Drive data

Definition of the basic principles of motor specifications
The specified performances, torques and revolutions per minute are rounded values and apply to:

- Operating time/day = 8 h (100% duty cycle)
- Uniform operation (continual), no, or very light, impacts in a rotational direction at 10 switching cycles/hour
- Installation positions and designs described in the catalog
- Maintenance-free gears with life-long lubrication,
- Ambient operating temperature 0 ... 60 °C. Gear unit with life-long lubrication for ambient operating temperature ≤0°C available on request
- Protection class IP 55
- f_{mains} = 50 Hz constant
- T_U = 20 °C for gears,
  40 °C for motors
- Installation altitude ≤ 1000 m above sea level
- If the drive is overloaded, the service life is reduced.
  10% overloading = 75% service life
  20% overloading = 50% service life
- The gear motor (GM = 1) corresponds to the operating mode S1 (continuous operation)

In the case of other operating conditions, the achievable values may differ from those stated.
In the case of extreme operating conditions, please consult your distribution partner.

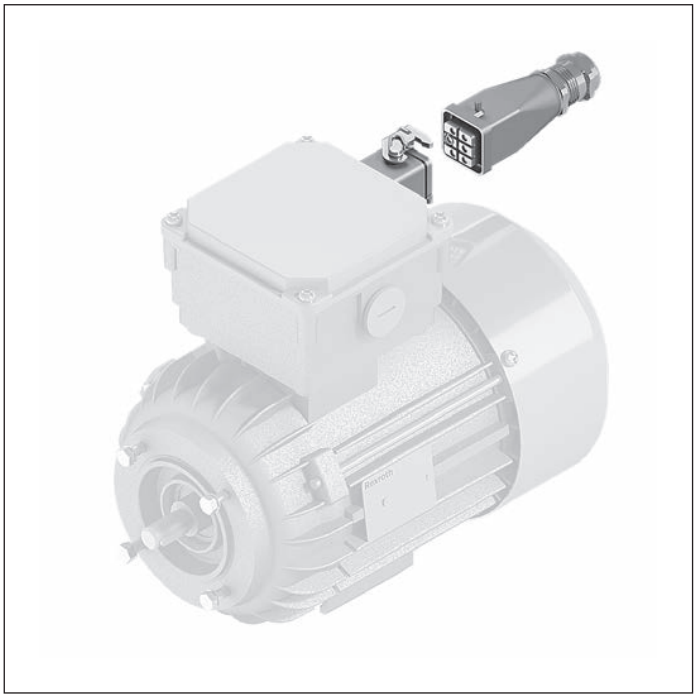
Motor data

Electrical connection requirements:
Connection to a 3-phase, 5-wire system (L1, L2, L3, N, PE); a connection plan is included in the terminal box. All motors are equipped with a thermal contact*, which has to be connected to an overload switch-off.

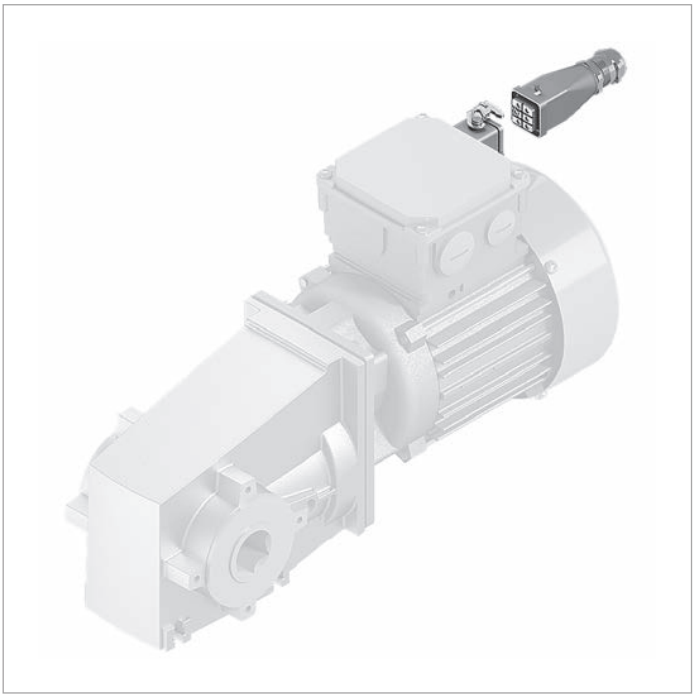
All of the motors comply with protection class IP 55.

