

Worm Geared Motors HMD/I

Housing: Aluminium, corrosion-inhibited coating, with mounting holes for flexible foot and flange mounting.

Worm shaft: Hardened and ground.

Worm gear: Bronze on grey cast iron hub.

Lubrication: Synthetic oil (lubricated for life).

Motor: Standard three-phase motor with small flange B14, 230/400V, 50Hz. **Efficiency class:** 0.09 kW: IE1 · 0.12-0.55 kW: IE2 ·

From 0.75 kW: IE3

Other motor versions (AC motor, posistor, forced ventilation, brake etc.) on request.

Light-weight, high-quality model range with many mounting options. These maintenance-free, geared motors without ventilation can be used in **any mounting position**. The mounting positions V5 and V6 (worm shaft vertical) are however not recommended for continuous operation.

Output shaft push-in type: The basic gearbox version has a hollow shaft. They can, however, also be supplied with a push-in type output shaft (single sided, to be used left and right, or double sided). These output shafts have their own product number and have to be ordered separately.

Variable mounting: The geared motors are supplied without foot mounting. The foot mounting, which has to be ordered separately, can however easily be screwed on, if a foot mounting is required. The position of the foot can be changed for different mounting positions.

Retrofittable flange: If an output-side flange mounting is required, this flange can easily be mounted by the customer. These flanges have their own product number and have to be ordered separately.

Ordering details: e.g.: Prod. No., Type, Motor power, Output Speed
If required: Output shaft single sided (or double sided), Prod. No., Gearbox Size
Foot Mounting, Gearbox Size, Prod. No.
Output Flange, Gearbox Size, Prod. No.
Torque Arm, Gearbox Size, Prod. No.



