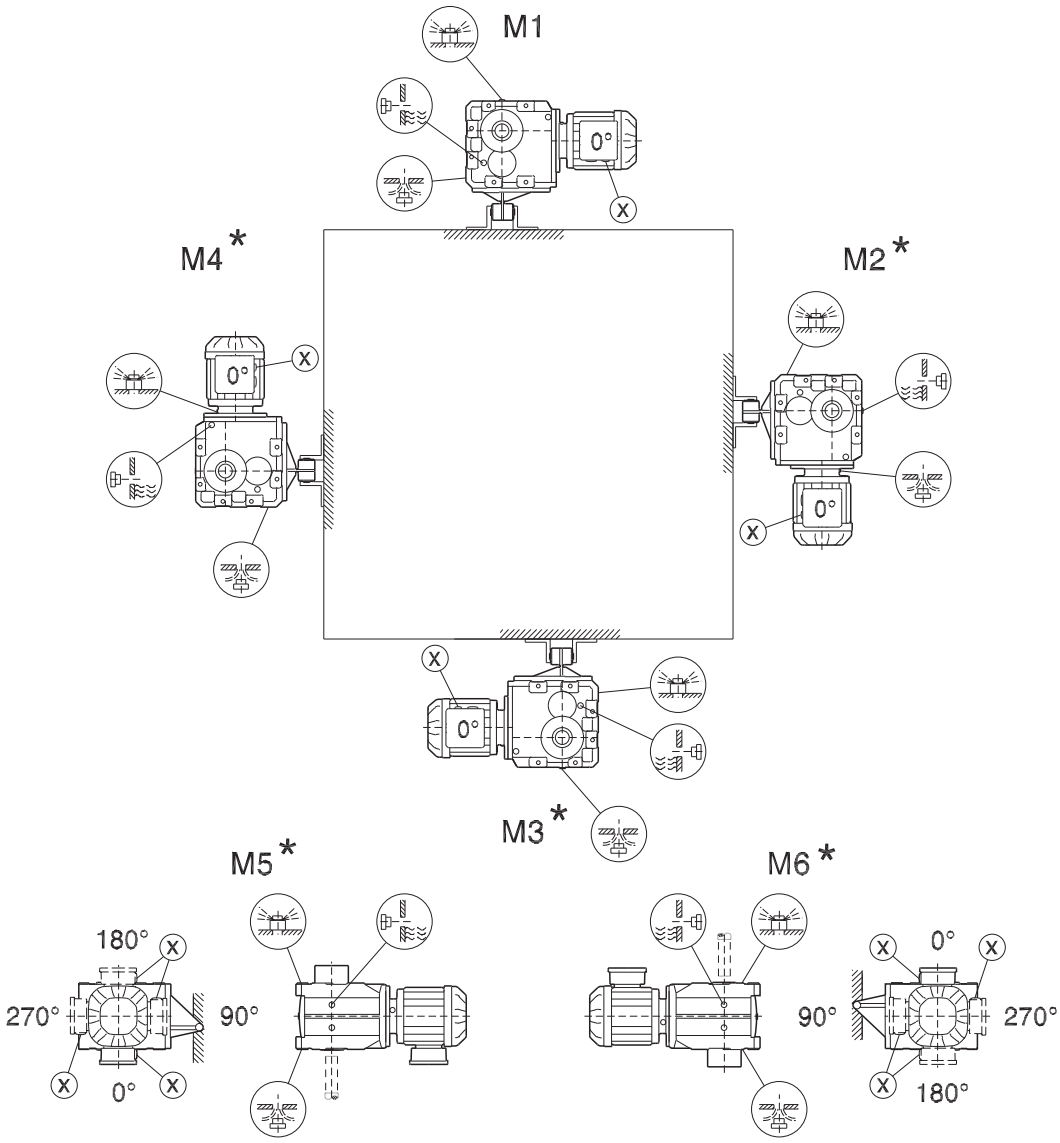


* (→ 🗎 71)

