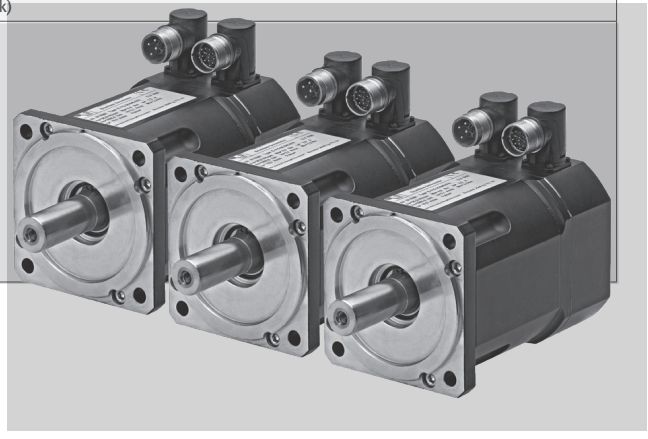
E MOTORS SERIES CHARACTERISTICS

Technology:	Synchronous Brushless Servomotors with sinusoidal fcem. Built using last generation of Iron Boron Neodymium magnets. 8 poles construction
Thermal Insulation:	F Class (max T = 140°C → Ta = 40°C + ΔT = 100°C) obtained using components in F and H class
Constructive Shape:	B5
Degree of protection:	IP65 – Natural cooling
Thermal Protection:	Through a PTC
Shaft :	Standard without key
Connections	2 orientable 90° connectors. The transducer connector (type M23 17 pins) includes the thermal sensor pins. The power connector (M23 o M40 types - in base to the motor size) includes the eventually present brake connections
Transducer:	Line Drive incremental Encoder with 2048 pulses per rotation + Hall sensors
Painting:	The motors are painted with protective resins (half luster black)
Options:	24Vdc brake. Shaft with key IP67 degree of protection 2048 pulses /rot. SINCOS 1Vpp Encoder Coupling with epicycloidal gear box



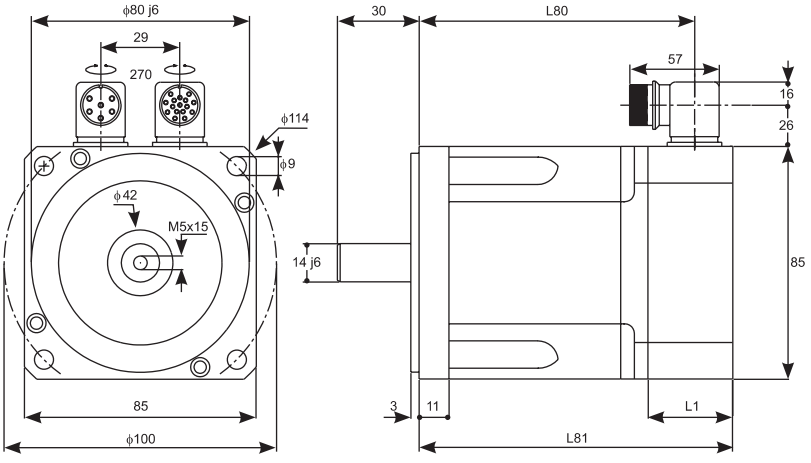
1		2	3	4		5	6		7	8	9		10	11	12		13	14
E	-	0	8	5	-	6	0	-	0	1	5	-	X	X	X	-	X	X

	Pos.	Description
	1	Motor identification label "E"
	2-3-4	Size: Identify the square side of the motor expressed in mm
	5-6	Nominal Velocity: Multiplied x 100 defines the motor nominal velocity expressed in rpm
	7-8-9	Stall Torque: Defines the motor stall torque expressed in tenth of Nm
	10	Brake 0= Brake not present. 1= 24VDC brake integrated inside the motor
	11	Motor Transducer 1= Incremental 5V Line Drive encoder with 2048 pulses x rot. + Hall sensors (standard) 2= SINCOS 1Vpp encoder with 2048 sinusoidal pulses x rot
	12	Motor Shaft 0= Shaft without key (standard) 1= Shaft with key
	13 - 14	Available for special version identification 00= Standard version 01= Forced Cooling