*) Bi-metal thermal contact, opening, tripping at 150 °C ± 5 °C.

Motor for push-on gearbox (with plug AT=S)



Gear motor (with plug AT=S)



Country classification

	Europe	Switzerland	USA	Canada	Brazil	Australia	New Zealand	South Korea	China	India
Line voltage (3x....)	400 V	400 V	480 V[1)]	480 V[1)] 575 V	220 V 380 V[3)] 440 V[1)]	400 V 415 V[2)]	400 V 415 V[2)]	220 V 380 V[3)] 440 V[1)]	380 V[2)]	415 V[2)]
Line voltage tolerance	±10%	±10%	±10%	±10%	±10%	±5%	±5%			±5%
Mains frequency	50 Hz	50 Hz	60 Hz	60 Hz	60 Hz	50 Hz	50 Hz	60 Hz	50 Hz	50 Hz

[1)] ~ 460 V / 60 Hz
[2)] ~ 400 V / 50 Hz
[3)] ~ 400 V / 60 Hz

Motor data (GM = 1, 3)

Performance data

Notice: Values are typical. Subject to change. See motor type plate for official data. Please note the country assignment.

Voltage class	**A**	**A**	**B**	**D**
Circuit	**Δ**	**Y**	**Y**	**Y**
Voltage U at f = 50 Hz	200 V ±10%		400 V +10...-12 %	
Voltage U at f = 60 Hz	220 V ±10%	400 V ±10%	460 V +10...-12%	575 V ±10%

			Current consumption at rated power			**Power factor**	**Power output at**	
Motor type	**IE3**	**I_N** (A)	**I_N** (A)	**I_N** (A)	**I_N** (A)	**cos φ**	**(50Hz) P** (kW)	**(60Hz) P** (kW)
524	x	0.65	0.35	0.32	0.24	0.6	0.09	0.1
624	x	1.15	0.65	0.55	0.45	0.66	0.18	0.22
634	x	1.65	0.9	0.85	0.65	0.6	0.25	0.29
714b	x	1.9	1.1	0.95	0.75	0.73	0.37	0.42
804a	x	3.1	1.8	1.45	1.15	0.65	0.55	0.63
716	x	1.3	0.75	0.6	0.62	0.68	0.18	0.22
734	x	1.9	1.05	0.95	0.72	0.74	0.37	0.42
734a	x	2.5	1.4	1.3	1	0.66	0.45	0.52
714a	x	1.65	0.95	0.85	0.65	0.60	0.25	0.29
716a	x	1.3	0.75	0.6	0.52	0.61	0.18	0.22
718b	x	0.95	0.55	0.48	0.38	0.6	0.12	0.14
814	x	3.1	1.7	1.45	1.1	0.69	0.55	0.63
824	x	4.1	2.25	2	1.6	0.66	0.75	0.86

Suitable for continuous operation (S1) and start-stop operation with a duty cycle of up to 70% (S3/70%-10 s) and frequency converter operation.

Certification for the motor, cable and plug components:

IE3 motors: CE, cURUS, CCC

Gear motor

3-phase motors	
T_U (°C)	**P_V / P_N**
< 40	1[1)]
45	0.95
50	0.90
55	0.85
60	0.8

[1)] Rated motor power (0.37; 0.25; 0.12 kW)

Rated motor power

The ambient operating temperature T_U influences the rated power P_N of the gear motors.

Transport and nominal speed v_N (GM = 1)

The transport speed v_N is specified for the rated output and frequencies of 50 Hz or 60 Hz.