P = Power
 n_2 = Output Speed
 T_2 = Output torque

f_B = Operating factor
 i_{ist} = Ratio

Product No. Standard Version	P kW	n_2 min ⁻¹	T_2 Nm	f_B	i_{ist}	Gearbox Size	Motor Size	Weight kg	Accessories (order separately)*			
									Product No. Single-Sided Output Shaft	Product No. Double-Sided Output Shaft	Product No. Foot Mounting	Product No. Output Flange
438 009 05	0,09	9	44	1,2	100	050	63A6	8	438 051 00	438 052 00	438 053 00	438 054 00
438 009 10	0,09	12,9	34	1,1	70	045	63A6	7	438 041 00	438 042 00	438 043 00	438 044 00
438 009 15	0,09	15	30	1,5	60	045	63A6	7	438 041 00	438 042 00	438 043 00	438 044 00
438 009 20	0,09	19,6	24	1,9	46	045	63A6	7	438 041 00	438 042 00	438 043 00	438 044 00
438 009 25	0,09	23	19	1	61	030	56B4	4,5	438 031 00	438 032 00	438 033 00	438 034 00
438 009 30	0,09	35	14	1,4	40	030	56B4	4,5	438 031 00	438 032 00	438 033 00	438 034 00
438 009 35	0,09	46,7	11	1,8	30	030	56B4	4,5	438 031 00	438 032 00	438 033 00	438 034 00
438 009 40	0,09	70	8	2,2	20	030	56B4	4,5	438 031 00	438 032 00	438 033 00	438 034 00
438 009 45	0,09	93	7	2,7	15	030	56B4	4,5	438 031 00	438 032 00	438 033 00	438 034 00
438 009 50	0,09	140	5	3,2	10	030	56B4	4,5	438 031 00	438 032 00	438 033 00	438 034 00
438 009 55	0,09	200	3	4,7	7	030	56B4	4,5	438 031 00	438 032 00	438 033 00	438 034 00
438 012 05	0,12	12,9	49	0,8	70	045	63B6	7	438 041 00	438 042 00	438 043 00	438 044 00
438 012 10	0,12	17,5	38	1,4	80	050	63A4	7	438 051 00	438 052 00	438 053 00	438 054 00
438 012 15	0,12	20,6	34	1,6	68	050	63A4	7	438 051 00	438 052 00	438 053 00	438 054 00
438 012 20	0,12	30,4	24	1,6	46	045	63A4	6,5	438 041 00	438 042 00	438 043 00	438 044 00
438 012 25	0,12	35	20	1	40	030	63A4	5	438 031 00	438 032 00	438 033 00	438 034 00
438 012 30	0,12	46,7	16	1,2	30	030	63A4	5	438 031 00	438 032 00	438 033 00	438 034 00
438 012 35	0,12	50	16	2,4	28	045	63A4	6,5	438 041 00	438 042 00	438 043 00	438 044 00
438 012 40	0,12	70	12	1,5	20	030	63A4	5	438 031 00	438 032 00	438 033 00	438 034 00
438 012 45	0,12	93	10	1,9	15	030	63A4	5	438 031 00	438 032 00	438 033 00	438 034 00
438 012 50	0,12	140	7	2,2	10	030	63A4	5	438 031 00	438 032 00	438 033 00	438 034 00
438 012 55	0,12	200	5	1,5	7	030	63A4	5	438 031 00	438 032 00	438 033 00	438 034 00
438 018 05	0,18	9,6	86	1,4	94	063	71A6	12	438 061 00	438 062 00	438 063 00	438 064 00
438 018 10	0,18	14	61	0,8	100	050	63B4	8	438 051 00	438 052 00	438 053 00	438 054 00
438 018 15	0,18	17,5	53	1	80	050	63B4	8	438 051 00	438 052 00	438 053 00	438 054 00
438 018 20	0,18	20,6	48	1,2	68	050	63B4	8	438 051 00	438 052 00	438 053 00	438 054 00
438 018 25	0,18	30,4	33	1,2	46	045	63B4	7	438 041 00	438 042 00	438 043 00	438 044 00
438 018 30	0,18	37,8	29	1,4	37	045	63B4	7	438 041 00	438 042 00	438 043 00	438 044 00
438 018 35	0,18	50	22	1,7	28	045	63B4	7	438 041 00	438 042 00	438 043 00	438 044 00
438 018 40	0,18	70	16	1,1	20	030	63B4	6	438 031 00	438 032 00	438 033 00	438 034 00
438 018 45	0,18	100	13	2,2	14	045	63B4	7	438 041 00	438 042 00	438 043 00	438 044 00
438 018 50	0,18	140	10	1,6	10	030	63B4	6	438 031 00	438 032 00	438 033 00	438 034 00
438 018 55	0,18	200	7	2,3	7	030	63B4	6	438 031 00	438 032 00	438 033 00	438 034 00

*More details and further accessories see page 959.

Note for dimensioning and dimensions table see page 961.

