

Gear motors

On the following pages, you can find a selection of our standard programme for gearboxes.

A detailed overview of planetary, worm and spur gearboxes is provided by the gear reduction tables and the general gearbox data.

Please contact us for individual, custom-made adaptation possibilities.





Gear motors

Motors with planetary gearbox	Page 200
Motors with worm gearbox	Page 222
Motors with spur gearbox	Page 230

Planetary gearboxes

- Motor M28/I with planetary gear P32I
- Motor M28/I with planetary gear PKS30
- Motor M36/I with planetary gear P32I
- Motor M42/I with planetary gear P32I
- Motor M42/I with planetary gear P42I
- Motor M42/I with planetary gear P52I
- Motor M42/I with planetary gear PK42I
- Motor M42/I with planetary gear PK52I
- Motor M48/I with planetary gear P42I
- Motor M48/I with planetary gear P52I
- Motor M48/I with planetary gear PK42I
- Motor M48/I with planetary gear PK52I
- Motor M63/I with planetary gear P52I
- Motor M63/I with planetary gear P62I
- Motor M63/I with planetary gear PK52I
- Motor M80/I with planetary gear P62I
- Motor M80/I with planetary gear P81I

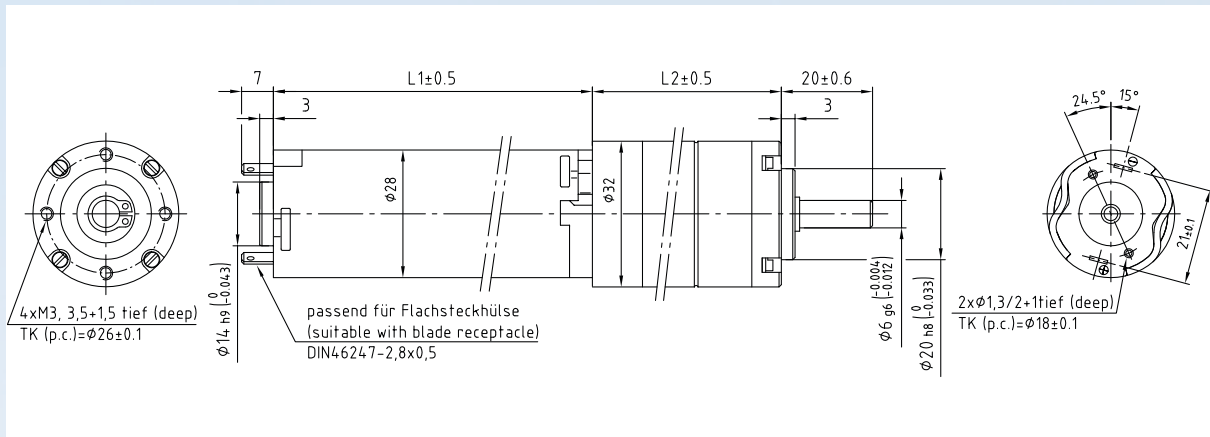
- Motor ECM63/I with planetary gear P52I
- Motor ECM63/I with planetary gear P62I
- Motor ECM75/I with planetary gear P62I
- Motor ECM75/I with planetary gear P81I



	mit Motor						max. Dauerdrehmoment [Ncm]	Untersetzung [x:1]
	M28	M36	M42	M48	M63	M80		
PKS30	•						200	25-308
P32I	•	•	•				450	4-308
PK42I			•	•			400	4-308
P42I			•	•			1500	4-308
PK52I			•	•	•		1000	4-308
P52I			•	•	•		2500	4-308
P62I					•	•	5000	4-308
P81I						•	12000	4-308

Motor M28 with planetary gear P32I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of die-cast-zinc



Application on request

Gear reduction table M28xXX/S+ P32I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque	
				M28x20/I L1 = 50mm	M28x40/I L1 = 70mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]
4	1	80	750	5	10
7	1	80	429	9	17
14	2	75	214	17	32
25	2	75	120	30	56
46	2	75	65	55	104
93	3	70	32	104	195
169	3	70	18	189	355
308	3	70	10	345	*) 450

*) Motor have to be operated with current limitation

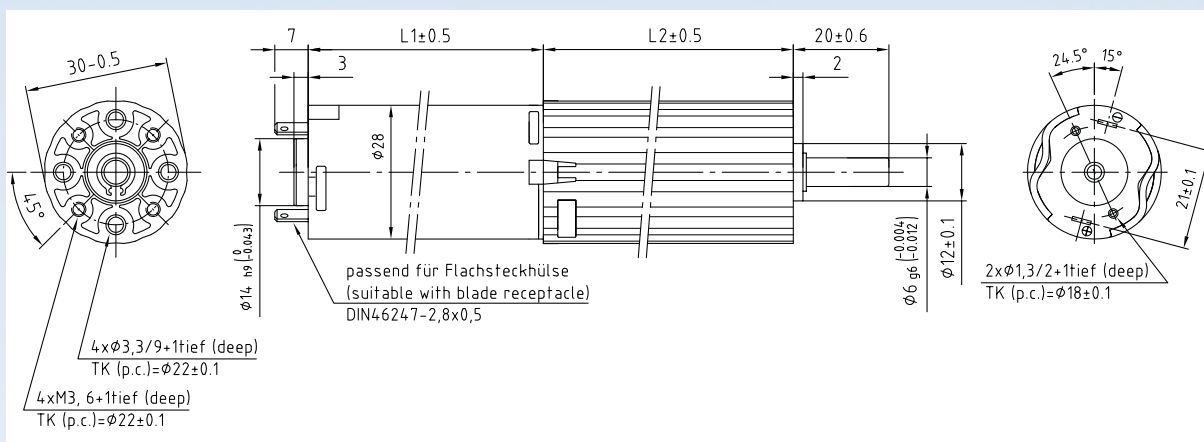
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	75	225	450
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	10	20	30
Permissible radial shaft load	[N]	40	70	100
Backlash unloaded	[°]	1.5	1.55	1.6
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	32,3	41,8	51,3

Stand: 22. Januar 2015 – changes reserved

Motor M28/S with planetary gear PKS30

- Steel output shaft, Grease lubrication for life, Output shaft in sleeve bearing, plastic housing and gears



Application on request

Gear reduction table M28xXX/S+ PKS30

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque	
				M28x20/S L1 = 50mm	M28x40/S L1 = 70mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]
25	2	70	120	28	52
46	2	70	65	52	97
93	3	65	32	97	181
169	3	65	18	176	*) 200
308	3	65	10	*) 200	*) 200

*) Motor have to be operated with current limitation

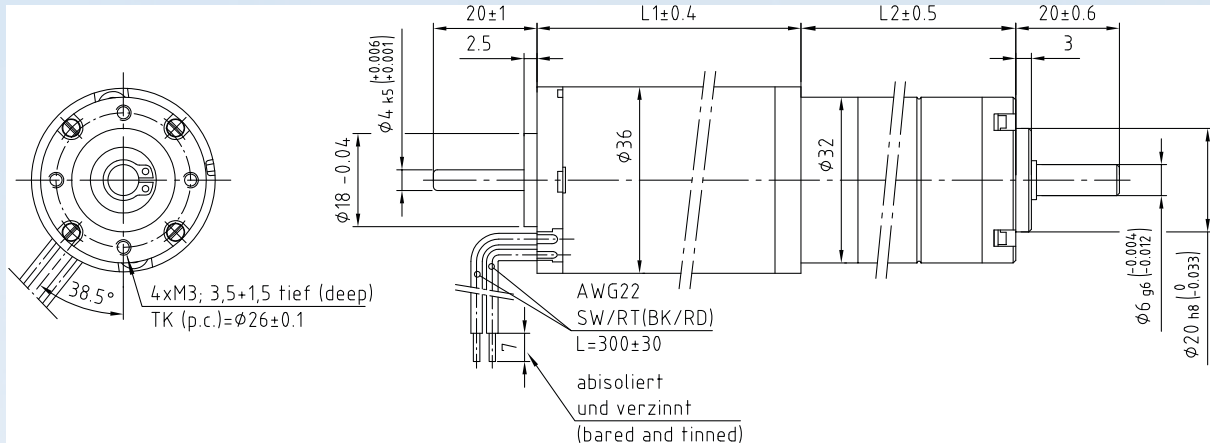
General gear data

Number of gear stages	[x]	-	2	3
Maximum torque	[Ncm]	-	100	200
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	-	< 15	< 15
Permissible radial shaft load	[N]	-	< 45	< 45
Backlash unloaded	[°]	-	2.5	2.5
Temperature range	[°C]	-15 ... 65		
Gear length L2	[mm]	-	42,8	52,3

Stand: 22. Januar 2015 – changes reserved

Motor M36/I with planetary gear P32I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of die-cast-zinc



Application on request

Gear reduction table M36xXX/I+ P32I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				M36x13/I L1 = 51mm	M36x20/I L1 = 60mm	M36x30/I L1 = 70mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	5	10	13
7	1	80	429	8	17	22
14	2	75	214	16	32	42
25	2	75	120	28	56	75
46	2	75	65	52	104	138
93	3	70	32	98	195	260
169	3	70	18	177	355	*) 450
308	3	70	10	323	*) 450	*) 450

*) Motor have to be operated with current limitation

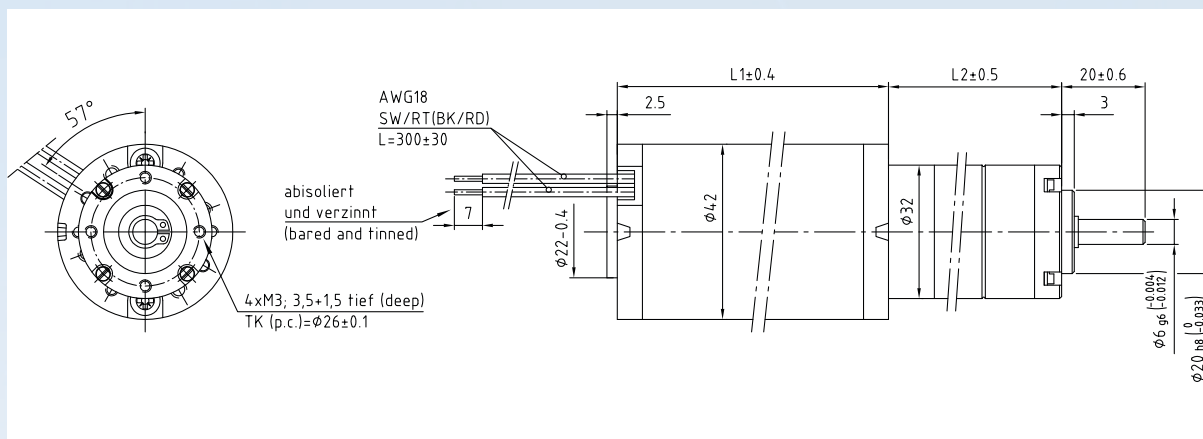
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	75	225	450
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	10	20	30
Permissible radial shaft load	[N]	40	70	100
Backlash unloaded	[°]	1.5	1.55	1.6
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	21,3	30,8	40,3

