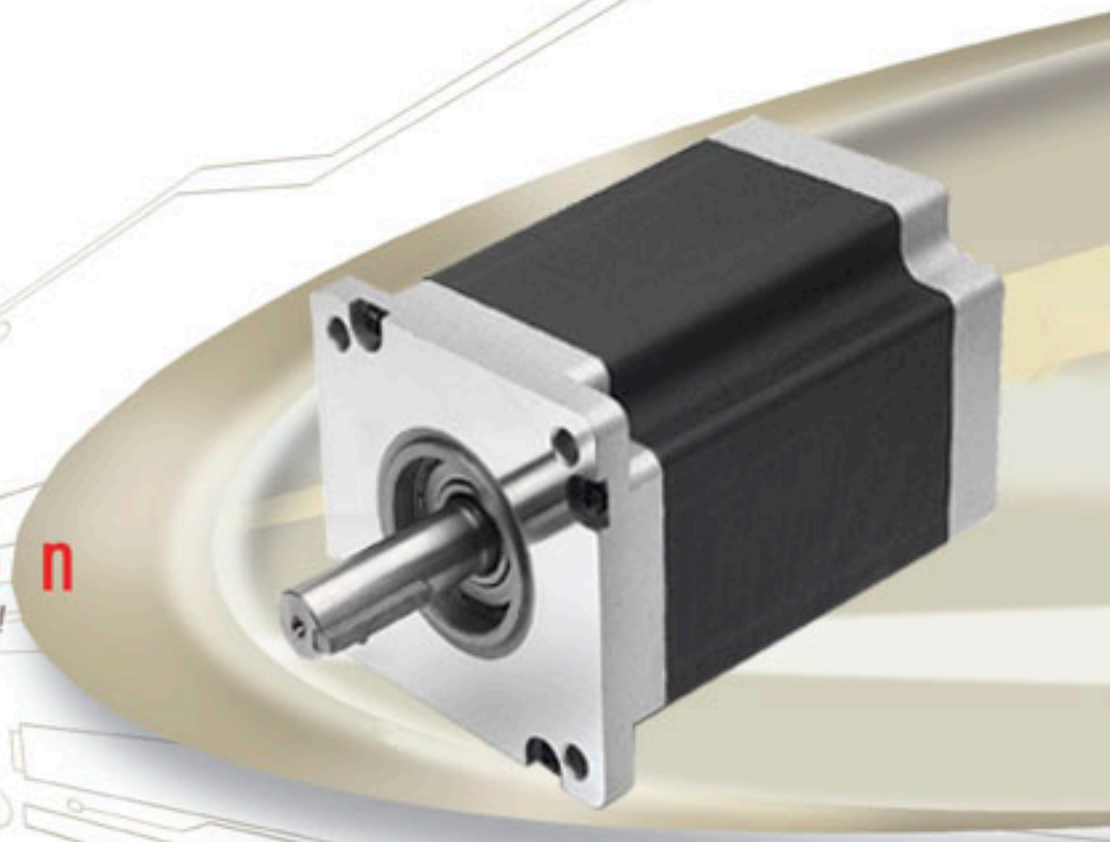
entrainement

MOTEURS PAS A PAS



motion

la force de la gamme !

transtechnik

servomécanismes

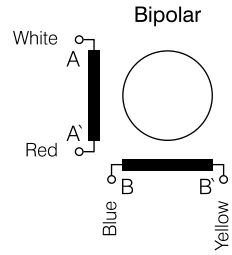
2-phase stepper motors

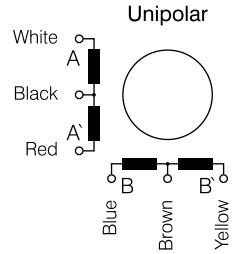
Permanent magnet stepper motors, 1.8°-18°, types SP0618 - SP5575

Option

Getriebe Steuerung

Pin configuration





Order identifier

SP 3515 S 0506 - A

A = one shaft end

- with molded-on plug
- with high-quality plain bearings on both sides

Because of their simple construction (stator windings consist of only 2 ring coils and the current flow then generates a magnetic flow via vertically punched out pole shoes), the SP permanent magnet motors are used in countless low-priced device applications where bigger step angles are sufficient.

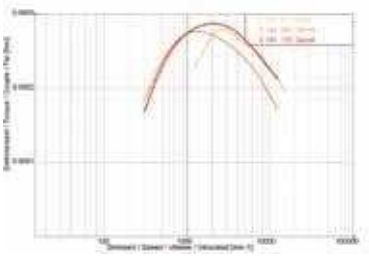
Available power sizes (other version of winding, shaft and flange on request)

Type	Step resolution °	Current per winding A/winding	Voltage per winding V/winding	Holding torque N cm	Resistance per winding Ohm/winding	Inductance per winding mH/winding	Rotor inertia g cm²	Weight kg	Diameter (mm)
SP0618M0204	18°	0.250	3.0	0.045	12.0	10.00	0.002	0.002	6
SP0818M0204	18°	0.238	5.0	0.059	21.0	1.37	0.002	0.003	8
SP1018M0204	18°	0.220	3.3	0.160	15.0	3.00	0.010	0.004	10
SP1518M0104	18°	0.065	12.0	0.320	190.0	37.00	1.000	0.012	15
SP1518M0204	18°	0.24	12.0	0.350	50.0	9.00	1.000	0.012	15
SPG1518M0504-50	0.36°	0.50	5.0	13.500	10.0	2.30	1.000	0.012	15
SPG1518M0504-102	0.176°	0.50	5.0	20.000	10.0	2.30	1.000	0.012	15
SP2018M0506	18°	0.500	5.0	0.500	10.0	1.85	1.000	0.026	20
SP2515M0406	15°	0.430	5.0	1.000	11.5	2.30	1.000	0.036	25
SP2575M0206	7.5°	0.240	12.0	1.600	50.0	12.00	1.000	0.036	25
SP2575M0506	7.5°	0.500	5.0	1.400	10.0	2.00	1.000	0.036	25
SP2575M0704	7.5°	0.760	3.8	1.000	5.0	3.00	1.000	0.036	25
SP3575S0506	7.5°	0.500	5.0	4.000	10.0	3.80	5.000	0.090	35
SP3575M0906	7.5°	0.860	5.0	5.500	5.8	6.50	7.500	0.090	35
SP4275S0606	7.5°	0.590	5.0	5.000	8.6	4.50	9.600	0.110	42
SP4275M0806	7.5°	0.810	5.0	6.000	6.2	5.50	9.600	0.130	42
SP5575M0106	7.5°	0.120	12.0	15.000	100.0	107.00	12.500	0.270	57
SP5575M0604	7.5°	0.625	5.6	12.000	9.0	19.50	12.500	0.270	57

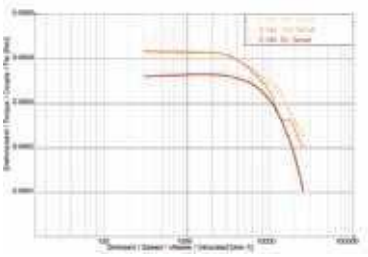
All data refer to 1 half of the winding or unipolar!

Speed/torque curves

SP0618M0204



SP0818M0204



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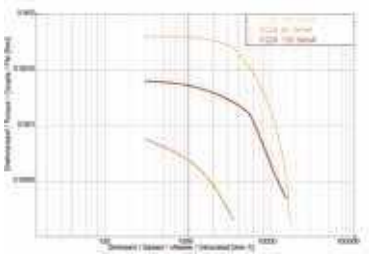
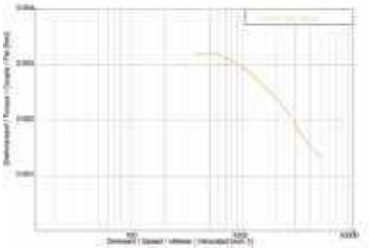


SP1518M0104



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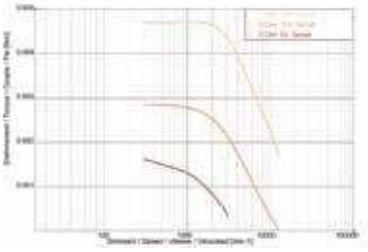

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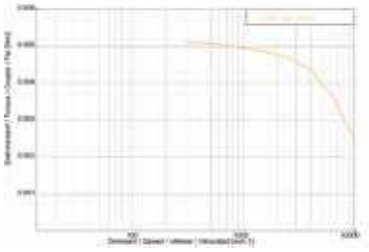

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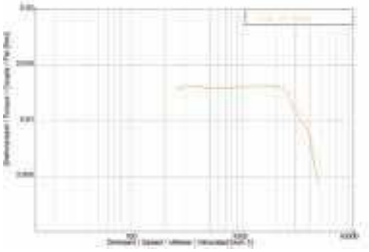

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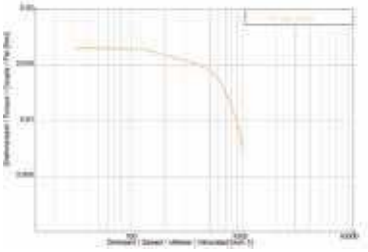

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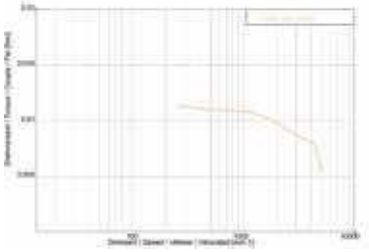

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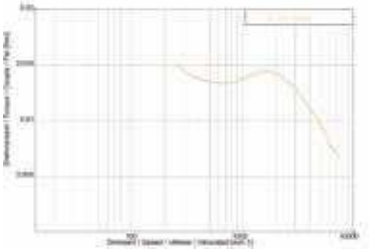

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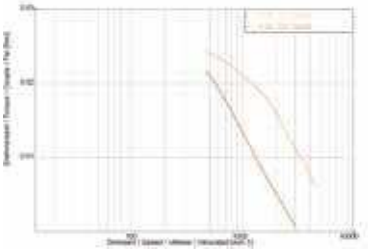

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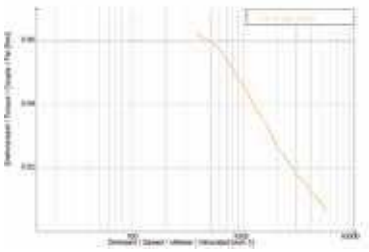
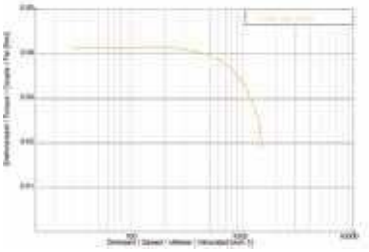


SP4275S0606



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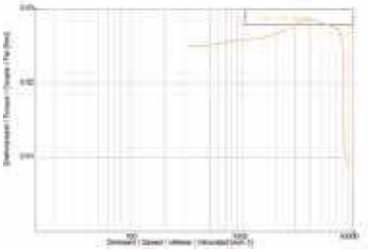

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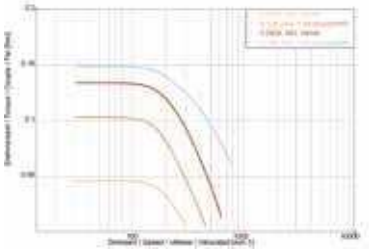

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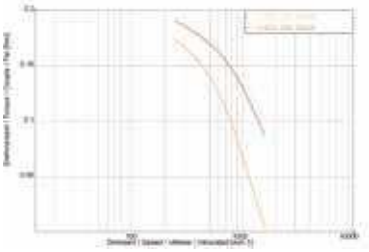
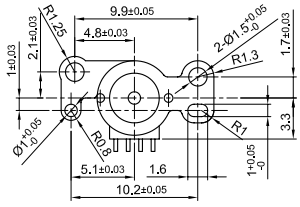


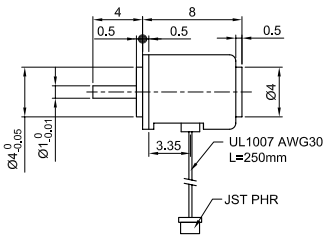
Permanent magnet stepper motors, 1.8°-18°, types SP0618 - SP5575