The actual values v vary depending on:

- Tolerance of the standard motors
- Performance range of the motors
- Load on the conveyor section

Modular unit	**50 Hz** (see p. 317)					**Motor type**	**60 Hz** (see p. 317)				**Motor type**
	v_N (m/min)	v[1] (m/min)	i	n2[3] (min^{-1})	M_N (Nm)		v[1] (m/min)	i	n2[3] (min^{-1})	M_N (Nm)	
Head drive/ center drive	5	5.2	60	11.5	94	718b	6.4	60	14	92	718b
	10	10.6	60	23.3	97	714a	8.3	60	18.3	108	716a
	13	13.2	47	29.2	114	714b	12.9	60	28.5	92	714a
	16	16.8	37	37.1	91	714b	15.9	47	35.0	108	714b
	21	21.6	29	47.7	71	714b	20.2	37	44.5	87	714b
	27	27.2	23	60.0	57	714b	26.0	29	57.3	67	714b
	33	33.3	19	73.5	46	714b	32.6	23	72.0	53	714b
	40	40.8	15	90.0	38	714b	39.9	19	88.2	44	714b
	50	49.9	12	110.2	30	714b	48.9	15	108.0	36	714b
Connection drive	5	5.2	60	11.5	94	718b	6.4	60	14	92	718b
	10	10.6	60	23.3	97	714a	8.3	60	18.3	108	716a
	13	13.2	47	29.2	114	714b	12.9	60	28.5	92	714a
	16	16.8	37	37.1	91	714b	15.9	47	35.0	108	714b
	21	21.6	29	47.7	71	714b	20.2	37	44.5	87	714b
	27	27.2	23	60.0	57	714b	26.0	29	57.3	67	714b
Curve wheel drive VF65	5	5.2	128	5.4	60[2]	718b	6.2	128	6.5	60[2]	718b
	10	11.1	60	11.5	60[2]	718b	13.5	60	14	60[2]	718b
	13	14.5	60	15.1	60[2]	716a	17.6	60	18.3	60[2]	716a
	21	22.4	60	23.3	60[2]	714a	27.4	60	28.5	60[2]	714a
Curve wheel drive VF90	5	5.6	128	5.4	60[2]	718b	6.8	128	6.5	60[2]	718b
	10	12.0	60	11.5	60[2]	718b	14.6	60	14	60[2]	718b
	13	15.7	60	15.1	60[2]	716a	19.0	60	18.3	60[2]	716a
	21	24.2	60	23.3	60[2]	714a	29.6	60	28.5	60[2]	714a

[1] Transport speeds at other voltages/frequencies available on request
[2] Torque limited to 60 Nm by coupling
[3] Gear unit output speed

Transport and nominal speed v_N (GM = 3)

The transport speed v_N is specified for the rated power and frequencies of 50 Hz or 60 Hz.

The actual values v vary depending on:

- Tolerance of the standard motors
- Performance range of the motors
- Load on the conveyor section

Modular unit	**50 Hz** (see p. 317)					**Motor type**	**60 Hz** (see p. 317)				**Motor type**
	v_N (m/min)	v[1] (m/min)	i	n2[3] (min^{-1})	M_N (Nm)		v[1] (m/min)	i	n2[3] (min^{-1})	M_N (Nm)	
Head drive/ center drive	10	10.6	60	23.3	19	634					
	13	12.7	50	28.0	27	634	12.84	60	28.00	19	634
	16	15.9	40	35.0	28	634	15.41	50	33.6	27	634
	21	21.2	30	46.7	30	634	19.27	40	42	28	634
	27	25.4	25	56.0	25	634	25.69	30	56.00	30	634
	33	31.7	20	70.0	24.9	634	30.83	25	67.2	25	634
	40	42.3	15	93.3	19.7	634	38.53	20	84	23.6	634
	50	52.9	12	116.7	15.3	634	51.38	15	112.00	18.7	634
Connection drive	10	10.6	60	23.3	19	634					
	13	12.7	50	28.0	27	634	12.84	60	28.00	19	634
	16	15.9	40	35.0	28	634	15.41	50	33.6	27	634
	21	21.2	30	46.7	30	634	19.27	40	42	28	634
	27	25.4	25	56.0	25	634	25.69	30	56.00	30	634

[1] Transport speeds at other voltages/frequencies available on request
[2] Torque limited to 60 Nm by coupling
[3] Gear unit output speed

Design information, transport and nominal speed v_N 60-120 m/min

For layouts of applications beyond the conveyor speeds of 60 m/min, special design rules apply to ensure smooth operation with optimized wear.