KH167-187

39 026 05 00

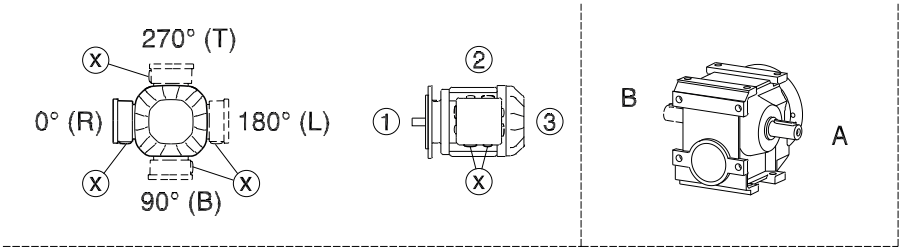


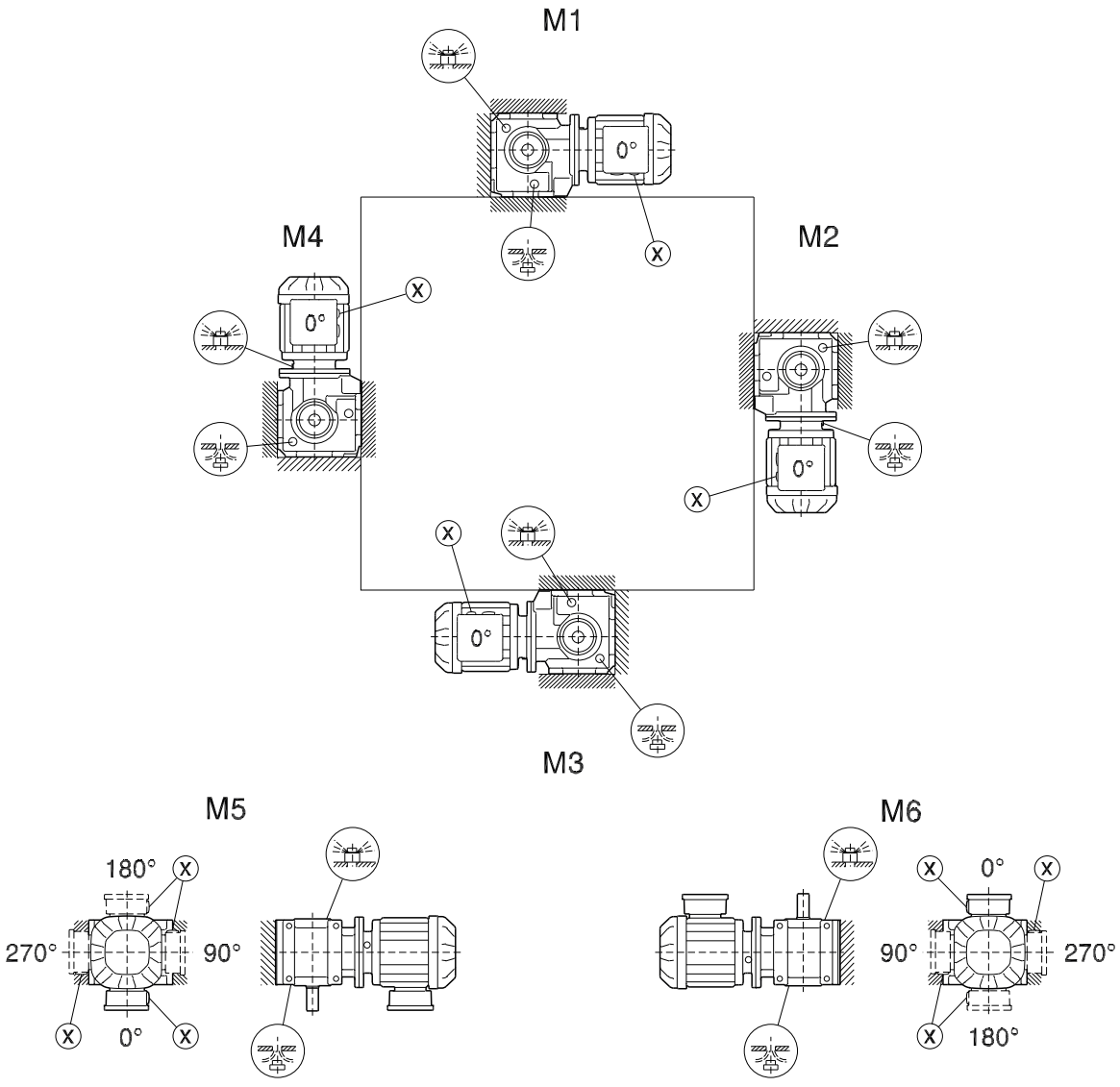


* (→ 🗎 71)

5.6 Mounting positions – Helical-worm

S37

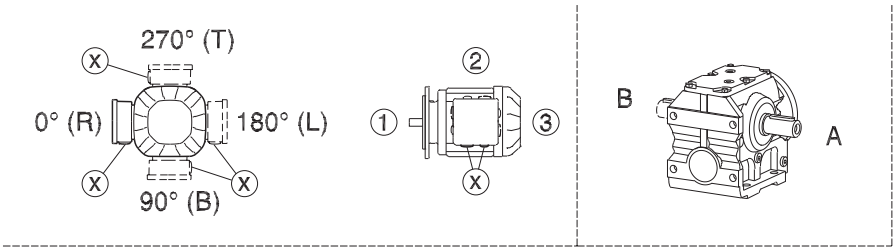




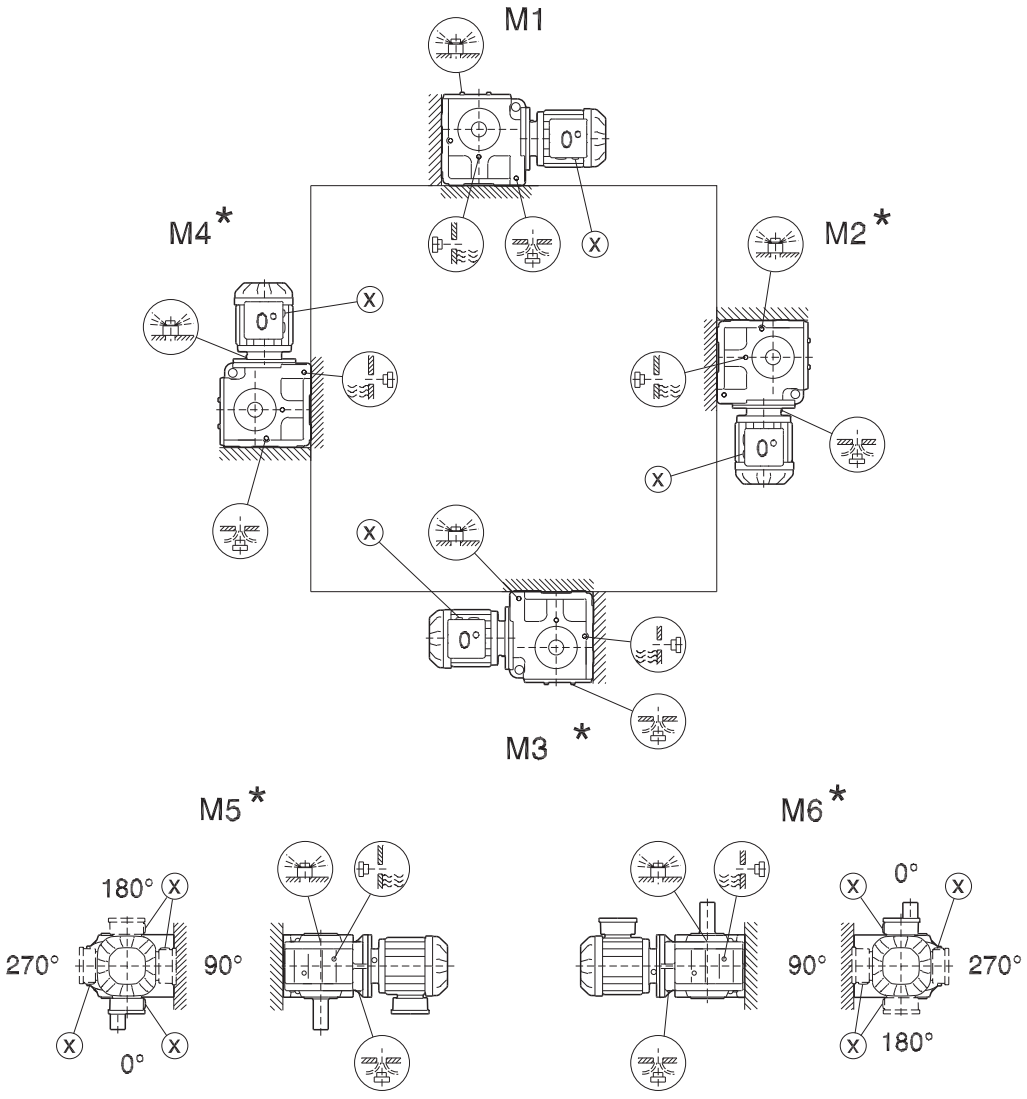
For M1, refer to the information in chapter "Allowable overhung load" (→ 🗎 53).