SP0618M

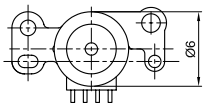
Front view and mounting



Side view

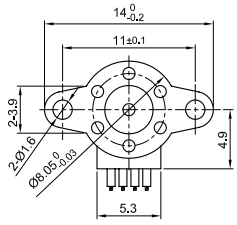


Rear view

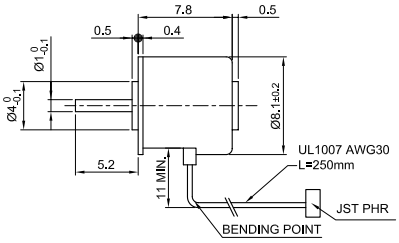


SP0818M

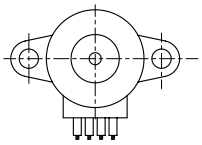
Front view and mounting



Side view

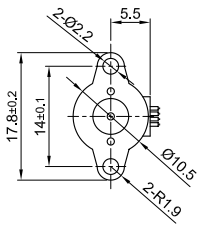


Rear view

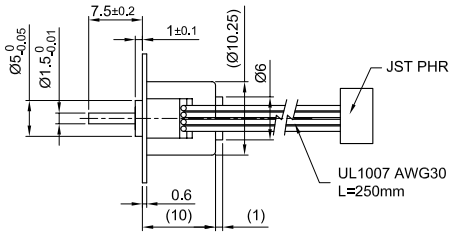


SP1018M

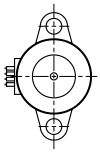
Front view and mounting



Side view

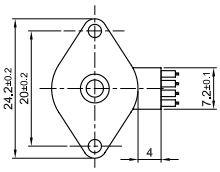


Rear view

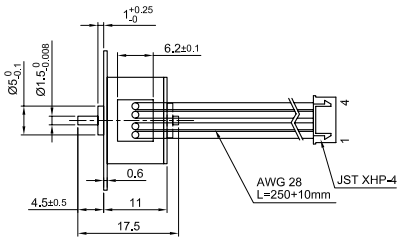


SP1518M

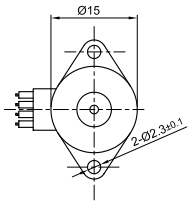
Front view and mounting



Side view

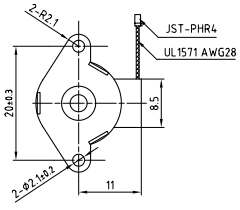


Rear view

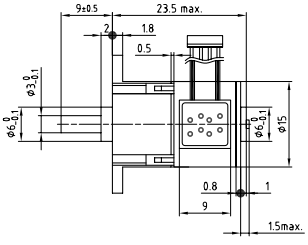


SPG1518M

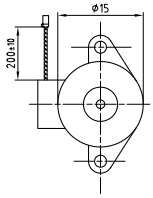
Front view and mounting



Side view

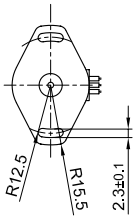


Rear view

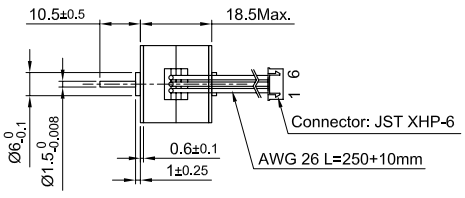


SP2018M

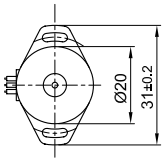
Front view and mounting



Side view

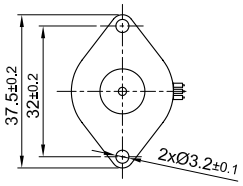


Rear view

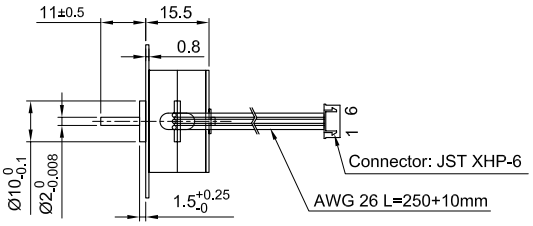


SP2515M

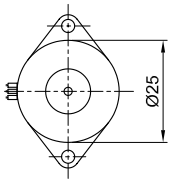
Front view and mounting



Side view

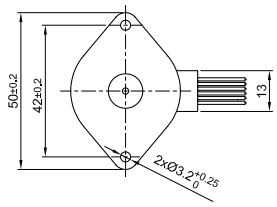


Rear view

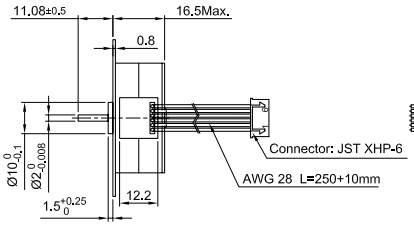


SP3575S

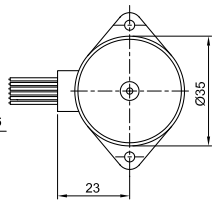
Front view and mounting



Side view

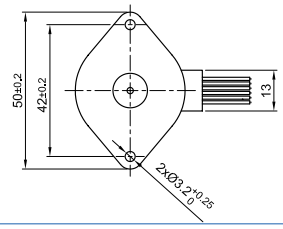


Rear view

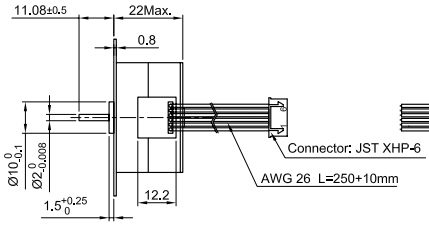


SP3575M

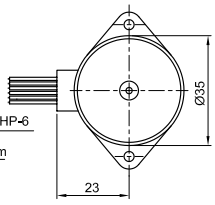
Front view and mounting



Side view

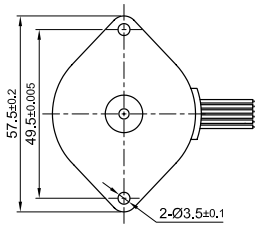


Rear view

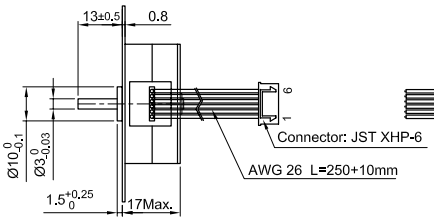


SP4275S

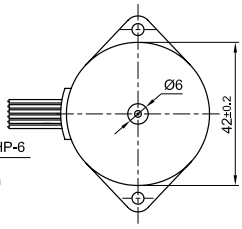
Front view and mounting



Side view

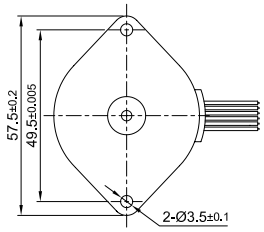


Rear view

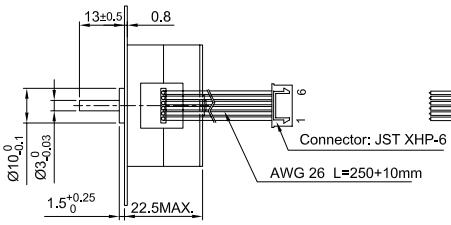


SP4275M

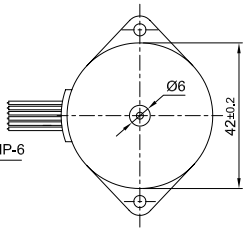
Front view and mounting



Side view

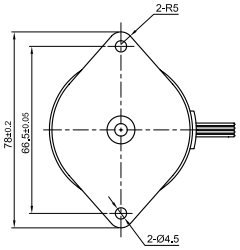


Rear view

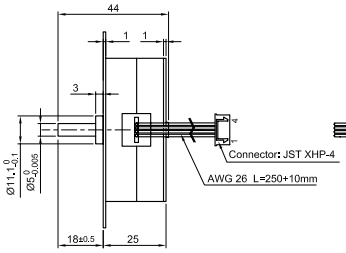


SP5575M

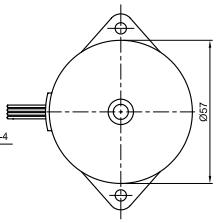
Front view and mounting



Side view



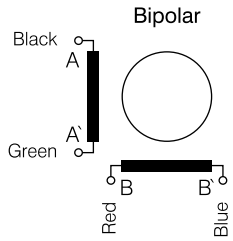
Rear view



Type ST2018 - sizes S, M, L - 1.8°

Option

Pin configuration

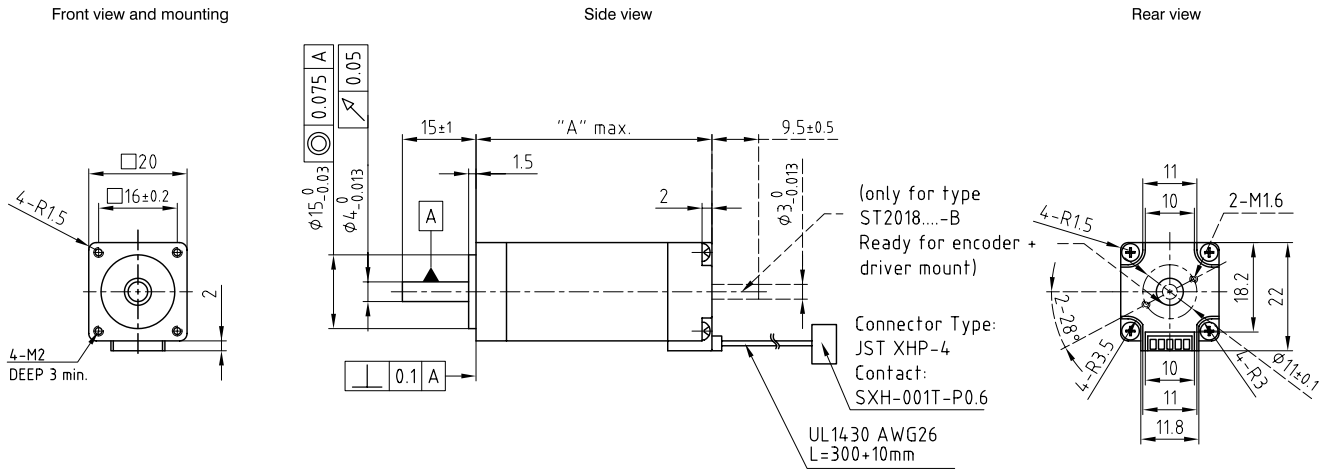


Order identifier

ST 2018 S 0604 -(A)

A = one shaft end
B = two shaft ends for encoder

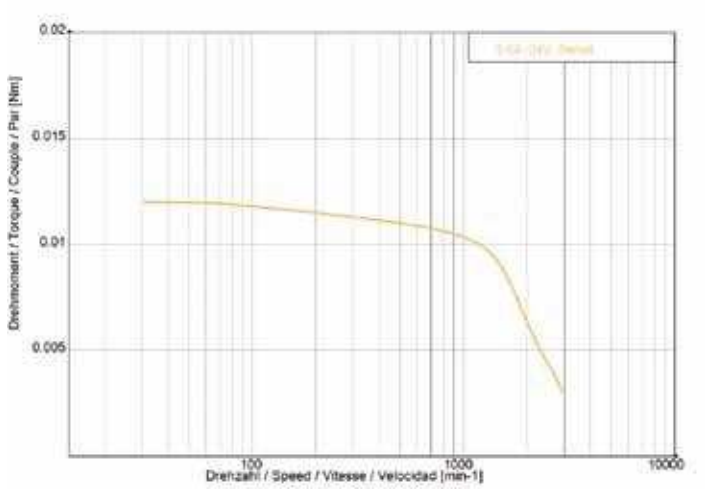
Outline drawing (in mm)



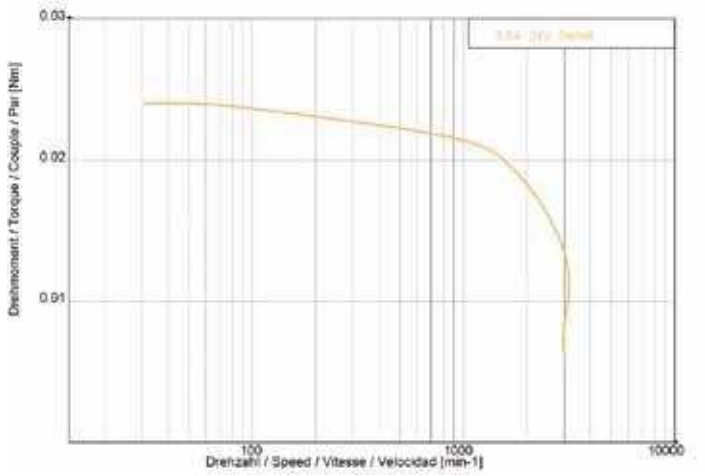
Available power sizes (others on request)							
Type	Current per winding A/winding	Holding torque Ncm	Resistance per winding Ohm/winding	Inductance per winding mH/winding	Rotor inertia g cm²	Weight kg	Length "A" mm
ST2018S0604	0.60	1.80	6.5	1.70	2.0	0.06	33
ST2018M0804	0.80	3.00	5.4	1.50	2.0	0.08	42
ST2018L0804	0.80	3.60	6.0	2.20	2.3	0.09	48

Speed/torque curves

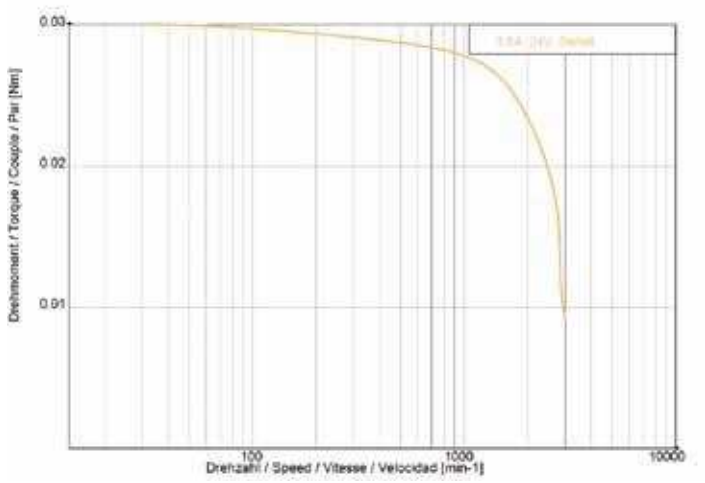
ST2018S0604



ST2018M0804



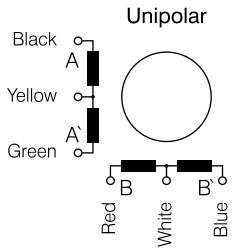
ST2018L0804



Type ST2818 - sizes S, M, L - 1.8°

Option

Pin configuration

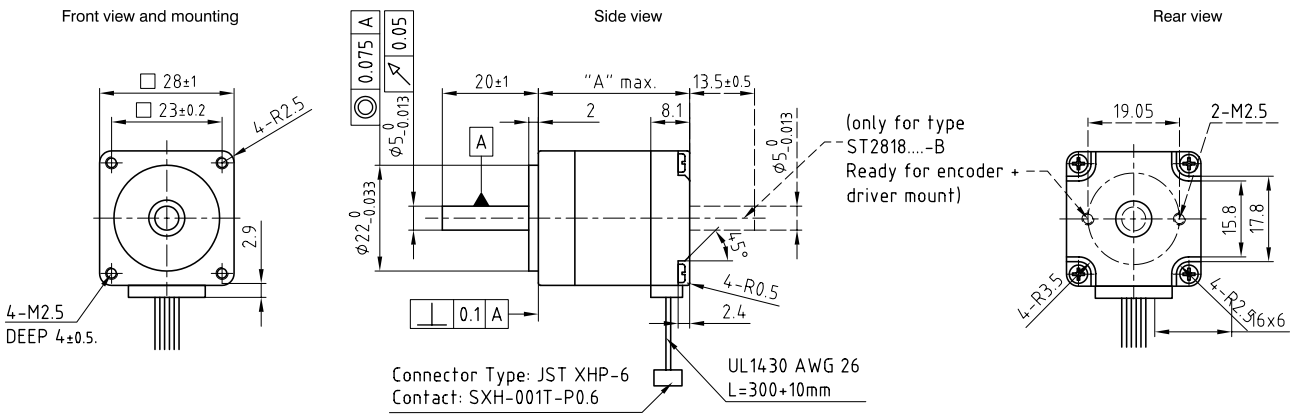


Order identifier

ST 2818 S 1006 - (A)