Stand: 22. Januar 2015 – changes reserved

Motor M42/I with planetary gear P32I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of die-cast-zinc



Application on request

Gear reduction table M42xXX/I+ P32I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque			
				M42x15/I L1 = 73mm	M42x20/I L1 = 78mm	M42x30/I L1 = 88mm	M42x40/I L1 = 98mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	13	16	21	32
7	1	80	429	22	28	36	56
14	2	75	214	42	53	68	105
25	2	75	120	75	94	122	188
46	2	75	65	138	173	224	*) 225
93	3	70	32	260	326	423	*) 450
169	3	70	18	*) 450	*) 450	*) 450	*) 450
308	3	70	10	*) 450	*) 450	*) 450	*) 450

*) Motor have to be operated with current limitation

General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	75	225	450
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	10	20	30
Permissible radial shaft load	[N]	40	70	100
Backlash unloaded	[°]	1.5	1.55	1.6
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	21.3	30.8	40.3

Stand: 22. Januar 2015 – changes reserved

-
- Front View Dimensions:**
- Top chamfer: 45°
 - Inner hole chamfers: 57°, 30°, 30°
 - Holes: 4xM4, 10+2 tief (deep) TK (p.c.)=Ø36±0.1; 4xM3, 7+2 tief (deep) TK (p.c.)=Ø32±0.1
 - Surface treatment: abisoliert und verzinkt (bared and tinned)
- Side View Dimensions:**
- AWG18 SW/RT(BK/RD) L=300±30
 - Shaft diameter: Ø42
 - Keyway depth: 22-0.04
 - Key: Passfeder (fit-in key) A3x3x16; DIN 6885
 - Center bore: Zentrierbohrung (center hole) DIN332 - D M3
 - End face chamfer: 2.8, 2, 3
 - End face hole: Ø6 h9/k9
 - End face hole depth: 25±0.6
 - End face hole diameter: Ø25 h9/k9 ±0.052

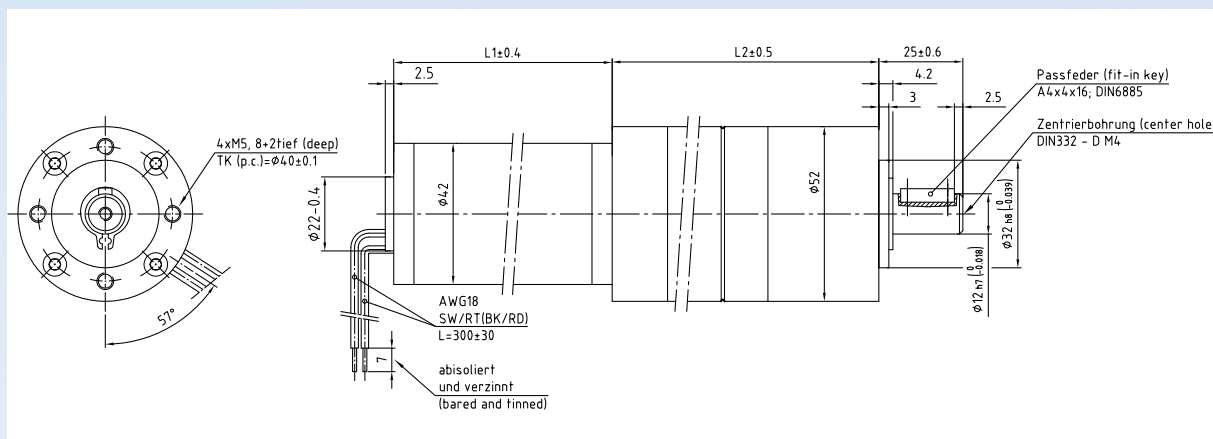
Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque			
				M42x15/I L1 = 70mm	M42x20/I L1 = 75mm	M42x30/I L1 = 85mm	M42x40/I L1 = 95mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	13	16	21	29
7	1	80	429	22	28	36	50
14	2	75	214	42	53	68	95
25	2	75	120	75	94	122	169
46	2	75	65	138	173	224	310
93	3	70	32	260	326	423	586
169	3	70	18	473	592	769	1065
308	3	70	10	862	1078	1401	*) 1500

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	300	750	1500
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	50	80	110
Permissible radial shaft load	[N]	160	230	300
Backlash unloaded	[°]	0,9	0,95	1
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	41,2	54,3	67,4

209

Motor M42/I with planetary gear P52I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium
- Gear length can be shortened by direct mounting of certain ratios



Application on request

Gear reduction table M42xXX/I+ P52I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque			
				M42x15/I L1 = 70mm	M42x20/I L1 = 75mm	M42x30/I L1 = 85mm	M42x40/I L1 = 95mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	13	16	21	29
7	1	80	429	22	28	36	50
14	2	75	214	42	53	68	95
25	2	75	120	75	94	122	169
46	2	75	65	138	173	224	310
93	3	70	32	260	326	423	586
169	3	70	18	473	592	769	1065
308	3	70	10	862	1078	1401	1940

*) Motor have to be operated with current limitation

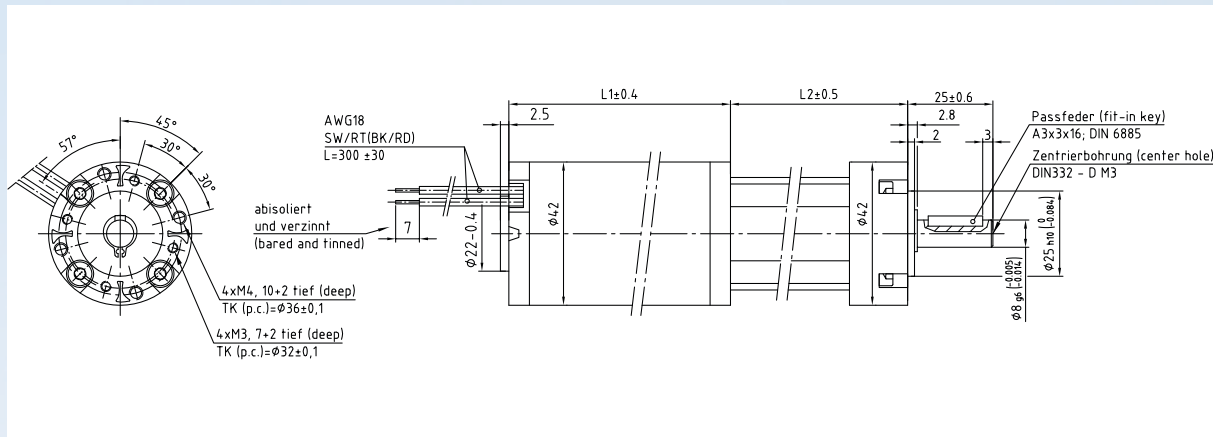
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	400	1200	2500
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	60	100	150
Permissible radial shaft load	[N]	200	320	450
Backlash unloaded	[°]	0.7	0.75	0.8
Temperature range	[°C]	-30 ... 80		
Gear length L2	[mm]	72.3	86.4	100.5

Stand: 22. Januar 2015 – changes reserved

Motor M42/I with planetary gear PK42I

- good price gear alternative off plastic with sintered bearing
- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium



Application on request

Gear reduction table M42xXX/I+ PK42I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque			
				M42x15/I L1 = 73mm	M42x20/I L1 = 78mm	M42x30/I L1 = 88mm	M42x40/I L1 = 98mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	13	16	21	29
7	1	80	429	22	28	36	50
14	2	75	214	42	53	68	95
25	2	75	120	75	94	122	169
46	2	75	65	138	173	*) 200	*) 200
93	3	70	32	260	326	*) 400	*) 400
169	3	70	18	*) 400	*) 400	*) 400	*) 400
308	3	70	10	*) 400	*) 400	*) 400	*) 400

*) Motor have to be operated with current limitation

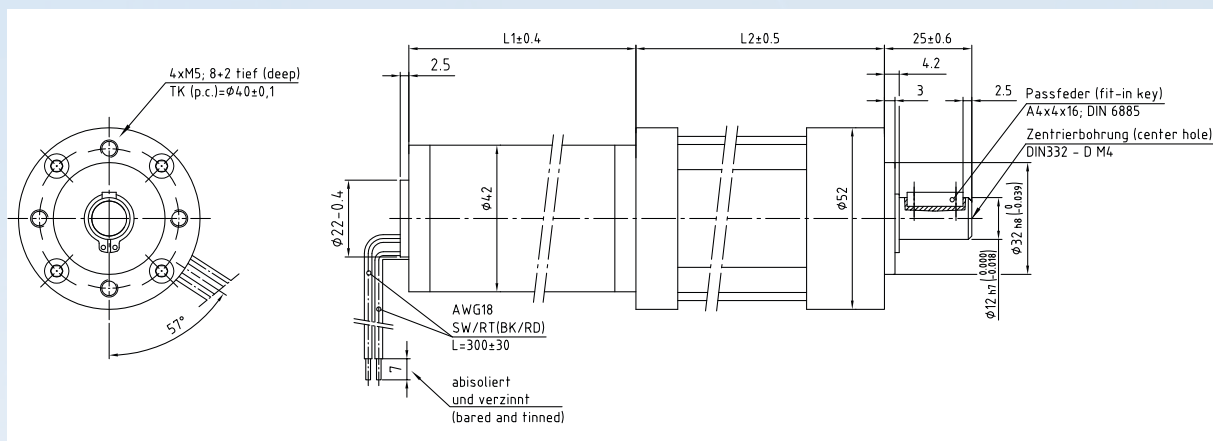
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	80	200	400
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	5	10	30
Permissible radial shaft load	[N]	15	30	45
Backlash unloaded	[°]	1.7	1.75	1.8
Temperature range	[°C]	-15 ... 65		
Gear length L2	[mm]	40	54	67.1

