DRUM MOTOR
DL SERIES
DL 0080

A lightweight motor for light-duty applications. The DL 0080 is a cost-efficient belt drive for small to medium, dynamic belt conveyor applications and is ideal for small infeed conveyors, packaging equipment, and transfer conveyors. Its application range stretches from classic conveying applications in the dry logistics area up to applications in food production in dry to humid environments with occasional cleaning.

The proven and nearly maintenance-free design, as well as a planetary gear box made of technopolymer result in a lightweight, low-noise and at the same time powerful drum motor for applications for which the weight of the belt drive plays a role. Lightweight, friction-driven conveyor belts with a moderate belt expansion factor are particularly well suited for use with a DL 0080 drum motor.

The speed of the DL 0080 with three-phase motor winding can be adjusted by means of a frequency inverter. In addition to the three-phase motor variant, the DL 0080 is also available with a single-phase motor winding. This also allows operating the drum motor directly on a single-phase network, such as a grounded household power outlet, without additional power electronics.

Technical data

	Asynchronous squirrel cage motor, IEC 34 (VDE 0530)
Insulation class of motor windings	Class F, IEC 34 (VDE 0530)
Voltage	230/400 V ±5 % (IEC 34/38)
Frequency	50 Hz
Shaft seal, internal	NBR
Shaft seal, external	Deflection seal, NBR
Protection rate Motor*	IP66 (with grease nipple)
Thermal protection	Bi-metal switch
Operating mode	S1
Ambient temperature, 3-phase motor	+5 to +40 °C Low temperature ranges on request
Ambient temperature, 1-phase motor	+5 to +40 °C

* The protection rate of the cable connector may deviate.

Design variants and accessories

Laggings	Lagging for friction drive belts
Oils	Food-grade oils (EU, FDA)
Certificate	cULus safety certificates
Accessories	Idler pulleys; conveyor rollers; mounting brackets; cables; inverters

Material variants

The following components can be selected for the drum motor and the electrical connection. The combination of components depends on the material used.

Component	Version	Aluminum	Mild steel	Stainless steel	Brass/nickel	Technopolymer
Shell	Crowned		●	●		
	Cylindrical		●	●		
End housing	Standard	●		●		
Shaft cap	Standard	●				
	With cable protection	●				
	Regreasable			●		
Gear boxes	Planetary gear box					●
Electrical connector	Straight connector			●	●	
	Elbow connector			●		
	Terminal box	●		●		
Motor winding	Asynchronous motor					
External seal	NBR					

Motor variants

Mechanical data for 3-phase asynchronous motor with technopolymer gear

P_N [W]	n_P	gs	i	v [m/s]	n_A [min^{-1}]	M_A [Nm]	F_N [N]	FW_{MIN} [mm]	SL_{MIN} [mm]
40	4	3	78.55	0.072	16.8	19.5	479	305	295
40	4	3	71.56	0.079	18.4	17.8	437	305	295
40	4	3	63.51	0.089	20.8	15.8	387	305	295
50	2	3	115.2	0.102	23.9	16.8	412	280	270
60	4	2	19.2	0.293	68.8	7.5	183	305	295
60	4	2	16	0.352	82.5	6.2	152	305	295
60	4	2	13.09	0.43	100.8	5.1	125	305	295
75	2	3	96	0.125	29.4	20.6	505	280	270
85	2	3	78.55	0.152	35.6	19.5	479	280	270
85	2	3	71.56	0.167	39.1	17.8	437	280	270
85	2	3	63.51	0.188	44.1	15.8	387	280	270
85	2	3	52.92	0.226	52.9	13.2	323	280	270
85	2	3	48.79	0.245	57.4	12.1	298	280	270
85	2	3	43.3	0.276	64.7	10.8	264	280	270
85	2	2	19.2	0.622	145.8	5	123	280	270
85	2	2	16	0.747	175	4.2	103	280	270
85	2	2	13.09	0.913	213.9	3.4	84	280	270

P_N = Rated power
n_P = Number of poles
gs = Gear stages
i = Speed ratio
v = Speed

n_A = Shell rated speed
M_A = Drum motor rated torque
F_N = Drum motor rated belt pull
FW_{MIN} = Minimum drum width
SL_{MIN} = Minimum shell length