A = one shaft end
B = two shaft ends for encoder or brake

Outline drawing (in mm)

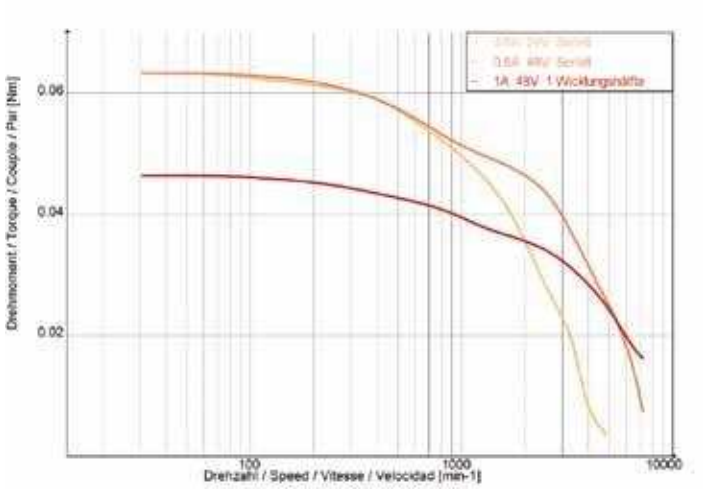


Available power sizes (others on request)							
Type	Current per winding A/winding	Holding torque N cm	Resistance per winding Ohm/winding	Inductance per winding mH/winding	Rotor inertia gcm²	Weight kg	Length "A" mm
ST2818S1006	0.95	4.3	2.8	1.0	9	0.110	32
ST2818M1006	0.95	7.5	3.4	1.2	12	0.176	45
ST2818L1006	0.95	9.0	4.6	1.4	18	0.250	51

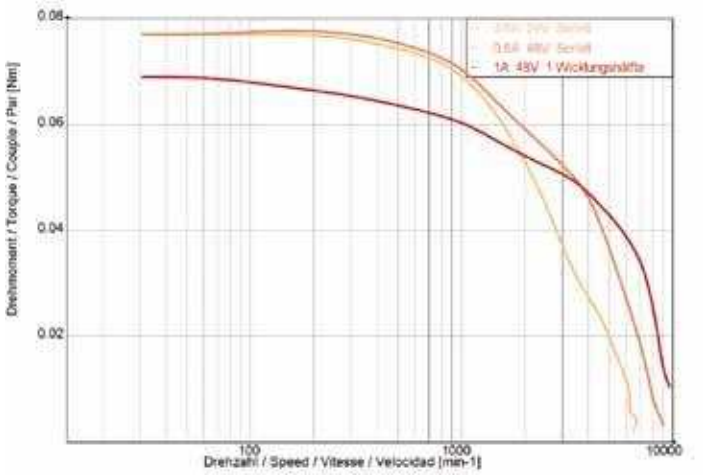
All data refer to 1 half of the winding or unipolar!

Speed/torque curves

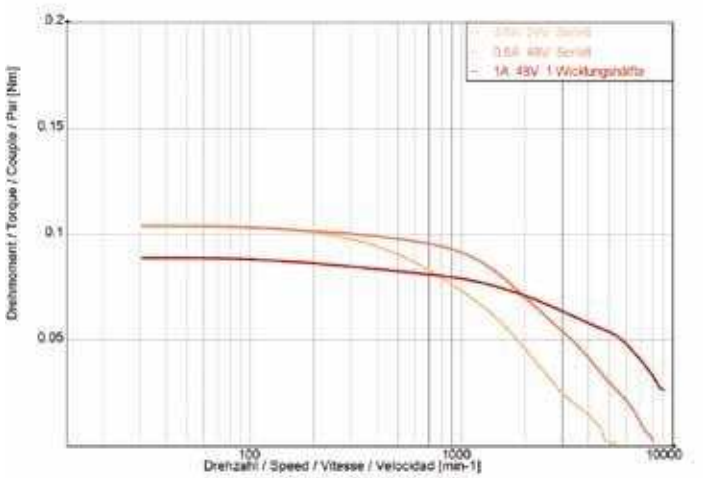
ST2818S1006



ST2818M1006



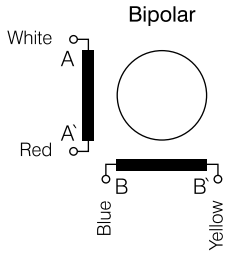
ST2818L1006



Type ST3518 - sizes S, M, L - 1.8°

Option

Pin configuration

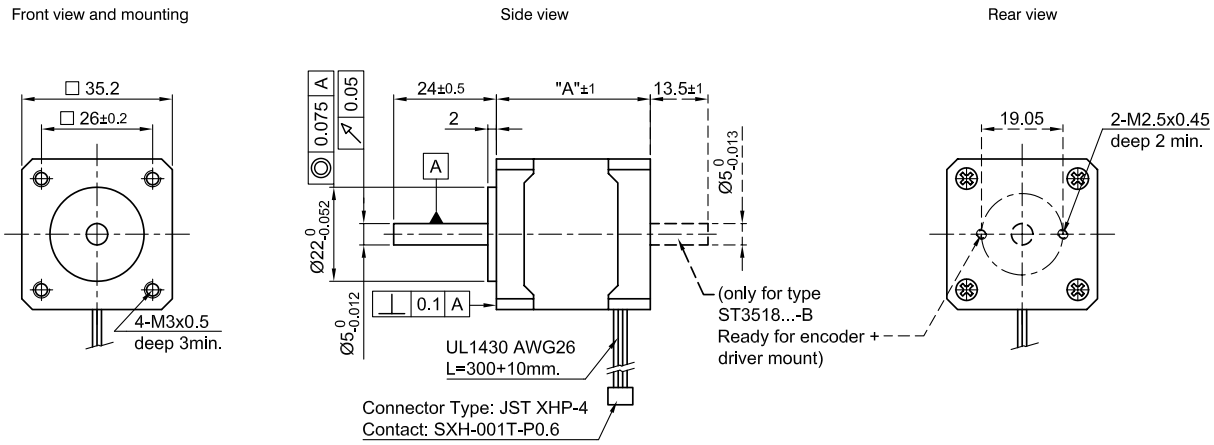


Order identifier

ST 3518 S 0804 - A

A = one shaft end
B = two shaft ends for encoder

Outline drawing (in mm)

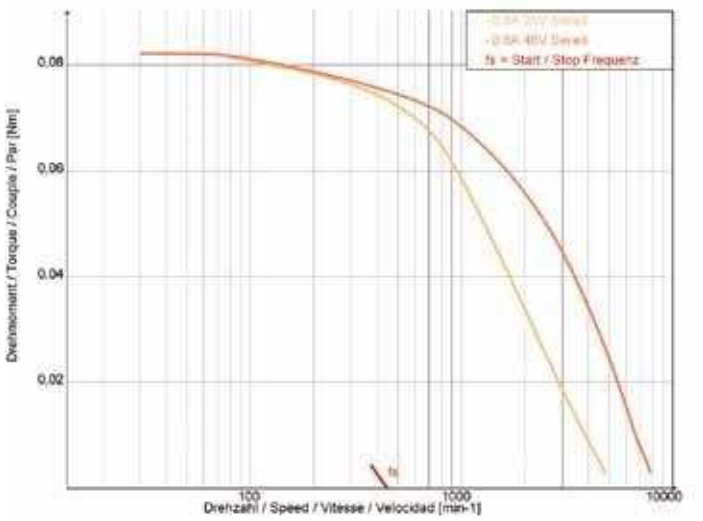


Available power sizes (others on request)							
Type	Current per winding A/winding	Holding torque N cm	Resistance per winding Ohm/winding	Inductance per winding mH/winding	Rotor inertia g cm²	Weight kg	Length "A" mm
ST3518S0804	0.8	5.1	4.0	2.3	10	0.15	26.0
ST3518M1004	1.0	14.0	2.7	4.3	14	0.18	36.0
ST3518L1204	1.2	23.0	3.4	2.8	43	0.30	52.0

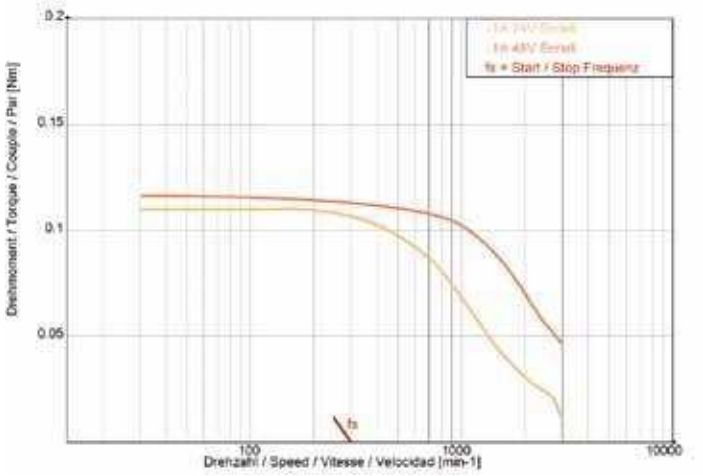
All data refer to 1 half of the winding or unipolar!

Speed/torque curves

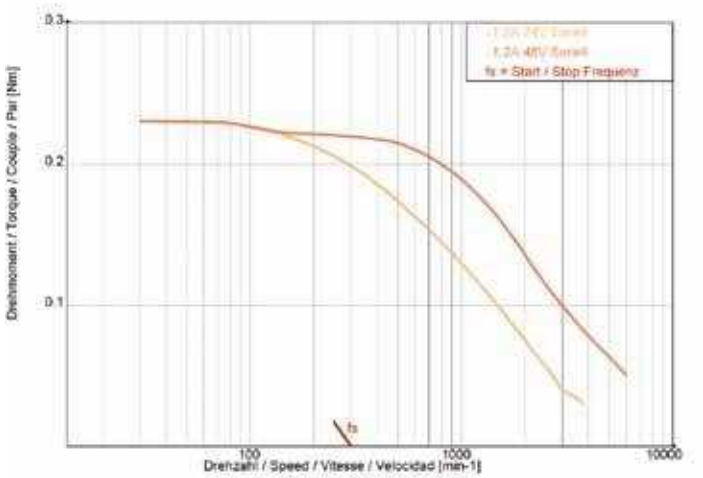
ST3518S0804



ST3518M1004



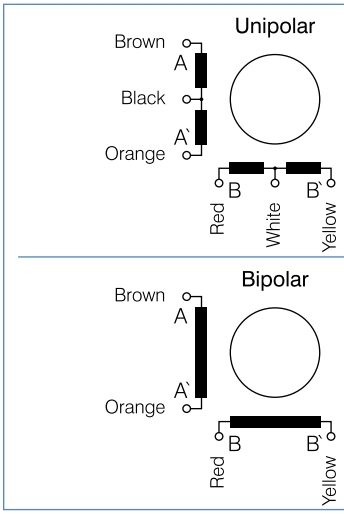
ST3518L1204



Type ST4209 - size X, S, M, L - 0.9°

Option

Pin configuration

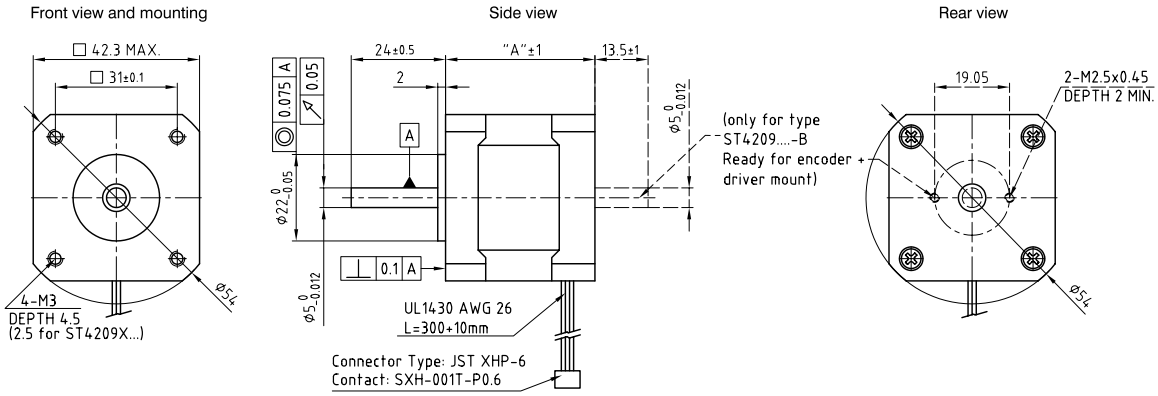


Order identifier

ST 4209 S 1006 - A

A = one shaft end
B = two shaft ends
for encoder or brake

Outline drawing (in mm)



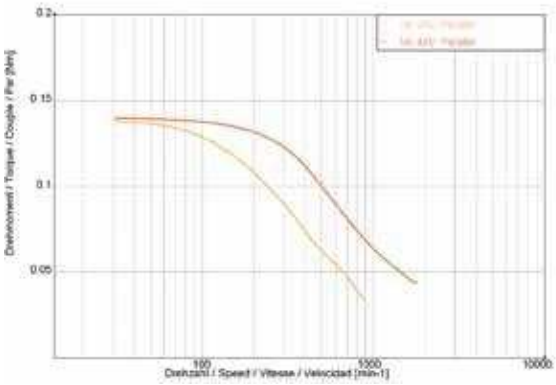
Available power sizes (others on request)

Type	Current per winding A/winding	Holding torque N cm	Resistance per winding Ohm/winding	Inductance per winding mH/winding	Rotor inertia g cm²	Weight kg	Length "A" mm
ST4209X1004	1.00	17.0	8.70	18.0	20	0.15	22.0
ST4209S0404	0.42	7.6	13.00	7.5	35	0.22	33.5
ST4209S1006	0.95	15.0	4.20	4.0	35	0.22	33.5
ST4209S1404	1.33	22.0	2.10	5.2	35	0.22	33.5
ST4209M1206	1.20	25.0	3.30	4.0	54	0.28	39.5
ST4209M1704	1.68	36.0	1.65	4.0	54	0.28	39.5
ST4209L1206	1.20	31.0	3.30	4.8	68	0.35	47.5
ST4209L1704	1.68	44.0	1.65	5.0	68	0.35	47.5

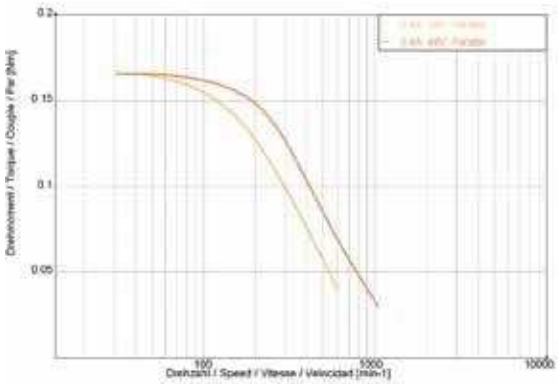
All data refer to 1 half of the winding or unipolar!