SQUARE 85 MM MOTORS

Electrical Characteristics		E-085-35-010 (*)	E-085-35-015	E-085-60-015	E-085-35-029	E-085-60-029	E-085-35-042	E-085-60-042	E-085-30-053	E-085-50-053
Stall Torque ΔT=100 °C – T_0	Nm	1	1,5		2,9		4,2		5,3	
Max Velocity - N_{max}	rpm	3500	3500	6000	3500	6000	3500	6000	3000	5000
Torque at N_{max} in S3		1	1,4	1,2	2,6	2,2	3,8	3,2	4,5	4
Nominal Torque - T_N	Nm	0,9	1,3		2,4		3,3		4	
Max Current - I_{max}	Arms	**3,5** (7,5)	**4** (7,5)	**6,6** (7,5)	8 (**7,5**)	**13** (13,5)	**12** (13,5)	19 (**18**)	**15** (13,5)	24 (**18**)
Max Torque - T_{Max}	Nm	**3,8**	**5,7**	**6**	**10,9**	**11,8**	**17,5**	**16,3**	**20,7**	**16,3**
Velocity N_{max1}	rpm	2800	2800	4800	3000	5000	3350	5500	2850	5000
Torque T_1	Nm	2	3	1,8	6,4	4,5	9,4	7,3	18,4	16,3
Voltage Constant - K_E	V/Krpm	66	86	55	88	55	88	55	93	55
Torque Constant - K_T	Nm/A	1,1	1,42	0,91	1,45	0,91	1,45	0,91	1,54	0,91
Rotor Inertia - J_R	gm²	0,06	0,092		0,172		0,253		0,333	
Weight without brake M	Kg	1,8	2,4		3,5		4,6		5,7	

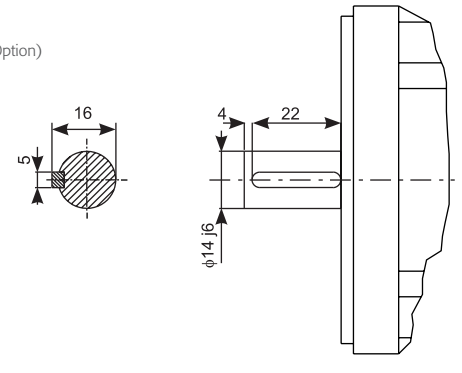
(*) Preliminary Data



Motor's Lengths		E-085-35-010	E-085-35-015	E-085-60-015	E-085-35-029	E-085-60-029	E-085-35-042	E-085-60-042	E-085-30-053	E-085-50-053
L80 without brake	mm	74	116		146		176		206	
L81 without brake	mm	87	130		160		190		220	
L80 with brake	mm		164		194		224		254	
L81 con freno	mm		178		208		238		268	
L1	mm	26	46							

Brake characteristics for square 85mm motors	
Supply Voltage [VDC]	24
Current [A]	0,67
Braking Torque [Nm]	11
Inertia [gm²]	0,106
Weight [Kg]	0,6

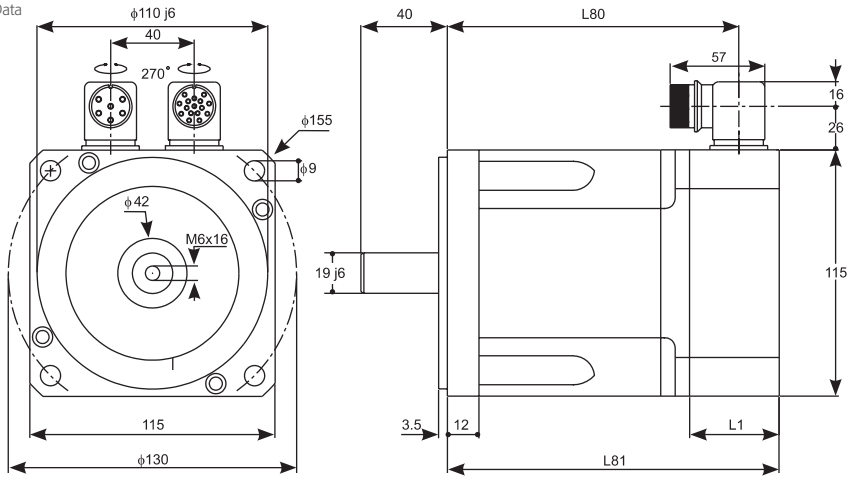
Key dimensions (Option)