21933480/EN-US – 04/2018

S47-S97



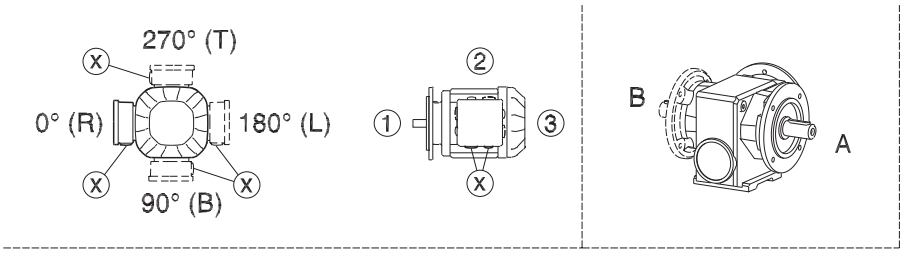
05 026 04 00

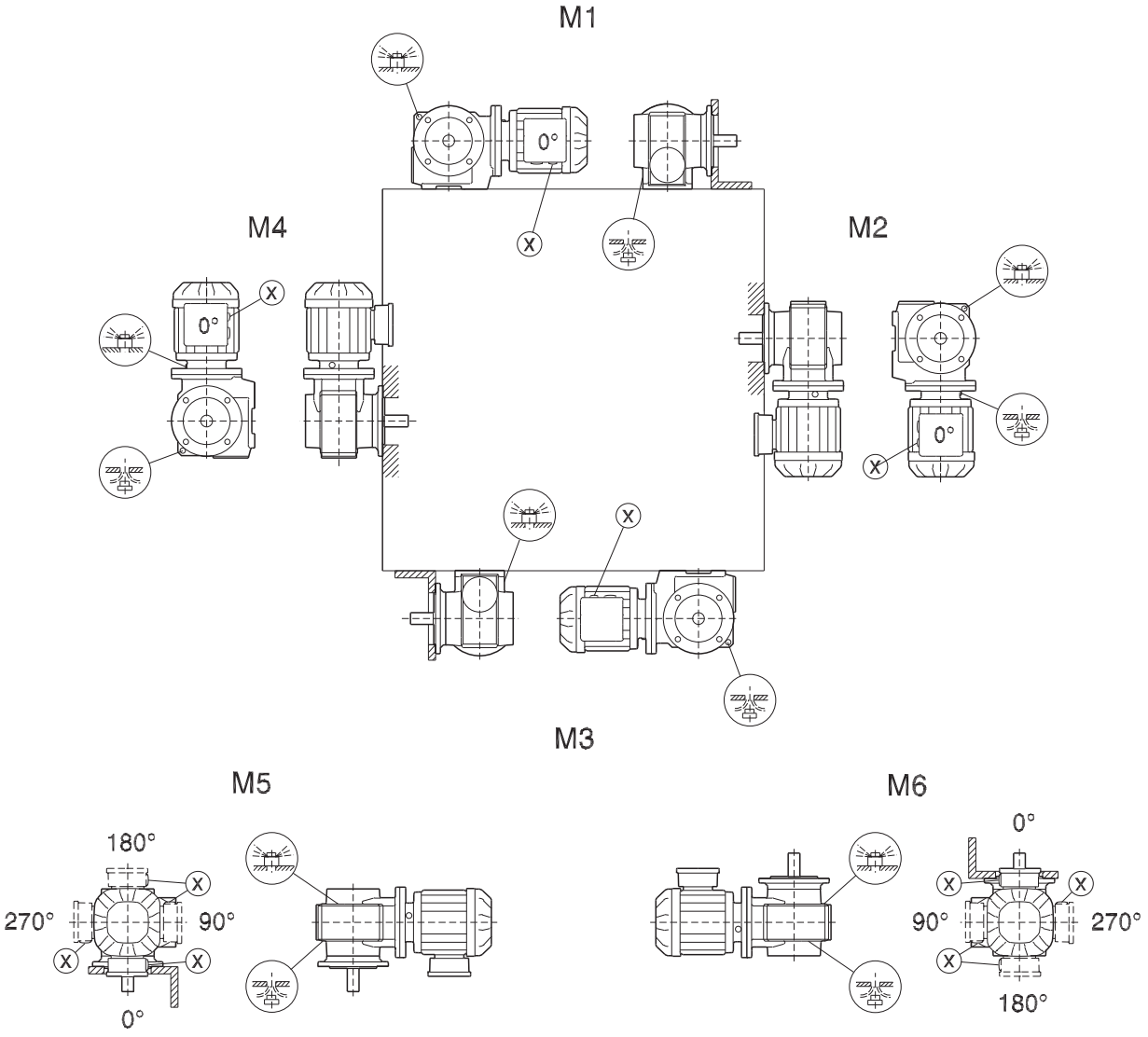


* (→ 🗎 71)

For M1, refer to the information in chapter "Allowable overhung load" (→ 🗎 53).