Stand: 22. Januar 2015 – changes reserved

Motor M42/I with planetary gear PK52I

- good price gear alternative off plastic with ball bearings
- Steel gears and output shaft, grease lubrication for life, output shaft in 2 ball bearings, plastic housing, end-plates made of aluminium
- Gear length can be shortened by direct mounting of certain ratios



Application on request

Gear reduction table M42xXX/I+ PK52I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque			
				M42x15/I L1 = 70mm	M42x20/I L1 = 75mm	M42x30/I L1 = 85mm	M42x40/I L1 = 95mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]	[Ncm]
4	1	75	750	12	15	20	27
7	1	75	429	21	26	34	47
14	2	70	214	39	49	64	88
25	2	70	120	70	88	114	158
46	2	70	65	120	161	209	290
93	3	65	32	242	302	393	544
169	3	65	18	440	549	714	989
308	3	65	10	801	*) 1000	*) 1000	*) 1000

*) Motor have to be operated with current limitation

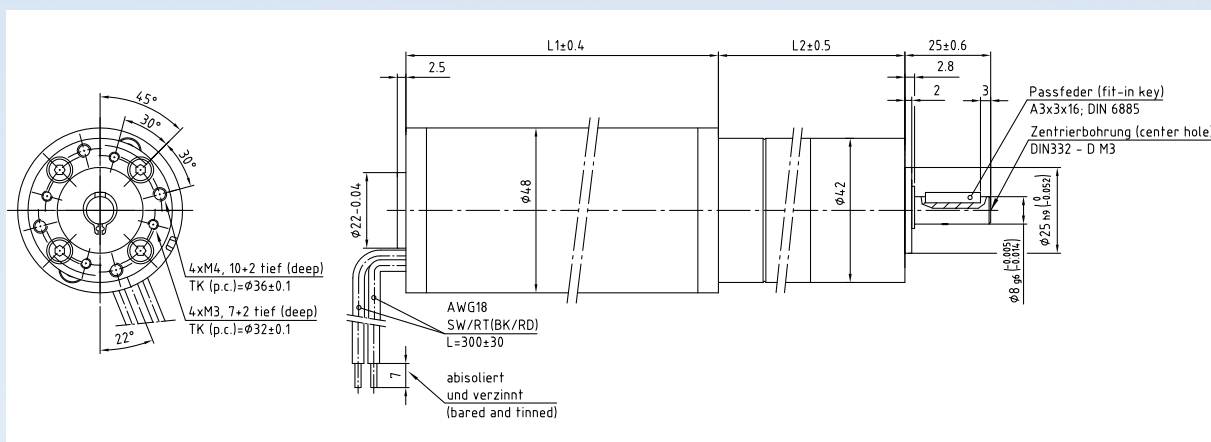
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	200	500	1000
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	60	100	150
Permissible radial shaft load	[N]	200	320	450
Backlash unloaded	[°]	1,1	1,15	1,2
Temperature range	[°C]	-15 ... 65		
Gear length L2	[mm]	72	86,1	100,2

Stand: 22. Januar 2015 – changes reserved

Motor M48/I with planetary gear P42I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium



Application on request

Gear reduction table M48xXX/I+ P42I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				M48x25/I L1 = 91mm	M48x50/I L1 = 116mm	M48x60/I L1 = 126mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	16	32	48
7	1	80	429	28	56	84
14	2	75	214	53	105	158
25	2	75	120	94	188	281
46	2	75	65	173	345	518
93	3	70	32	326	651	977
169	3	70	18	592	1183	*) 1500
308	3	70	10	1078	*) 1500	*) 1500

*) Motor have to be operated with current limitation

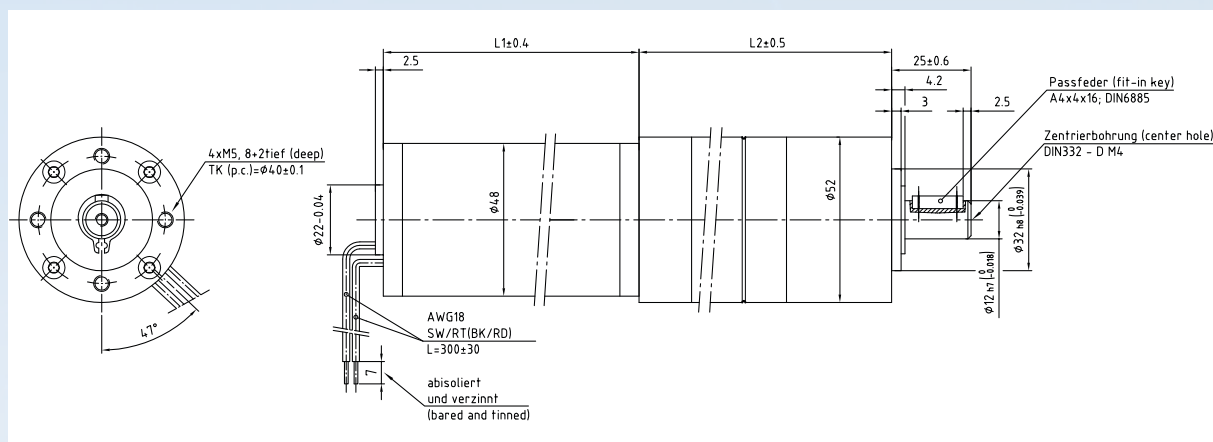
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	300	750	1500
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	50	80	110
Permissible radial shaft load	[N]	160	230	300
Backlash unloaded	[°]	0.9	0.95	1
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	41	54,1	67,2

Stand: 22. Januar 2015 – changes reserved

Motor M48/I with planetary gear P52I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium



Application on request

Gear reduction table M48xXX/I+ P52I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				M48x25/I L1 = 85mm	M48x50/I L1 = 110mm	M48x60/I L1 = 120mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	16	32	48
7	1	80	429	28	56	84
14	2	75	214	53	105	158
25	2	75	120	94	188	281
46	2	75	65	173	345	518
93	3	70	32	326	651	977
169	3	70	18	592	1183	1775
308	3	70	10	1078	2156	*)2500

*) Motor have to be operated with current limitation

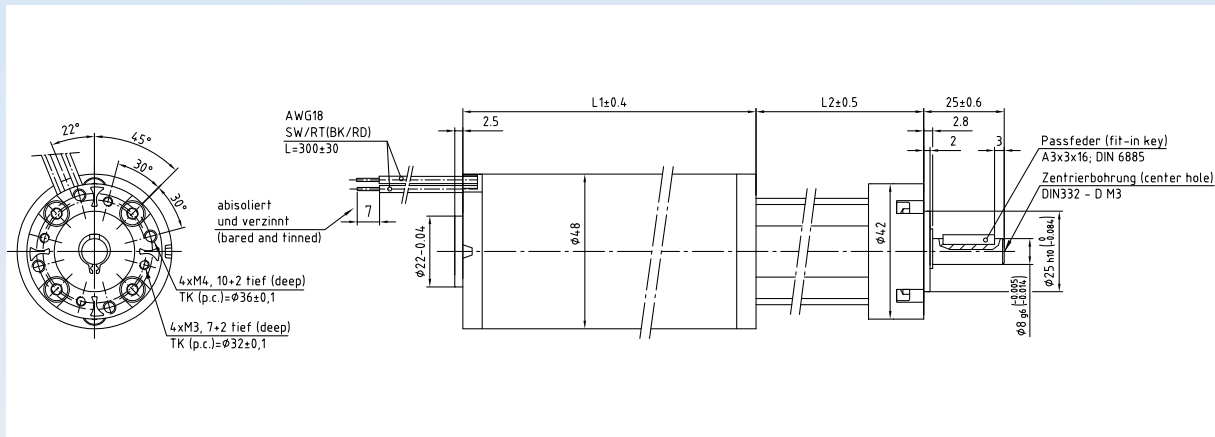
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	400	1200	2500
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	60	100	150
Permissible radial shaft load	[N]	200	320	450
Backlash unloaded	[°]	0,7	0,75	0,8
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	58	72	86

Stand: 22. Januar 2015 – changes reserved

Motor M48/I with planetary gear PK42I

- good price gear alternative off plastic with sintered bearing
- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium



Application on request

Gear reduction table M48xXX/I+ PK42I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				M48x25/I L1 = 91mm	M48x50/I L1 = 116mm	M48x60/I L1 = 126mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	16	32	48
7	1	80	429	28	56	84
14	2	75	214	53	105	158
25	2	75	120	94	188	*) 200
46	2	75	65	173	*) 200	*) 200
93	3	70	32	326	*) 400	*) 400
169	3	70	18	*) 400	*) 400	*) 400
308	3	70	10	*) 400	*) 400	*) 400

*) Motor have to be operated with current limitation

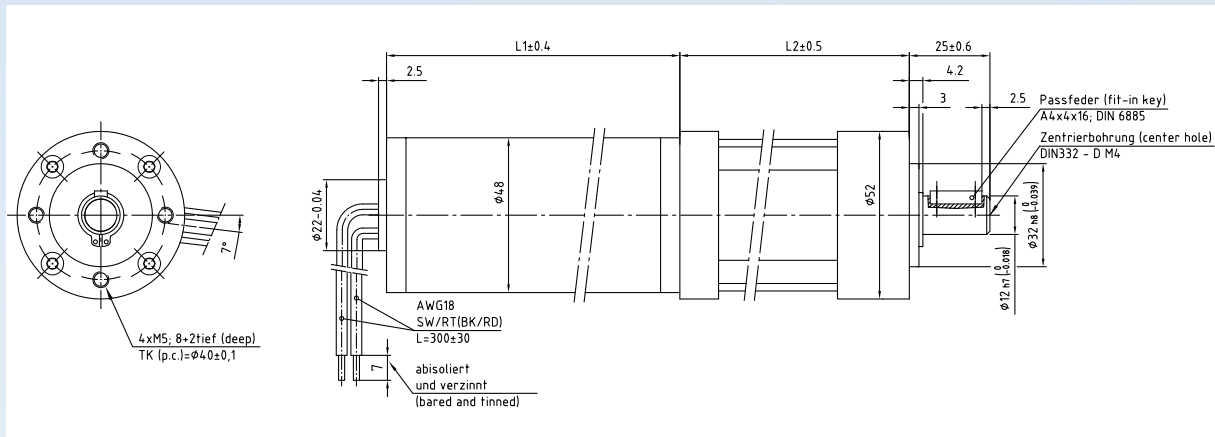
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	80	200	400
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	5	10	30
Permissible radial shaft load	[N]	15	30	45
Backlash unloaded	[°]	1.7	1.75	1.8
Temperature range	[°C]	-15 ... 65		
Gear length L2	[mm]	40.7	53.8	66.9