SQUARE 115 MM MOTORS

Electrical Characteristics		E-115-30-022 (*)	E-115-30-040	E-115-60-040	E-115-30-076	E-115-50-076	E-115-30-113	E-115-50-113
Stall Torque ΔT=100 °C - T_0	Nm	2,2	4		7,6		11,3	
Max Velocity - N_{max}	rpm	3000	3000	6000	3000	5000	3000	5000
Torque at N_{max} in S3	Nm	2,1	3,6	3	6	4,8	8,5	6,4
Nominal Torque - T_N	Nm	2	3,2		5,4		7,7	
Max Current - I_{max}	Arms	8 (**7,5**)	10 (**7,5**)	18 (**13,5**)	19 (**18**)	31 (**18**)	28 (**18**)	47 (**36**)
Max Torque - T_{Max}	Nm	**8,2**	**11,9**	**12,2**	**29,1**	**17,5**	**29,1**	**35**
Velocity N_{max1}	rpm	2900	2900	5300	2850	3850	3000	5000
Torque T_1	Nm	8	11,1	5,9	24,3	8,2	29,1	35
Voltage Constant - K_E	V/Krpm	66	96	55	98	59	98	59
Torque Constant - K_T	Nm/A	1,1	1,59	0,91	1,62	0,98	1,62	0,98
Rotor Inertia - J_R	gm²	0,26	0,5		0,96		1,4	
Weight without brake M	Kg	3,9	5,6		8,5		11,4	

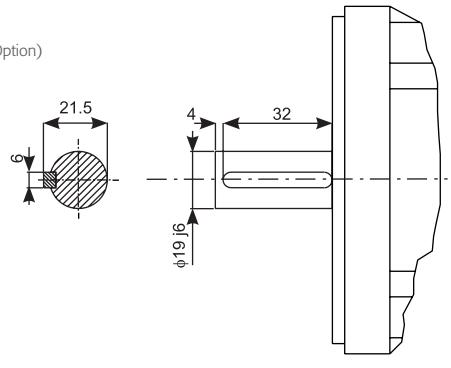
(*) Preliminary Data



Motor's Lengths		E-115-30-022	E-115-30-040	E-115-60-040	E-115-30-076	E-115-50-076	E-115-30-113	E-115-50-113
L80 without brake	mm	78	137,5		177,5		217,5	
L81 without brake	mm	91	160,5		200,5		240,5	
L80 with brake	mm		186,5		226,5		246,5	
L81 with brake	mm		209,5		249,5		289,5	
L1	mm	26	46					

Brake characteristics for square 115mm motors	
Supply Voltage [VDC]	24 +/- 6%
Current [A]	0,75
Braking Torque [Nm]	22
Inertia [gm²]	0,36
Weight [Kg]	1,1

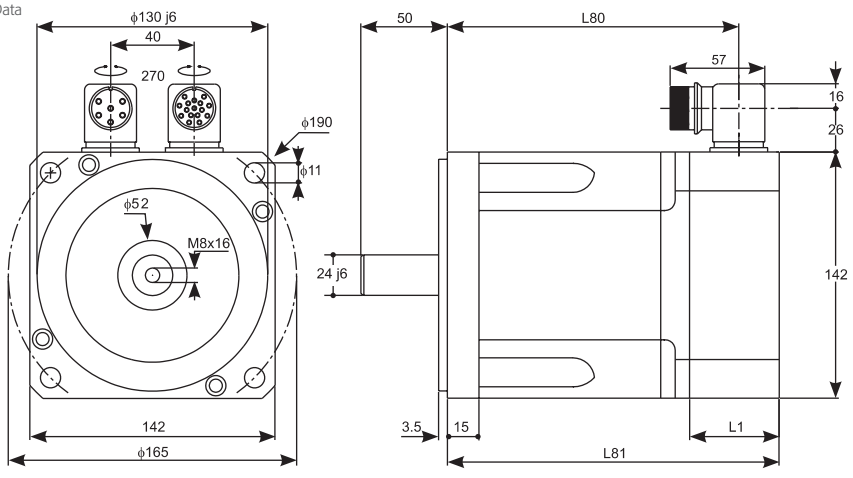
Key dimensions (Option)



