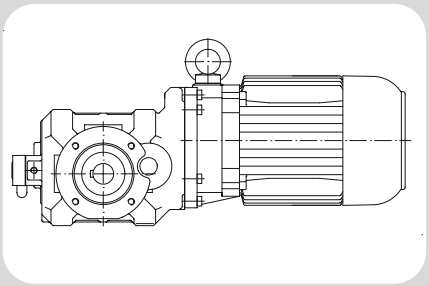
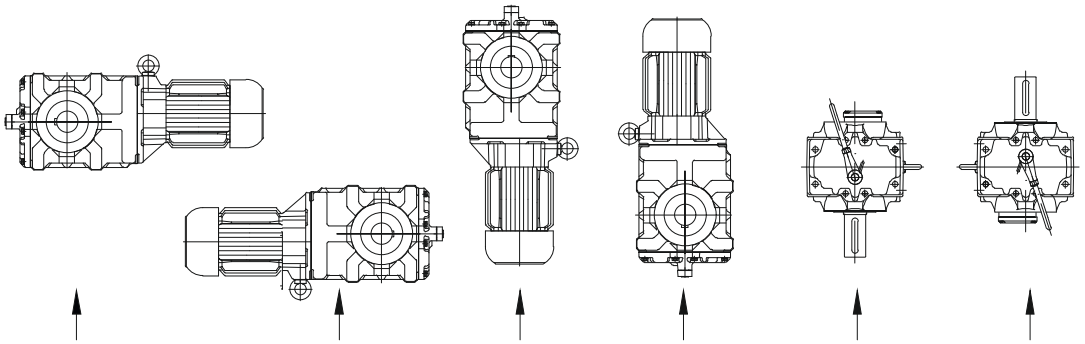


5

Gearboxes & Lubrication

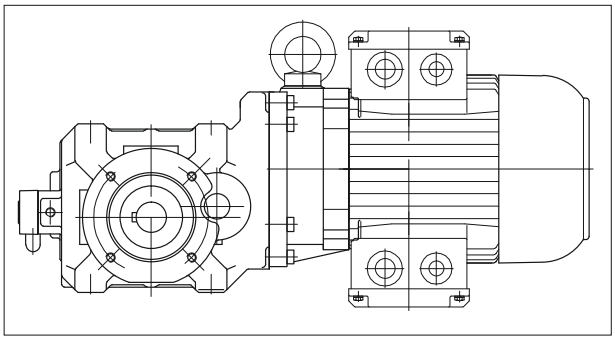
BM series



Gear side	(U)	(O)	(R)	(L)	(V)	(H)
Mounting position	H1	H2	H3	H4	V1	V2

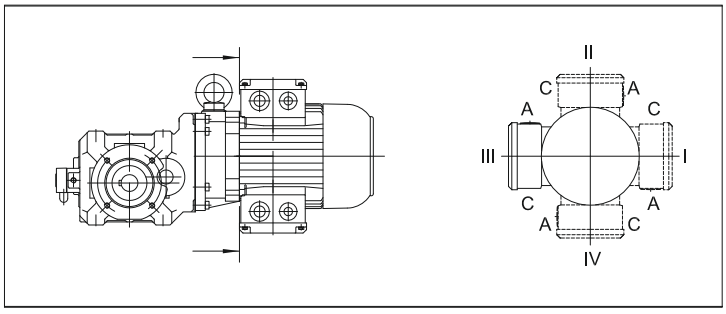
Standard fitting position of BM geared motors

Geared motor carriages for overhead conveyors are almost always installed horizontally in installation type H1. The lubricant quantity is adapted to suit the resulting inclined positions of the gear unit where ascents and descents have to be negotated. Please therefore specifiy the rise angle with your enquiries or orderes. BM-series geared motors can also **be used as** point operationg gears. Please indicate the mounting orientation. This usually difffers from the fitting position of the carriage drives.



Position of the terminal box and the cable glands

The standard position of the terminal box for BM geared motors is position III, opposite the output shaft pointing towards the “H” side of the gear unit. This position is preferred for most overhead conveyor applications. The terminal box can be supplied rotated by 90 degrees about the motor axis upon request. The standard cable entry is from side A or C. Cable entry towards the fan cowl (B) available on request.



Lubricants

The drives are shipped ready-filled with gear lubricant. Lubricated in this way, the gear units are suitable for ambient temperatures in the range -20 °C to + 40 °C. The quantity of lubricant is optimised for the desired installed position as is stated on the nameplate. The type of lubricant is stated in the Operating Instructions. Lubricants for other temperature ranges or special applications available on request.

