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 ±5 % (IEC 34/38) Most of the common international voltages and frequencies are available upon request
Frequency	50 Hz
Shaft sealing	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

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

* Depending on the option, the drum motor is extended by 50 mm.

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Material variants

The following components can be selected for the drum motor and the electrical connection:

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					

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	0.190	22.2	158.5	1933	407	400
370	4	3	46.56	0.255	29.7	118.3	1443	407	400
370	4	3	39.31	0.302	35.2	99.9	1218	407	400
370	4	3	31.56	0.376	43.8	80.2	978	407	400
370	4	3	24.60	0.482	56.2	62.5	762	407	400
370	4	2	19.64	0.604	70.4	50.9	621	407	400
370	4	2	14.66	0.809	94.3	38.0	464	407	400
370	4	2	12.38	0.959	111.6	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]	np	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

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]
370	4	1382	50	400	0.9	0.81	0.73	5.78	3.95	1.70	2.08	1.55	2.57	26.6		29.1
370	4	1382	50	230	1.56	0.81	0.74	5.78	3.95	1.70	2.08	1.55	2.57	26.6	16.8	
370	8	730	50	400	1.50	0.62	0.57	22.33	2.87	1.90	2.35	1.90	4.84	20.3		28.3
370	8	730	50	230	2.59	0.62	0.58	22.33	2.87	1.90	2.35	1.90	4.84	20.3	16.3	
370	12	456	50	400	1.60	0.63	0.53	34.73	2.0	1.20	1.50	1.20	7.75	27.3		41.3
370	12	456	50	230	2.76	0.63	0.53	34.73	2.0	1.20	1.50	1.20	7.75	27.3	23.7	
550	6	845	50	400	1.60	0.69	0.72	22.33	3.4	1.40	1.65	1.40	6.22	21.0		34.8
550	6	845	50	230	2.76	0.69	0.72	22.33	3.4	1.40	1.65	1.40	6.22	21.0	20.0	
750	4	1355	50	400	1.80	0.80	0.75	11.56	3.5	1.53	1.80	1.30	5.29	11.57		25.0
750	4	1355	50	230	3.11	0.80	0.76	11.56	3.5	1.53	1.80	1.30	5.29	11.57	14.4	
750	6	893	50	400	1.8	0.81	0.74	34.73	3.6	1.75	1.93	1.58	8.00	11.4		24.9
750	6	893	50	230	3.12	0.81	0.74	34.73	3.6	1.75	1.93	1.58	8.00	11.4	14.4	
1100	2	2845	50	400	2.40	0.86	0.77	7.08	5.2	3.15	3.42	2.10	3.69	5.8		18
1100	2	2845	50	230	4.14	0.86	0.78	7.08	5.2	3.15	3.42	2.10	3.69	5.8	10.3	
1100	4	1320	50	400	2.80	0.82	0.69	13.0	3.5	1.50	1.70	1.30	7.96	6.18		21.3
1100	4	1320	50	230	4.83	0.82	0.70	13.0	3.5	1.50	1.70	1.30	7.96	6.18	12.2	
1500	4	1393	50	400	3.50	0.87	0.71	20.23	3.8	2.10	2.55	1.55	10.28	5.2		23.8
1500	4	1393	50	230	6.04	0.87	0.72	20.23	3.8	2.10	2.55	1.55	10.28	5.2	13.7	
2200	2	2840	50	400	4.55	0.86	0.81	12.4	5.3	2.60	3.20	2.60	7.40	2.5		14.7
2200	2	2840	50	230	7.85	0.86	0.82	12.4	5.3	2.60	3.20	2.60	7.40	2.5	8.4	