DRUM MOTOR
DL SERIES
DL 0080

Electrical data for 3-phase asynchronous motor

P_N [W]	n_P	n_N [min^{-1}]	f_N [Hz]	U_N [V]	I_N [A]	cosφ	η	J_R [kgcm^2]	I_S/I_N	M_S/M_N	M_B/M_N	M_P/M_N	M_N [Nm]	R_M [Ω]	$U_{SHΔ}$ [V]	U_{SHY} [V]
40	4	1320	50	230	0.71	0.65	0.21	1	1.77	1.6	1.6	1.6	0.29	156.5	36	–
40	4	1320	50	400	0.43	0.65	0.21	1	1.77	1.6	1.6	1.6	0.29	156.5	–	66
50	2	2750	50	230	0.46	0.57	0.47	1	4.58	3.82	3.82	3.82	0.17	111.3	15	–
50	2	2750	50	400	0.22	0.71	0.45	1	4.35	2.35	2.35	2.35	0.17	171	–	40
60	4	1320	50	230	0.79	0.65	0.29	1	1.77	1.6	1.6	1.6	0.43	156.5	40	–
60	4	1320	50	400	0.46	0.65	0.29	1	1.77	1.6	1.6	1.6	0.43	156.5	–	70
75	2	2820	50	230	0.51	0.69	0.53	1	4.58	2.5	2.5	2.5	0.25	111.3	20	–
75	2	2820	50	400	0.3	0.7	0.51	1	4.46	2.5	2.5	2.5	0.25	113	–	36
85	2	2800	50	230	0.53	0.73	0.55	1	4.58	2.24	2.24	2.24	0.29	111.3	22	–
85	2	2800	50	400	0.32	0.74	0.52	1	4.46	2.24	2.24	2.24	0.29	113	–	40

P_N = Rated power
n_P = Number of poles
n_N = Rated speed of rotor
f_N = Rated frequency
U_N = Rated voltage
I_N = Rated current
cosφ = Power factor
η = Efficiency
J_R = Rotor moment of inertia

I_S/I_N = Ratio of startup current – rated current
M_S/M_N = Ratio of startup torque – rated torque
M_B/M_N = Ratio of pull-out torque – rated torque
M_P/M_N = Ratio of pull-up torque – rated torque
M_N = Rated torque of rotor
R_M = Branch resistance
$U_{SHΔ}$ = Heater voltage in delta connection
U_{SHY} = Heater voltage in star connection

Mechanical data for 1-phase asynchronous motor with technopolymer gear

P_N [W]	n_P	gs	i	v [m/s]	n_A [1/min]	M_A [Nm]	F_N [N]	FW_{MIN} [mm]	SL_{MIN} [mm]
25	4	3	115.2	0.049	11.5	17.8	436	295	285
25	4	3	96	0.059	13.8	14.8	364	295	285
25	4	3	78.55	0.072	16.8	12.1	297	295	285
25	4	3	71.56	0.079	18.4	11	271	295	285
75	2	3	96	0.122	28.6	21.4	525	280	270
75	2	3	78.55	0.149	35	17.5	430	280	270
75	2	3	71.56	0.164	38.4	16	391	280	270
75	2	3	63.51	0.185	43.3	14.2	347	280	270
85	2	3	78.55	0.149	35	20.2	496	295	285
85	2	3	71.56	0.164	38.4	18.4	452	295	285
85	2	3	63.51	0.185	43.3	16.3	401	295	285
110	2	3	63.51	0.185	43.3	20.7	508	295	285
110	2	3	52.92	0.222	52	17.2	423	295	285
110	2	3	48.79	0.241	56.4	15.9	390	295	285
110	2	3	43.3	0.271	63.5	14.1	346	295	285
110	2	2	19.2	0.611	143.2	6.6	162	295	285
110	2	2	16	0.733	171.9	5.5	135	295	285
110	2	2	13.09	0.896	210.1	4.5	110	295	285