Stand: 22. Januar 2015 – changes reserved

Motor M48/I with planetary gear PK52I

- good price gear alternative off plastic with ball bearings
- Steel gears and output shaft, grease lubrication for life, output shaft in 2 ball bearings, plastic housing, end-plates made of aluminium



Application on request

Gear reduction table M48xXX/I+ PK52I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				M48x25/I L1 = 85mm	M48x50/I L1 = 110mm	M48x60/I L1 = 120mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	75	750	15	30	45
7	1	75	429	26	53	79
14	2	70	214	49	98	147
25	2	70	120	88	175	263
46	2	70	65	161	322	483
93	3	65	32	302	605	907
169	3	65	18	549	*) 1000	*) 1000
308	3	65	10	*) 1000	*) 1000	*) 1000

*) Motor have to be operated with current limitation

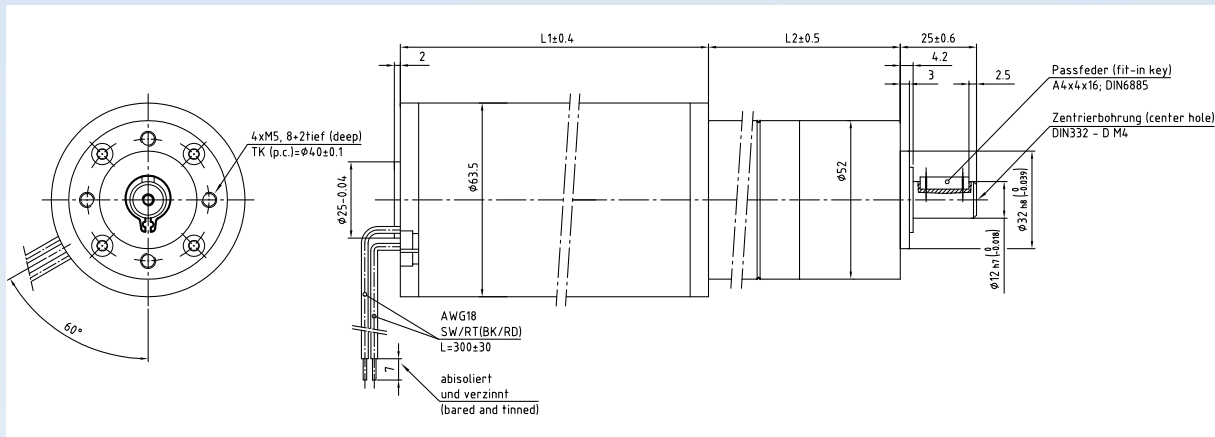
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	200	500	1000
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	60	100	150
Permissible radial shaft load	[N]	200	320	450
Backlash unloaded	[°]	1.1	1.15	1.2
Temperature range	[°C]	-15 ... 65		
Gear length L2	[mm]	57.7	71.7	85.7

Stand: 22. Januar 2015 – changes reserved

Motor M63/I with planetary gear P52I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium



Application on request

Gear reduction table M63xXX/I+ P52I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				M63x25/I L1 = 99mm	M63x40/I L1 = 114mm	M63x60/I L1 = 134mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	45	58	96
7	1	80	429	78	101	168
14	2	75	214	147	189	315
25	2	75	120	263	338	563
46	2	75	65	483	621	1035
93	3	70	32	911	1172	1953
169	3	70	18	1656	2129	*)2500
308	3	70	10	*)2500	*)2500	*)2500

*) Motor have to be operated with current limitation

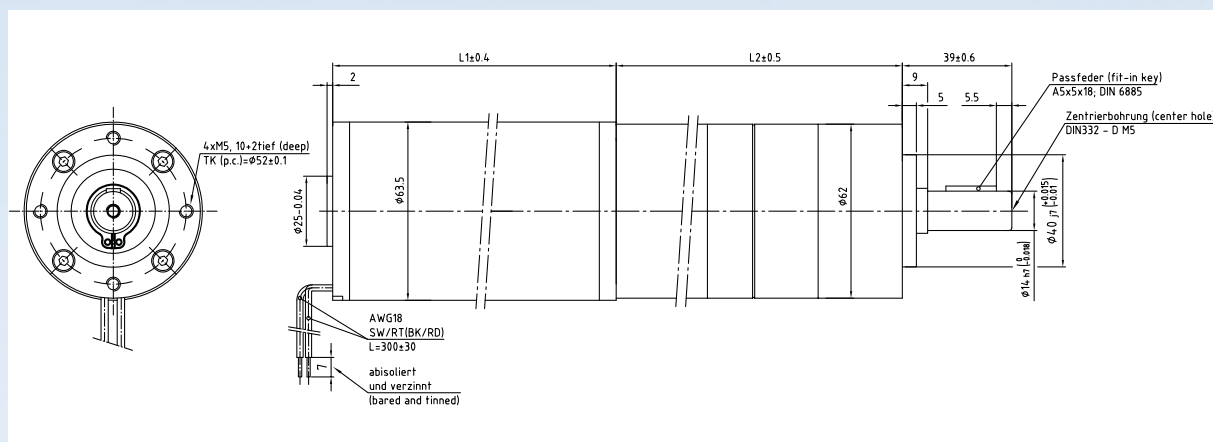
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	400	1200	2500
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	60	100	150
Permissible radial shaft load	[N]	200	320	450
Backlash unloaded	[°]	0.7	0.75	0.8
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	48	62	76

Stand: 22. Januar 2015 – changes reserved

Motor M63/I with planetary gear P62I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium
- Gear length can be shortened by direct mounting of certain ratios



Application on request

Gear reduction table M63xXX/I+ P62I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				M63x25/I L1 = 95mm	M63x40/I L1 = 110mm	M63x60/I L1 = 130mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	45	58	96
7	1	80	429	78	101	168
14	2	75	214	147	189	315
25	2	75	120	263	338	563
46	2	75	65	483	621	1035
93	3	70	32	911	1172	1953
169	3	70	18	1656	2129	3549
308	3	70	10	3018	3881	*) 5000

*) Motor have to be operated with current limitation

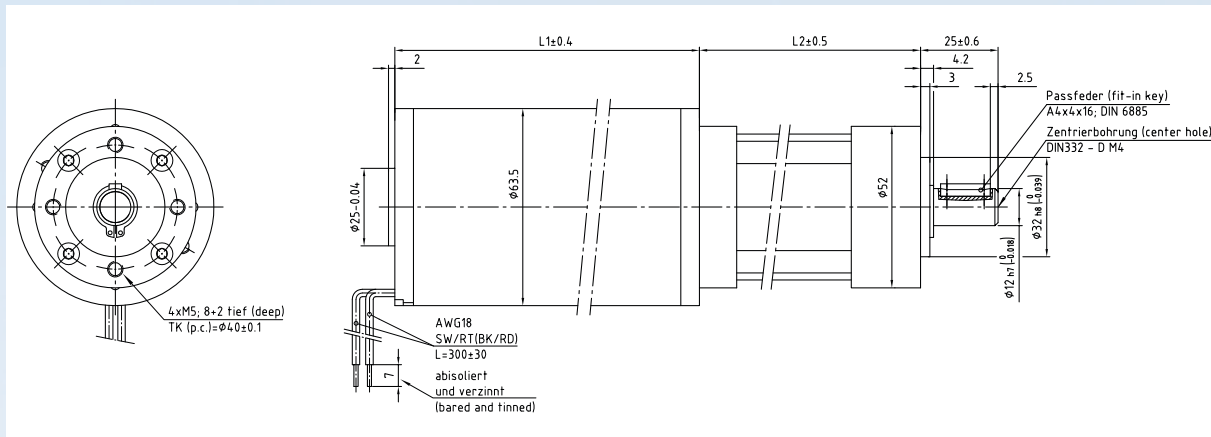
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	800	2500	5000
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	70	100	150
Permissible radial shaft load	[N]	240	360	520
Backlash unloaded	[°]	0,65	0,7	0,75
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	75,7	92,6	109,5

Stand: 22. Januar 2015 – changes reserved

Motor M63/I with planetary gear PK52I

- good price gear alternative off plastic with ball bearings
- Steel gears and output shaft, grease lubrication for life, output shaft in 2 ball bearings, plastic housing, end-plates made of aluminium



Application on request

Gear reduction table M63xXX/I+ PK52I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				M63x25/I L1 = 99mm	M63x40/I L1 = 114mm	M63x60/I L1 = 134mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	42	54	90
7	1	80	429	74	95	158
14	2	75	214	137	176	294
25	2	75	120	245	315	*) 500
46	2	75	65	483	*) 500	*) 500
93	3	70	32	911	*) 1000	*) 1000
169	3	70	18	*) 1000	*) 1000	*) 1000
308	3	70	10	*) 1000	*) 1000	*) 1000

*) Motor have to be operated with current limitation

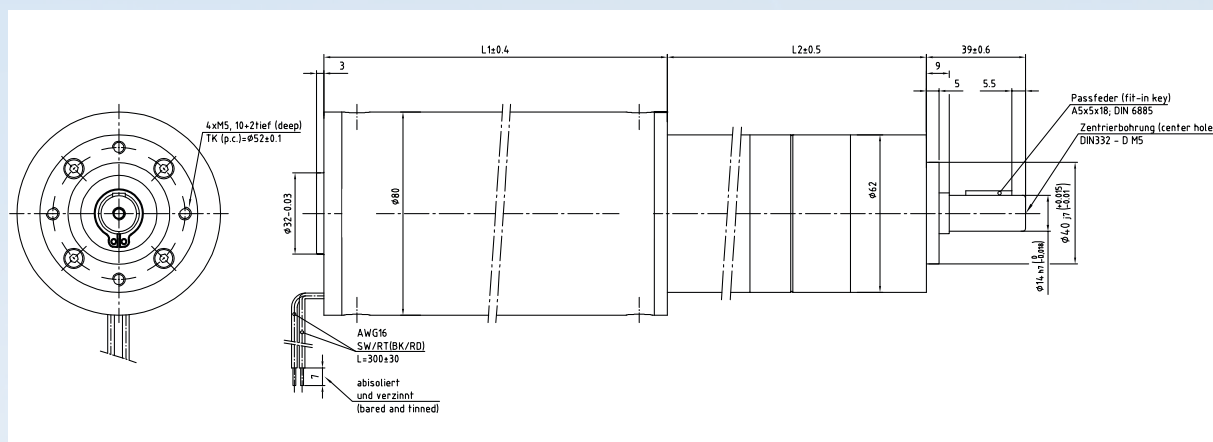
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	200	500	1000
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	60	100	150
Permissible radial shaft load	[N]	200	320	450
Backlash unloaded	[°]	1.1	1.15	1.2
Temperature range	[°C]	-15 ... 65		
Gear length L2	[mm]	47.7	67.7	75.7