Frequency Inverters
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Product No. Standard Version	P kW	n ₂ min ⁻¹	T ₂ Nm	f _B	i _{ist}	Gearbox Size	Motor Size	Weight kg	Accessories (order separately)*			
									Product No. Single-Sided Output Shaft	Product No. Double-Sided Output Shaft	Product No. Foot Mounting	Product No. Output Flange
438 025 05	0,25	9,6	120	1	94	063	71B6	12,5	438 061 00	438 062 00	438 063 00	438 064 00
438 025 10	0,25	13,4	100	1,3	67	063	71B6	12,5	438 061 00	438 062 00	438 063 00	438 064 00
438 025 15	0,25	17,5	78	1,5	80	063	71A4	11	438 061 00	438 062 00	438 063 00	438 064 00
438 025 20	0,25	20,9	69	1,7	67	063	71A4	11	438 061 00	438 062 00	438 063 00	438 064 00
438 025 25	0,25	25	62	2,6	36	063	71B6	12,5	438 061 00	438 062 00	438 063 00	438 064 00
438 025 30	0,25	32,6	48	1,3	43	050	71A4	9	438 051 00	438 052 00	438 053 00	438 054 00
438 025 35	0,25	38,9	42	1,6	36	050	71A4	9	438 051 00	438 052 00	438 053 00	438 054 00
438 025 40	0,25	50	31	1,3	28	045	71A4	8	438 041 00	438 042 00	438 043 00	438 044 00
438 025 45	0,25	67	24	1,6	21	045	71A4	8	438 041 00	438 042 00	438 043 00	438 044 00
438 025 50	0,25	100	18	1,6	14	045	71A4	8	438 041 00	438 042 00	438 043 00	438 044 00
438 025 55	0,25	140	13	2,2	10	045	71A4	8	438 041 00	438 042 00	438 043 00	438 044 00
438 025 60	0,25	200	10	3	7	045	71A4	8	438 041 00	438 042 00	438 043 00	438 044 00
438 037 05	0,37	14,9	123	0,8	94	063	71B4	12	438 061 00	438 062 00	438 063 00	438 064 00
438 037 10	0,37	17,5	115	1	80	063	71B4	12	438 061 00	438 062 00	438 063 00	438 064 00
438 037 15	0,37	20,9	101	1,2	67	063	71B4	12	438 061 00	438 062 00	438 063 00	438 064 00
438 037 20	0,37	31,1	75	1,7	45	063	71B4	12	438 061 00	438 062 00	438 063 00	438 064 00
438 037 25	0,37	38,9	62	2,3	36	063	71B4	12	438 061 00	438 062 00	438 063 00	438 064 00
438 037 30	0,37	46,7	56	2,5	30	063	71B4	12	438 061 00	438 062 00	438 063 00	438 064 00
438 037 35	0,37	54	45	1,4	26	050	71B4	9	438 051 00	438 052 00	438 053 00	438 054 00
438 037 40	0,37	67	36	1,1	21	045	71B4	9	438 041 00	438 042 00	438 043 00	438 044 00
438 037 45	0,37	78	34	1,7	18	050	71B4	9	438 051 00	438 052 00	438 053 00	438 054 00
438 037 50	0,37	100	27	1,1	14	045	71B4	9	438 041 00	438 042 00	438 043 00	438 044 00
438 037 55	0,37	140	20	1,5	10	045	71B4	9	438 041 00	438 042 00	438 043 00	438 044 00
438 037 60	0,37	200	14	2,1	7	045	71B4	9	438 041 00	438 042 00	438 043 00	438 044 00
438 055 05	0,55	9,4	280	0,9	96	085	80B6	21	438 081 00	438 082 00	438 083 00	438 084 00
438 055 10	0,55	13,4	239	1,2	67	085	80B6	21	438 081 00	438 082 00	438 083 00	438 084 00
438 055 15	0,55	18,9	161	1,6	74	085	80A4	20	438 081 00	438 082 00	438 083 00	438 084 00
438 055 20	0,55	20,9	163	1,7	67	085	80A4	20	438 081 00	438 082 00	438 083 00	438 084 00
438 055 25	0,55	26,9	129	2,1	52	085	80A4	20	438 081 00	438 082 00	438 083 00	438 084 00
438 055 30	0,55	31,1	111	1,2	45	063	80A4	15	438 061 00	438 062 00	438 063 00	438 064 00
438 055 35	0,55	38,9	92	1,5	36	063	80A4	15	438 061 00	438 062 00	438 063 00	438 064 00
438 055 40	0,55	46,7	83	1,7	30	063	80A4	15	438 061 00	438 062 00	438 063 00	438 064 00
438 055 45	0,55	58	68	2	24	063	80A4	15	438 061 00	438 062 00	438 063 00	438 064 00
438 055 50	0,55	74	56	2,4	19	063	80A4	15	438 061 00	438 062 00	438 063 00	438 064 00
438 055 55	0,55	93	44	2,9	15	063	80A4	15	438 061 00	438 062 00	438 063 00	438 064 00