SQUARE 142 MM MOTORS

Electrical Characteristics		E-142-30-050 (*)	E-142-30-100	E-142-50-100	E-142-30-190	E-142-45-190	E-142-30-270	E-142-45-270	E-142-30-340	E-142-40-340
Stall Torque ΔT=100 °C – T_0	Nm	5	10		19		27		34	
Max Velocity - N_{max}	rpm	3000	3000	5000	3000	4500	3000	4500	3000	4000
Torque at N_{max} in S3	Nm	4,2	8,3	6,8	12	7,5	14	7	18	12
Nominal Torque - T_N	Nm	4	7,6		12,3		18		25	
Max Current – I_{max}	Arms	18 (**18**)	26 (**18**)	40 (**36**)	50 (**36**)	69 (**36**)	62 (**36**)	98 (**60**)	84 (**60**)	112 (**60**)
Max Torque - T_{Max}	Nm	**19,8**	**27,6**	**35,7**	**55,3**	**39,8**	**63,1**	**66,4**	**105,1**	**74,4**
Velocity N_{max1}	rpm	3000	3000	4800	3000	4500	3000	4500	2950	4000
Torque T_1	Nm	19,8	27,6	29,7	55,3	39,8	63,1	66,4	94,6	74,4
Voltage Constant - K_E	V/Krpm	66	93	60	93	67	106	67	106	75
Torque Constant - K_T	Nm/A	1,1	1,54	0,99	1,54	1,11	1,74	1,11	1,74	1,24
Rotor Inertia - J_R	gm²	0,9	2,2		4,3		6,5		8,7	
Weight without brake M	Kg	6	11		16		21		26	

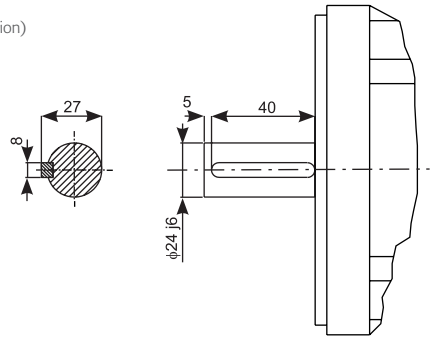
(*) Preliminary Data



Motor's Lengths		E-142-30-050	E-142-30-100	E-142-50-100	E-142-30-190	E-142-45-190	E-142-30-270	E-142-45-270	E-142-30-340	E-142-40-340
L80 without brake	mm	74	167		217		267		317	
L81 without brake	mm	112	187		237		287		337	
L80 with brake	mm		220,5		270,5		320,5		370,5	
L81 with brake	mm		240,5		290,5		340,5		390,5	
L1	mm	26	46							

Brake characteristics for square 142 mm motors	
Supply Voltage [Vdc]	24 +/- 6%
Current [A]	1
Braking Torque [Nm]	40
Inertia [gm²]	0,95
Weight [Kg]	1,4

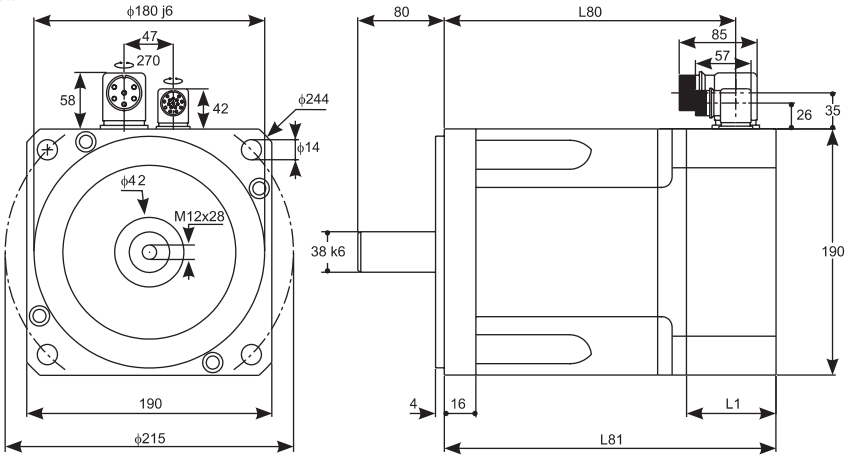
Key dimensions (Option)