Stand: 22. Januar 2015 – changes reserved

Motor M80/I with planetary gear P62I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium
- Gear length can be shortened by direct mounting of certain ratios



Application on request

Gear reduction table M80xXX/I+ P62I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque	
				M80x40/I L1 = 132mm	M80x80/I L1 = 172mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]
4	1	80	750	122	224
7	1	80	429	213	392
14	2	75	214	399	735
25	2	75	120	713	1313
46	2	75	65	1311	2415
93	3	70	32	2474	4557
169	3	70	18	4495	*) 5000
308	3	70	10	*) 5000	*) 5000

*) Motor have to be operated with current limitation

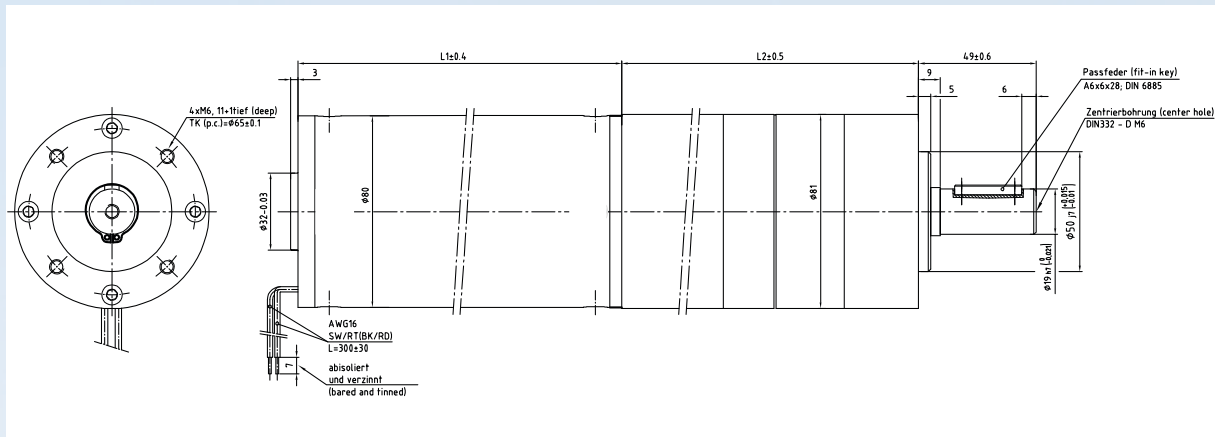
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	800	2500	5000
Recommended input speed	[1/min]	< 3001		
Permissible axial shaft load	[N]	70	100	150
Permissible radial shaft load	[N]	240	360	520
Backlash unloaded	[°]	0.65	0.7	0.75
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	8	97,9	114,8

Stand: 22. Januar 2015 – changes reserved

Motor M80/I with planetary gear P81I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium
- Gear length can be shortened by direct mounting of certain ratios



Application on request

Gear reduction table M80xXX/I+ P81I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque	
				M80x40/I L1 = 132mm	M80x80/I L1 = 172mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]
4	1	80	750	122	224
7	1	80	429	213	392
14	2	75	214	399	735
25	2	75	120	712	1312
46	2	75	65	1311	2415
93	3	70	32	2473	4557
169	3	70	18	4495	*) 5000
308	3	70	10	*) 5000	*) 5000

*) Motor have to be operated with current limitation

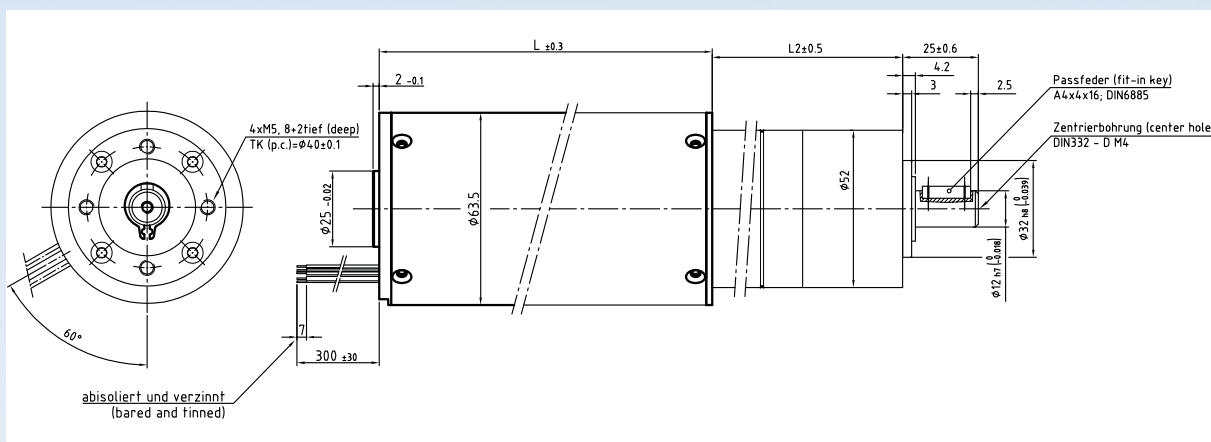
General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	2000	6000	12000
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	80	120	200
Permissible radial shaft load	[N]	400	600	1000
Backlash unloaded	[°]	0.5	0.55	0.6
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	101	123,4	145,8

Stand: 22. Januar 2015 – changes reserved

Motor ECM63/I with planetary gear P52I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium



Application on request

Gear reduction table ECM63xXX/I+ P52I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				ECM63x20/I L1 = 94mm	ECM63x40/I L1 = 114mm	ECM63x60/I L1 = 134mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	38	96	128
7	1	80	429	67	168	224
14	2	75	214	126	315	420
25	2	75	120	225	563	750
46	2	75	65	414	1035	1380
93	3	70	32	781	1953	*)2500
169	3	70	18	1419	*)2500	*)2500
308	3	70	10	*)2500	*)2500	*)2500

*) Motor have to be operated with current limitation

General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	400	1200	2500
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	60	100	150
Permissible radial shaft load	[N]	200	320	450
Backlash unloaded	[°]	0.7	0.75	0.8
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	48	62	76

Stand: 22. Januar 2015 – changes reserved

-
- 4xM5, 10x2tief (deep)
TK (p.c.)=ø52±0.1
- ø25±0.04
- 46.5
- 46.2
- L1=0.4
- L2=0.5
- 39±0.6
- 2
- 9
- 5
- 5.5
- 1
- 1.5
- 0.8
- 0.015
- 0.01
- 40.0
- 1.5
- 0.8
- 0.01
- Passfeder (fit-in key)
A5x5x18, DIN 6885
- Zentrierbohrung (center hole)
DIN332 - D M5
- AWG18
SW/RT(BK/RO)
L=300±30
- abisoliert und verzinkt
(bared and tinned)

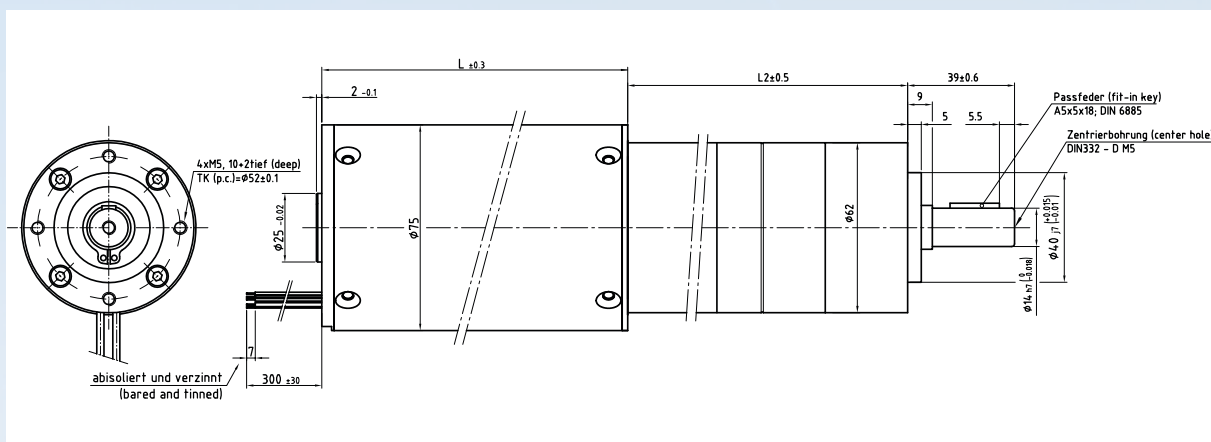
Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				ECM63x20/I L1 = 90mm	ECM63x40/I L1 = 110mm	ECM63x60/I L1 = 130mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	38	96	128
7	1	80	429	67	168	224
14	2	75	214	126	315	420
25	2	75	120	225	563	750
46	2	75	65	414	1035	1380
93	3	70	32	781	1953	2604
169	3	70	18	1419	3549	4732
308	3	70	10	2587	*)5000	*)5000

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	800	2500	5000
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	70	100	150
Permissible radial shaft load	[N]	240	360	520
Backlash unloaded	[°]	0.65	0,7	0.75
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	75.7	92,6	109,5

223

Motor ECM75/I with planetary gear P62I

- Steel gears, output shaft and housing, Grease lubrication for life, Output shaft in 2 ball bearings, end-plates made of aluminium
- Gear length can be shortened by direct mounting of certain ratios



Application on request

Gear reduction table ECM75xXX/I+ P62I

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				ECM75x20/I L1 = 101,5mm	ECM75x40/I L1 = 121,5mm	ECM75x60/I L1 = 141,5mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	64	128	224
7	1	80	429	112	224	392
14	2	75	214	210	420	735
25	2	75	120	375	750	1312
46	2	75	65	690	1380	2415
93	3	70	32	1302	2604	4557
169	3	70	18	2366	4732	*) 5000
308	3	70	10	4312	*) 5000	*) 5000

*) Motor have to be operated with current limitation

General gear data

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	800	2500	5000
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	70	100	150
Permissible radial shaft load	[N]	240	360	520
Backlash unloaded	[°]	0,65	0,7	0,75
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	81	97,9	114,8