Speed/torque curves

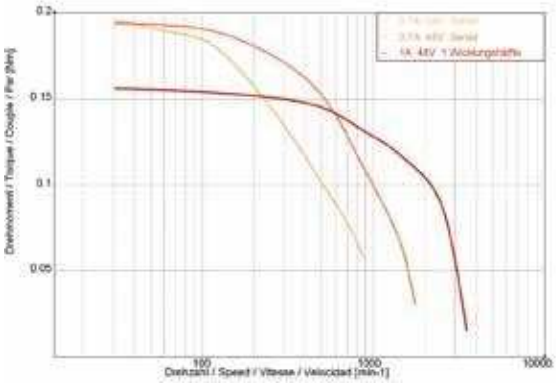
ST4209X1004



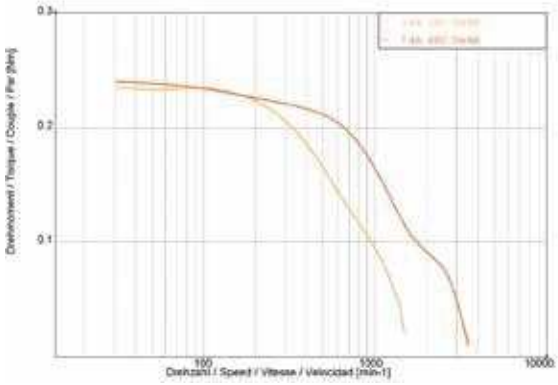
ST4209S0404



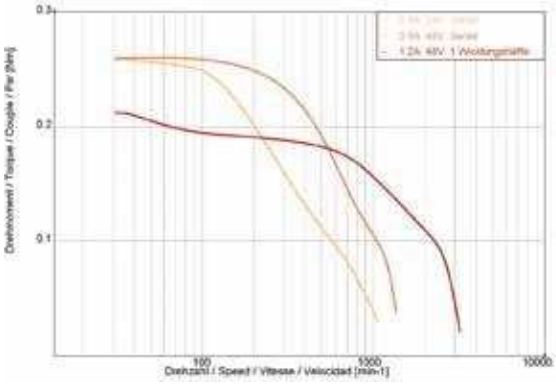
ST4209S1006



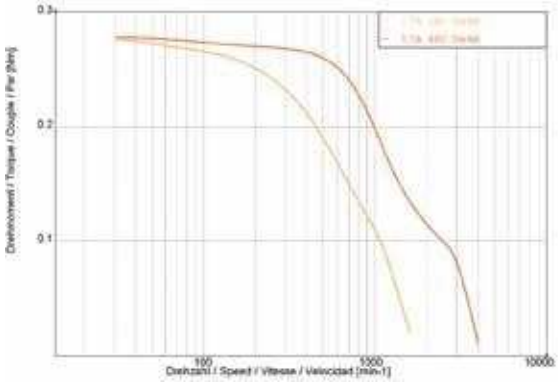
ST4209S1404



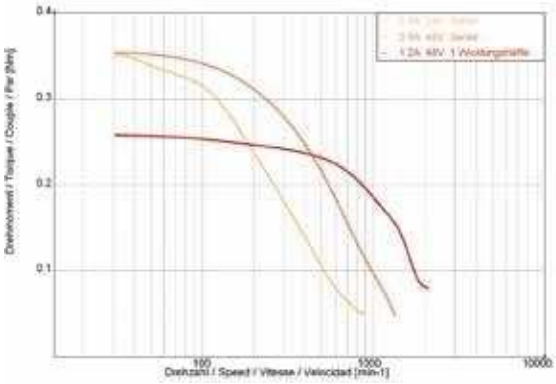
ST4209M1206



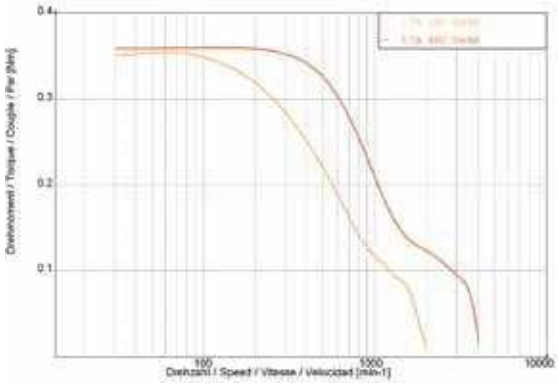
ST4209M1704



ST4209L1206



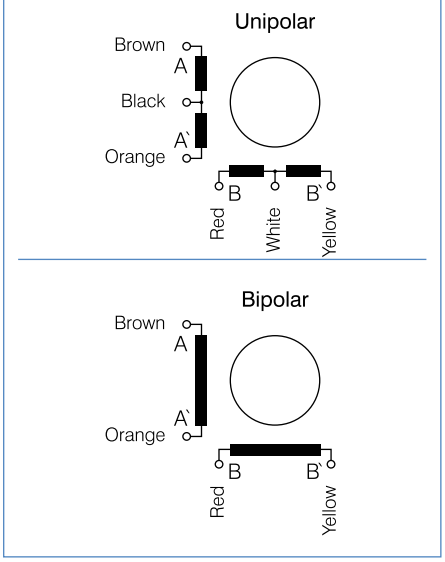
ST4209L1704



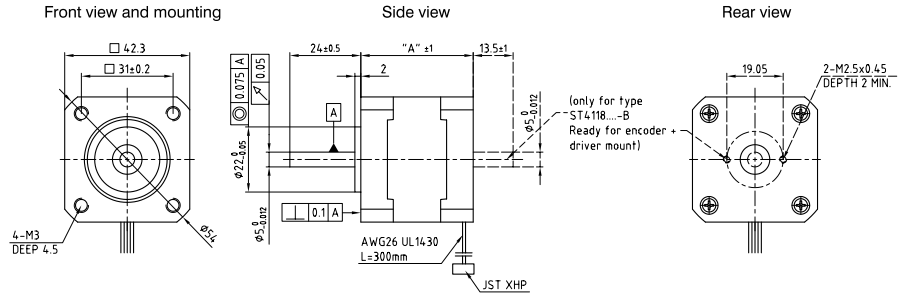
Type ST4118 - sizes S, M, L, D - 1.8

Option

Pin configuration



Outline drawing (in mm)



Order identifier

ST 4118 S 1404 - A

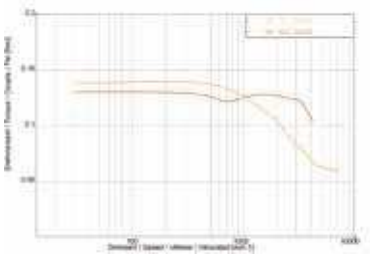
A = one shaft end
B = two shaft ends
for encoder or brake

Available power sizes (others on request)

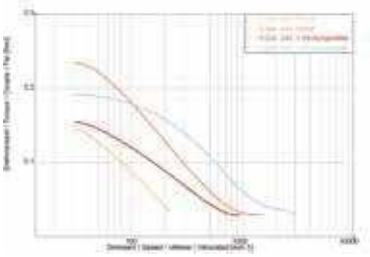
Type	Current per winding A/winding	Holding torque N cm	Resistance per winding Ohm/winding	Inductance per winding mH/winding	Rotor inertia g cm²	Weight kg	Length "A" mm
ST4118X0404	0.40	1.7	24.00	36.00	20	0.15	26
ST4118X1404	1.40	9.0	2.00	1.60	20	0.15	26
ST4118S0206	0.22	15.0	75.00	53.00	38	0.20	31
ST4118S0406	0.35	16.0	30.00	21.70	38	0.20	31
ST4118S0706	0.70	16.0	7.60	6.80	38	0.20	31
ST4118S1006	0.95	15.0	3.90	2.80	38	0.20	31
ST4118S1404	1.40	20.0	2.00	3.60	38	0.20	31
ST4118M0406	0.40	28.0	30.00	25.00	57	0.24	38
ST4118M0706	0.70	28.0	9.50	8.00	57	0.24	38
ST4118M0906	0.90	28.0	5.70	6.80	57	0.24	38
ST4118M1206	1.20	28.0	3.10	2.90	57	0.24	38
ST4118M1404	1.40	24.0	1.20	1.70	57	0.24	38
ST4118M1804	1.80	28.0	1.10	1.85	57	0.24	38
ST4118L0804	0.80	50.0	9.30	17.00	82	0.34	49
ST4118L1206	1.20	35.0	3.30	4.30	82	0.34	49
ST4118L1804	1.80	50.0	1.75	3.30	82	0.34	49
ST4118L3004	3.00	50.0	0.63	1.03	82	0.34	49
ST4118D1804	1.80	80.0	3.00	7.00	102	0.50	60
ST4118D3004	3.00	80.0	1.10	2.70	102	0.50	60