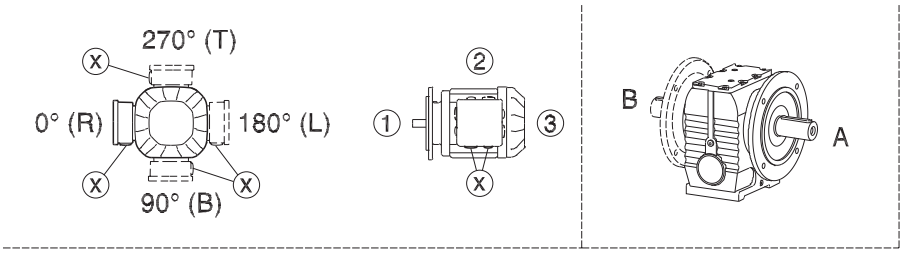
SF/SAF/SHF37

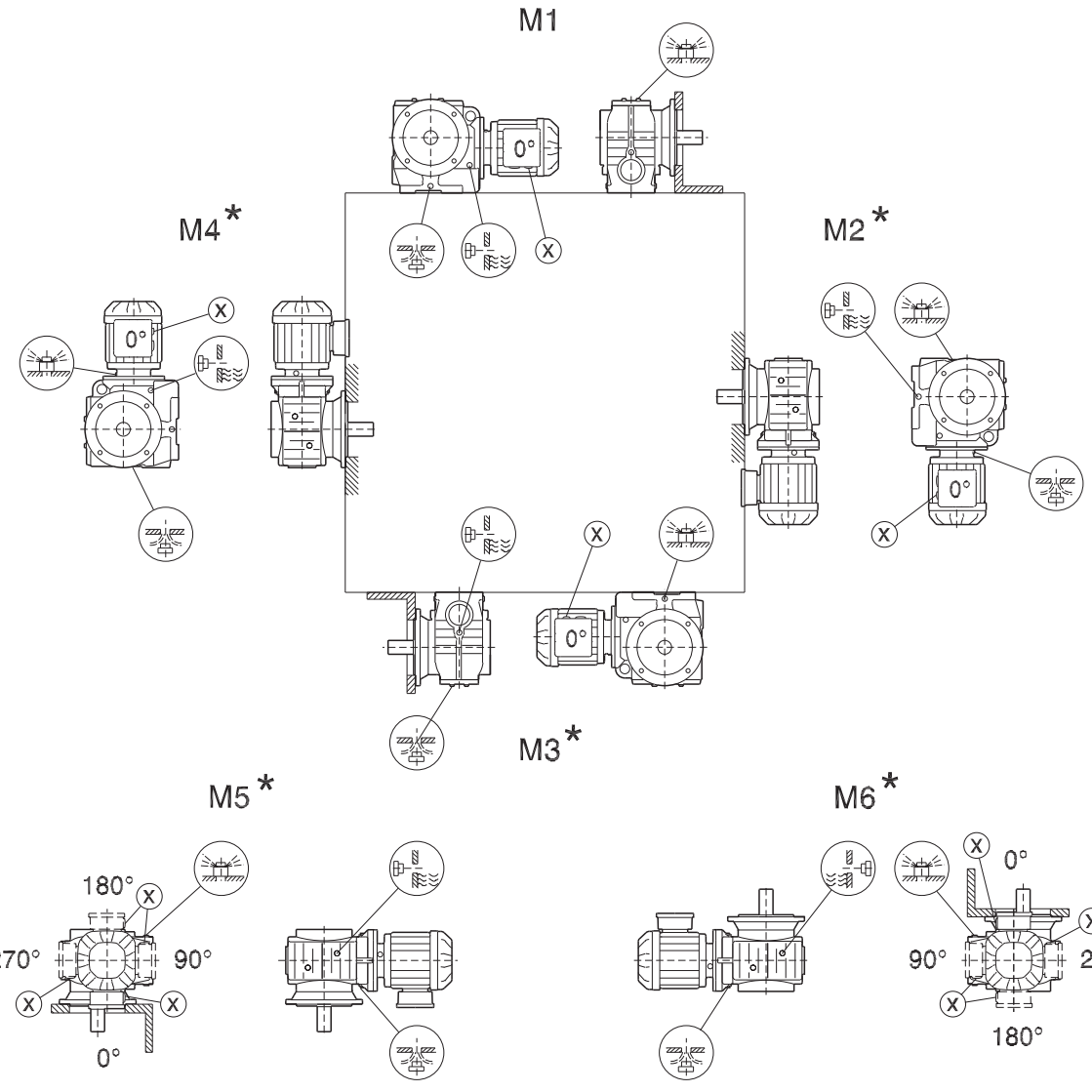




21933480/EN-US – 04/2018

SF/SAF/SHF/SAZ/SHZ47-97



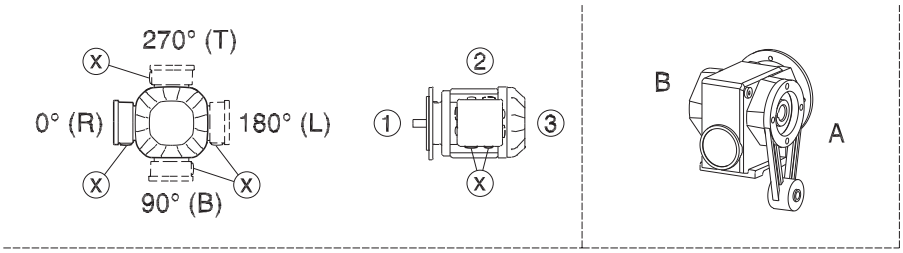


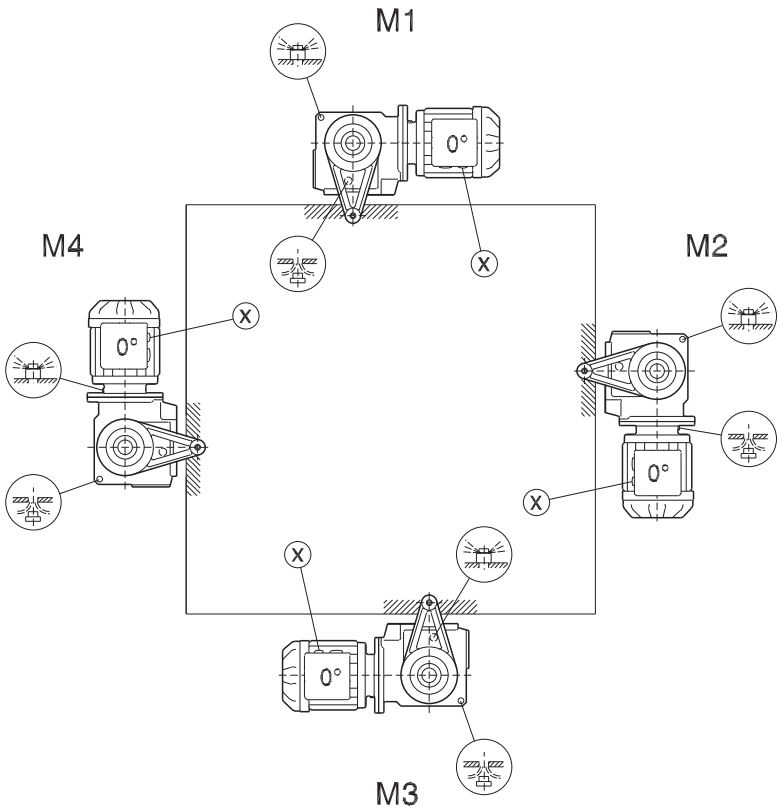
* (→ 🗎 71)

