

DRUM MOTOR

DM SERIES

DM 0165



Practice-oriented, scalable and thought out in detail: The new drum motor DM 0165 makes it easy to build a completely individual conveyor system and is dimensioned for the higher requirements of permissible belt tension now demanded from industry and belt manufacturers alike.

With a broader speed spectrum, the DM 0165 covers all possible applications. The clever plug-and-play connection significantly simplifies the installation. Each motor is approved, tested, and modularized so that it can be produced and delivered around the world in the shortest amount of time.

The modular design of the DM 0165 allows a free combination of individual module groups, such as shaft, end housing, shell or steel gear, to perfectly meet the requirements of an application. In addition, various options, such as encoder, brake, backstop, rubber laggings, etc., as well as different accessories are available.

With the platform concept of the DM 0165, it is possible to cover all internal logistics applications in the food processing sector, as well as in industry, distribution and airports.



Technical data

	Asynchronous squirrel cage motor
Insulation class of motor windings	Class F, IEC 34 (VDE 0530)
Voltage	230/400 V 3-phase $\pm 5\%$ (IEC 34/38) Most of the common international voltages and frequencies are available upon request
Frequency	50 Hz
Shaft seal, internal	NBR
Protection rate Motor*	IP69K
Thermal controller	Bi-metal switch
Operating mode	S1
Ambient temperature, 3-phase motor	+2 to +40 °C
Ambient temperature, 3-phase motor for applications with form-fit belts or no belt	+2 to +25 °C

* The protection rate of the cable connector may deviate.

Design variants and accessories

Lagging	Lagging for friction drive belts Lagging for modular plastic belts Lagging for positive drive solid homogeneous belts
Sprockets	Sprockets only on request
Options	Backstop Electromagnetic holding brake and rectifier* Encoder* Balancing Plug connection (only up to 1100 W)
Oils	Food-grade oils (EU, FDA, NSF H1)
Certificate	cULus safety certificates
Accessories	Idler pulleys; conveyor rollers; mounting brackets; cables; inverters

* Depending on the option, the motor extends by 50 mm.

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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		●	●		
	Cylindrical + key for sprockets		●	●		
End housing	Standard	●		●		
Shaft	Standard			●		
	Cross-drilled thread			●		
Gear boxes	Spur gear box		●			
Electrical connector	Straight connector			●	●	●
	Straight hygienic connector			●		
	Elbow connector			●		●
	Terminal box	●		●		●
	Straight plug connection			●		
	90° plug connection			●		
	90° hygienic connector			●		
Motor winding	Asynchronous motor					
External seal	PTFE					

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Motor variants

Mechanical data for 3-phase asynchronous motor

P_N [W]	np	gs	i	v [m/s]	n_A [min ⁻¹]	M_A [Nm]	F_N [N]	FW_{MIN} [mm]	SL_{MIN} [mm]
370	12	3	46.56	0.084	9.8	339.6	4142	457	450
370	8	3	62.37	0.100	11.1	300.6	3666	407	400
370	8	3	46.56	0.127	14.8	224.4	2736	407	400
370	4	3	62.37	0.189	22.0	158.5	1933	407	400
370	4	3	46.56	0.254	29.5	118.3	1443	407	400
370	4	3	39.31	0.300	35.0	99.9	1218	407	400
370	4	3	31.56	0.374	43.6	80.2	978	407	400
370	4	3	24.60	0.480	55.9	62.5	762	407	400
370	4	2	19.64	0.601	70.0	50.9	621	407	400
370	4	2	14.66	0.806	93.8	38.0	464	407	400
370	4	2	12.38	0.954	111.1	32.1	391	407	400
550	6	3	62.37	0.116	13.5	365.2	4453	407	400
550	6	3	46.56	0.156	18.1	272.6	3324	407	400
750	6	3	46.56	0.156	18.1	371.6	4532	457	450
750	4	3	62.37	0.187	21.7	310.6	3787	407	400
750	4	3	46.56	0.250	29.1	231.8	2827	407	400
750	4	3	39.31	0.296	34.5	195.7	2387	407	400
750	4	3	31.56	0.369	42.9	157.1	1916	407	400
750	4	3	24.60	0.473	55.1	122.5	1494	407	400
750	4	2	19.64	0.593	69.0	99.8	1217	407	400
750	4	2	14.66	0.794	92.40	74.5	908	407	400
750	4	2	12.38	0.940	109.5	62.9	767	407	400