The design shall take into account the following:

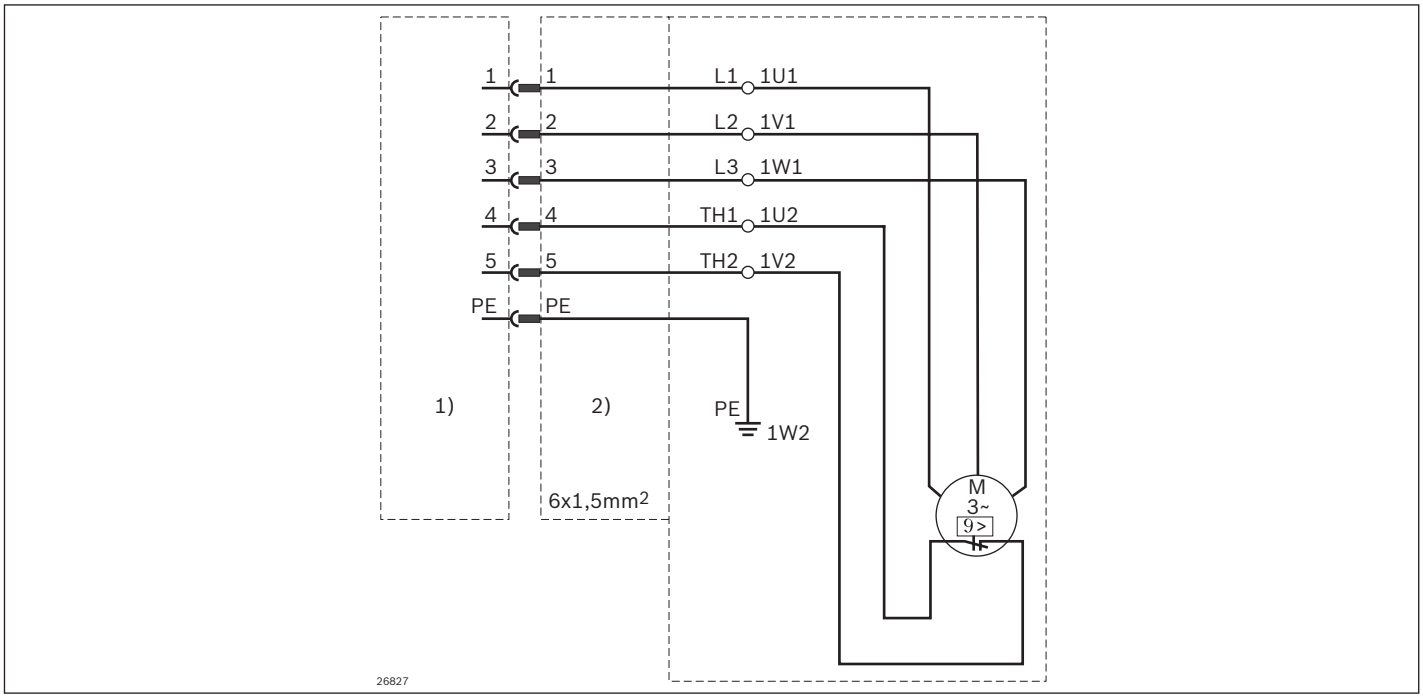
Overall system restrictions
- Conveyor speed: $v_N \leq 120$ m/min
- Permissible chain tensile force: $F_{max} = 150$ N
- Section length: L ≤ 25 m
- Curve angle: Σ α ≤ 210°
  Sum of all curve angles of the installed horizontal and vertical curves in a section
- Ambient conditions: Dry

Component restrictions
- System widths: VF*plus* 65, VF*plus* 90, VF*plus* 120
- Chain types: Flat conveyor chain, static friction chain. Use of other chain types possible, subject to all design instructions, at your discretion regarding suitability for high-speed applications.
- Basic units: Head drive directly, head drive closed
- Curve types: Sliding curve, curve wheel, horizontal/vertical curves from standard program, modification curves possible if all conditions are met
- Curve radii (min): R ≥ 700 mm for horizontal curves, R ≥ 500 mm for vertical curves
- Sliding rail: Sliding rail VF*plus* Premium

Further information
- Soft start using a frequency converter is mandatory
- Need to calculate and validate design using MTpro

Motor connection

Motor connection with plug (AT = S), circuit diagram

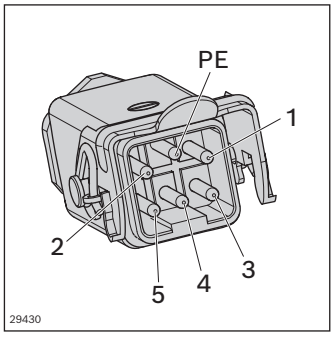


1) Connection cable side
2) Motor side

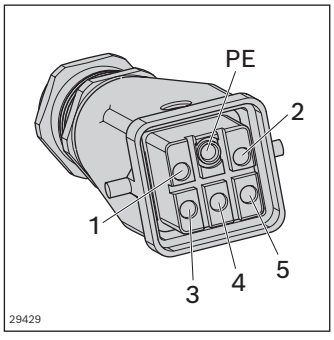
The push-in fitting consists of UL components.