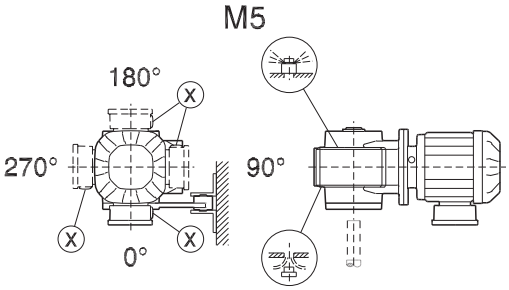
21933480/EN-US – 04/2018

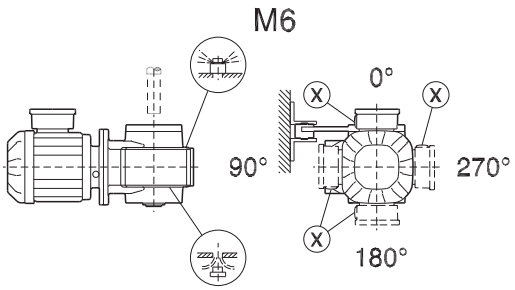
SA/SH/ST37

28 020 05 00



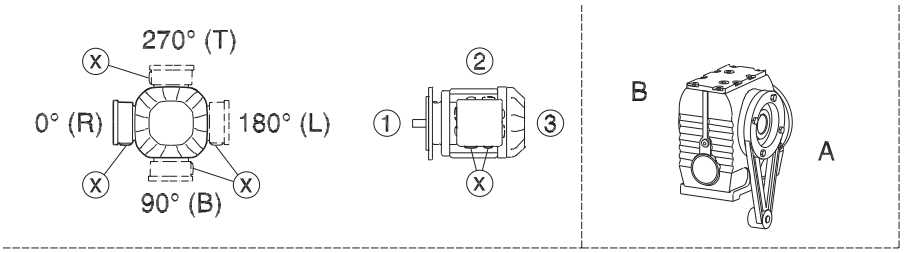


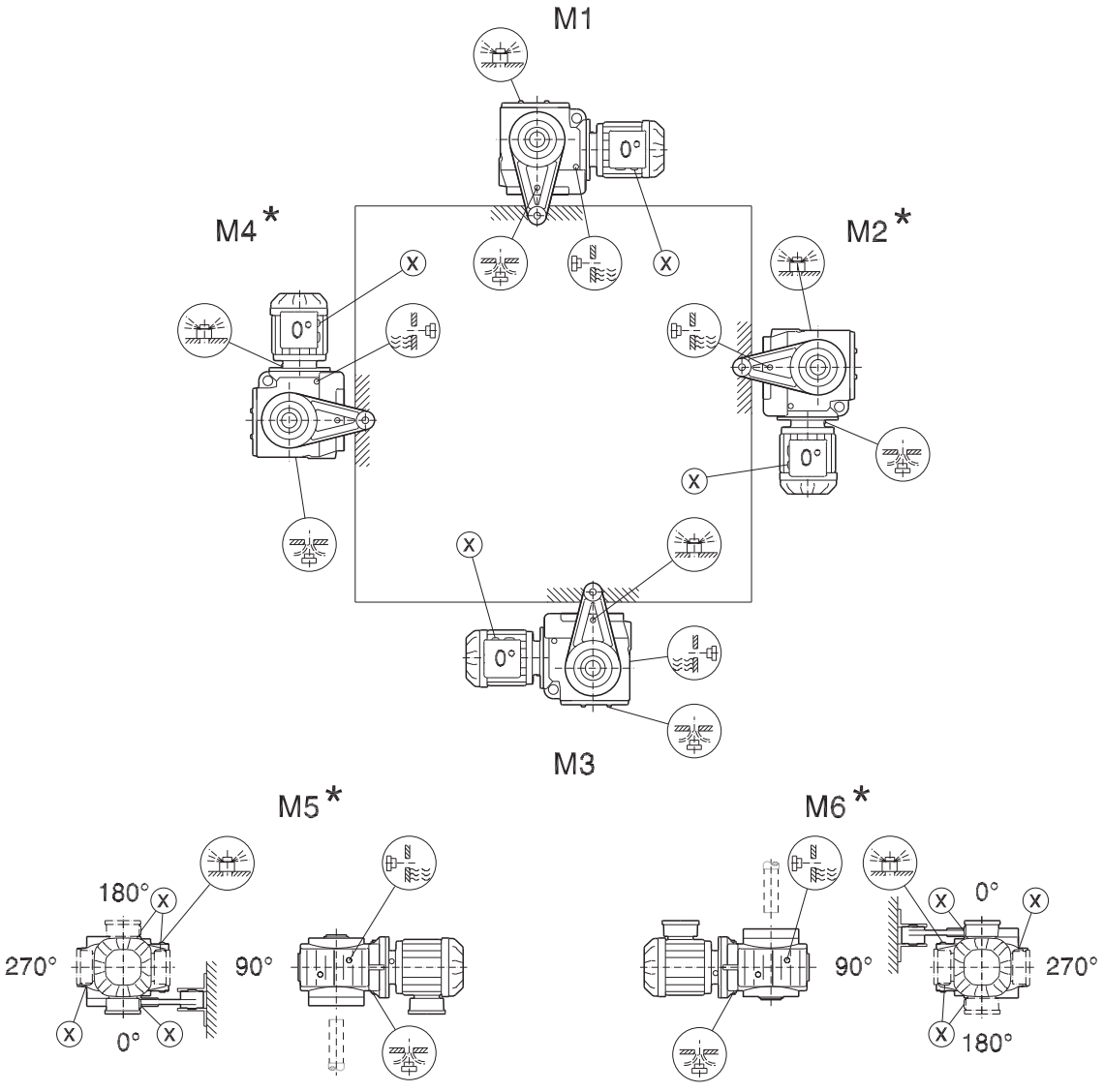




21933480/EN-US – 04/2018

SA/SH/ST47-97



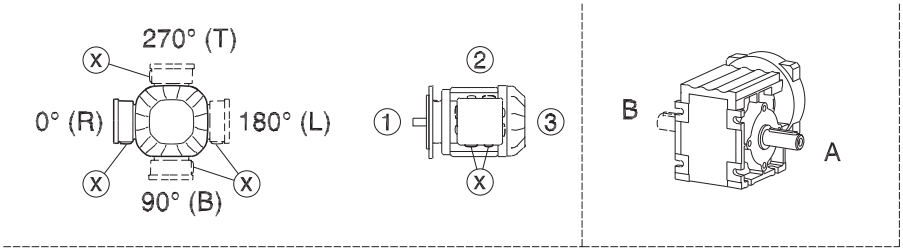


* (→ 🗎 71)