Stand: 22. Januar 2015 – changes reserved

- [illegible]

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				ECM75x20/I L1 = 101,5mm	ECM75x40/I L1 = 121,5mm	ECM75x60/I L1 = 141,5mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
4	1	80	750	64	128	224
7	1	80	429	112	224	392
14	2	75	214	210	420	735
25	2	75	120	375	750	1312
46	2	75	65	690	1380	2415
93	3	70	32	1302	2604	4557
169	3	70	18	2366	4732	8281
308	3	70	10	4312	8624	*)12000

Number of gear stages	[x]	1	2	3
Maximum torque	[Ncm]	2000	6000	12000
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	80	120	200
Permissible radial shaft load	[N]	400	600	1000
Backlash unloaded	[°]	0,5	0,55	0,6
Temperature range	[°C]	-30 ... 140		
Gear length L2	[mm]	101	123,4	145,8

225

Worm gearboxes

- Motor M42 with worm gear SN17
- Motor M42 with worm gear SN22,6
- Motor M48 with worm gear SN22,6
- Motor M48 with worm gear SN31
- Motor M63 with worm gear SN31
- Motor M63 with worm gear SN40
- Motor M80 with worm gear SN40



	With motor				Torque [Ncm]	ratio range [x:1]
	M42	M48	M63	M80		
SN17	•				169	7 – 75
SN22,6	•	•			204	3 – 40
SN31		•	•		400	7 – 38
SN40			•	•	1225	10 – 50

-

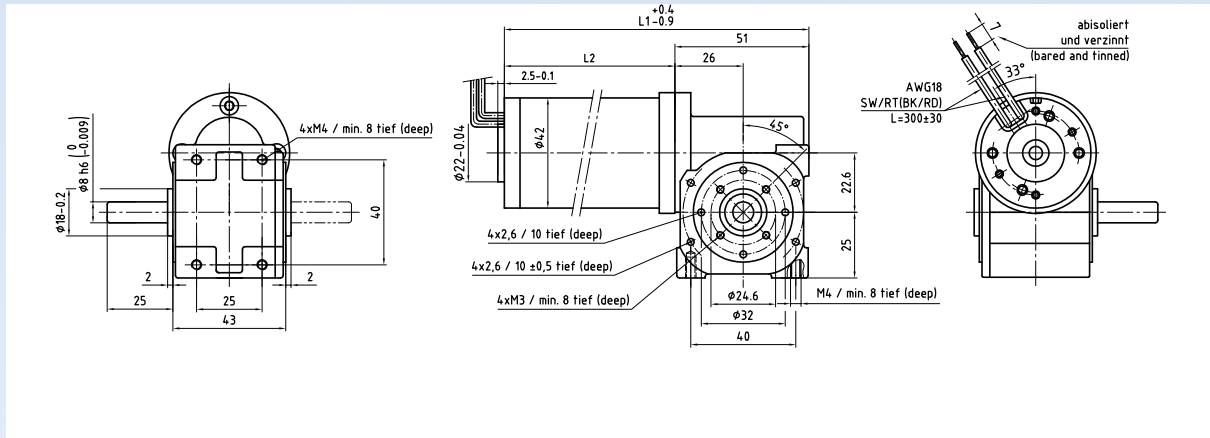
Gear reduction	Efficiency	Speed at motor-speed 3000rpm	Continuous torque			
			42x15/l L2 = 70mm	M42x20/l L2 = 75mm	M42x30/l L2 = 85mm	M42x40/l L2 = 95mm
[i = x:1]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]	[Ncm]
7	75	429	21	26	34	47
10	70	300	28	35	46	63
15	65	200	39	49	63	88
25	50	120	50	62,5	81	113
40	36	75	57,6	72	94	130
50	40	60	80	100	130	180
60	35	50	84	105	137	189
75	25	40	75	94	122	169

Max. Continuous torque	[Ncm]	265
Max. torque (short-term)	[Ncm]	400
Recommended input speed	[1/min]	< 3000
Permissible shaft load	[N] (axial / radial)	60 / 100
Backlash unloaded	[°]	< 0,5
Temperature range	[°C]	-30 to +40

227

Motor M42 with worm gear SN22,6

- Housing: aluminium, bronze worm gear, hardened steel worm (grinded), grease lubrication for life, output shaft in ball bearing, optional second output shaft or output shaft left



Application on request

Gear reduction table M42xXX/I+ SN22,6

Gear reduction	Efficiency	Speed at motor-speed 3000rpm	Continuous torque			
			42x15/I L2 = 70mm	M42x20/I L2 = 75mm	M42x30/I L2 = 85mm	M42x40/I L2 = 95mm
[i = x:1]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]	[Ncm]
3	79	1000	9	12	15	21
4	79	750	13	16	21	28
7	71	429	20	25	32	45
10,5	63	286	26	33	43	60
15	56	200	34	42	55	76
21	46	143	39	48	63	187
30	39	100	47	59	76	105
40	34	75	54	68	88	122

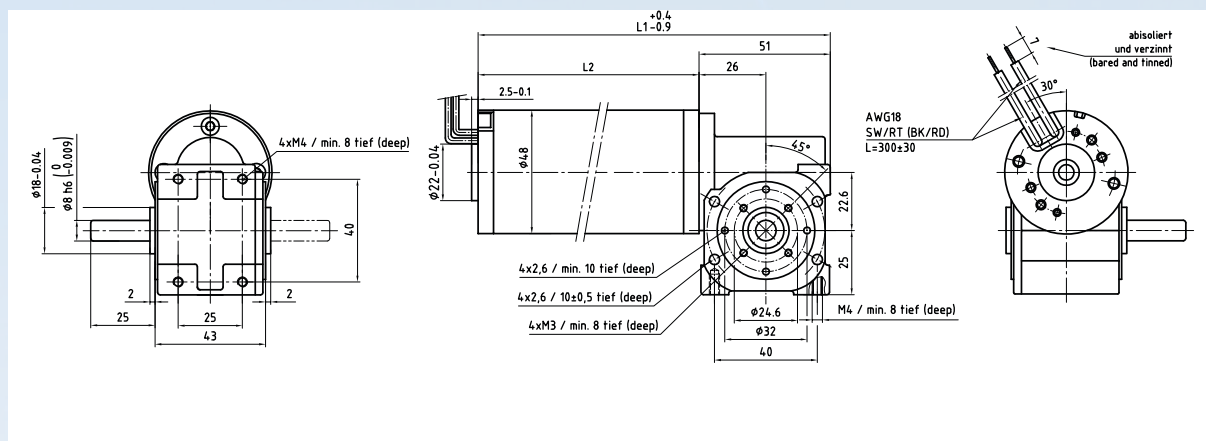
General gear data

Max. Continuous torque	[Ncm]	410
Max. torque (short-term)	[Ncm]	600
Recommended input speed	[1/min]	< 3000
Permissible shaft load	[N] (axial / radial)	40 / 40
Backlash unloaded	[°]	< 3
Temperature range	[°C]	-30 to +80

Stand: 22. Januar 2015 – changes reserved

Motor M48 with worm gear SN22,6

- Housing: die-cast-zinc, plastic worm gear, steel worm, grease lubrication for life, output shaft in ball bearing, standard version shaft on one side (left), optional second output shaft



Application on request

Gear reduction table M48xXX/I+ SN22,6

Gear reduction	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
			M48x25/I L2 = 91mm	M48x50/I L2 = 116mm	M48x60/I L2 = 126mm
[i = x:1]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
3	79	1000	12	24	36
4	79	750	16	32	47
7	71	429	25	50	75
10,5	63	286	33	66	99
15	56	200	42	84	126
21	46	143	48	97	145
30	39	100	59	117	176
40	34	75	68	136	204

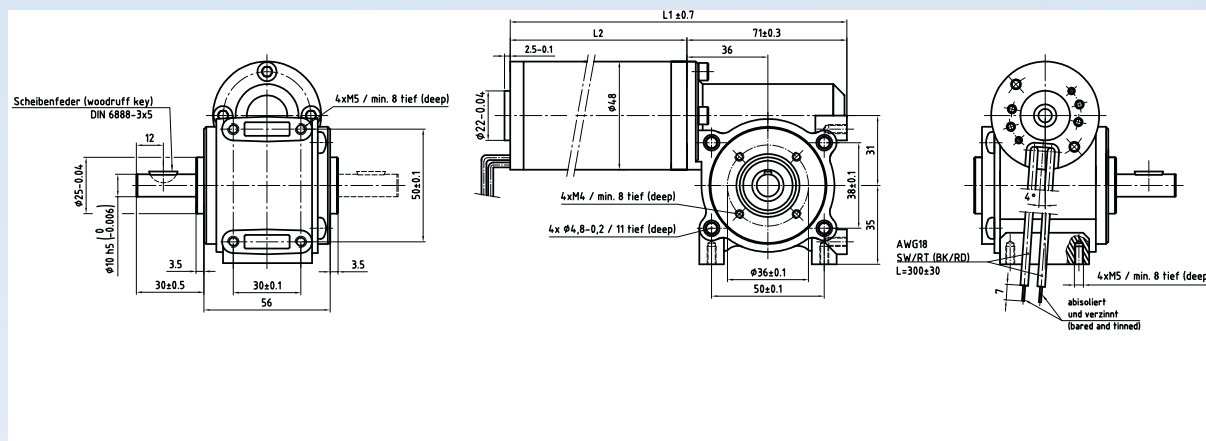
General gear data

Max. Continuous torque	[Ncm]	410
Max. torque (short-term)	[Ncm]	600
Recommended input speed	[1/min]	< 3000
Permissible shaft load	[N] (axial / radial)	40 / 40
Backlash unloaded	[°]	< 3
Temperature range	[°C]	-30 to +80

Stand: 22. Oktober 2014 – changes reserved

Motor M48 with worm gear SN31

- Housing: die-cast-zinc, plastic worm gear, steel worm, grease lubrication for life, output shaft in ball bearing, standard version shaft on one side (left), optional second output shaft



Application on request

Gear reduction table M48xXX/I+ SN31

Gear reduction	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
			M48x25/I L2 = 91mm	M48x50/I L2 = 116mm	M48x60/I L2 = 126mm
[i = x:1]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
10	84	300	42	84	126
15	72	200	54	108	162
38	46	79	87	175	262

General gear data

Max. Continuous torque	[Ncm]	400
Max. torque (short-term)	[Ncm]	800
Recommended input speed	[1/min]	< 3000
Permissible shaft load	[N] (axial / radial)	200 / 600
Backlash unloaded	[°]	< 0,5
Temperature range	[°C]	-30 to +80