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

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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	0.073	8.5	321.2	3918	457	450
306	8	3	62.37	0.095	11.0	248.6	3031	407	400
455	6	3	62.37	0.122	14.3	286.7	3496	407	400
455	6	3	46.56	0.164	19.1	214.0	2610	407	400
620	6	3	46.56	0.158	18.6	299.9	3703	457	450
620	4	3	62.37	0.192	22.3	249.8	3046	407	400
620	4	3	46.56	0.257	29.9	186.4	2274	407	400
620	4	3	39.31	0.304	35.4	157.4	1920	407	400
620	4	3	31.56	0.378	44.1	126.4	1541	407	400
620	4	3	24.6	0.486	56.5	98.5	1201	407	400
620	4	2	19.64	0.608	70.8	80.3	980	407	400
620	4	2	14.66	0.815	94.9	60.0	731	407	400
620	4	2	12.38	0.965	112.4	50.6	617	407	400
909	4	3	46.56	0.255	29.7	274.9	3352	407	400
909	4	3	39.31	0.302	35.2	232.1	2830	407	400
909	4	3	31.56	0.376	43.8	186.3	2272	407	400
909	4	3	24.6	0.482	56.2	145.2	1771	407	400
909	4	2	19.64	0.604	70.4	118.4	1444	407	400
909	4	2	14.66	0.809	94.3	88.4	1078	407	400
909	4	2	12.38	0.959	111.6	74.6	910	407	400
909	2	3	46.56	0.525	61.2	133.5	1628	407	400
909	2	3	39.31	0.622	72.4	112.7	1374	407	400
909	2	3	24.6	0.994	115.8	70.5	860	407	400
909	2	2	19.64	1.245	145.0	57.5	701	407	400
909	2	2	14.66	1.668	194.3	42.9	523	407	400
909	2	2	12.38	1.975	230.0	36.2	442	407	400
909	2	2	9.65	2.534	295.1	28.3	345	407	400
1240	4	3	31.56	0.375	43.6	255.1	3111	457	450
1240	4	3	24.6	0.481	56.0	198.9	2425	457	450
1240	4	2	19.64	0.602	70.1	162.1	1977	457	450
1240	4	2	14.66	0.807	93.9	121.0	1476	457	450
1240	4	2	12.38	0.955	111.2	102.2	1246	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	0.524	61.0	267.4	3261	457	450
1818	2	3	39.31	0.620	72.2	225.8	2753	457	450
1818	2	3	31.56	0.773	90.0	181.3	2211	457	450
1818	2	3	24.6	0.991	115.4	141.3	1723	457	450
1818	2	2	19.64	1.242	144.6	115.2	1405	457	450
1818	2	2	14.66	1.664	193.7	86.0	1049	457	450
1818	2	2	12.38	1.970	229.4	72.6	886	457	450
1818	2	2	9.65	2.527	294.3	56.6	690	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 (form-fit belts or without belt)