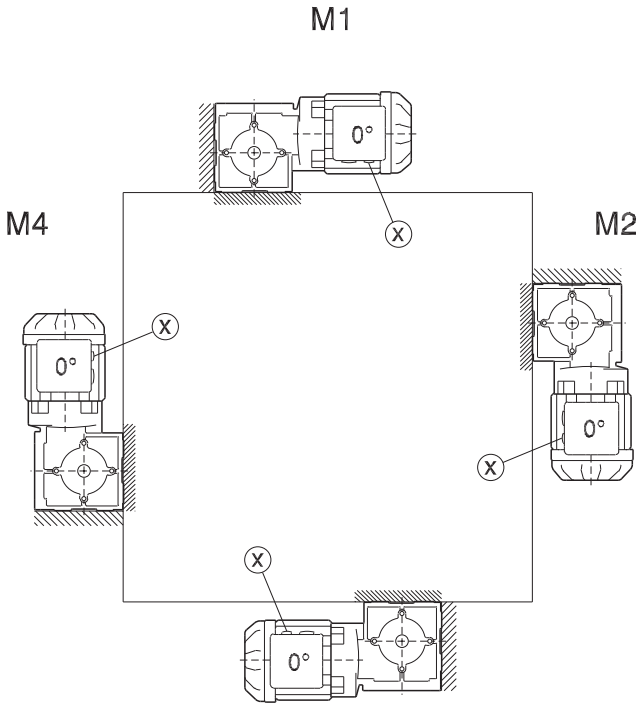
21933480/EN-US – 04/2018

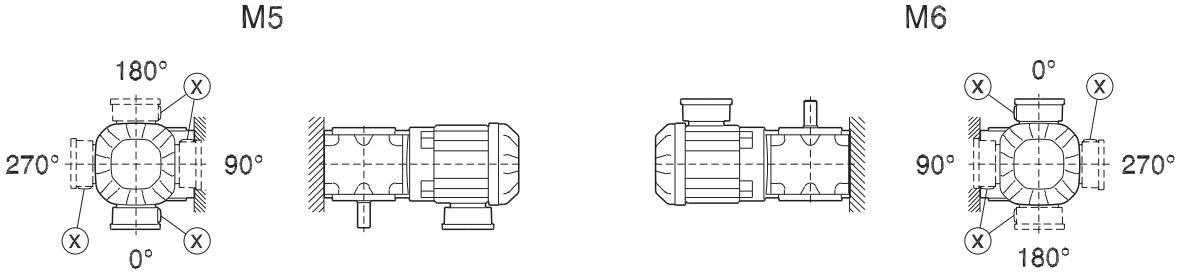
5.7 Mounting positions – SPIROPLAN®

W10-30



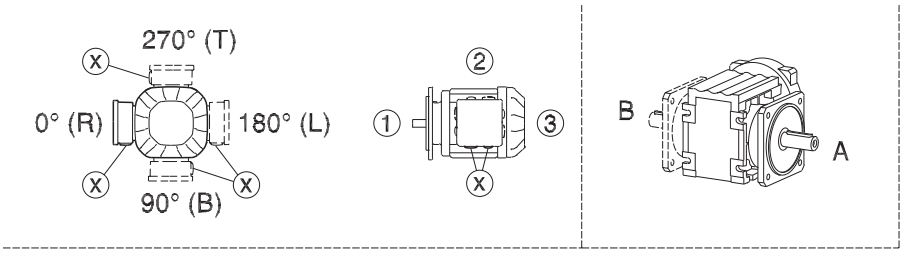
20 001 02 02

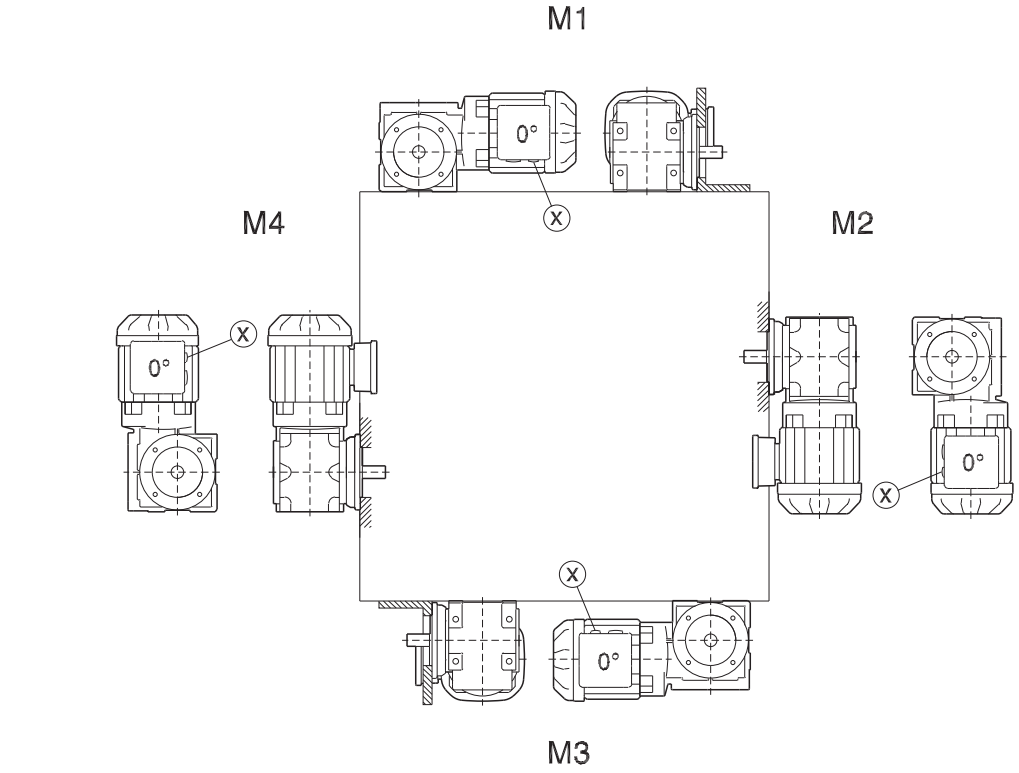


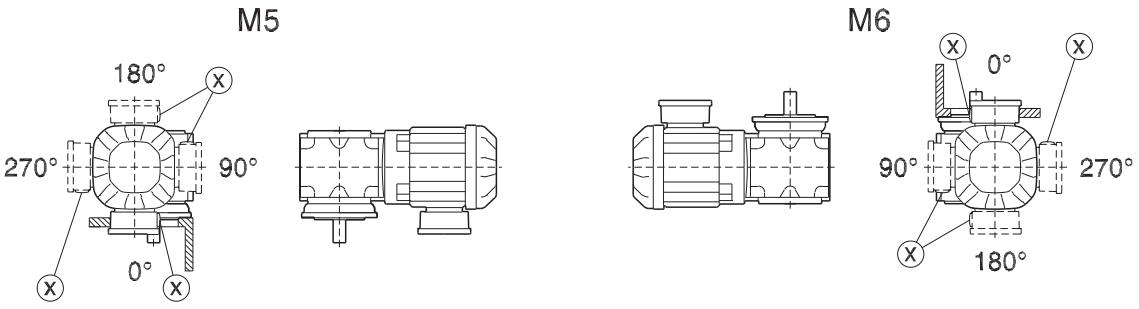


21933480/EN-US – 04/2018

WF10-30

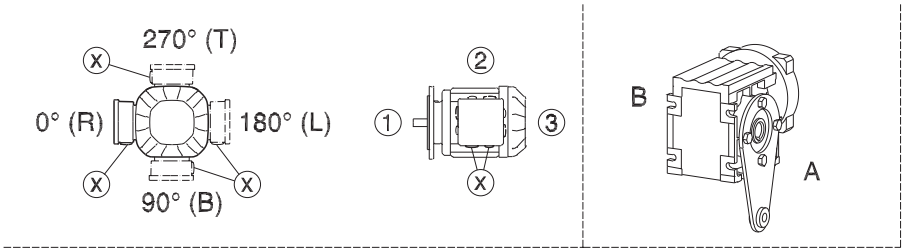




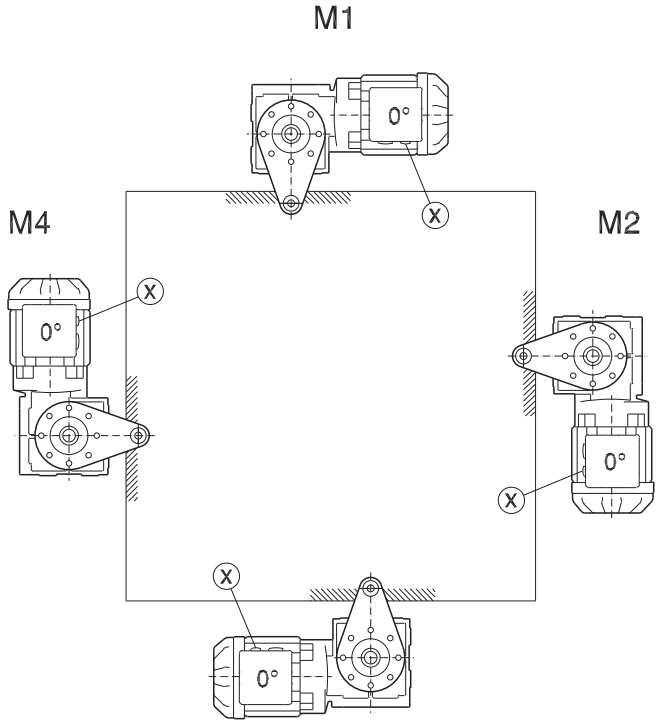


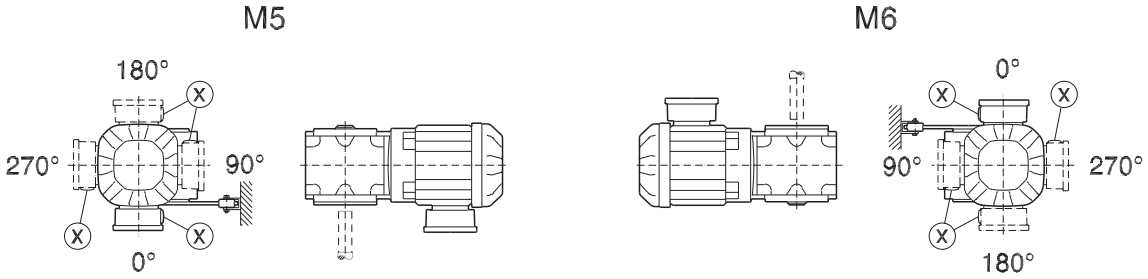