Wear-protective EP gear oils as indicated in the following table have proven particularly effective:

Lubricant Manufacturer	Lubricant type
	Synthetic Oil
	ISO VG 460
	Standard oil for gearboxes in the series **BM20-BM40** High temperature oil for gearboxes **BM20-BM40**
AGIP	BLASIA S 460 [13 02 06]
BECHEM RHUS	BERUSYNTH EP 460 [13 02 06]
CASTROL	ALPHASYN PG 460 [13 02 06] OPTIGEAR 800/460 [13 02 06] OPTIGEAR 1300/460 [13 02 06] ALPHASYN GS 460 [13 02 06]
CHEVRON	Meropa Synlube WS 460 [13 02 06]
FUCHS	RENOLIN PG 460 [13 02 06]
KLÜBER	KLÜBERSYNTH GH 6-460 [13 02 06]
MOBIL	MOBIL SHC Gear 460 [13 02 06] MOBIL SHC 634*** [13 02 06]
OEST	–
SHELL	OMALA S4 WE 460 [13 02 06]
TOTAL	CARTER SY 460 [13 02 06]
WINTERSHALL	–

[....] European Waste Catalogue Code (Decision 2001/118/CE)

Important:
Synthetic gear oils of a Polyglykol base (e.g. PGLP…) must be disposed of separately to mineral oil as **Special Waste**.

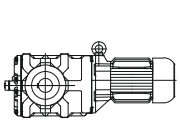
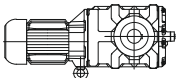
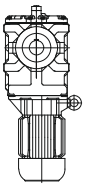
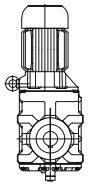
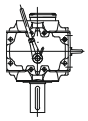
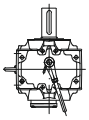
So long as the ambient temperature does not fall below – 20 °C the international definition of the viscosity class at 40 °C according to ISO 3448 and DIN 51519 ISO the viscosity class VG220 (SAE90) is recommended according, in North America AGMA 5EP.

For lower temperatures it is recommended to use oils of a lower nominal viscosity with a corresponding better starting characteristic, for instance a PGLP with a nominal viscosity VG68 (SAE80) or AGMA 2EP respectively. These types of oil can already be necessary at a temperature around the freezing point, if the break away torque of a drive is reduced by some smooth starting device or if the motor has a relatively low power.

Lubricant quantities

The preferred quantity of lubricant for the planned type of installation is stated on the motor's rating plate (symbol "oil can"). When topping up care should be taken to ensure that, depending on the fitting position, gearwheels and rolling contact bearings positioned at the top are also properly oiled. In special versions the oil level mark should be noted. Information about the quantity of lubricant required for other types of installation can be obtained from the factory.

Lubricant quantities, BM-series gears

Gear type	H1	H2	H3	H4	V1	V2
BM09	0,5					
BM10	0,65					
BM20	0,7					
BM30	1.2 1,8*					
BM30/S1	1,2 1,8*			**on request**		
BM30/S2	1,3 1,9*					
BM40	2,5 3,2*					
BM40/S1	2,5 3,2*					
BM40/S2	2,6 3,3*					

*: with BM30Z/BM40Z the prepress lubricant is filled via the main gearbox.

Lubrication quantity in litre

Lubricant quantity the primary stage (Z) for installation type H1

Gear unit	Litres in the primary stage (Z)
BM09(X)	-
BM10(X)	-
BM20(X)	0,15
BM30(X)	-
BM40(X)	-
BM30Z(X)	0,2
BM40Z(X)	0,32

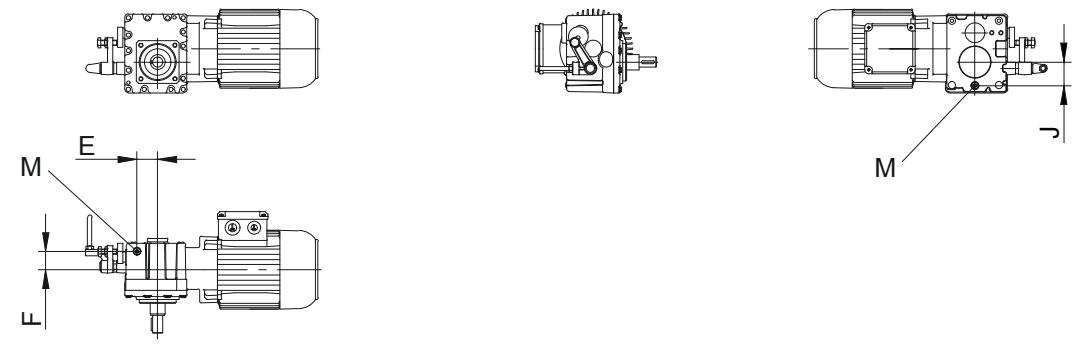
Lubricant quantities for other types of installation available on request.