P_N = Rated power
n_P = Number of poles
gs = Gear stages
i = Speed ratio
v = Speed
n_A = Shell rated speed

M_A = Drum motor rated torque
F_N = Drum motor rated belt pull
M_{MAX}/M_A = Ratio of max. acceleration torque to rated torque
FW_{MIN} = Minimum drum width
SL_{MIN} = Minimum shell length

DRUM MOTOR
DL SERIES
DL 0080

Electrical data for 1-phase asynchronous motor

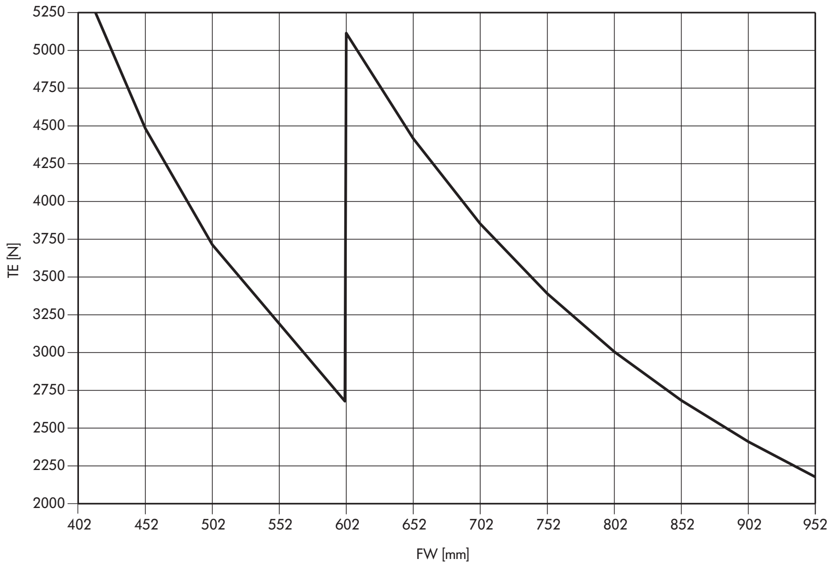
P_N [W]	n_P	n_N [min^{-1}]	f_N [Hz]	U_N [V]	I_N [A]	cosφ	η	J_R [kgcm^2]	I_S/I_N	M_S/M_N	M_B/M_N	M_P/M_N	M_N [Nm]	R_M [Ω]	$U_{SH\sim}$ [V DC]	C_R [µF]
25	4	1320	50	230	0.39	1	0.28	1.3	2.19	1.11	1.37	1.11	0.18	150	44	3
50	2	2750	50	230	0.54	1	0.4	0.9	3.08	0.94	1.71	0.94	0.17	82	33	3
75	2	2750	50	230	0.68	1	0.48	1	3.19	0.74	1.37	0.74	0.26	66	34	4
85	2	2750	50	230	0.73	0.98	0.53	1.3	5.24	0.93	1.6	0.93	0.3	52	28	6
110	2	2750	50	230	0.94	1	0.51	1.3	1.97	0.73	1.15	0.73	0.38	51	36	8

P_N = Rated power
n_P = Number of poles
n_N = Rated speed of rotor
f_N = Rated frequency
U_N = Rated voltage
I_N = Rated current
cosφ = Power factor
η = Efficiency
J_R = Rotor moment of inertia