Speed/torque curves

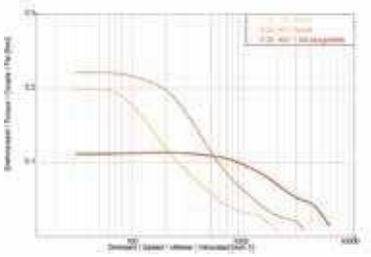
ST4118X1404



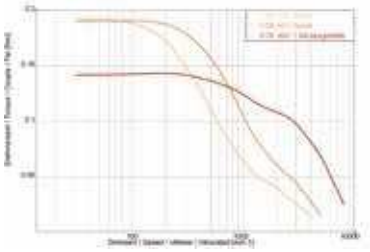
ST4118S0206



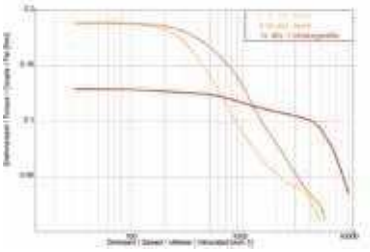
ST4118S0406



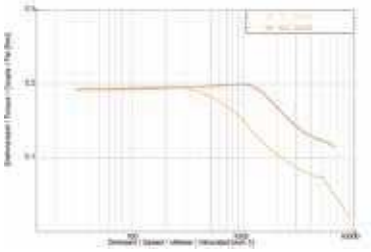
ST4118S0706



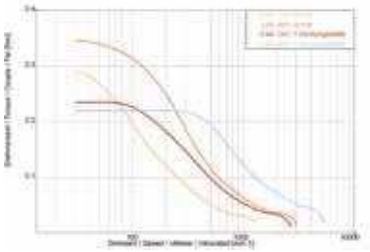
ST4118S1006



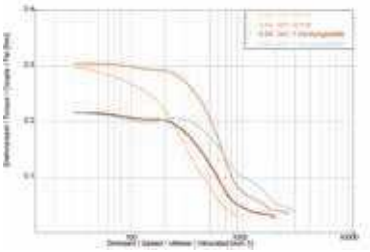
ST4118S1404



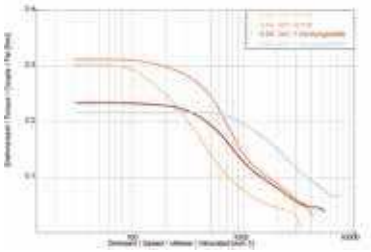
ST4118M0406



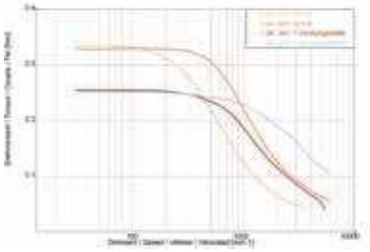
ST4118M0706



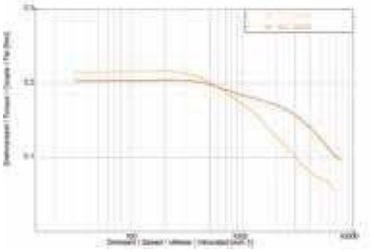
ST4118M0906



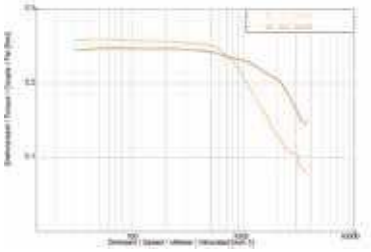
ST4118M1206



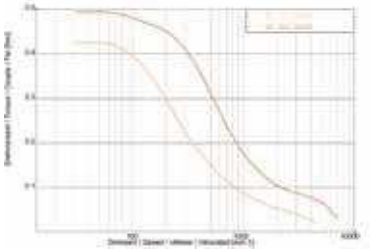
ST4118M1404



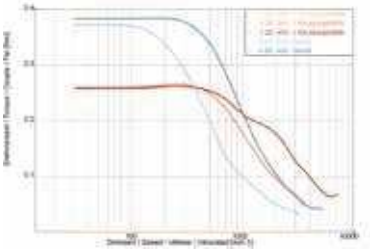
ST4118M1804



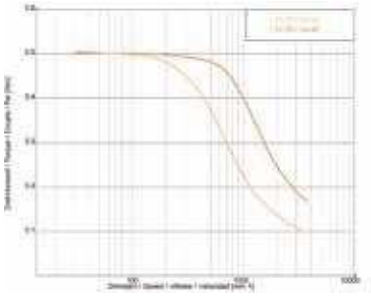
ST4118L0804



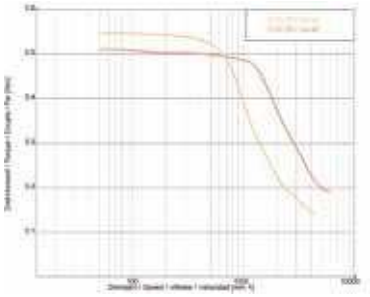
ST4118L1206



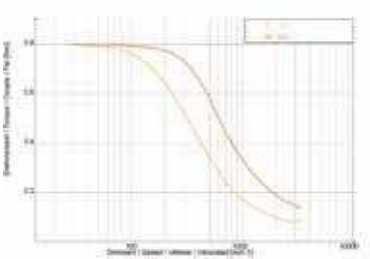
ST4118L1804



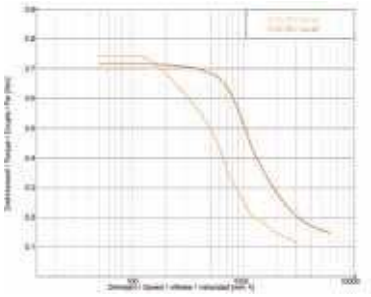
ST4118L3004



ST4118D1804



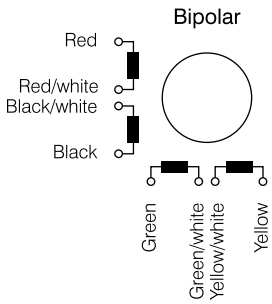
ST4118D3004



Type ST5709 - size X, S, M, L, C - 0.9°

Option

Pin configuration

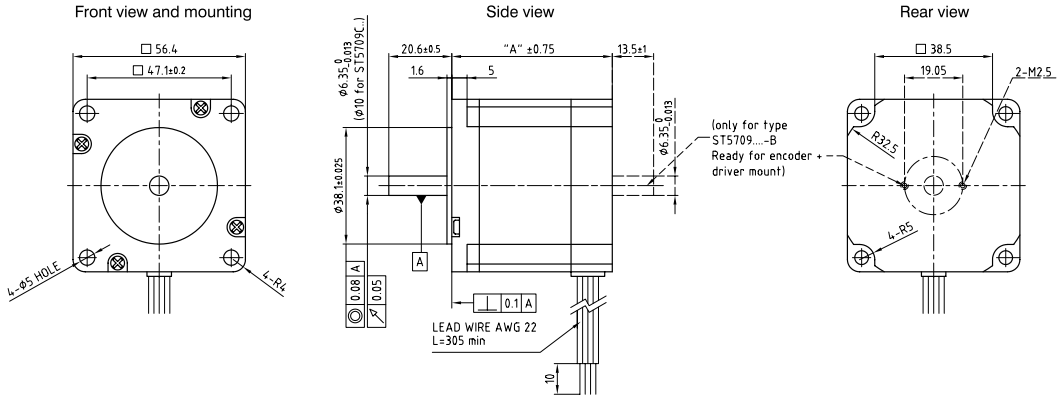


Order identifier

ST 5709 X 1108 -(A)

A = one shaft end
B = two shaft ends for encoder or brake

Outline drawing (in mm)

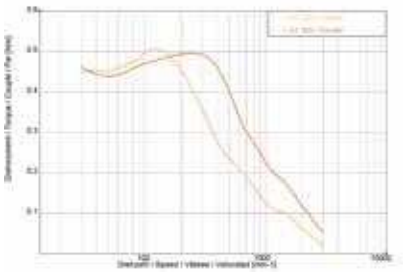


Available power sizes (others on request)							
Type	**Current per winding** A/winding	**Holding torque** Ncm	**Resistance per winding** Ohm/winding	**Inductance per winding** mH/winding	**Rotor inertia** g cm²	**Weight** kg	**Length "A"** mm
ST5709X1108	1.1	43	4.00	5.0	120	0.45	43.5
ST5709X2508	2.5	43	0.85	1.0	120	0.45	43.5
ST5709S1208	1.2	75	5.00	11.6	275	0.65	52.5
ST5709S2608	2.6	75	1.30	1.8	275	0.65	52.5
ST5709M1208	1.2	85	5.00	12.3	300	0.7	55.0
ST5709M2608	2.6	85	1.12	2.6	300	0.7	55.0
ST5709L1108	1.1	135	7.20	16.0	480	1.0	77.5
ST5709L4008	4.0	135	0.50	1.0	480	1.0	77.5
ST5709C3008	3.0	160	1.70	5.3	720	1.5	103.0

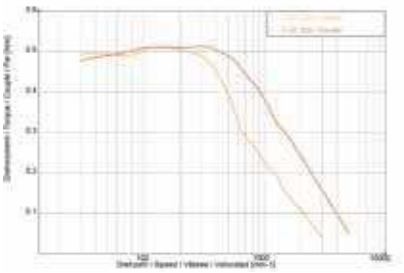
All data refer to 1 half of the winding or unipolar!

Speed/torque curves

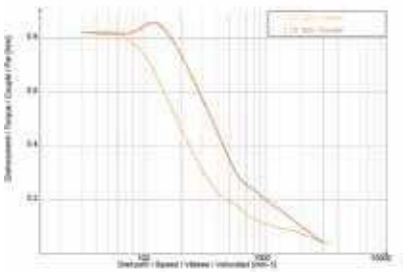
ST5709X1108



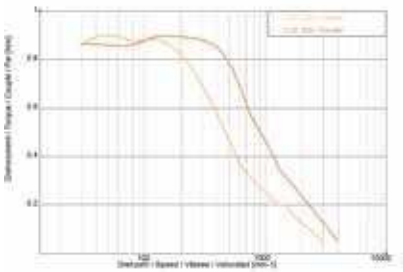
ST5709X2508



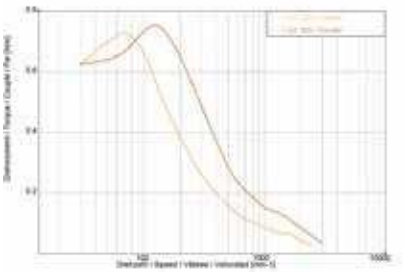
ST5709S1208



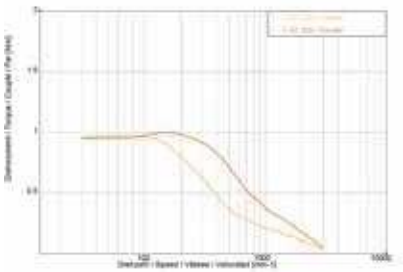
ST5709S2608



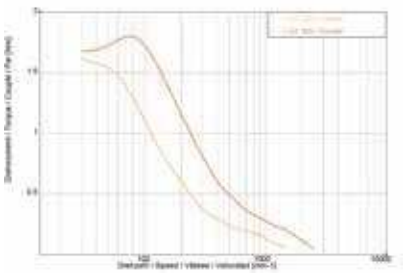
ST5709M1208



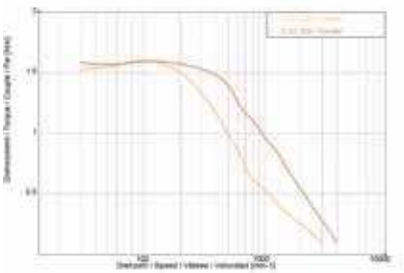
ST5709M2608



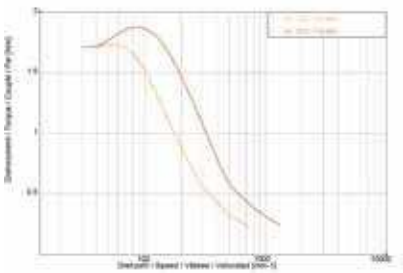
ST5709L1108



ST5709L4008



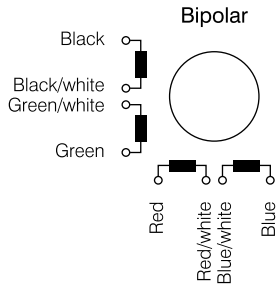
ST5709C3008



Type ST5909 - size X, M, L - 0.9°

Option

Pin configuration

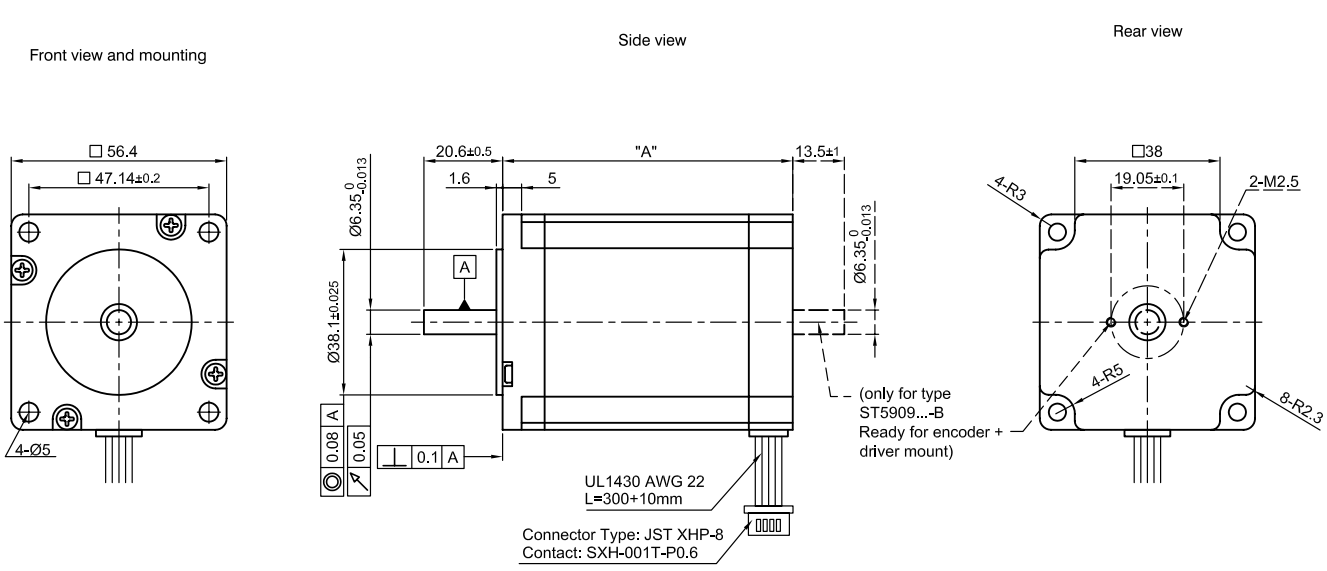


Order identifier

ST 5909M2008 -A

A = one shaft end
B = two shaft ends for encoder or brake

Outline drawing (in mm)

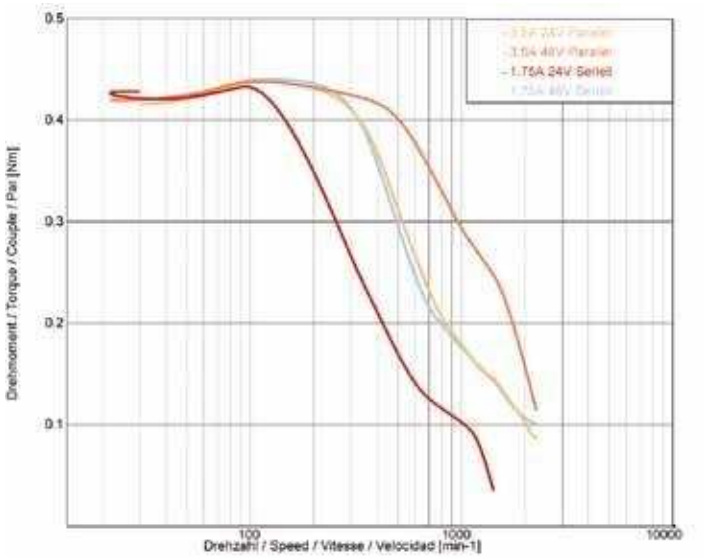


Available power sizes (others on request)							
Type	Current per winding A/winding	Holding torque N cm	Resistance per winding Ohm/winding	Inductance per winding mH/winding	Rotor inertia g cm²	Weight kg	Length "A" mm
ST5909X2508	2.5	43	0.85	1.6	120	0.45	41
ST5918M1008	2.0	74	1.80	4.5	300	0.70	56
ST5909L2008	2.0	140	2.40	6.7	480	1.00	76

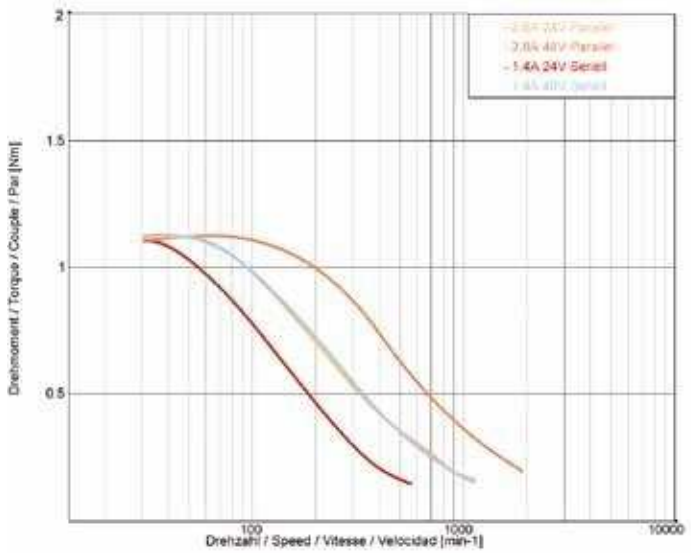
All data refer to 1 half of the winding or unipolar!