21933480/EN-US – 04/2018

WA10-30



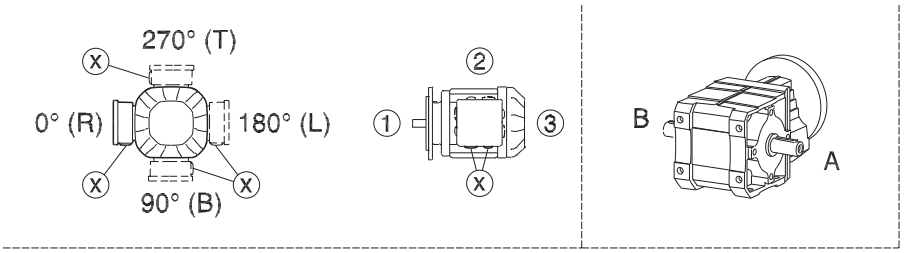
20 003 03 02

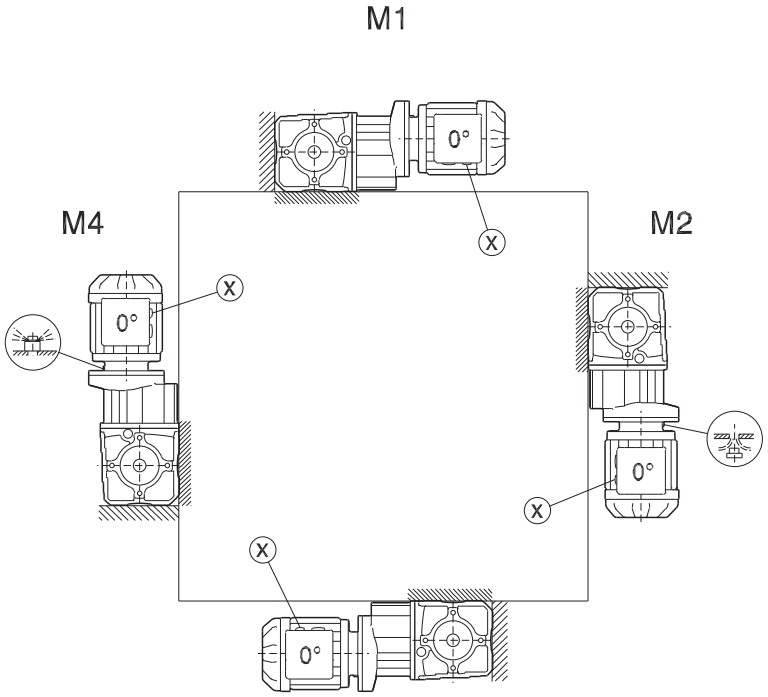


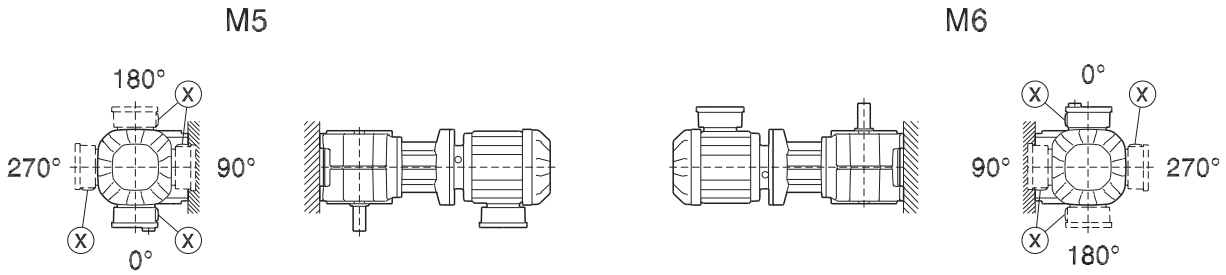


21933480/EN-US – 04/2018

W/WA..B/WH37B-47B

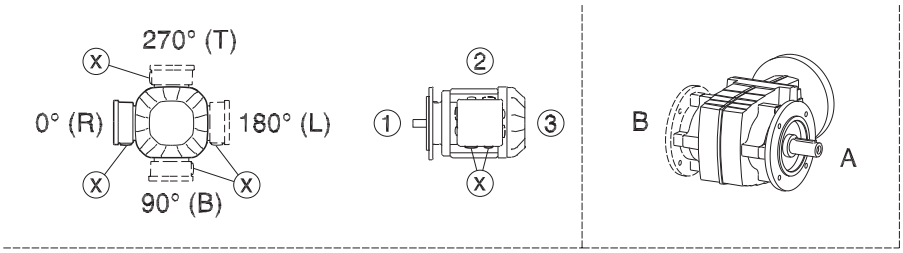


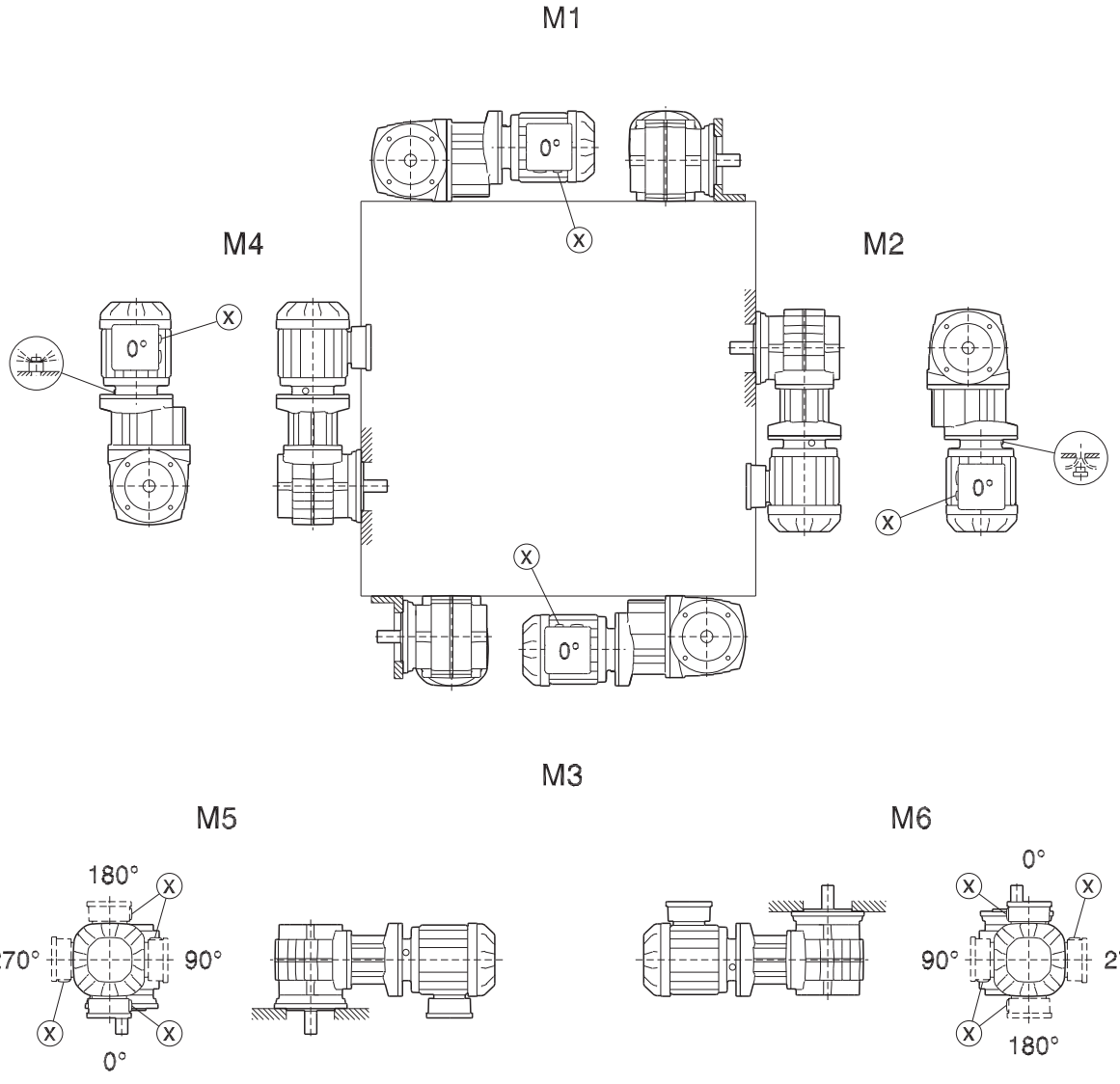




21933480/EN-US – 04/2018

WF/WAF/WHF37-47





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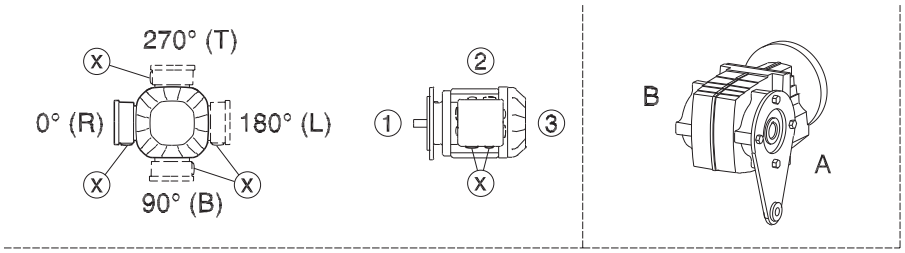
WA/WH/WT37-47