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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]
1100	4	3	46.56	0.243	28.4	348.8	4254	407	400
1100	4	3	39.31	0.288	33.6	294.5	3591	407	400
1100	4	3	31.56	0.359	41.8	236.4	2883	407	400
1100	4	3	24.60	0.461	53.7	184.3	2248	407	400
1100	4	2	19.64	0.577	67.2	150.1	1831	407	400
1100	4	2	14.66	0.773	90.1	112.1	1366	407	400
1100	4	2	12.38	0.916	106.7	94.6	1154	407	400
1100	2	3	46.56	0.525	61.1	161.7	1972	407	400
1100	2	3	39.31	0.621	72.4	136.5	1665	407	400
1100	2	3	24.60	0.993	115.7	85.4	1042	407	400
1100	2	2	19.64	1.244	144.9	69.6	849	407	400
1100	2	2	14.66	1.667	194.1	51.9	633	407	400
1100	2	2	12.38	1.974	229.9	43.9	535	407	400
1100	2	2	9.65	2.532	294.8	34.2	417	407	400
1500	4	3	31.56	0.379	44.1	305.3	3723	457	450
1500	4	3	24.60	0.486	56.6	238.0	2903	457	450
1500	4	2	19.64	0.609	70.9	193.9	2364	457	450
1500	4	2	14.66	0.816	95.0	144.7	1765	457	450
1500	4	2	12.38	0.967	112.6	122.20	1490	457	450
2200	2	3	46.56	0.524	61.0	324.3	3954	457	450
2200	2	3	39.31	0.620	72.2	273.8	3339	457	450
2200	2	3	31.56	0.773	90.0	219.8	2680	457	450
2200	2	3	24.60	0.991	115.4	171.3	2089	457	450
2200	2	2	19.64	1.242	144.6	139.6	1702	457	450
2200	2	2	14.66	1.664	193.8	104.2	1270	457	450
2200	2	2	12.38	1.971	229.5	87.9	1073	457	450
2200	2	2	9.65	2.527	294.3	68.6	836	457	450

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

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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]	$\cos\varphi$	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]	$U_{SH\Delta}$ [V]	U_{SHY} [V]
370	4	1375	50	400	1.10	0.77	0.66	11.3	3.2	1.60	1.80	1.60	2.70	29.2		37
370	4	1375	50	230	1.90	0.77	0.66	11.3	3.2	1.60	1.80	1.60	2.70	29.2	21	
370	8	690	50	400	1.50	0.62	0.57	22.6	2.87	1.90	2.35	1.90	5.12	22.0		31
370	8	690	50	230	2.42	0.62	0.57	22.6	2.87	1.90	2.35	1.90	5.12	22.0	17	
370	12	456	50	400	1.60	0.63	0.53	35.1	2.0	1.20	1.50	1.20	7.75	19.4		29
370	12	456	50	230	2.77	0.63	0.53	35.1	2.0	1.20	1.50	1.20	7.75	19.4	17	
550	6	845	50	400	1.60	0.69	0.72	22.6	3.4	1.40	1.65	1.40	6.22	19.5		32
550	6	845	50	230	2.77	0.69	0.72	22.6	3.4	1.40	1.65	1.40	6.22	19.5	19	
750	4	1355	50	400	1.80	0.80	0.75	11.3	3.5	1.53	1.80	1.30	5.29	23.9		52
750	4	1355	50	230	3.12	0.80	0.75	11.3	3.5	1.53	1.80	1.30	5.29	23.9	30	
750	6	845	50	400	2.10	0.81	0.64	22.6	3.5	1.75	2.00	1.75	8.48	6.2		16
750	6	845	50	230	3.64	0.81	0.64	22.6	3.5	1.75	2.00	1.75	8.48	6.2	9	
1100	2	2845	50	400	2.40	0.86	0.77	7.6	5.2	3.15	3.42	2.10	3.69	2.9		9
1100	2	2845	50	230	4.16	0.86	0.77	7.6	5.2	3.15	3.42	2.10	3.69	2.9	5	
1100	4	1320	50	400	2.80	0.82	0.69	11.3	3.5	1.50	1.70	1.30	7.96	7.2		25
1100	4	1320	50	230	4.85	0.82	0.69	11.3	3.5	1.50	1.70	1.30	7.96	7.2	14	
1500	4	1393	50	400	3.50	0.87	0.71	19.8	3.8	1.55	2.10	1.55	10.28	5.2		24
1500	4	1393	50	230	6.06	0.87	0.71	19.8	3.8	1.55	2.10	1.55	10.28	5.2	14	
2200	2	2840	50	400	4.55	0.86	0.81	7.6	5.3	2.60	3.20	2.60	7.40	6.2		36
2200	2	2840	50	230	7.88	0.86	0.81	7.6	5.3	2.60	3.20	2.60	7.40	6.2	21	