438 055 60	0,55	140	30	2	10	050	80A4	12	438 051 00	438 052 00	438 053 00	438 054 00
438 075 05	0,75	15,0	256	0,9	96	085	80B4	21	438 081 00	438 082 00	438 083 00	438 084 00
438 075 10	0,75	19,5	216	1,2	74	085	80B4	21	438 081 00	438 082 00	438 083 00	438 084 00
438 075 15	0,75	21,5	219	1,3	67	085	80B4	21	438 081 00	438 082 00	438 083 00	438 084 00
438 075 20	0,75	27,7	173	1,6	52	085	80B4	21	438 081 00	438 082 00	438 083 00	438 084 00
438 075 25	0,75	31,3	158	2,0	46	085	80B4	21	438 081 00	438 082 00	438 083 00	438 084 00
438 075 30	0,75	37,9	136	2,4	38	085	80B4	21	438 081 00	438 082 00	438 083 00	438 084 00
438 075 35	0,75	48,0	112	1,3	30	063	80B4	16	438 061 00	438 062 00	438 063 00	438 064 00
438 075 40	0,75	60	91	1,5	24	063	80B4	16	438 061 00	438 062 00	438 063 00	438 064 00
438 075 45	0,75	76	75	1,8	19	063	80B4	16	438 061 00	438 062 00	438 063 00	438 064 00
438 075 50	0,75	96	60	2,3	15	063	80B4	16	438 061 00	438 062 00	438 063 00	438 064 00
438 075 55	0,75	103	56	1,2	14	050	80B4	13	438 051 00	438 052 00	438 053 00	438 054 00
438 075 60	0,75	144	40	1,5	10	050	80B4	13	438 051 00	438 052 00	438 053 00	438 054 00
438 110 05	1,1	19,5	315	0,8	74	085	90S4	27	438 081 00	438 082 00	438 083 00	438 084 00
438 110 10	1,1	21,5	320	0,9	67	085	90S4	27	438 081 00	438 082 00	438 083 00	438 084 00
438 110 15	1,1	27,7	252	1,1	52	085	90S4	27	438 081 00	438 082 00	438 083 00	438 084 00
438 110 20	1,1	31,3	230	1,4	46	085	90S4	27	438 081 00	438 082 00	438 083 00	438 084 00
438 110 25	1,1	37,9	198	1,7	38	085	90S4	27	438 081 00	438 082 00	438 083 00	438 084 00
438 110 30	1,1	40,0	180	0,8	36	063	90S4	20	438 061 00	438 062 00	438 063 00	438 064 00
438 110 35	1,1	48,0	163	0,9	30	063	90S4	22	438 061 00	438 062 00	438 063 00	438 064 00
438 110 40	1,1	51	154	2,2	28	085	90S4	27	438 081 00	438 082 00	438 083 00	438 084 00
438 110 45	1,1	60	132	1,0	24	063	90S4	22	438 061 00	438 062 00	438 063 00	438 064 00
438 110 50	1,1	65	126	2,3	22	085	90S4	27	438 081 00	438 082 00	438 083 00	438 084 00
438 110 55	1,1	76	109	1,2	19	063	90S4	22	438 061 00	438 062 00	438 063 00	438 064 00
438 110 60	1,1	96	87	1,5	15	063	90S4	22	438 061 00	438 062 00	438 063 00	438 064 00
438 110 65	1,1	103	80	3,7	14	085	90S4	27	438 081 00	438 082 00	438 083 00	438 084 00
438 110 70	1,1	144	59	2,2	10	063	90S4	22	438 061 00	438 062 00	438 063 00	438 064 00
438 115 05	1,5	27,5	346	0,8	52	085	90LA4	29	438 081 00	438 082 00	438 083 00	438 084 00
438 115 10	1,5	31,1	316	1,0	46	085	90LA4	29	438 081 00	438 082 00	438 083 00	438 084 00
438 115 15	1,5	37,6	272	1,2	38	085	90LA4	29	438 081 00	438 082 00	438 083 00	438 084 00
438 115 20	1,5	51	212	1,6	28	085	90LA4	29	438 081 00	438 082 00	438 083 00	438 084 00
438 115 25	1,5	65	173	1,7	22	085	90LA4	29	438 081 00	438 082 00	438 083 00	438 084 00
438 115 30	1,5	72	159	1,8	20	085	90LA4	29	438 081 00	438 082 00	438 083 00	438 084 00
438 115 35	1,5	75	150	0,9	19	063	90LA4	24	438 061 00	438 062 00	438 063 00	438 064 00
438 115 40	1,5	95	120	1,1	15	063	90LA4	24	438 061 00	438 062 00	438 063 00	438 064 00
438 115 45	1,5	102	110	2,7	14	085	90LA4	29	438 081 00	438 082 00	438 083 00	438 084 00
438 115 50	1,5	143	82	1,6	10	063	90LA4	24	438 061 00	438 062 00	438 063 00	438 064 00
438 115 55	1,5	204	62	4,1	7	085	90LA4	29	438 081 00	438 082 00	438 083 00	438 084 00