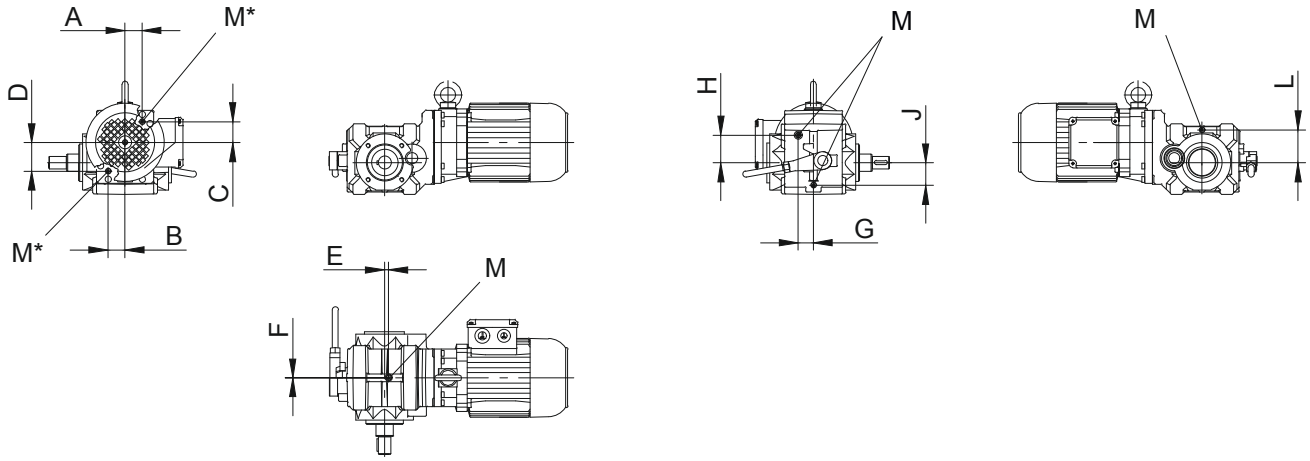
Gear ventilation

BM gear units are shipped ready-equipped with a vent plug. Low operating temperatures are achieved thanks to the high levels of efficiency of BM gear units and the fact that their surfaces have been designed for optimum heat dissipation. This results in oil change intervals of 2500.