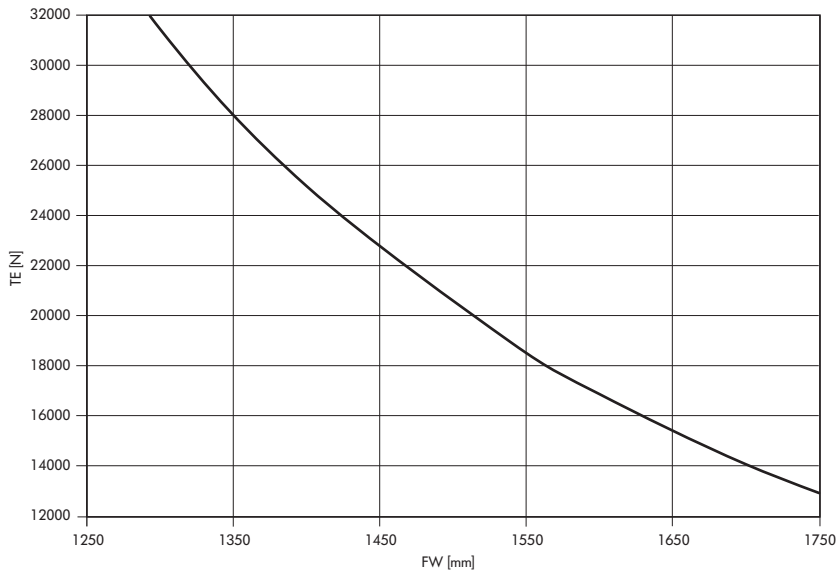
P_N [W]	n_P	n_N [min^{-1}]	f_N [Hz]	U_N [V]	I_N [A]	cosφ	η	J_R [$kgcm^2$]	I_S/I_N	M_S/M_N	M_B/M_N	M_P/M_N	M_N [Nm]	R_M [Ω]	$U_{SH\Delta}$ [V]	U_{SHY} [V]
306	12	398	50	400	1.84	0.53	0.45	34.73	1.79	2.4	2.07	2.06	7.34	18.4		26.9
306	12	398	50	230	3.19	0.53	0.45	34.73	1.79	2.4	2.07	2.06	7.34	18.4	15.6	
306	8	689	50	400	1.02	0.68	0.64	22.33	2.99	1.75	2.07	1.6	4.24	25.9		26.9
306	8	689	50	230	1.77	0.68	0.64	22.33	2.99	1.75	2.07	1.6	4.24	25.9	15.6	
455	6	889	50	400	1.08	0.85	0.72	22.33	3.37	1.65	1.69	1.31	4.89	22.3		30.7
455	6	889	50	230	1.87	0.85	0.72	22.33	3.37	1.65	1.69	1.31	4.89	22.3	17.7	
620	6	865	50	400	1.91	0.78	0.6	34.73	3.2	1.17	1.2	1.16	6.85	14.3		32
620	6	865	50	230	3.3	0.78	0.6	34.73	3.2	1.17	1.2	1.16	6.85	14.3	18.4	
620	4	1391	50	400	1.32	0.85	0.8	11.56	4.52	1.88	2.06	1.35	4.26	12.7		21.4
620	4	1391	50	230	2.29	0.85	0.8	11.56	4.52	1.88	2.06	1.35	4.26	12.7	12.4	
909	4	1382	50	400	1.98	0.83	0.8	13	4.53	2.1	2.21	1.58	6.28	7.8		19.2
909	4	1382	50	230	3.43	0.83	0.8	13	4.53	2.1	2.21	1.58	6.28	7.8	11.1	
909	2	2848	50	400	1.81	0.87	0.83	7.08	7.03	3.33	3.62	2.97	3.05	6.2		14.6
909	2	2848	50	230	3.14	0.87	0.84	7.08	7.03	3.33	3.62	2.97	3.05	6.2	8.5	
1240	4	1377	50	400	2.57	0.86	0.81	20.23	4.32	1.84	1.93	1.26	8.6	6.2		20.6
1240	4	1377	50	230	4.45	0.86	0.81	20.23	4.32	1.84	1.93	1.26	8.6	6.2	11.9	
1818	2	2840	50	400	3.36	0.91	0.86	12.4	7.38	3.43	3.57	2.89	6.11	2.9	4.4	13.3
1818	2	2840	50	230	5.82	0.91	0.86	12.4	7.38	3.43	3.57	2.89	6.11	2.9	7.7	