Speed/torque curves

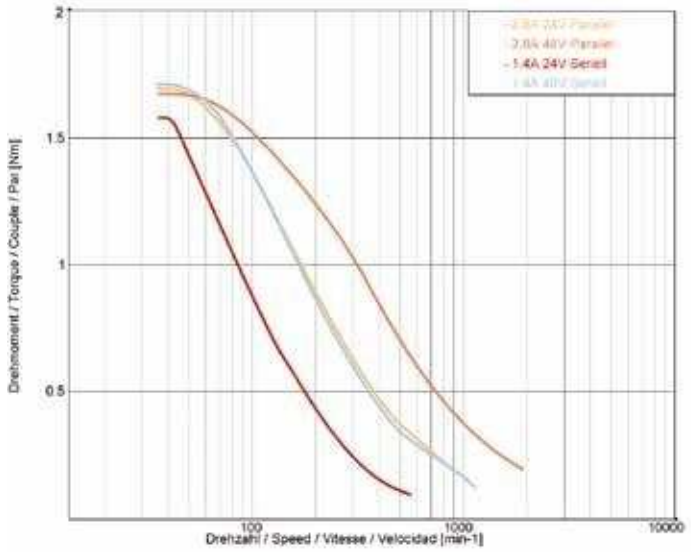
ST5909X2508



ST5909M2008



ST5909L2008

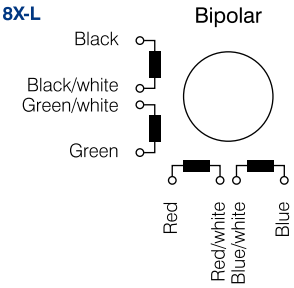


Type ST5918 - size X, S, M, L, D - 1.8°

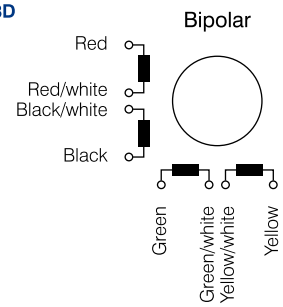
Option

Pin configuration

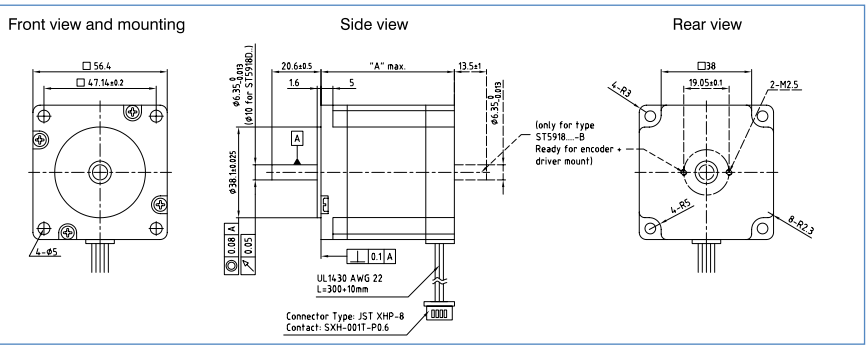
ST5918X-L



ST5918D



Outline drawing (in mm)



Order identifier

ST 5918 X 1008 - A

A = one shaft end

B = two shaft ends for encoder or brake

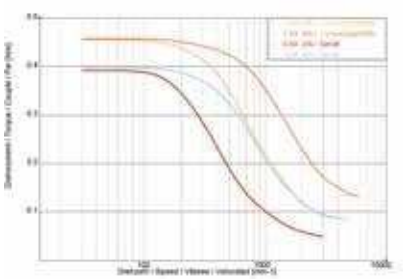
Available power sizes (others on request)

Type	Current per winding	Holding torque	Resistance per winding	Inductance per winding	Rotor inertia	Weight	Length "A"
	A/winding	N cm	Ohm/winding	mH/winding	g cm²	kg	mm
ST5918X1008	1.0	38	5.00	5.40	135	0.49	41
ST5918X2008	2.0	38	1.20	1.30	135	0.49	41
ST5918X3008	3.0	38	0.50	0.54	135	0.49	41
ST5918S1008	1.0	65	6.20	9.70	275	0.65	51
ST5918S2008	2.0	60	1.50	2.60	275	0.65	51
ST5918S3008	3.0	65	0.72	1.10	275	0.65	51
ST5918M1008	1.0	74	6.90	14.0	300	0.70	56
ST5918M2008	2.0	74	1.70	3.60	300	0.70	56
ST5918M3008	3.0	80	0.70	1.30	300	0.70	56
ST5918L1008	1.0	120	8.80	19.0	480	1.00	76
ST5918L2008	2.0	140	2.40	5.10	480	1.00	76
ST5918L3008	3.0	140	1.00	2.20	480	1.00	76
ST5918D4208	4.2	180	1.00	2.60	650	1.80	115

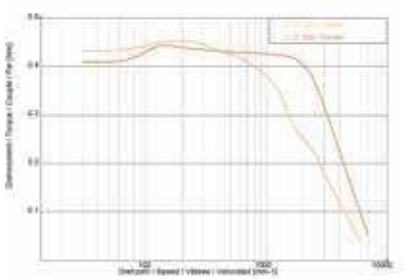
All data refer to 1 half of the winding or unipolar!

Speed/torque curves

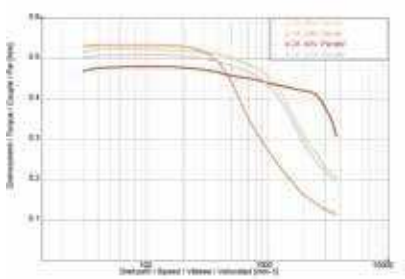
ST5918X1008



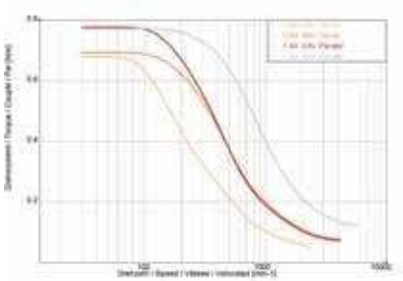
ST5918X2008



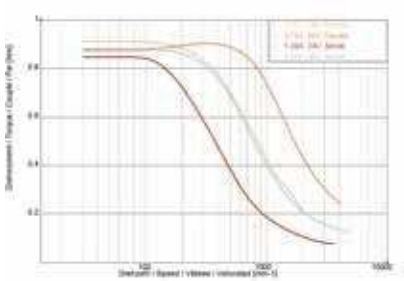
ST5918X3008



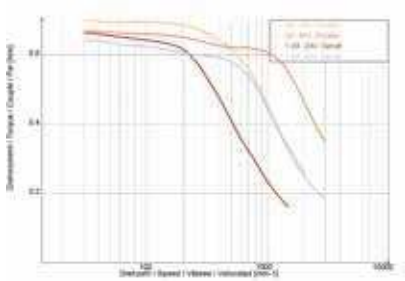
ST5918S1008



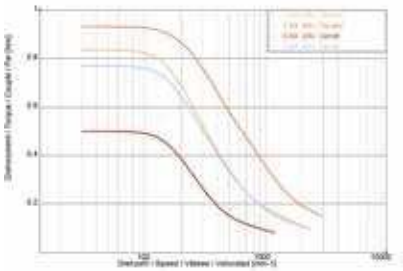
ST5918S2008



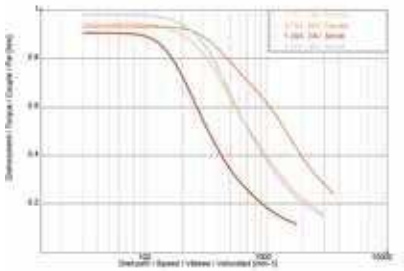
ST5918S3008



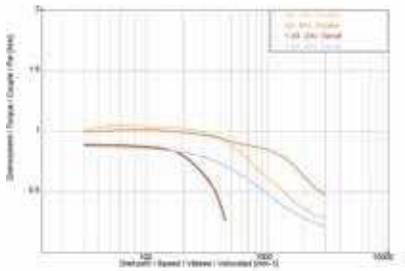
ST5918M1008



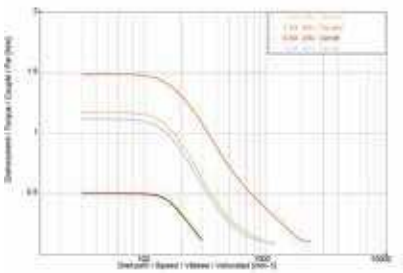
ST5918M2008



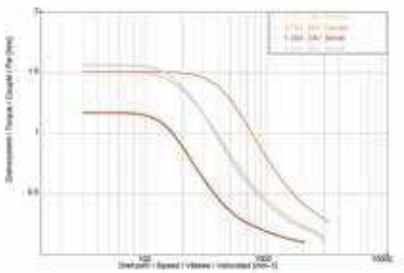
ST5918M3008



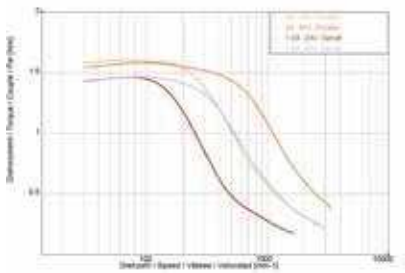
ST5918L1008



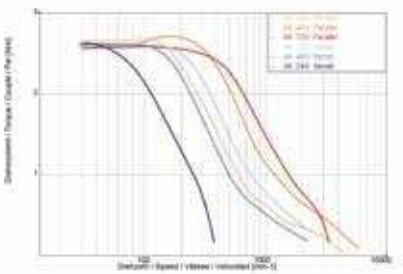
ST5918L2008



ST5918L3008



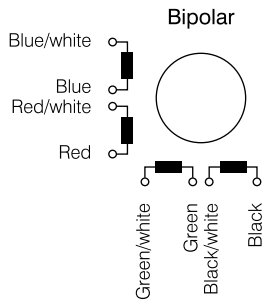
ST5918D4208



Type ST6018 - size X, M, L - 1.8°

Option

Pin configuration

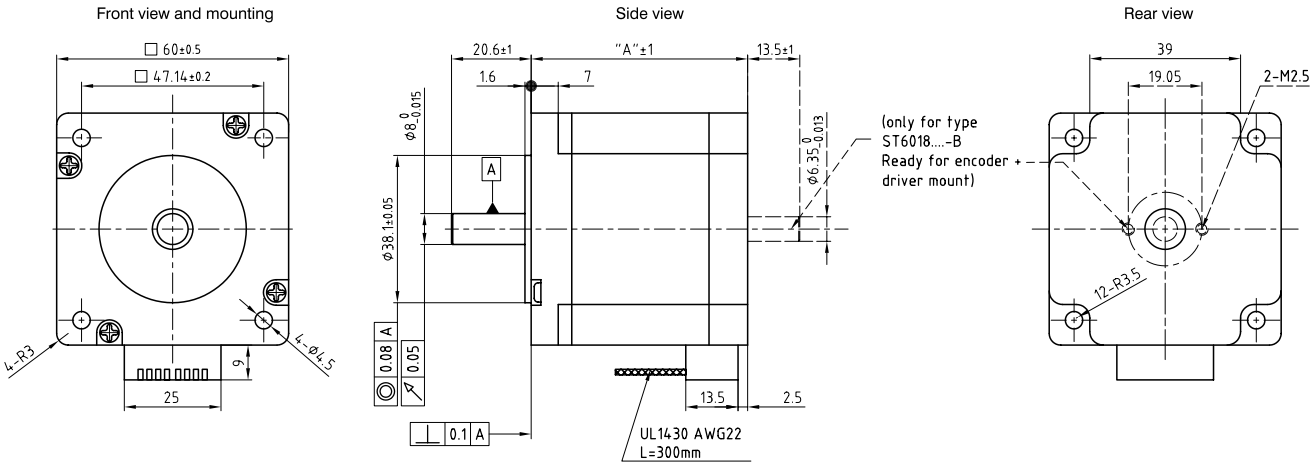


Order identifier

ST 6018 X 2008 -(A)

A = one shaft end
B = two shaft ends
for encoder or brake

Outline drawing (in mm)



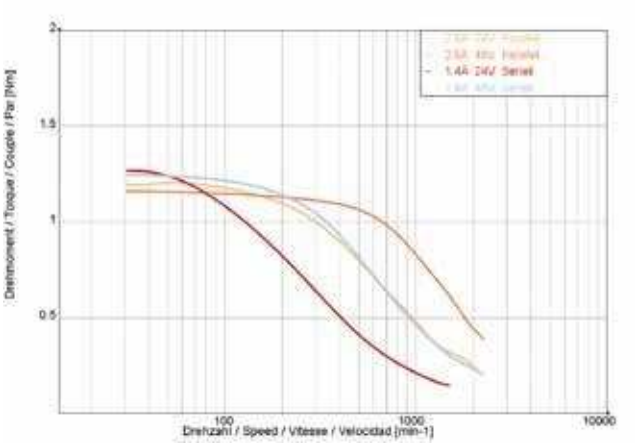
Available power sizes (others on request)

Type	Current per winding A/winding	Holding torque N cm	Resistance per winding Ohm/winding	Inductance per winding mH/winding	Rotor inertia g cm²	Weight kg	Length "A" mm
ST6018X2008	2.0	75	1.46	1.80	275	0.60	47
ST6018X3008	3.0	78	0.68	0.80	275	0.60	47
ST6018M2008	2.0	138	2.00	5.60	450	0.77	56
ST6018M3008	3.0	117	0.80	1.38	450	0.77	56
ST6018K2008	2.0	150	2.40	4.60	570	1.20	67
ST6018L3008	3.0	250	1.30	3.20	840	1.40	88
ST6018D4508	4.5	283	0.75	1.40	1100	1.90	111

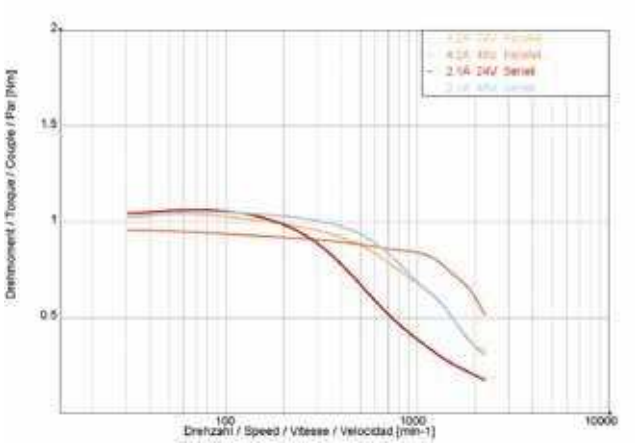
All data refer to 1 half of the winding or unipolar!