Note for dimensioning and dimensions table see page 961.

Accessories Worm Geared Motors HMD/I

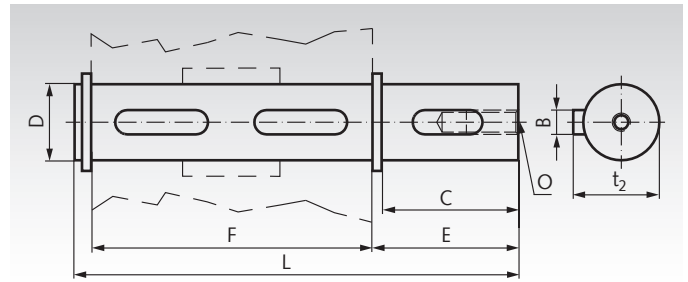
Push-In Output Shafts HMD, Single Sided

Material: Steel.

To change the gearboxes HMD/I over from hollow shaft to solid shaft. The shaft is only pushed in and secured with the enclosed cover disc and mounting screw.



Ordering details: e.g.: Prod. No. 438 031 00, Push-In Output Shaft, Single Sided, Gearbox Size 030



Product No.	Gearbox Size	B mm	C mm	D mm	E mm	F mm	L mm	O mm	t ₂ mm	Weight kg
438 031 00	030	5	25	14	35,5	55	94,5	M5x14	15,8	0,12
438 041 00	045	6	32	18	43,0	65	113,0	M6x18	20,5	0,23
438 051 00	050	8	52	25	59,5	81	146,0	M8x20	28	0,57
438 061 00	063	8	60	25	63,2	120	190,0	M8x20	28	0,73
438 081 00	085	10	60	35	73,5	135	214,5	M10x23	38	1,52

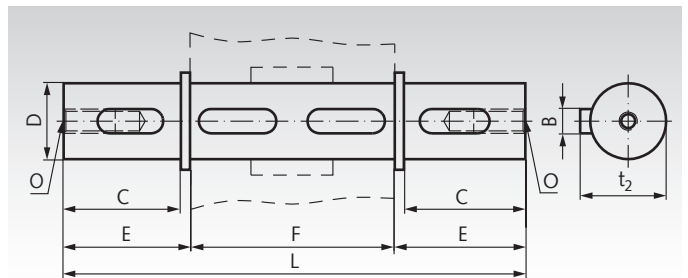
Push-In Output Shafts HMD, Double Sided

Material: Steel.

To change the gearboxes HMD/I over from hollow shaft to solid shaft. The shaft is only pushed in and secured with the enclosed cover disc and mounting screw.



Ordering details: e.g.: Prod. No. 438 032 00, Push-In Output Shaft, Double Sided, Gearbox Size 030



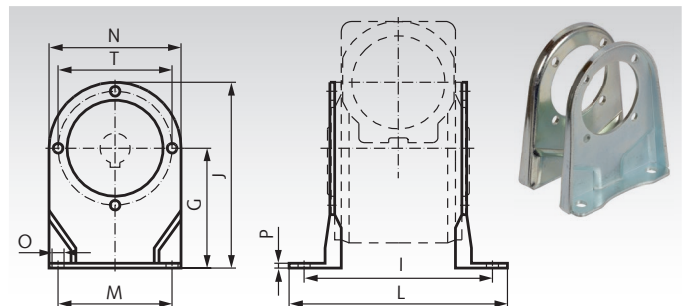
Product No.	Gearbox Size	B mm	C mm	D mm	E mm	F mm	L mm	O mm	t ₂ mm	Weight kg
438 032 00	030	5	25	14	35,5	55	126,0	M5x14	15,8	0,16
438 042 00	045	6	32	18	43,0	65	151,0	M6x18	20,5	0,33
438 052 00	050	8	52	25	59,5	81	200,0	M8x20	28	0,77
438 062 00	063	8	60	25	63,2	120	246,4	M8x20	28	0,93
438 082 00	085	10	60	35	73,5	135	282,0	M10x23	38	1,73

Foot Mountings HMD/I

Material: Steel sheet, zinc-plated.