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

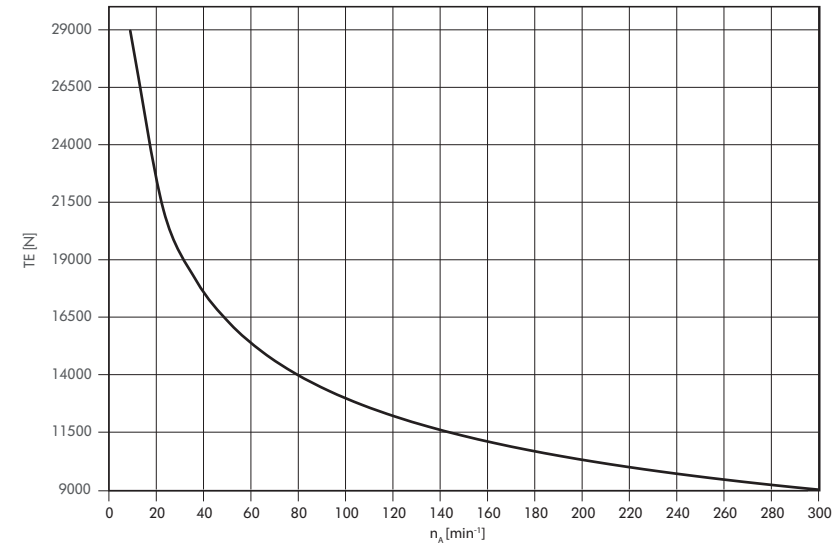
I_S/I_N = Ratio of startup current – rated current
M_S/M_N = Ratio of startup torque – rated torque
M_B/M_N = Ratio of pull-out torque – rated torque
M_P/M_N = Ratio of pull-up torque – rated torque
M_N = Rated torque of rotor
R_M = Branch resistance
$U_{SH\Delta}$ = Heater voltage in delta connection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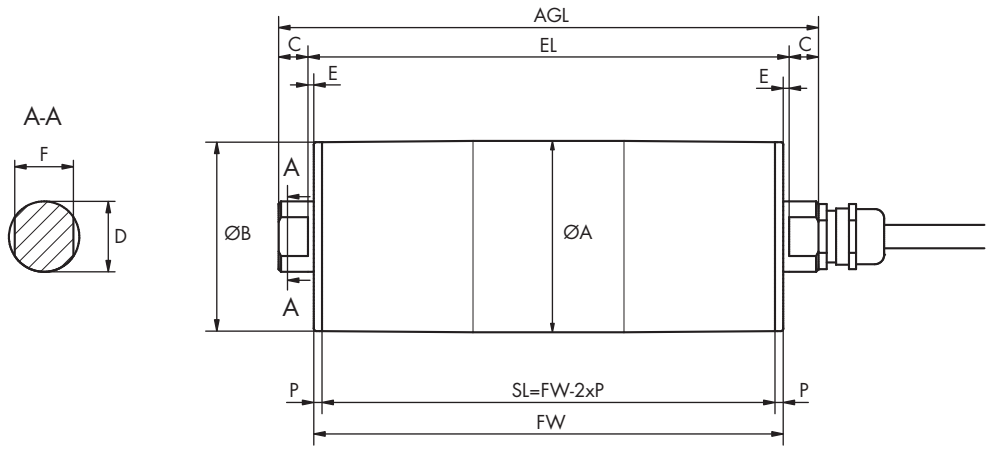
Dimensions

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

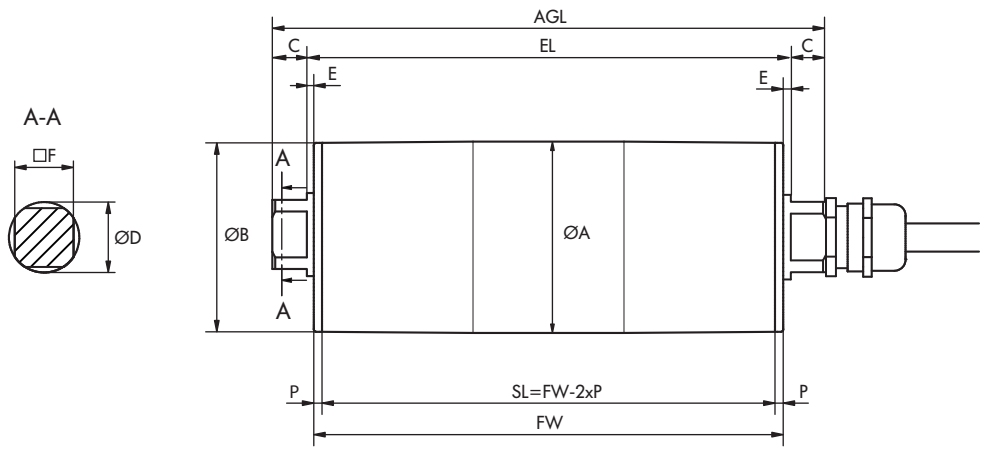


Fig.: Square shaft

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
DM 0165 cylindrical	Standard	162	162	25	30	16.5	25	3.5	FW – 7	FW + 33	FW + 83
DM 0165 cylindrical + key	Standard	162	162	25	30	16.5	25	3.5	FW – 7	FW + 33	FW + 83