P_N	= Rated power	I_S/I_N	= Ratio of startup current – rated current
n_p	= Number of poles	M_S/M_N	= Ratio of startup torque – rated torque
n_N	= Rated speed of rotor	M_B/M_N	= Ratio of pull-out torque – rated torque
f_N	= Rated frequency	M_P/M_N	= Ratio of pull-up torque – rated torque
U_N	= Rated voltage	M_N	= Rated torque of rotor
I_N	= Rated current	R_M	= Branch resistance
$\cos\varphi$	= Power factor	$U_{SH\Delta}$	= Heater voltage in delta connection
η	= Efficiency	U_{SHY}	= Heater voltage in star connection
J_R	= Rotor moment of inertia		

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Mechanical data for 3-phase asynchronous motor (form-fit belts or without belt)

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]
306	12	3	46.56	0.083	9.8	280.8	3467	457	450
306	8	3	62.37	0.100	13.5	204.2	2521	407	400
455	6	3	62.37	0.115	13.5	301.9	3727	407	400
455	6	3	46.56	0.154	18.1	225.3	2782	407	400
620	6	3	46.56	0.158	18.6	299.9	3703	457	450
620	4	3	62.37	0.187	22.1	252.3	3114	407	400
620	4	3	46.56	0.251	29.6	188.3	2325	407	400
620	4	3	39.31	0.297	35.1	159.0	1963	407	400
620	4	3	31.56	0.370	43.7	127.6	1576	407	400
620	4	3	24.60	0.475	56.0	99.5	1228	407	400
620	4	2	19.64	0.595	70.2	81.0	1000	407	400
620	4	2	14.66	0.797	94.0	60.5	747	407	400
620	4	2	12.38	0.945	111.4	51.1	630	407	400
909	4	3	46.56	0.240	28.4	288.2	3558	407	400
909	4	3	39.31	0.285	33.6	243.3	3004	407	400
909	4	3	31.56	0.355	41.8	195.3	2411	407	400
909	4	3	24.60	0.455	53.7	152.3	1880	407	400
909	4	2	19.64	0.570	67.2	124.0	1531	407	400
909	4	2	14.66	0.764	90.1	92.6	1143	407	400
909	4	2	12.38	0.905	106.7	78.2	965	407	400
909	2	3	46.56	0.521	61.4	133.0	1642	407	400
909	2	3	39.31	0.617	72.8	112.3	1386	407	400
909	2	3	24.60	0.986	116.3	70.3	868	407	400
909	2	2	19.64	1.235	145.6	57.2	707	407	400
909	2	2	14.66	1.655	195.1	42.7	527	407	400
909	2	2	12.38	1.960	231.1	36.1	445	407	400
909	2	2	9.65	2.514	296.4	28.1	347	407	400
1240	4	3	31.56	0.374	44.1	252.5	3117	457	450
1240	4	3	24.60	0.480	56.6	196.8	2430	457	450
1240	4	2	19.64	0.602	70.9	160.3	1979	457	450
1240	4	2	14.66	0.806	95.0	119.7	1477	457	450
1240	4	2	12.38	0.955	112.6	101.0	1247	457	450

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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]
1818	2	3	46.56	0.519	61.2	267.0	3296	457	450
1818	2	3	39.31	0.615	72.5	225.4	2783	457	450
1818	2	3	31.56	0.766	90.3	180.9	2234	457	450
1818	2	3	24.60	0.983	115.9	141.1	1741	457	450
1818	2	2	19.94	1.231	145.1	114.9	1418	457	450
1818	2	2	14.66	1.649	194.4	85.8	1059	457	450
1818	2	2	12.38	1.953	230.3	72.4	894	457	450
1818	2	2	9.65	2.505	295.3	56.5	697	457	450

P_N	= Rated power	n_A	= Shell rated speed
n_p	= Number of poles	M_A	= Drum motor rated torque
gs	= Gear stages	F_N	= Drum motor rated belt pull
i	= Speed ratio	FW_{MIN}	= Minimum drum width
v	= Speed	SL_{MIN}	= Minimum shell length

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Electrical data for 3-phase asynchronous motor (form-fit belts or without belt)