Speed/torque curves

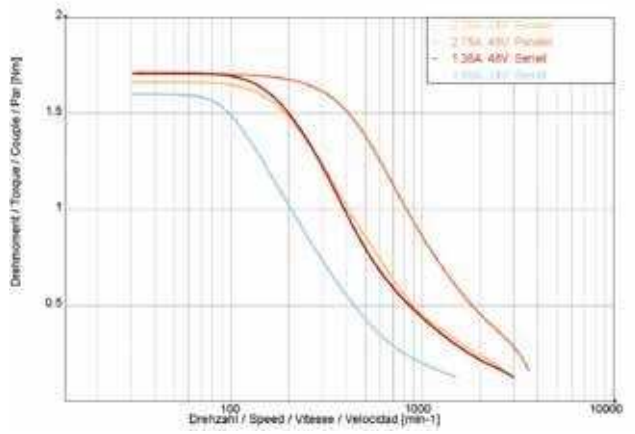
ST6018X2008



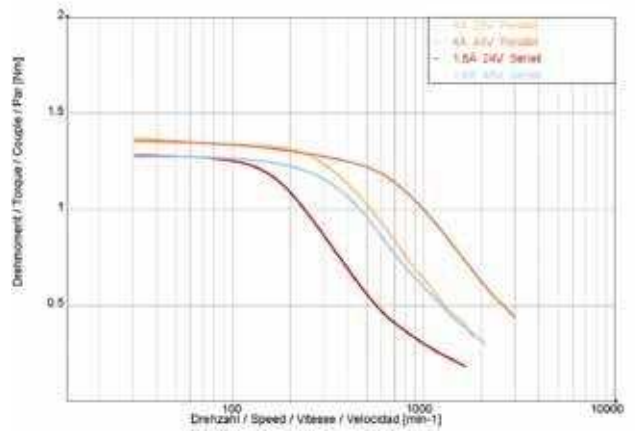
ST6018X3008



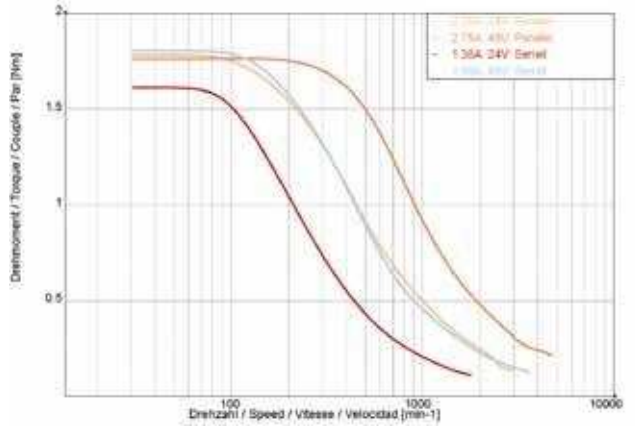
ST6018M2008



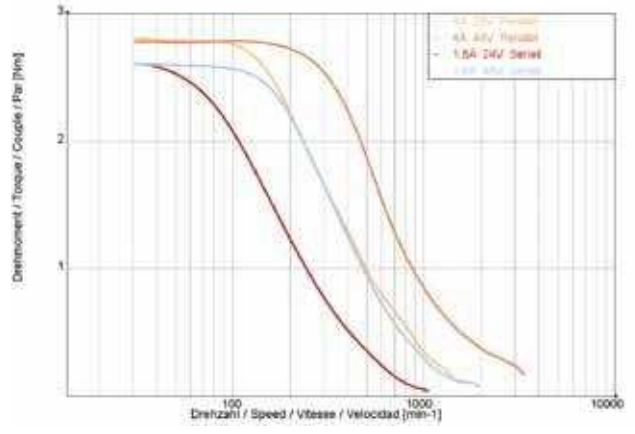
ST6018M3008



ST6018K2008



ST6018L3008



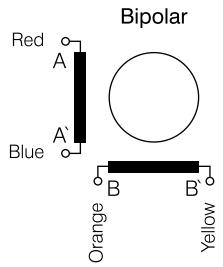
Type ST6318 - ultraflat stepper motor

Option

Getriebe

Steuerung

Pin configuration

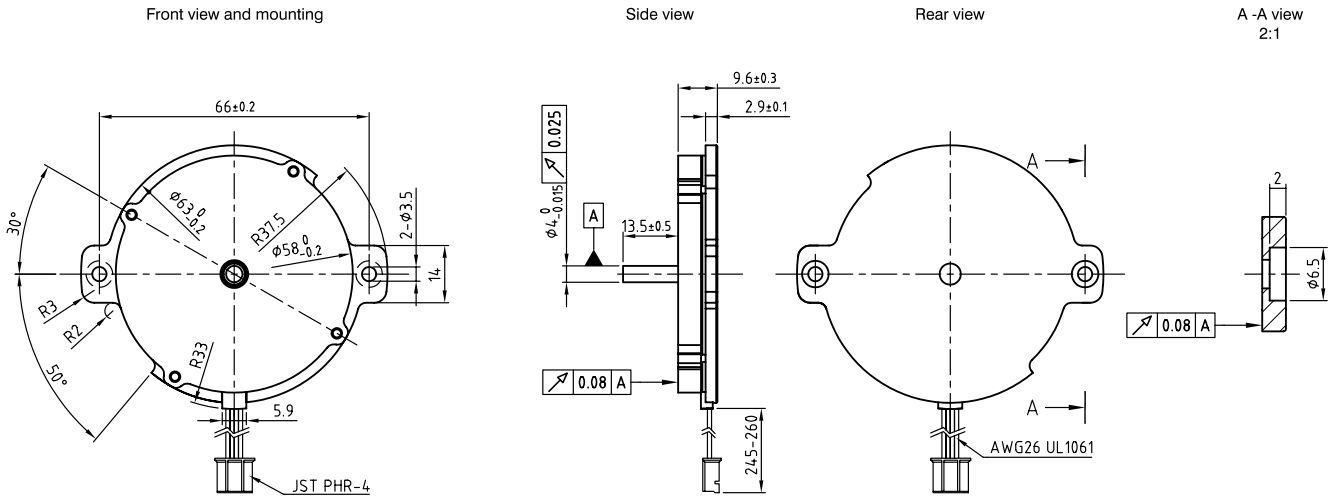


The ultraflat high torque stepper motor ST6318F1004 with a step angle of 1.8° (with microstep to < 0.02°) supports all designers who require maximum torque and a high positioning accuracy with a minimal overall height. Due to the high torque, stable speed behavior is possible at very low speeds (this often makes a gearbox unnecessary and keeps the installation space small) and at high speeds (up to 50 W can be reached during short power-up times). The advantages are particularly significant in applications such as component feeders in the semi-conductor automation, medical laboratories and inspection devices, laser technology, test equipment construction, surveillance cameras, etc. Customer-specific versions (mechanical and electrical) can be carried out seamlessly in series solutions.

Order identifier

ST 6318 F 1004 - A

Outline drawing (in mm)



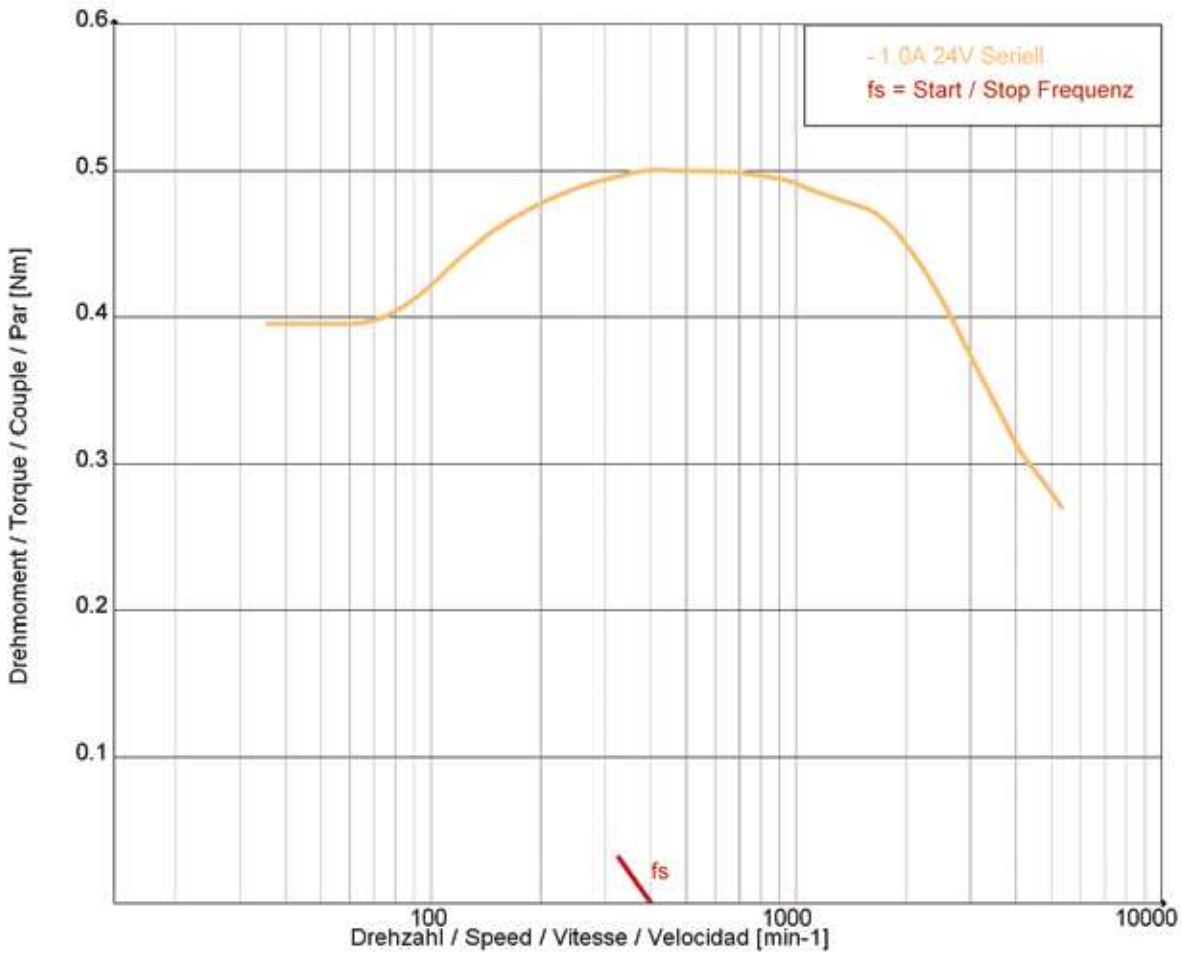
Available power sizes (others on request)

Type	Current per winding	Holding torque	Resistance per winding	Inductance per winding	Rotor inertia	Weight	Length "A"
	A/winding	N cm	Ohm/winding	mH/winding	g cm²	kg	mm
ST6318F1004	1.0	6.0	3.8	2.0	16	0.095	9.5

All data refer to 1 half of the winding or unipolar!

Speed/torque curves

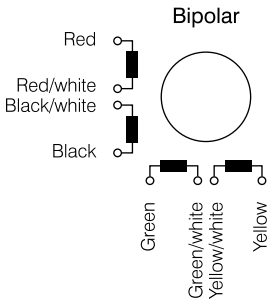
ST6318F1004



Type ST8918 - sizes S, M, L - 1.8°

Option

Pin configuration



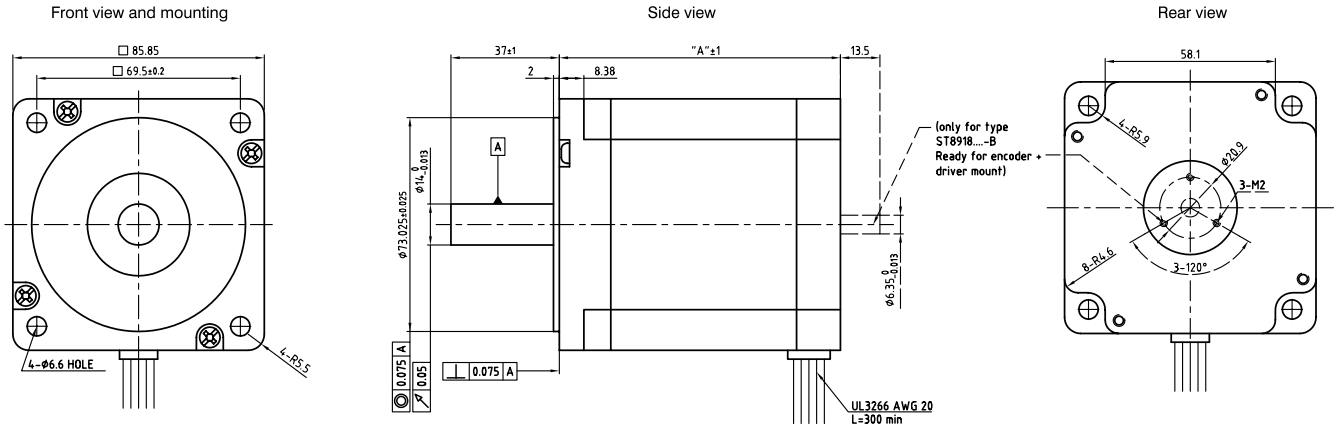
Order identifier

ST 8918 M 6708 -(A)

A = one shaft end

B = two shaft ends for encoder or brake

Outline drawing (in mm)

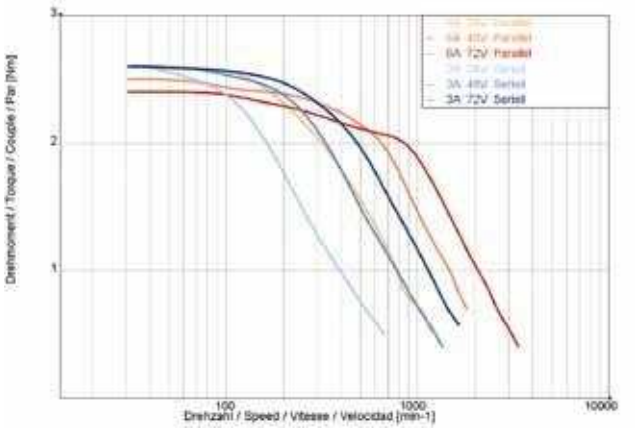


Available power sizes (others on request)							
Type	Current per winding A/winding	Holding torque N cm	Resistance per winding Ohm/winding	Inductance per winding mH/winding	Rotor inertia g cm²	Weight kg	Length "A" mm
ST8918S4508	4.5	250	0.60	1.9	1000	1.70	65
ST8918M4508	4.5	420	0.66	3.0	1900	2.80	96
ST8918M6708	6.7	420	0.45	2.6	1900	2.80	96
ST8918L4508	4.5	660	1.10	6.3	3000	3.95	126
ST8918L6708	6.7	660	0.46	2.7	3000	3.95	126
ST8918D6708	6.7	950	0.75	4.9	4000	5.40	156

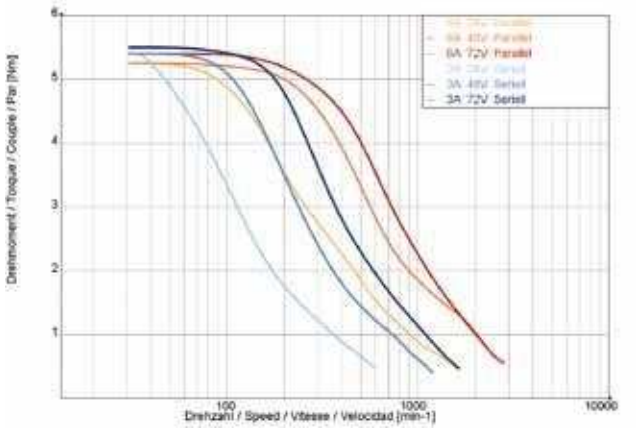
All data refer to 1 half of the winding or unipolar!