Threaded plugs

Position of threaded plugs
- BM-series gears



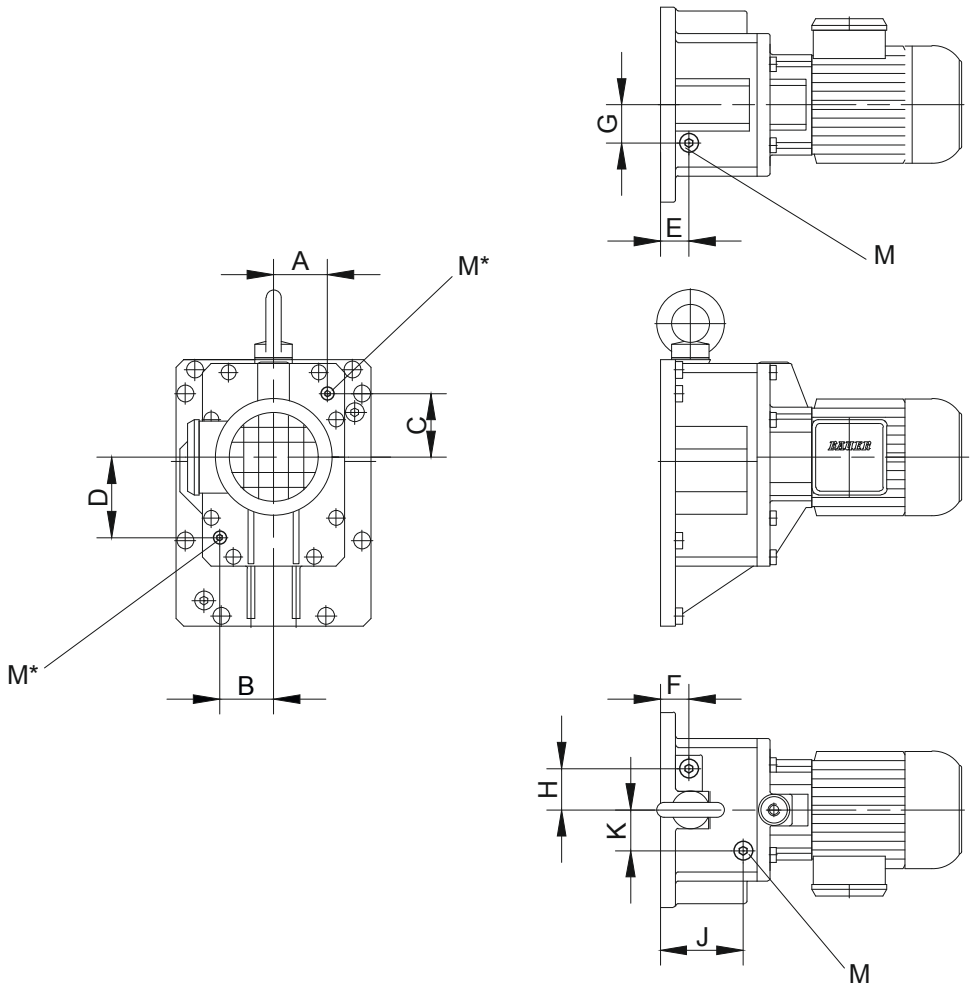


Type	A	B	C	D	E	F	G	H	J	L	M
BM09	-			B.09	41	36	-	-	46.5		M10x1
BM10	*Tab.I-Tab.III size			B.10	8	0	30	55	45	-	M10x1
BM20	*Tab.I-Tab.III size			B.20	0	49	-	-	45	62	M10x1
BM30	*Tab.I-Tab.III size			B.30	-	-	0	70	-	-	M10x1
BM40	*Tab.I-Tab.III size			B.40	-	-	0	-	-	-	-

M = Plug according to DIN 908
* see Position of the oil drain and filler plugs on the system cover
Dimensions in millimetres (mm)

M* =Factor and position of the drain plug see page 48.

Position of threaded plugs
- pre-stage gears (Z)



Type	A	B	C	D	E	F	G	H	J	K	M
BM20(Z)	-	-	-	-	49	-	28.5	-	23.5	28	M10x1
BM30(Z)	*Tab.I-Tab.III size B.10				-	24	-	30	-	-	M10x1
BM40(Z)	*Tab.I-Tab.III size B.10				-	27.5	-	36.5	-	-	M14x1.5

M = Plug according to DIN 908
* see Position of the oil drain and filler plugs on the system cover
Dimensions in millimetres (mm)

M* =Factor and position of the drain plug see page 48.

Threaded plugs

Position of the drain plugs
- in the System Cover Design with Standard Geared Motor

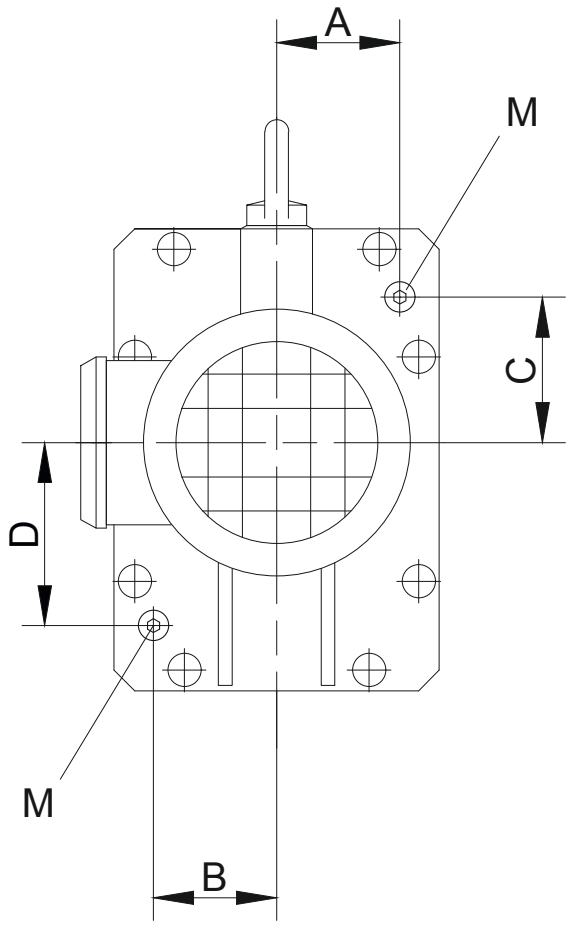


Table I: Design with Standard Geared Motor

Gear	Size	A	B	C	D	M
BM10(X)	D05-D..09	36	34	43.5	59	M10x1
BM20(X)	D05-D..09	44	44	58	72,5	M10x1
BM30(X)	D05-D..09	56.5	40	58.2	75	M10x1
BM40(X)	D08-D..11	66	71	71	94	M14x1.5
M = Plug according to DIN 908 Dimensions in millimetres (mm)						