SQUARE 190 MM MOTORS

Electrical Characteristics		E-190-30-100 (*)	E-190-30-150	E-190-40-150	E-190-25-280	E-190-40-280	E-190-20-500	E-190-30-500
Stall Torque ΔT=100 °C - T_0	Nm	10	15		28		50	
Max Velocity - N_{max}	rpm	3000	3000	4000	2500	4000	2000	3000
Torque at N_{max} in S3	Nm	7	9	7	18	11	35	28
Nominal Torque - T_N	Nm	8	11,5		19		35	
Max Current - I_{max}	Arms	22 (**18**)	27 (**18**)	**35,5** (36)	38 (**36**)	67 (**60**)	60 (**60**)	91 (**60**)
Max Torque - T_{Max}	Nm	**25,2**	**29,7**	**44,6**	**79,7**	**75,4**	**150,8**	**99**
Velocity N_{max1}	rpm	3000	3000	3750	2200	4000	2000	3000
Torque T_1	Nm	25	29,7	35,8	33	67	150,8	99
Voltage Constant - K_E	V/Krpm	82	100	76	134	76	152	100
Torque Constant - K_T	Nm/A	1,4	1,65	1,26	2,22	1,26	2,51	1,66
Rotor Inertia - J_R	gm²	4,8	5		9,3		18	
Weight without brake M	Kg	12	-		24		-	

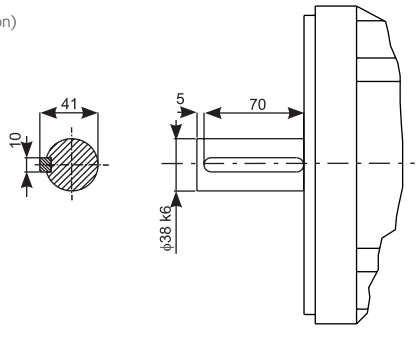
(*) Preliminary Data



Motor's Lengths		E-190-30-100	E-190-30-150	E-190-50-150	E-190-25-280	E-190-40-280	E-190-20-500	E-190-30-500
L80 without brake	mm	112	148		218		288	
L81 without brake	mm	99	132,5		194,5		264,5	
L80 with brake	mm		218,5		288,5		358,5	
L81 with brake	mm		203		265		335	
L1	mm	26	47					

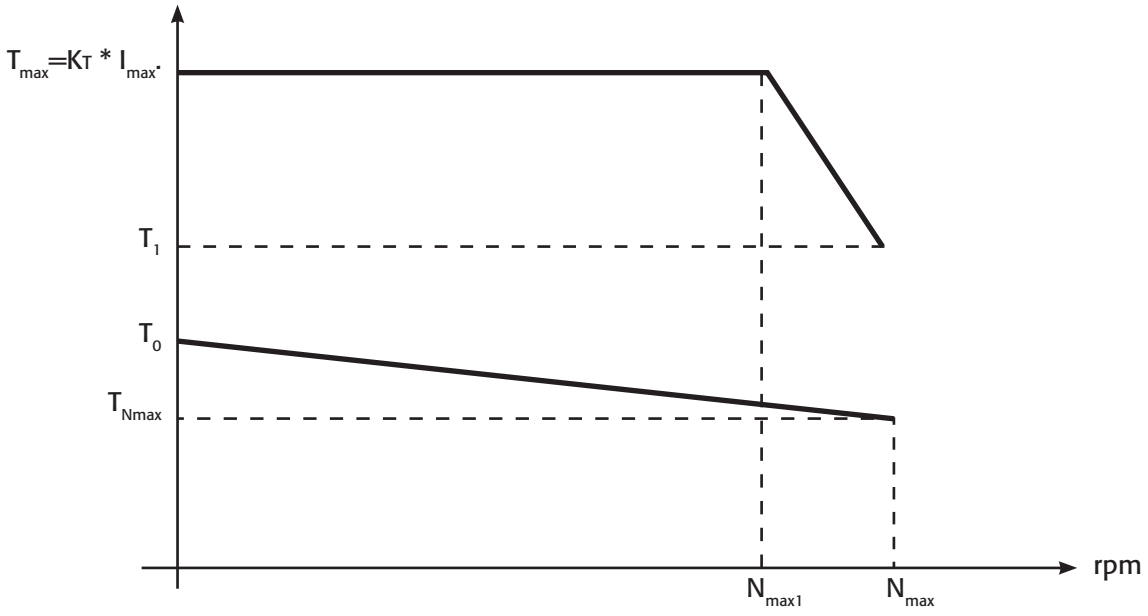
Brake characteristics for square 190 mm motors	
Supply Voltage [VDC]	24 +/- 6%
Current [A]	1,46
Braking Torque [Nm]	80
Inertia [gm²]	3,18
Weight [Kg]	4,1