Connection list

3~ motor connection terminals	Pin no.	Code
U1	1	L1
V1	2	L2
W1	3	L3
TW1	4	Th1
TW2	5	Th2
	PE	PE



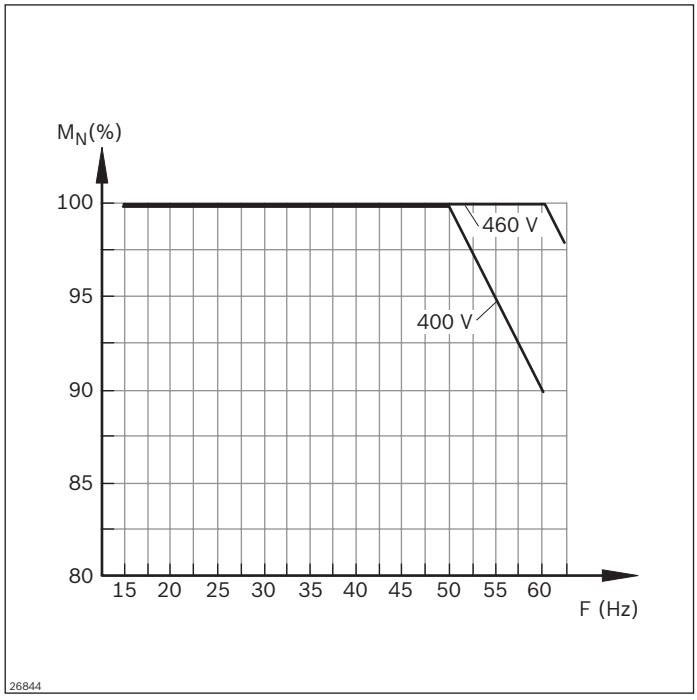
Motor side



Connection cable side

Frequency converter motec 8400 (FU)

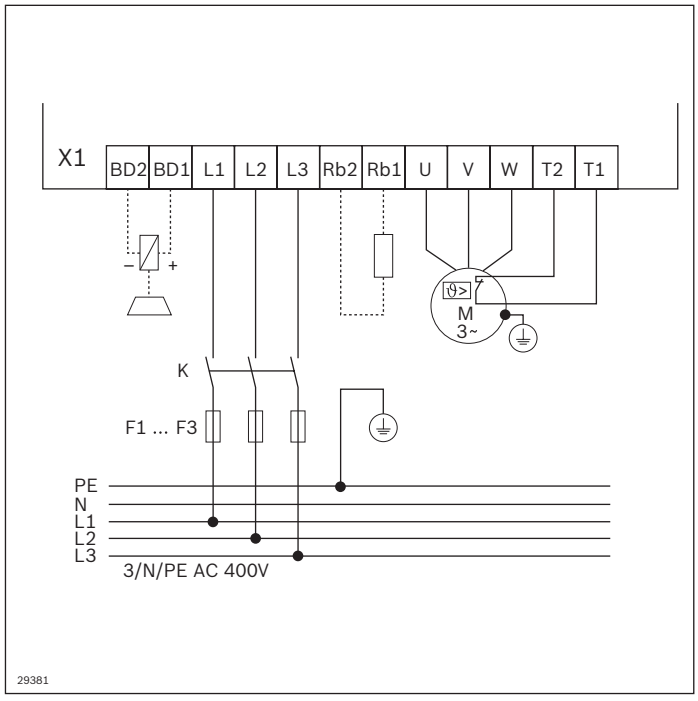
Drive spectrum of motors with frequency converters (FU)



Technical information:
At rotating field frequencies of ≥ 15 Hz, the motor can be operated under normal operating conditions without an external fan. The motor's thermal conditions should be considered at rotating field frequencies of ≤ 20 Hz.
In the range 20 ... 50 Hz, the full torque is available.
At rotating field frequencies > 50 Hz, higher speeds can also be achieved with a corresponding drop in performance.