Stand: 22. Oktober 2014 – changes reserved

-
- Technical drawings of the motor assembly showing front, side, and top views with dimensions and labels.
- Front View (Left):**
- Labels: Scheibenfeder (woodruff key) DIN 6888-3x5, 4xM5 / min. 8 tief (deep)
 - Dimensions: $\phi 25 \pm 0.04$, 0, $\phi 10 \text{ H5 } \pm 0.006$, 12, 35, 30 ± 0.5 , 30 ± 0.1 , 56, 50 ± 0.1
- Side View (Middle):**
- Labels: 4xM4 / min. 8 tief (deep), 4x $\phi 4.8 \pm 0.2$ / 11 tief (deep)
 - Dimensions: L1 ± 0.6 , L2, 36, 71 ± 0.3 , $\phi 25 \pm 0.5$, $\phi 63.5$, 31, 35, 38 ± 0.1 , 50 ± 0.1 , $\phi 36 \pm 0.1$
- Top View (Right):**
- Labels: 4xM5 / min. 8 tief (deep), abisoliert und verzinkt (bared and finned)
 - Dimensions: 7
- Additional Labels:**
- AWG18 SW/RT (BK/RD) L=300 ± 30

Gear reduction table M63xXX/I+ SN31

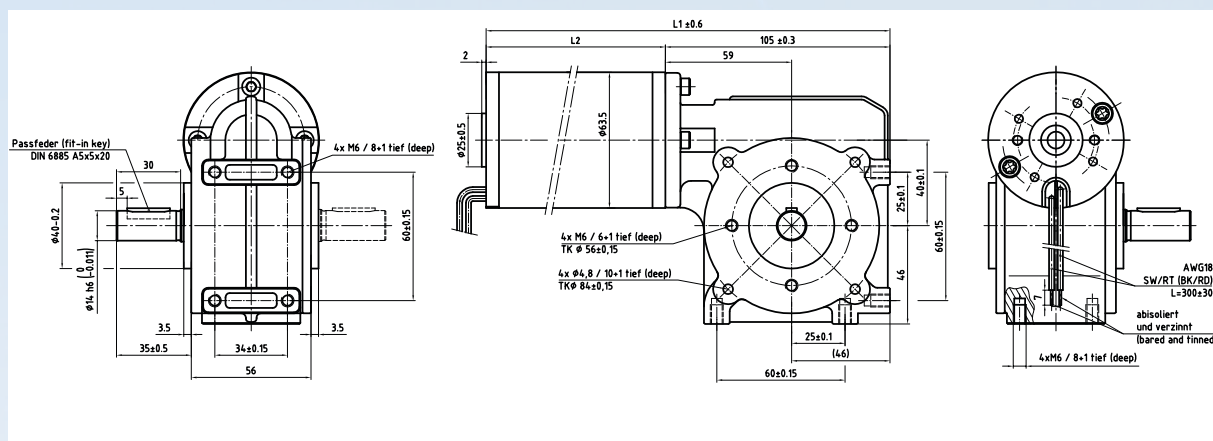
*) Motor have to be operated with current limitation

Max. Continuous torque	[Ncm]	400
Max. torque (short-term)	[Ncm]	800
Recommended input speed	[1/min]	< 3000
Permissible shaft load	[N] (axial / radial)	200 / 600
Backlash unloaded	[°]	< 0,5
Temperature range	[°C]	-30 to +80

231

Motor M63 with worm gear SN40

- Housing: die-cast-zinc, plastic worm gear, steel worm, grease lubrication for life, output shaft in ball bearing, standard version shaft on one side (left), optional second output shaft



Application on request

Gear reduction table M63xXX/I+ SN40

Gear reduction	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
			M63x25/I L2 = 95mm	M63x40/I L2 = 110mm	M63x60/I L2 = 130mm
[i = x:1]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
10	84	300	118	151	252
15	72	200	151	194	324
30	40	100	168	216	360
50	35	60	245	315	525

General gear data

Max. Continuous torque	[Ncm]	1500
Max. torque (short-term)	[Ncm]	2000
Recommended input speed	[1/min]	< 3000
Permissible shaft load	[N] (axial / radial)	300 / 500
Backlash unloaded	[°]	3
Temperature range	[°C]	-30 to +80

Stand: 22. Oktober 2014 – changes reserved

-

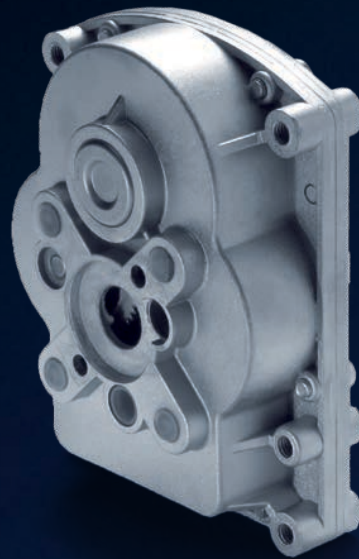
Gear reduction	Efficiency	Speed at motor-speed 3000rpm	Continuous torque	
			M80x40/I L2 = 132mm	M80x80/I L2 = 172mm
[i = x:1]	[%]	[1/min]	[Ncm]	[Ncm]
10	84	300	319	588
15	72	200	410	756
30	40	100	456	840
50	35	60	665	1225

Max. Continuous torque	[Ncm]	1500
Max. torque (short-term)	[Ncm]	2000
Recommended input speed	[1/min]	< 3000
Permissible shaft load	[N] (axial / radial)	300 / 500
Backlash unloaded	[°]	3
Temperature range	[°C]	-30 to +80

233

Spur gearboxes

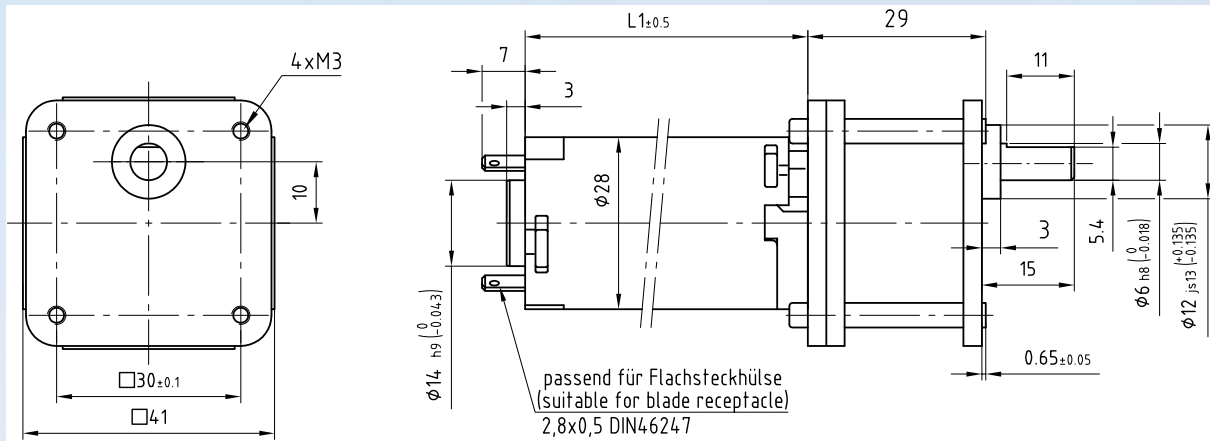
- ⌚ Motor M28/I with spur gear S1
- ⌚ Motor M42/I with spur gear S5
- ⌚ Motor M42/I with spur gear S90
- ⌚ Motor M48/I with spur gear S5
- ⌚ Motor M63/I with spur gear S92



	With motor				Torque [Ncm]	ratio range [x:1]
	M28	M42	M48	M63		
S1	•				265	7,5-150
S5		•	•		500	10-1250
S90		•			900	19-222
S92				•	1500	15-92

Motor M28/I with spur gear S1

- Platinum, gears made of nitrided steel output shaft of steel, grease lubrication, output in sintered bronze bearings, plastic cover
- Optional: output shaft with ball bearings



Application on request

Gear reduction table M28xXX/I+ S1

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque	
				M28x20/I L = 50mm	M28x40/I L = 70mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]
7,5	3	73	400	9	16
10	3	73	300	12	22
25	3	73	120	29	55
50	4	66	60	53	99
75	4	66	40	79	120 *)
83	4	66	36	88	120 *)
100	5	59	30	94	120 *)
150	5	59	20	120 *)	120 *)

*) Motor have to be operated with current limitation

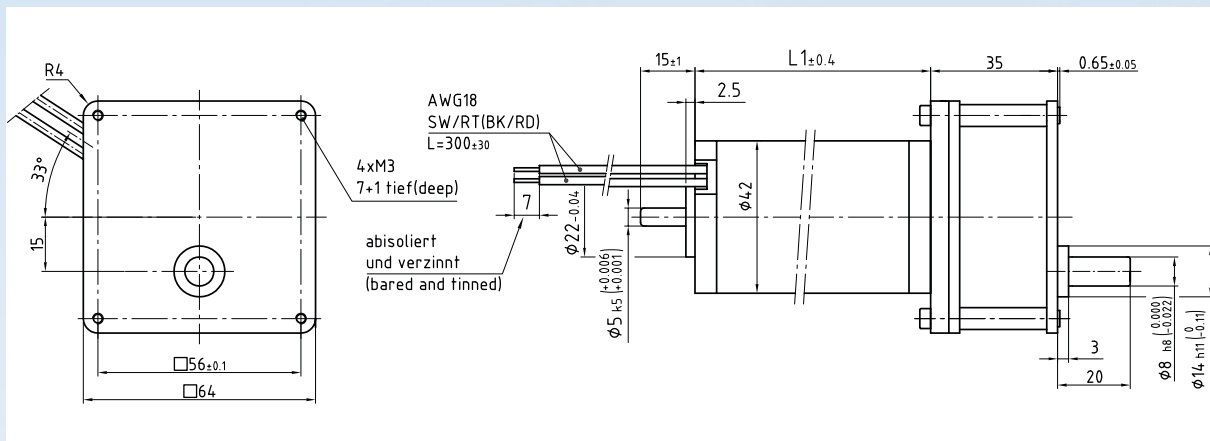
General gear data

Number of gear stages	[x]	3, 4, 5
Maximum torque	[Ncm]	120
Recommended input speed	[1/min]	< 3000
Permissible axial shaft load	[N]	20
Permissible radial shaft load	[N]	30
Backlash unloaded	[°]	< 0,5
Temperature range	[°C]	-10 to +65
Gear length L2	[mm]	29