Key dimensions (Option)



RULES FOR A CORRECT INTERPRETATION OF THE SUPPLIED MOTORS TORQUE VELOCITY DATA

The data supplied with all the motors allows to define a schematic representation of the related Torque / Velocity characteristic inclusive of both continuous and impulsive torque working area.



T_0 = Stall Torque continuously supplied by the motor with its rotor practically still and an over temperature on its winding (respect the environment) of 100°C. This value is measured with the motor in air fixed with a thermo insulated flange.

T_{max} = Max torque supplied by the motor for a limited time (during acceleration) can be approximate with the relation KT * I_{max}.
Attention as I_{max} must be used the smaller between motor peak current and the peak current of the smaller drive that can match the motor. In case of different pairing (Drive & Motor) this parameters (and some others) must be re-calculated.

N_{max} = Max motor velocity till is guaranteed the TN_{max} Torque. It is important to note that this torque is guaranteed with the DC BUS to a nominal voltage (drive supplied with a 380 VAC three phases) and however intermittently (S3 - 50%).

N_{max1} = Velocity till the motor supplies, for a limited time (3-4 sec), the Tmax torque.

T_1 = Max torque that the motor can supply, for a limited time (3-4 sec), to the N_{max} velocity

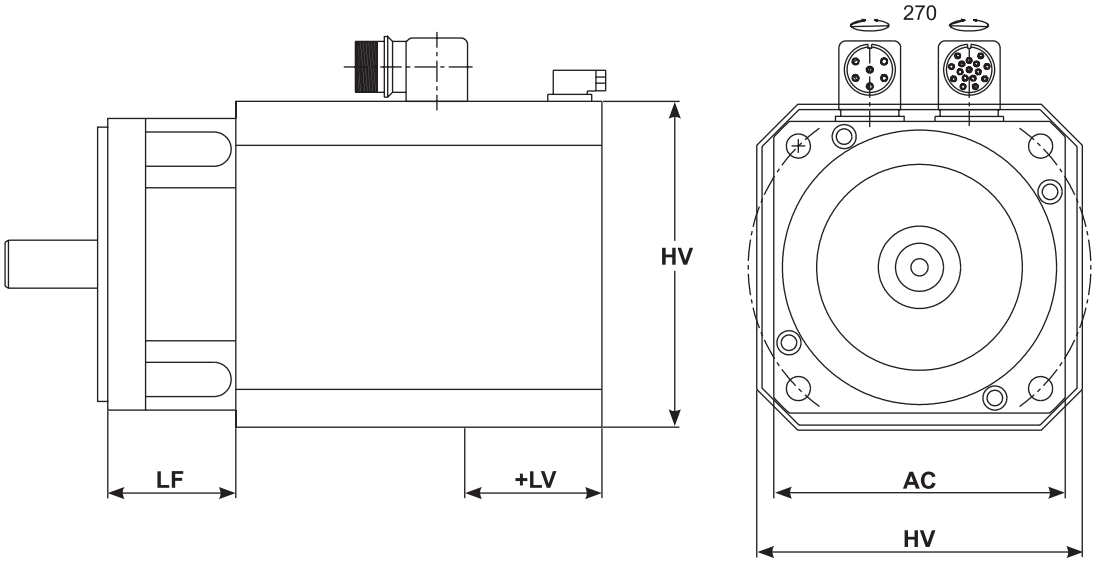
Max current acceptable by the motor

xx (yy)