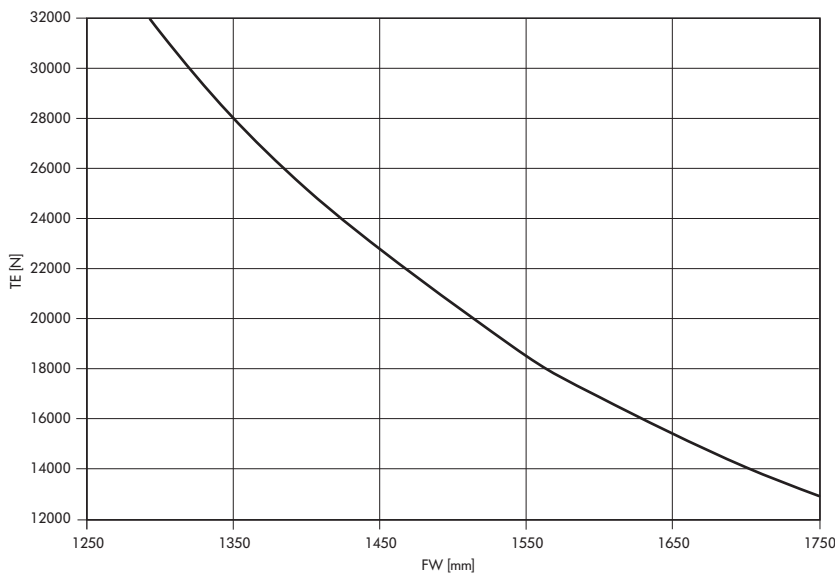
P_N [W]	n_p	n_N [min ⁻¹]	f_N [Hz]	U_N [V]	I_N [A]	$\cos\varphi$	η [%]	J_R [kgcm ²]	I_s/I_N	M_s/M_N	M_B/M_N	M_P/M_N	M_N [Nm]	R_M [Ω]	$U_{SH\Delta}$ [V]	U_{SHY} [V]
306	12	456	50	400	1.45	0.62	0.49	35.1	1.80	1.74	1.98	1.57	6.41	22.4		30.0
306	12	456	50	230	2.51	0.62	0.49	35.1	1.80	1.74	1.98	1.57	6.41	22.4	17.0	
306	8	690	50	400	1.15	0.62	0.62	22.6	2.90	1.24	1.40	1.16	3.48	28.0		30.0
306	8	690	50	230	1.97	0.62	0.62	22.6	2.90	1.24	1.40	1.16	3.48	28.0	17.0	
455	6	845	50	400	1.18	0.75	0.74	22.60	3.10	1.07	1.07	1.07	5.14	25.0		33.0
455	6	845	50	230	2.40	0.75	0.74	22.60	3.10	1.07	1.07	1.07	5.14	25.0	19.0	
620	6	865	50	400	1.91	0.78	0.60	22.60	3.20	1.17	1.20	1.16	6.85	6.2		14.0
620	6	865	50	230	3.30	0.78	0.60	22.60	3.20	1.17	1.20	1.16	6.85	6.2	8.0	
620	4	1378	50	400	1.48	0.80	0.76	11.30	3.60	1.26	1.49	1.07	4.30	14.4		36.0
620	4	1378	50	230	2.55	0.80	0.76	11.30	3.60	1.26	1.49	1.07	4.30	14.4	21.0	
909	4	1320	50	400	2.27	0.84	0.69	11.30	3.70	1.16	1.24	1.07	6.58	8.3		24.0
909	4	1320	50	230	3.92	0.84	0.69	11.30	3.70	1.16	1.24	1.07	6.58	8.3	14.0	
909	2	2860	50	400	1.91	0.86	0.80	7.30	4.60	2.48	2.64	1.74	3.04	6.2		15.0
909	2	2860	50	230	3.30	0.86	0.80	7.30	4.60	2.48	2.64	1.74	3.04	6.2	9.0	
1240	4	1393	50	400	2.86	0.80	0.78	19.80	3.50	1.18	1.21	1.07	8.50	6.2		21.0
1240	4	1393	59	230	4.94	0.80	0.78	19.80	3.50	1.18	1.21	1.07	8.50	6.2	12.0	
1818	2	2850	50	400	3.73	0.85	0.83	7.60	4.80	2.07	2.31	1.65	6.09	6.2		29.0
1818	2	2850	50	230	6.43	0.85	0.83	7.60	4.80	2.07	2.31	1.65	6.09	6.2	17.0	