Retrofit kit: Foot mounting.

The position of the feet can be changed by 4x90 (Size 063: 8x 45°). 8 mounting screws are included in the delivery (4 screws per side).



Ordering details: e.g.: Prod. No. 438 033 00, Foot Mounting, Gearbox Size 030

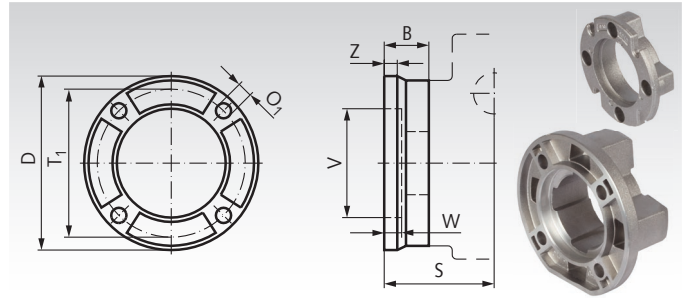
Product No.	Gearbox Size	G mm	I mm	J mm	L mm	M mm	N mm	O mm	P mm	T mm	Screws Size	Weight kg
438 033 00	030	55	66	94	87	50	78	6,5	3	65	M6	0,27
438 043 00	045	72	81	121	100	52	98	10,5	3	65	M6	0,49
438 053 00	050	82	98,5	138,5	123	63	113	10,5	3,5	94	M6	0,82
438 063 00	063	100	111	170	144	95	133	10,5	4	90	M8	1,23
438 083 00	085	142	145	236,5	182	140	180	10,5	5	130	M10	2,70

Accessories Worm Geared Motors HMD/I

Output-Side Flanges HMD/I

Material: Aluminium.

Retrofit kit: Flange B5 with mounting screws.



Ordering details: e.g.: Prod. No. 438 034 00, Output-Side Flange, Ø 80 mm

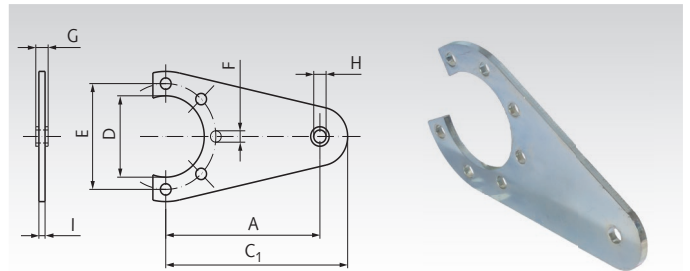
Product No.	Gearbox Size	D mm	B mm	O ₁ mm	S mm	T ₁ mm	V mm	W mm	Z mm	Screws Amount x Size	Weight kg
438 034 00	030	80	20,5	7,0	50,5	68	50	6	6	4 x M6	0,11
438 044 00	045	110	25,5	8,5	60,5	87	60	9	9	4 x M6	0,20
438 054 00	050	123	47	10,5	85,0	90	70	9	12	4 x M6	0,40
438 064 00	063	175	41	11	86,0	150	115	7	13	4 x M8	0,60
438 084 00	085	205	40	13,0	108,0	176	152	5	16	4 x M10	0,88

Torque Arms HMD/I

Material: Steel sheet, zinc-plated.

Retrofit kit: Torque arm with mounting screws.

The position can be changed by 4x90° (Size 063: 8x45°).



Ordering details: e.g.: Prod. No. 438 035 00, Torque Arm, Gearbox Size 030

Product No.	Gearbox Size	A mm	C ₁ mm	D mm	E mm	F mm	G mm	H mm	I mm	Screws Amount x Size	Weight kg
438 035 00	030	100	118	50	65	7	4	8,2	4	4 x M6	0,21
438 045 00	045	100	113	50	65	7	4	8,2	4	4 x M6	0,21
438 055 00	050	100	118	68	94	7	4	8,2	4	4 x M6	0,26
438 065 00	063	150	180	75	90	9	20	11	6	4 x M8	0,70
438 085 00	085	200	240	110	130	11	25	21	6	4 x M10	1,44

Permissible Radial and Axial Loads

The values are calculated for the middle of the input shaft end also calculating in the output speed n_2 in min^{-1} . F_R is the max. permissible radial load for $F_A = 0$. F_A is the max. permiss. axial load for $F_R = 0$.