Motor speed range (m/min) **at 50 Hz**	**Min**[1] (m/min)	**Max**[2] (m/min)	**Max** (m/min) **at max. 0 % moment**
5[3]	2	6	8
10[3]	4	12	16
13	5	15	21
16	6	19	26
21	7	25	34
27	9	32	43
33	11	39	52
40	13	48	–
50	16	60	–

[1] Min corresponds to approx. 16 Hz supply frequency
[2] Max corresponds to approx. 60 Hz supply frequency
[3] At 460 V/60 Hz max (m/min) 20% higher



——— Minimum wiring required for operation
----*)---- Additional wiring to change rotational direction

Frequency converter (FU) accessories

In order to operate a drive with a frequency converter (FU), the user needs to work out the minimum wiring for the internal and external voltage supply (see terminal assignment plan left).

Ordering parameters for SEW motors (GM = 2)

The following ordering information is required if using gear motors from SEW-Eurodrive GmbH & Co, Bruchsal:

- Motor type
- Ratio
- Installation position
- Drive output position
- Terminal box position
- Cable entry (fig. 4)
- Motor voltage/frequency[*)]
- Thermal class[*)]
- Motor protection class[*)]

[*)] www.seweurodrive.com

Gear motors for line frequency f = 50 Hz

v_N (m/min)	Ist v_N (m/min)	Motor type	Ratio	Drive speed gear motor	N (kW)	M_{max} (Nm)
5	5.9	SA47 DRN71MS4/TH	110.73	13.00	0.25	90
5[1)]	6.7	SA47 DRN71MS4/TH	201	7.00	0.25	90 / 60[3)]
5[2)]	7.3	SA47 DRN71MS4/TH	201	7.00	0.25	90 / 60[3)]
7	7.7	SA47 DRN71MS4/TH	84	17.00	0.25	90
10	11.8	SA47 DRN71M4/TH	54.59	26.00	0.37	90
10[1)]	10.6	SA47 DRN71M4/TH	128.1	11.00	0.37	90 / 60[3)]
10[2)]	10.4	SA47 DRN80MK4/TH	137.1	10.00	0.55	90 / 60[3)]
13	14.5	SA47 DRN80MK4/TH	44.22	32.00	0.55	90
13[1)]	14.4	SA47 DRN80MK4/TH	94.1	15.00	0.55	90 / 60[3)]
13[2)]	13.5	SA47 DRN71M4/TH	110.7	13.00	0.37	90 / 60[3)]
16	16.8	SA47 DRN71M4/TH	38.23	37.00	0.37	78
21	22.2	SA47 DRN71M4/TH	29	49.00	0.37	60
21[1)]	21.1	SA47 DRN71M4/TH	63.8	22.00	0.37	60
21[2)]	20.8	SA47 DRN71M4/TH	69.4	20.00	0.37	60
27	27.6	SA47 DRN71M4/TH	23.2	61.00	0.37	49
33	36.2	SA47 DRN80MK4/TH	17.62	80.00	0.37	40
40	45.7	SA47 DRN80MK4/TH	14.24	101.00	0.55	48
50	53.9	SA47 DRN80MK4/TH	12.1	119.00	0.55	41
4 ... 26	2.4-24	SA47 DRN71M4/MM05	54.59	5.3 ... 53.0	0.055-0.55	69 ... 81
16 ... 60	7.2-74	SA47 DRN80MK4/MM07	17.62	16 ... 165.0	0.075-0.75	36 ... 39

For basic unit curve wheel drive:

[1)] VF*plus* 65 (z = 28 / ø306 mm)

[2)] VF*plus* 90 (z = 30 / ø331 mm)