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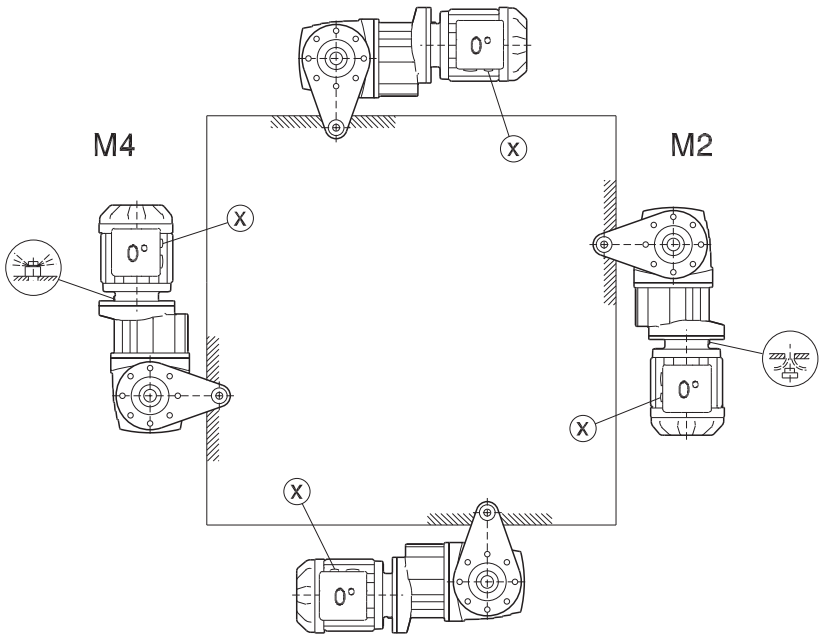
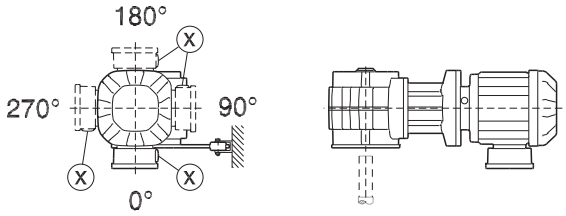
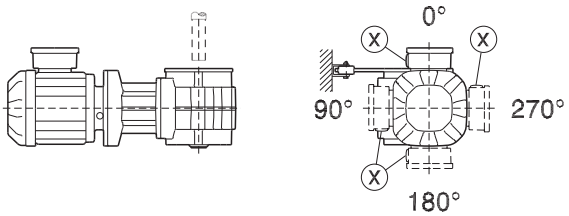


M3

M5



M6



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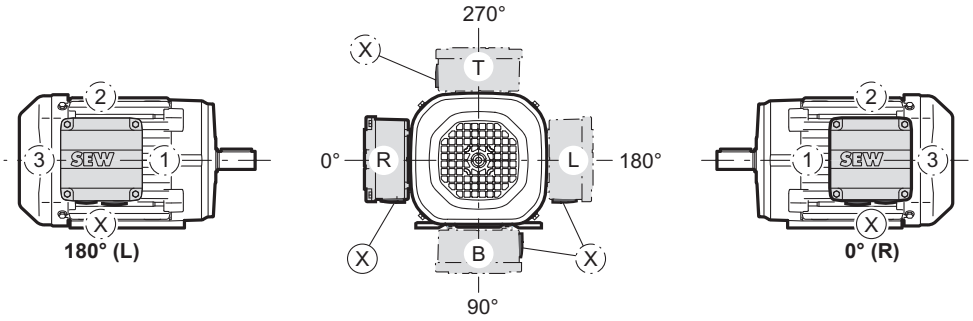
5.8 Mounting positions – AC motors without gear units

5.8.1 Terminal box position and cable entry



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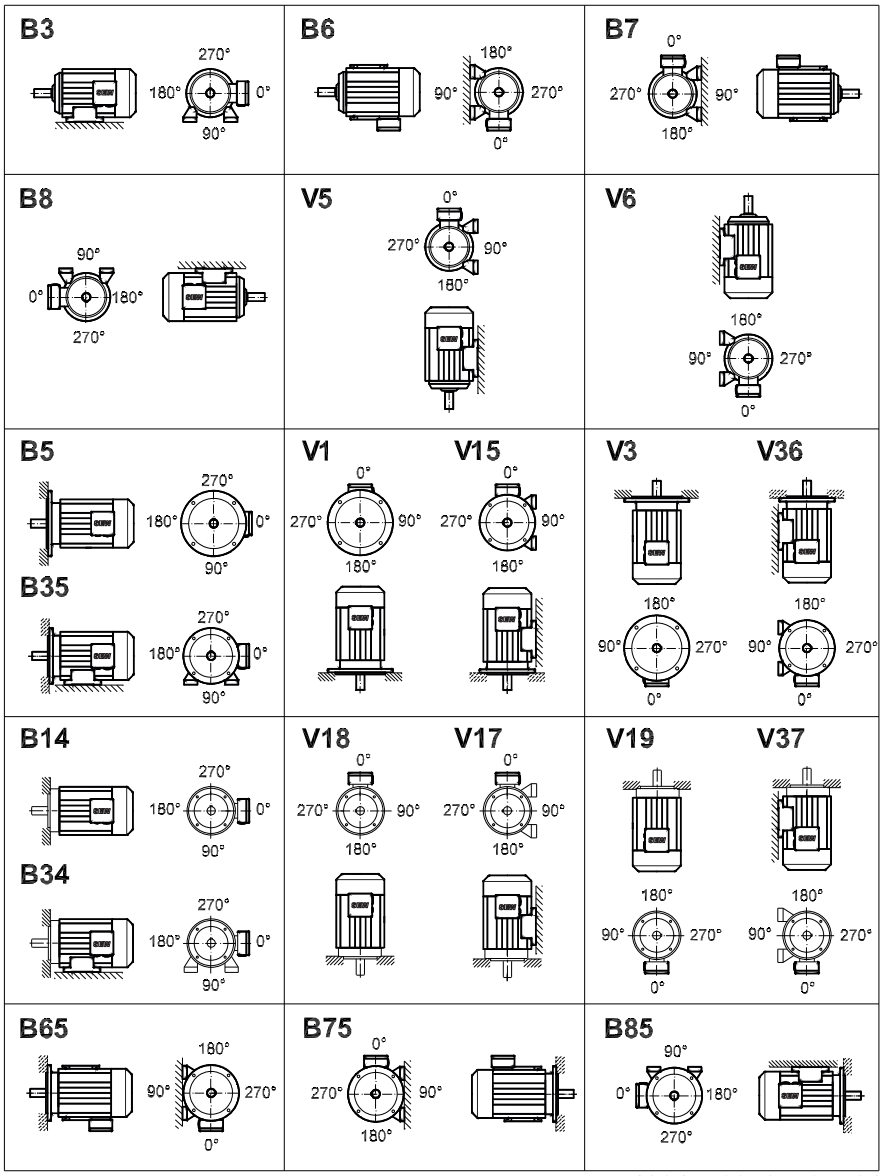
5.8.2 Mounting positions



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