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
 $\cos\varphi$ = Power factor
 η = Efficiency
 J_R = Rotor moment of inertia

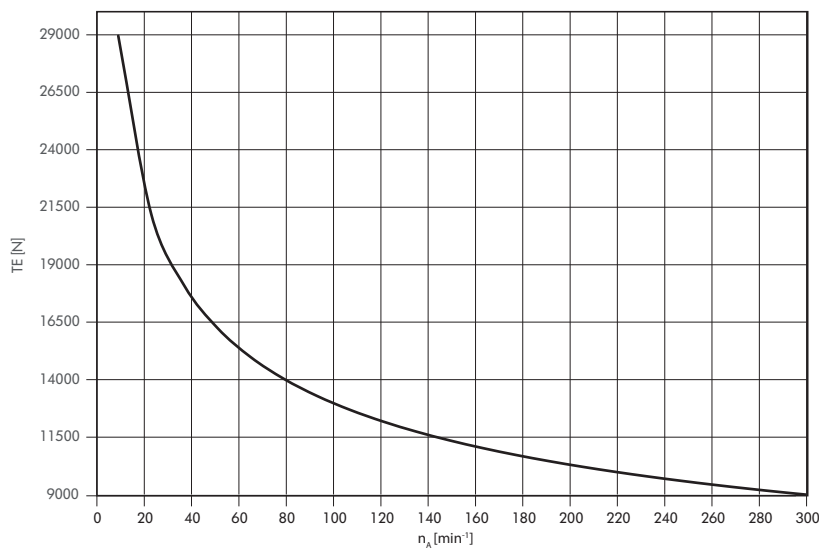
I_s/I_N = Ratio of startup current – rated current
 M_s/M_N = Ratio of startup torque – rated torque
 M_B/M_N = Ratio of pull-out torque – rated torque
 M_P/M_N = Ratio of pull-up torque – rated torque
 M_N = Rated torque of rotor
 R_M = Branch resistance
 $U_{SH\Delta}$ = Heater voltage in delta connection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

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). The belt tension diagrams apply only to standard shafts.

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

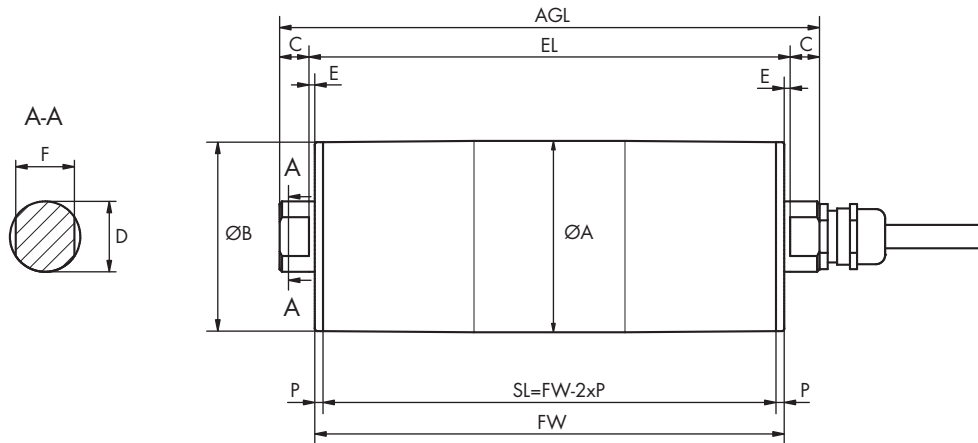
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Dimensions

Drum motor



Type		A [mm]	B [mm]	C [mm]	D [mm]	S [mm]	F [mm]	P [mm]	SL [mm]	EL [mm]	AGL [mm]
DM 0165 crowned	Standard	164	162	25	30	16.5	25	3.5	FW - 7	FW + 33	FW + 83
	Optional	164	162	45	40	16.5	30	3.5	FW - 7	FW + 33	FW + 123
DM 0165 cylindrical	Standard	162	162	25	30	16.5	25	3.5	FW - 7	FW + 33	FW + 83
	Optional	162	162	45	40	16.5	30	3.5	FW - 7	FW + 33	FW + 123
DM 0165 cylindrical + key	Standard	162	162	25	30	16.5	25	3.5	FW - 7	FW + 33	FW + 83
	Optional	162	162	45	40	16.5	30	3.5	FW - 7	FW + 33	FW + 123

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DL series

DM series

DP series

Application notes