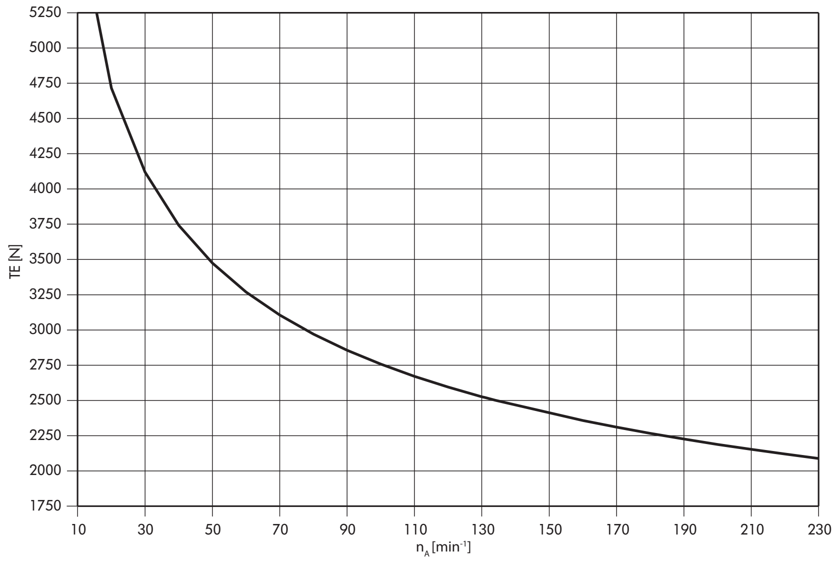
I_S/I_N = Ratio of startup current – rated current
M_S/M_N = Ratio of startup torque – rated torque
M_B/M_N = Ratio of pull-out torque – rated torque
M_P/M_N = Ratio of pull-up torque – rated torque
M_N = Rated torque of rotor
R_M = Branch resistance
$U_{SH\sim}$ = Heater voltage for DC units
C_R = Capacitor size

Belt tension diagrams

Belt tension depending on drum width



Belt tension depending on rated speed of shell



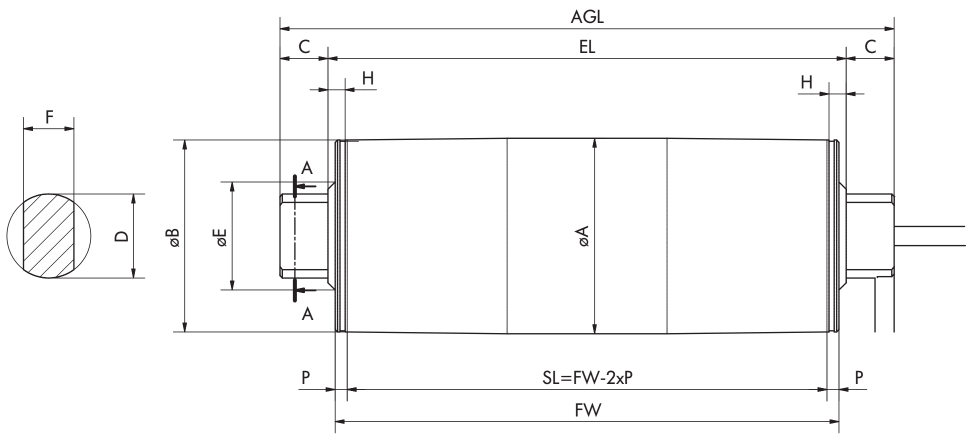
Note: The correct value for the maximum permissible belt tension is determined from the speed of the drum motor. When selecting the motor, also check whether the maximum permissible TE value fits the desired drum width (FW).

TE = Belt tension
n_A = Shell rated speed
FW = Drum width

DRUM MOTOR
DL SERIES
DL 0080

Dimensions

Drum motor



Type	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	H [mm]	P [mm]	SL [mm]	EL [mm]	AGL [mm]
DL 0080 crowned Shell length SL 260 – 602 mm	81.5	80.0	20	35	21	8	5	FW – 10	FW + 6	FW + 46
DL 0080 crowned Mild steel shell, shell length SL 603 – 952 mm	82.7	81.0	20	35	21	8	5	FW – 10	FW + 6	FW + 46
DL 0080 crowned Stainless steel shell, shell length SL 603 – 952 mm	83.0	80.0	20	35	21	8	5	FW – 10	FW + 6	FW + 46
DL 0080 cylindrical Shell length SL 260 – 602 mm	80.5	80.5	20	35	21	8	5	FW – 10	FW + 6	FW + 46
DL 0080 cylindrical Mild steel shell, shell length SL 603 – 952 mm	83.0	83.0	20	35	21	8	5	FW – 10	FW + 6	FW + 46
DL 0080 cylindrical Stainless steel shell, shell length SL 603 – 952 mm	82.7	82.7	20	35	21	8	5	FW – 10	FW + 6	FW + 46