[3)] at KPG = 1 limited to 60 Nm

Gear motors for line frequency f = 60 Hz

v_N (m/min)	Ist v_N (m/min)	Motor type	Ratio	Drive speed gear motor	N (kW)	M_{max} (Nm)
5	5.9	SA47 DRN71MS4/TF	128.10	13.00	0.25	90
5[1)]	8.3	SA47 DRN71MS4/TH	201.00	8.60	0.25	90 / 60[3)]
5[2)]	8.9	SA47 DRN71MS4/TF	201.00	8.60	0.25	90 / 60[3)]
7	8.2	SA47 DRN71MS4/TF	94.08	18.00	0.25	90
10	12.2	SA47 DRN71M4/TH	63.80	27.00	0.37	90
10[1)]	10.6	SA47 DRN71M4/TH	158.12	11.00	0.37	90 / 60[3)]
10[2)]	11.4	SA47 DRN80MK4/TH	158.12	11.00	0.55	90 / 60[3)]
13	14.5	SA47 DRN80MK4/TH	54.59	32.00	0.55	90
13[1)]	15.4	SA47 DRN80MK4/TH	110.73	16.00	0.55	90 / 60[3)]
13[2)]	14.6	SA47 DRN71M4/TH	128.10	14.00	0.37	90 / 60[3)]
16	17.7	SA47 DRN71M4/TH	44.22	39.00	0.37	90
21	24.0	SA47 DRN71M4/TH	32.48	53.00	0.37	67 / 60
21[1)]	23.1	SA47 DRN71M4/TH	71.75	24.00	0.37	67 / 60[3)]
21[2)]	25.0	SA47 DRN71M4/TH	71.75	24.00	0.37	67 / 60[3)]
27	31.7	SA47 DRN71M4/TH	24.77	70.00	0.37	52
33	38.5	SA47 DRN71M4/TH	20.33	85.00	0.37	46
40	48.0	SA47 DRN80MK4/TH	16.47	106.00	0.55	37
50	55.7	SA47 DRN80MK4/TH	14.24	123.00	0.55	48
4 ... 26	2.4-24	SA47 DRN71M4/MM05	54.59	5.3 ... 53.0	0.055-0.55	69 ... 81
16 ... 60	7.2-74	SA47 DRN80MK4/MM07	17.62	16 ... 165.0	0.075-0.75	36 ... 39

For basic unit curve wheel drive:

[1)] VF*plus* 65 (z = 28 / ø306 mm)

[2)] VF*plus* 90 (z = 30 / ø331 mm)

[3)] at KPG = 1 limited to 60 Nm

Ordering parameters for SEW motors (GM = 4)

The following ordering information is required if using gear motors from SEW-Eurodrive GmbH & Co, Bruchsal:

- Motor type
- Ratio
- Installation position
- Drive output position
- Terminal box position
- Cable entry (fig. 4)
- Motor voltage/frequency[*)]
- Thermal class[*)]
- Motor protection class[*)]

[*)] www.seweurodrive.com

Gear motors for line frequency f = 50 Hz

v_N (m/min)	Ist v_N (m/min)	Motor type	Ratio	Drive speed gear motor	N (kW)	M_{max} (Nm)
5	5.0	SA37 DRN63M4/TH	122.94	11.00	0.18	90
5[1)]	5.0	SA37 pR17DR2S56MR4/TH	265	5.20	0.09	90 / 60[3)]
5[2)]	4.8	SA37 pR17DR2S56MR4/TH	303	4.60	0.09	90 / 60[3)]
7	7.2	SA37 DRN71MS4/TH	86.36	16.00	0.25	90
10	9.1	SA37 pDRN71MS4/TH	71.44	20.00	0.25	90
10[1)]	10.6	SA37 DRN63M4/TH	122.9	11.00	0.18	90 / 60[3)]
10[2)]	9.9	SA37 DRN63M4/TH	144.4	9.50	0.18	90 / 60[3)]
13	12.7	SA37 DRN71M4/TH	51.3	28.00	0.37	90
13[1)]	13.5	SA37 pDRN63M4/TH	98.8	14.00	0.18	90 / 60[3)]
13[2)]	13.5	SA37 pDRN63M4/TH	106.0	13.00	0.18	90 / 60[3)]
16	17.2	SA37 DRN71M4/TH	37.66	38.00	0.37	78
21	20.8	SA37 DRN71M4/TH	30.68	46.00	0.37	60
21[1)]	21.1	SA37 DRN71MS4/TH	63.3	22.00	0.25	60
21[2)]	20.8	SA37 DRN71MS4/TH	71.4	20.00	0.25	60
27	28.5	SA37 DRN71M4/TH	22.5	63.00	0.37	49
33	33.2	SA37 DRN71M4/TH	19.89	71.00	0.37	40
40	41.7	SA37 DRN80MK4/TH	15.53	92.00	0.55	48
50	48.5	SA37 DRN80MK4/TH	13.39	107.00	0.55	41
4 ... 26	5-25	SA37 pDRN80MK4/MM05	25.38	11-55	0.11-0.55	69 ... 81
16 ... 60	14-70	SA37 pDRN80M4/MM07	9.02	31-155	0.15-0.75	36 ... 39