Gearbox Size	200 min^{-1}		150 min^{-1}		100 min^{-1}		75 min^{-1}		50 min^{-1}		25 min^{-1}		15 min^{-1}	
	F_R N	F_A N	F_R N	F_A N	F_R N	F_A N	F_R N	F_A N	F_R N	F_A N	F_R N	F_A N	F_R N	F_A N
030	600	120	700	140	800	160	900	180	1000	200	1250	250	1400	280
045	900	180	1000	200	1100	220	1200	240	1400	260	1800	300	2000	400
050	1200	240	1400	280	1500	300	1700	340	1900	380	2500	480	2800	560
063	1800	360	2000	400	2300	460	2500	500	3000	600	3800	700	4000	800
085	2500	500	2900	580	3000	600	3500	700	4000	800	5000	1000	5800	1160

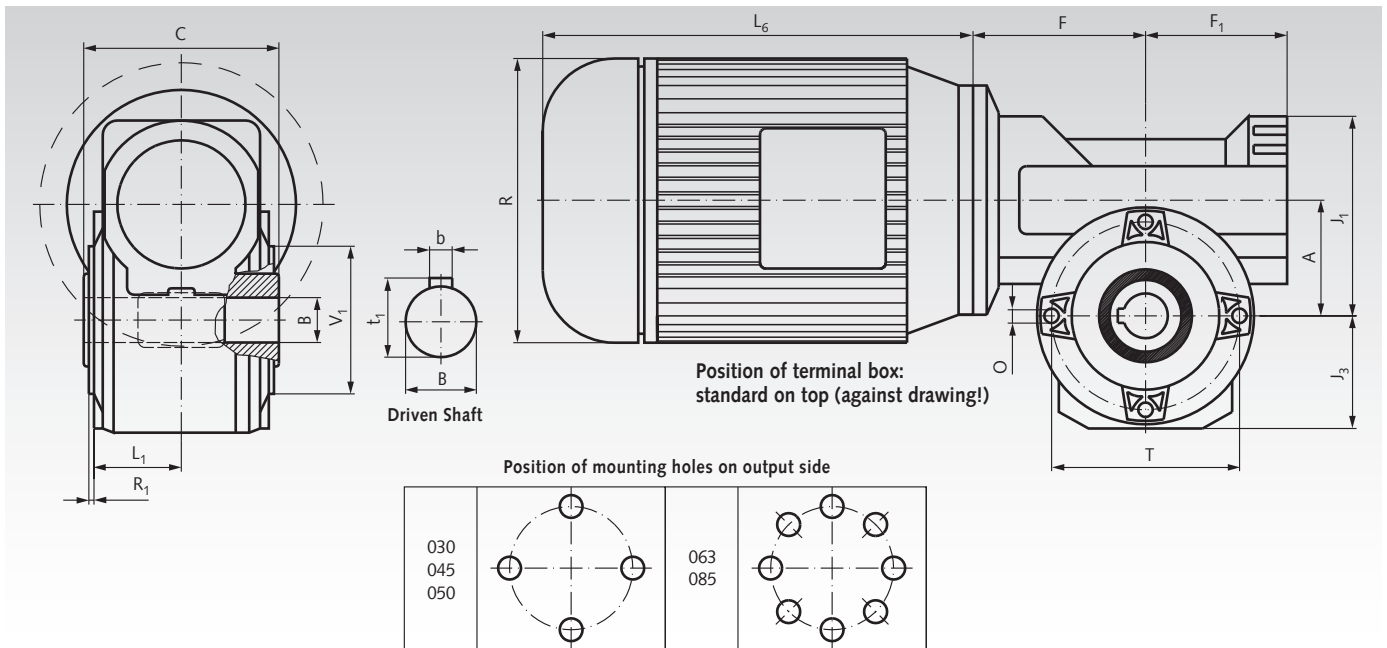
Lubricant Volume in Litre (dm^3)