Stand: 22. Januar 2015 – changes reserved

Motor M42/I with spur gear S5

- Platinum, gears made of nitrided steel output shaft of steel, grease lubrication, output in sintered bronze bearings, plastic cover
- Optional: output shaft with ball bearings



Application on request

Gear reduction table M42xXX/I+ S5

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque			
				M42x15/I L = 70mm	M42x20/I L = 75mm	M42x30/I L = 85mm	M42x40/I L = 95mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]	[Ncm]
10	3	73	300	29	37	47	66
30	4	66	100	79	99	129	178
50	4	66	60	132	165	215	297
100	5	59	30	236	295	384	500 *)
250	5	59	12	500 *)	500 *)	500 *)	500 *)
375	5	59	8	500 *)	500 *)	500 *)	500 *)
500	6	53	6	500 *)	500 *)	500 *)	500 *)
1250	6	53	2	500 *)	500 *)	500 *)	500 *)

*) Motor have to be operated with current limitation

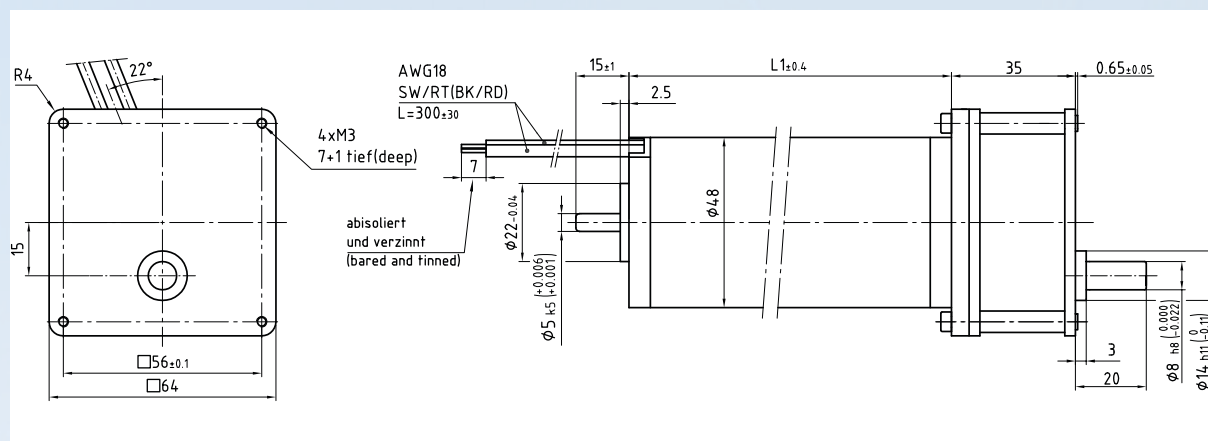
General gear data

Number of gear stages	[x]	3, 4, 5, 6
Maximum torque	[Ncm]	500
Recommended input speed	[1/min]	< 5000
Permissible axial shaft load	[N]	20
Permissible radial shaft load	[N]	30
Backlash unloaded	[°]	0.9...2
Temperature range	[°C]	-10 to +65
Gear length L2	[mm]	49

Stand: 22. Januar 2015 – changes reserved

Motor M48/I with spur gear S5

- Platinum, gears made of nitrided steel output shaft of steel, grease lubrication, output in sintered bronze bearings, plastic cover
- Optional: output shaft with ball bearings



Application on request

Gear reduction table M48xXX/I+ S5

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				M48x25/I L = 91mm	M48x50/I L = 116mm	M48x60/I L = 126mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
10	3	73	300	37	73	110
30	4	66	100	99	198	297
50	4	66	60	165	330	495
100	5	59	30	295	500 *)	500 *)
250	5	59	12	500 *)	500 *)	500 *)
375	5	59	8	500 *)	500 *)	500 *)
500	6	53	6	500 *)	500 *)	500 *)
1250	6	53	2	500 *)	500 *)	500 *)

*) Motor have to be operated with current limitation

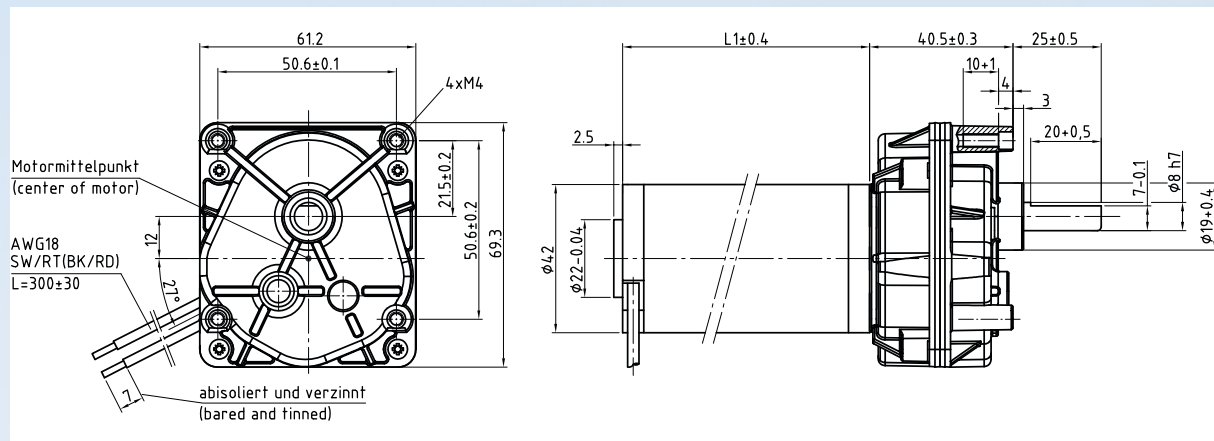
General gear data

Number of gear stages	[x]	3, 4, 5, 6
Maximum torque	[Ncm]	500
Recommended input speed	[1/min]	< 5000
Permissible axial shaft load	[N]	20
Permissible radial shaft load	[N]	30
Backlash unloaded	[°]	0,9...2
Temperature range	[°C]	-10 to +65
Gear length L2	[mm]	49

Stand: 22. Januar 2015 – changes reserved

Motor M42/I with spur gear S90

- Output shaft made of steel, die-cast zinc housing, noise-optimized input stage made of plastic, output ball bearings, grease lubrication



Application on request

Gear reduction table M42xXX/I+ S90

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque			
				M42x15/I L = 70mm	M42x20/I L = 75mm	M42x30/I L = 85mm	M42x40/I L = 95mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]	[Ncm]
19	2	81	160	61	76	99	123
27	2	81	112	87	109	141	175
31	2	81	98	99	124	161	209
53	3	73	56	155	194	252	310
68	3	73	44	198	247	322	397
93	3	73	32	271	338	440	543
142	3	73	21	416	520	676	700 *)
222	4	66	14	586	733	900 *)	900 *)

*) Motor have to be operated with current limitation

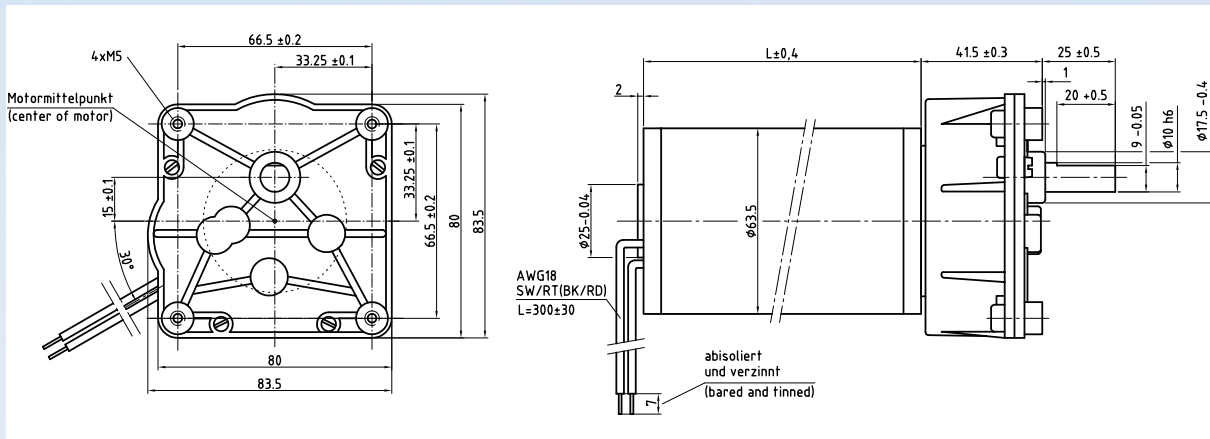
General gear data

Number of gear stages	[x]	2	3	4
Maximum torque	[Ncm]	500	700	900
Recommended input speed	[1/min]	< 3000		
Permissible axial shaft load	[N]	40	40	40
Permissible radial shaft load	[N]	120	120	120
Backlash unloaded	[°]	0,7 - 1,6	0,7 - 1,6	0,7 - 1,6
Temperature range	[°C]	-20 to +80		
Gear length L2	[mm]	40,5	40	40

Stand: 22. Januar 2015 – changes reserved

Motor M63/I with spur gear S92

- Output shaft made of steel, die-cast zinc housing, noise-optimized input stage made of plastic, output ball bearings, grease lubrication



Application on request

Gear reduction table M63xXX/I+ S92

Gear reduction	number of Gear stages	Efficiency	Speed at motor-speed 3000rpm	Continuous torque		
				M63x25/I L = 95mm	M63x40/I L = 110mm	M63x60/I L = 130mm
[i = x:1]	[x]	[%]	[1/min]	[Ncm]	[Ncm]	[Ncm]
15	2	81	194	176	226	390
18	2	81	163	209	268	470
23	2	81	130	262	337	590
31	2	81	96	353	453	790
40	2	81	75	455	585	1000
55	3	73	55	562	723	1300
70	3	73	43	719	925	1500 *)
92	3	73	33	943	1213	1500 *)

*) Motor have to be operated with current limitation

General gear data

Number of gear stages	[x]	2	3
Maximum torque	[Ncm]	1200	1500
Recommended input speed	[1/min]	< 3000	
Permissible axial shaft load	[N]	50	50
Permissible radial shaft load	[N]	150	150
Backlash unloaded	[°]	0.7 - 1.2	0.7 - 1.2
Temperature range	[°C]	-20 to +80	
Gear length L2	[mm]	42	42

Stand: 22. Januar 2015 – changes reserved