For basic unit curve wheel drive:

[1)] VF*plus* 65 (z = 28 / ø306 mm)

[2)] VF*plus* 90 (z = 30 / ø331 mm)

[3)] at KPG = 1 limited to 60 Nm

Gear motors for line frequency f = 60 Hz

v_N (m/min)	Ist v_N (m/min)	Motor type	Ratio	Drive speed gear motor	N (kW)	M_{max} (Nm)
5	5.0	SA37 DRN63M4/TF	157.43	11.00	0.18	90
5[1)]	5.1	SA37 DRN71MS8/TH	157.43	5.30	0.12	90 / 60[3)]
5[2)]	5.0	SA37 pR17DR2S56MR4/TF	351.00	4.80	0.09	90 / 60[3)]
7	7.2	SA37 DRN71MS4/TF	106.00	16.00	0.25	90
10	10.0	SA37 pDRN71M6	51.30	22.00	0.25	90
10[1)]	10.6	SA37 DRN63M4/TH	157.43	11.00	0.18	90 / 60[3)]
10[2)]	10.4	SA37 DRN80MK8/TH	86.36	10.00	0.18	90 / 60[3)]
13	12.7	SA37 DRN90S8/TH	30.68	28.00	0.37	90
13[1)]	13.5	SA37 DRN71MS4/TH	122.94	14.00	0.25	90 / 60[3)]
13[2)]	13.5	SA37 DRN71M6/TH	86.36	13.00	0.25	90 / 60[3)]
16	15.4	SA37 pDRN71M4/TH	51.30	34.00	0.37	90
21	20.8	SA37 pDRN71M4/TH	37.66	46.00	0.37	67 / 60
21[1)]	22.0	SA37 DRN71MS4/TH	63.33	22.00	0.25	67 / 60[3)]
21[2)]	20.8	SA37 pDRN63M4/TH	86.36	20.00	0.18	67 / 60[3)]
27	27.2	SA37 pDRN71M4/TH	28.76	60.00	0.37	52
33	33.5	SA37 DRN80MK6/TH	15.53	74.00	0.37	46
40	39.4	SA37 pDRN71M4/TH	19.89	87.00	0.37	37
50	50.7	SA37 DRN80MK4/TH	15.53	112.00	0.55	48
4 ... 26	23.6	SA37 pDRN80MK4/MM05	25.38	52.0	0.11-0.55	69 ... 81
16 ... 60	12-58	SA37 pDRN80M4/MM07	10.91	--	0.15-0.75	36 ... 39

For basic unit curve wheel drive:

[1)] VF*plus* 65 (z = 28 / ø306 mm)

[2)] VF*plus* 90 (z = 30 / ø331 mm)

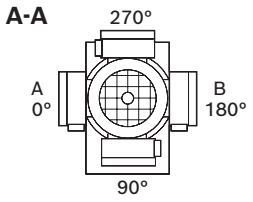
[3)] at KPG = 1 limited to 60 Nm

Head drive direct

Motor mounting	Installation position	Drive output	Terminal box
R	M2 (M1)	B	0°
L	M2 (M1)	A	180°

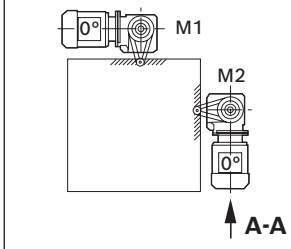
Position of terminal box

Fig. 1



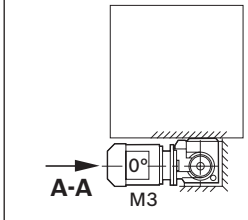
Installation position horizontal top/vertical

Fig. 2



Installation position horizontal (above top edge chain)

Fig. 3



Cable entry point

Fig. 4