The gearbox is lubricated for life, using synthetic oil. At normal operating conditions, no change is required. The lubricant volume is the same for all mounting positions. The mounting positions V5

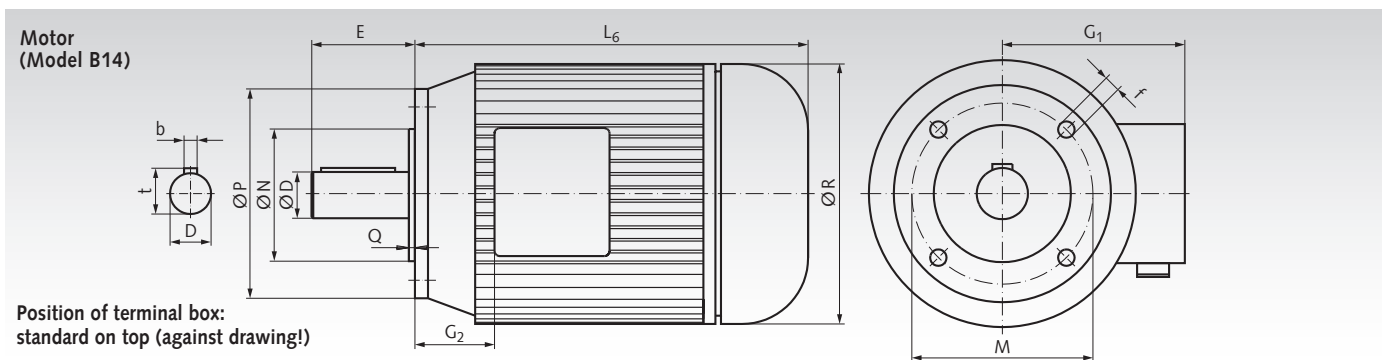
and V6 (worm shaft vertical) are however not recommended for continuous operation.

Size	030	045	050	063	085
Oil volume	0.03	0.09	0.14	0.40	1.20

Dimensions Table Worm Geared Motors HMD/I



Gearbox Size	A mm	BH7 mm	b mm	t_1 mm	C mm	F_{max} mm	F_1 mm	J_1 mm	J_3 mm	L_1 mm	O Amount/Size	R_1 mm	T mm	V_1^{h8} mm	Weight kg
030	30	14	5	16,3	55	62,5	40	52	39	30	4/M6x10	2	65	50	1,0
045	45	18	6	20,8	65	74	55	72	49	35	4/M6x14	2	65	50	2,4
050	50	25	8	28,3	81	78,5	65	81	54,4	38	4/M6x9	3	94	68	3,0
063	63	25	8	28,3	120	99,5	79	100	70	45	8/M8x17	5	90	75	6,0
085	85	35	10	38,3	135	119	100	138	94,5	64	8/M10x18	3,5	130	110	11,0



Motor Size	D mm	b mm	t mm	E mm	f mm	G_1 mm	G_2 mm	L_6 mm	M mm	N mm	P mm	Q mm	R mm	Weight kg
56B	9	3	10,2	20	M5	112	13	179	65	50	80	2,5	108	2,9
63A	11	4	12,5	23	M5	113	19	185	75	60	90	2,5	120	3,8
63B	11	4	12,5	23	M5	113	19	185	75	60	90	2,5	120	4,2
71A	14	5	16	30	M6	125	24	206	85	70	105	2,5	130	5,9
71B	14	5	16	30	M6	125	24	225	85	70	105	2,5	141	6,5
80A	19	6	21,5	40	M6	133	23	256	100	80	120	3	159	8,5
80B	19	6	21,5	40	M6	133	23	256	100	80	120	3	159	10,8
90S	24	8	27	50	M8	148	28	255	115	95	140	3	170	13,0
90L	24	8	27	50	M8	148	28	280	115	95	140	3	170	15,4

Note for Dimensioning

Three-phase motors have a very high starting torque. The max. permissible, stability related torque of the gearbox is the product of output torque and operating factor: $T_{max.} = T_2 \times f_B$

This torque must never be exceeded.

Furthermore, depending on kind of operation, factors for shock load and acceleration must be considered.

Optionally also available with additional manual adjustment mechanism (on request).