Max current that the associated drive can supply

FORCED COOLING MOTORS

This option is available only for the motor square 142 mm and 190 mm.
It foreseen the application of a 230VaAC mono-phase fan and of a proper carter. This modify the motor's dimensions :



Servomotor Size	Fan Power [W]	LF dimension [mm]	Square AC [mm]	HV dimension [mm]	Elongation LV [mm]
E-142-…	30	60	142	160	80
E-190-…	40	60	190	210	100

MOTORS/DRIVER PAIRING TABLE

Motor	Drive	Stall Torque ΔT 100°C [rpm]	Peak Torque [Nm]	Max Velocity [rpm]
E-085-35-010 -…	ASP3 – 2,5 / 7,5	1	3,8	3500
E-085-35-015 -…	ASP3 – 2,5 / 7,5	1,5	5,7	3500
E-085-60-015 -…	ASP3 – 2,5 / 7,5	1,5	5,7	6000
E-085-35-029 -…	ASP3 – 2,5 / 7,5	2,9	10,9	3500
E-085-60-029 -…	ASP5 – 4,5 / 13,5	2,9	11,6	6000
E-085-35-042 -…	ASP5 – 4,5 / 13,5	4,2	17,5	3500
E-085-60-042-…	**ASP5 – 4,5 / 13,5**	**4,1**	**12,2**	**6000**
E-085-60-042 -…	ASP9 – 9 / 18	4,2	16,3	6000
E-085-30-053 -…	ASP9 – 4,5 / 13,5	5,3	20,7	3000
E-085-50-053 -…	ASP9 – 9 / 18	5,3	16,3	5000
E-115-30-022 -…	ASP3 – 2,5 / 7,5	2,2	8,2	3000
E-115-30-040 -…	ASP3 – 2,5 / 7,5	4	11,9	3000
E-115-60-040 -…	ASP5 – 4,5 / 13,5	4	12,2	6000
E-115-30-076 -…	ASP9 – 9 / 18	7,6	29,1	3000
E-115-50-076 -…	ASP9 – 9 / 18	7,6	17,5	5000
E-115-30-113 -…	ASP9 – 9 / 18	11,3	29,1	3000
E-115-50-113 -…	ASP18 – 18 / 36	11,3	35	5000
E-142-30-050 -…	ASP9 – 9 / 18	5	19,8	3000
E-142-30-100 -…	ASP9 – 9 / 18	10	27,6	3000
E-142-50-100 -…	ASP18 – 18 / 36	10	35,7	5000
E-142-30-190 -…	ASP18 – 18 / 36	19	55,3	3000
E-142-45-190 -…	ASP18 – 18 / 36	19	39,8	4500
E-142-30-270 -…	ASP18 – 18 / 36	27	63,1	3000
E-142-45-270 -…	ASP30 – 30 / 60	27	66,4	4500
E-142-30-340 -…	ASP30 – 30 / 60	34	105,1	3000
E-142-40-340 -…	ASP30 – 30 / 60	34	74,4	4000
E-190-30-100 -…	ASP9 – 9 / 18	10	25,2	3000
E-190-30-150 -…	**ASP9 – 9 / 18**	**14,9**	**29,7**	**3000**
E-190-30-150 -…	ASP18 – 18 / 36	15	44,6	3000
E-190-40-150 -…	ASP18 – 18 / 36	15	44,6	4000
E-190-25-280 -…	ASP18 – 18 / 36	28	79,7	2500
E-190-40-280 -…	ASP30 – 30 / 60	28	75,4	4000
E-190-20-500 -…	ASP30 – 30 / 60	50	150,8	2000
E-190-30-500 -…	**ASP30 – 30 / 60**	**49,6**	**99**	**3000**

In bold style are enhanced the configurations where the drive limits the continuous torque that the motor can supply