Speed/torque curves

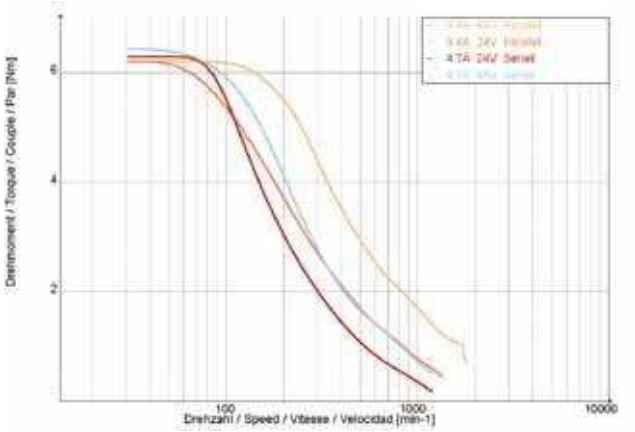
ST8918S4508



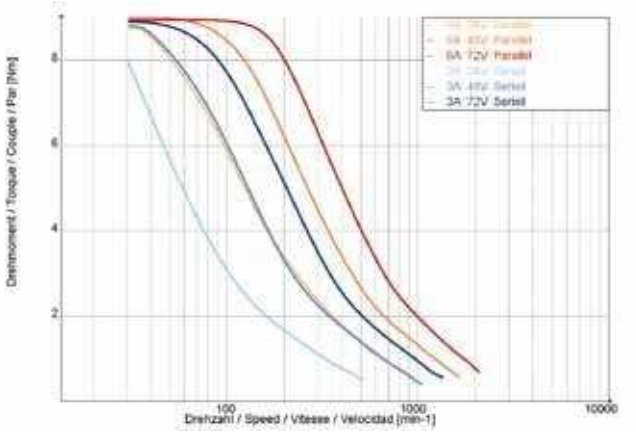
ST8918M4508



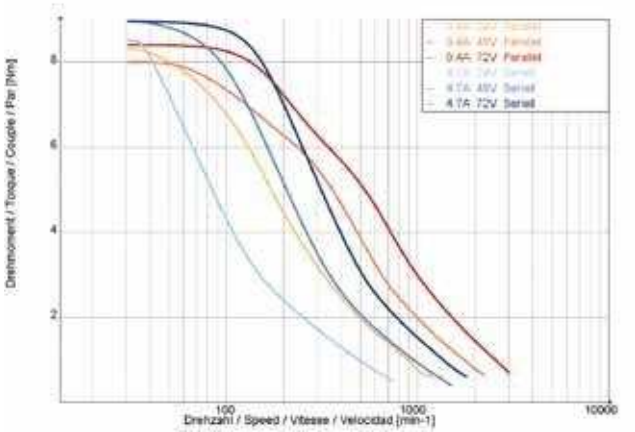
ST8918M6708



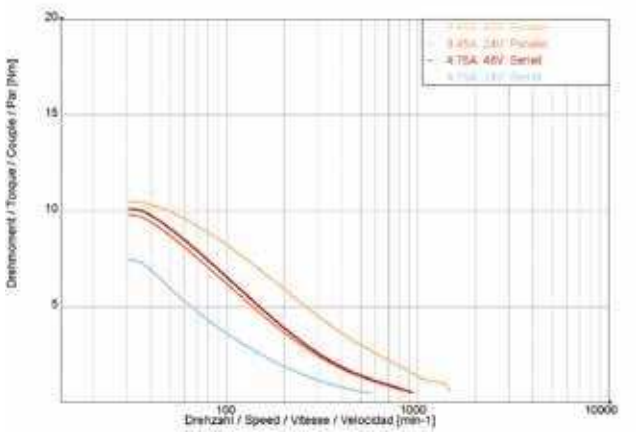
ST8918L4508



ST8918L6708



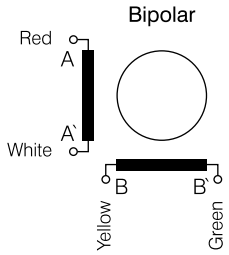
ST8918D6708



Type ST11018 - sizes S, M, L - 1.8°

Option

Pin configuration

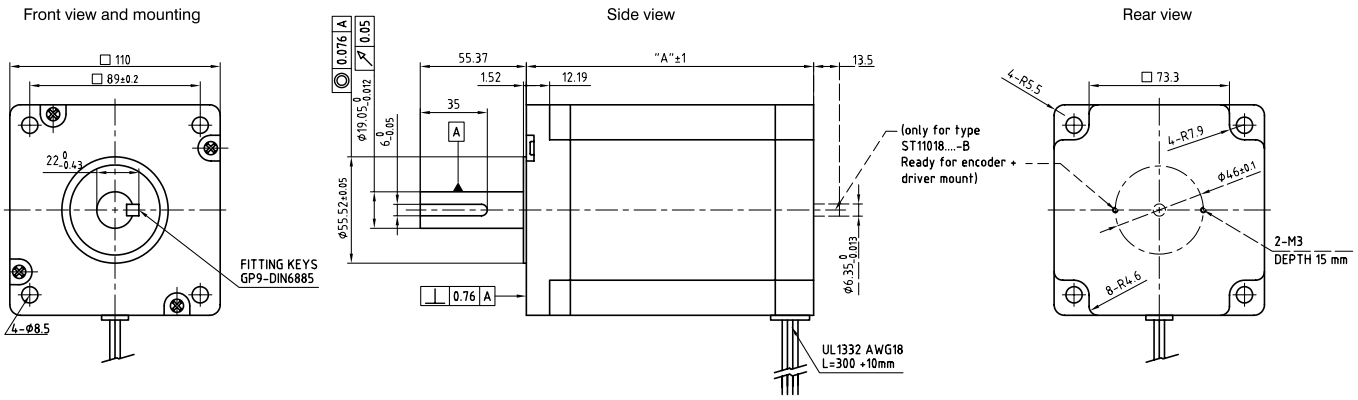


Order identifier

ST 11018 M 6504 - (A)

A = one shaft end
B = two shaft ends
for encoder or brake

Outline drawing (in mm)

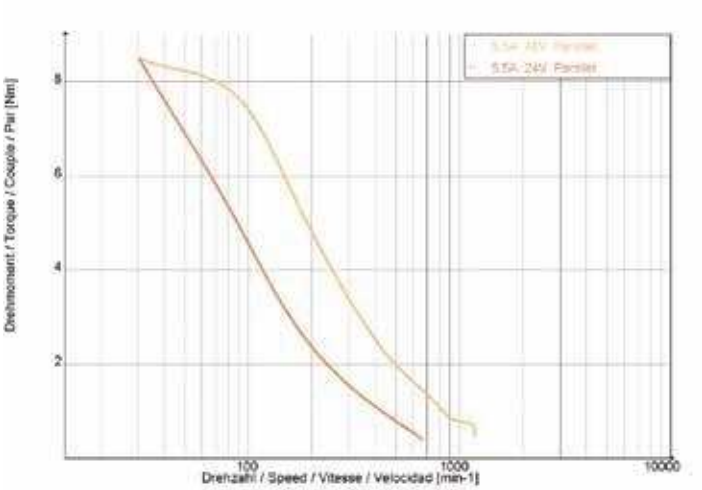


Available power sizes (others on request)							
Type	Current per winding A/winding	Holding torque Nm	Resistance per winding Ohm/winding	Inductance per winding mH/winding	Rotor inertia g cm²	Weight kg	Length "A" mm
ST11018S5504	5.5	11.7	0.70	9.8	5500	5.0	99
ST11018M6504	6.5	21.0	1.15	15.2	10900	8.4	150
ST11018L8004	8.0	25.0	1.00	17.1	16200	11.7	210

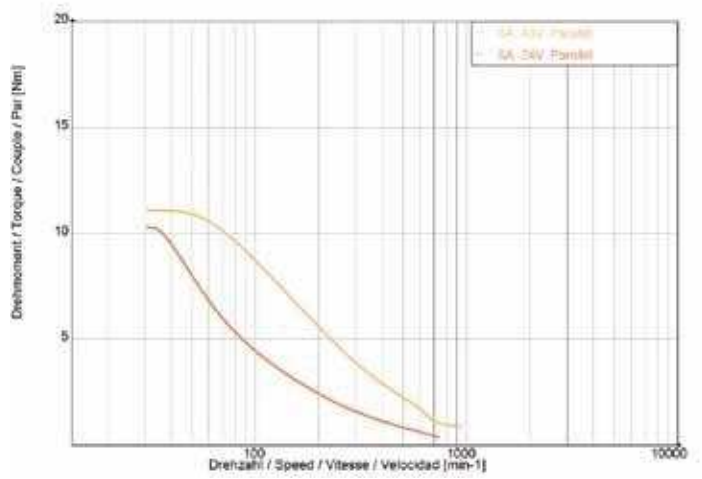
All data refer to 1 half of the winding or unipolar!

Speed/torque curves

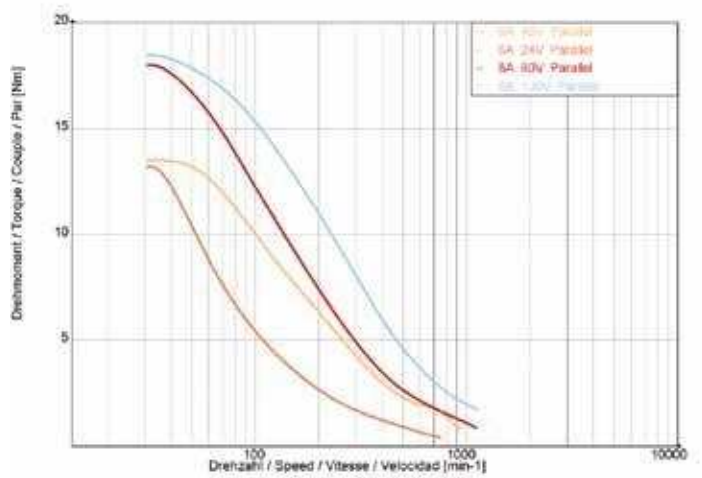
ST11018S5504



ST11018M6504



ST11018L8004



Stepper motors in protection class IP65

Stepper motors in protection class IP65

AS2818, AS4118, AS5918 stepper motor with junction box

AS2818

AS4118

AS5918

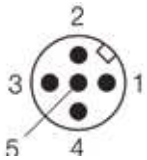
Option

Connector configuration

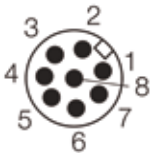
M12 - 5-pin (MOTOR)	
Pin	assignment
1	A\
2	A
3	B
4	B\
5	Housing

M12 - 8-pin (ENCODER)	
Pin	assignment
1	A
2	A\
3	B
4	B\
5	GND
6	I
7	I\
8	Vcc
Housing	GND/shielding

M12 connector



M12 connector



Order identifier

A S 5918S2804 -

S = M12 connector

without option = with junction box

E = with encoder

Connection cable:

Motor: ZK-M12-5-xx

Encoder: ZK-M12-8-xx

For further information, see section on "Cables"

The machine-compliant stepper motors up to a protection class of IP 65 (except for shaft output) offer a consistent drive concept. Because they have the same flange dimensions, they are electrically and mechanically interchangeable with the standard motors. The junction box on the rear panel makes the motors only slightly longer! They are distinguished in particular by their wide range of powers and applications as well as by their high availability.

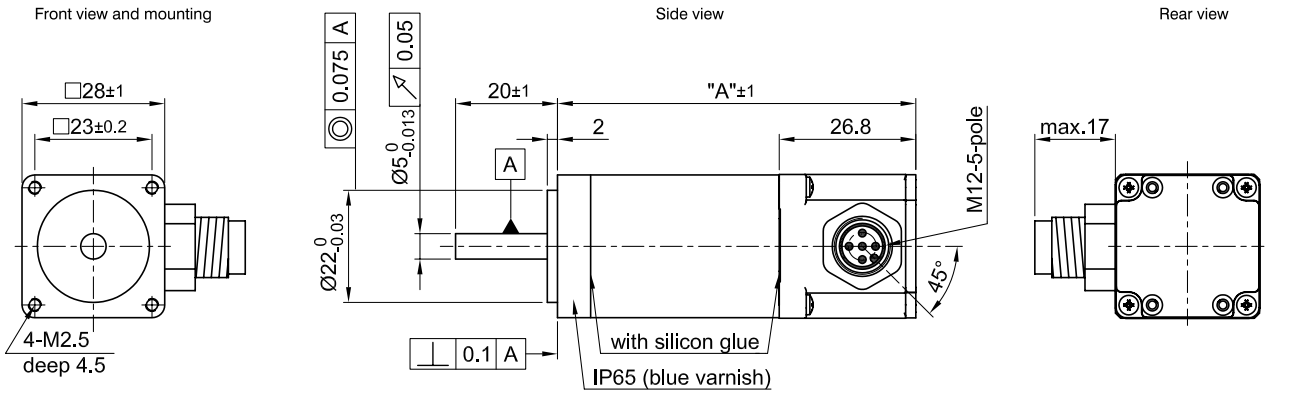
Encoders used:
3-channel with 500 pulses/revolution and line controller, 5 V TTL signal each
(for 24V, please contact us!)

Available performance categories (others on request)

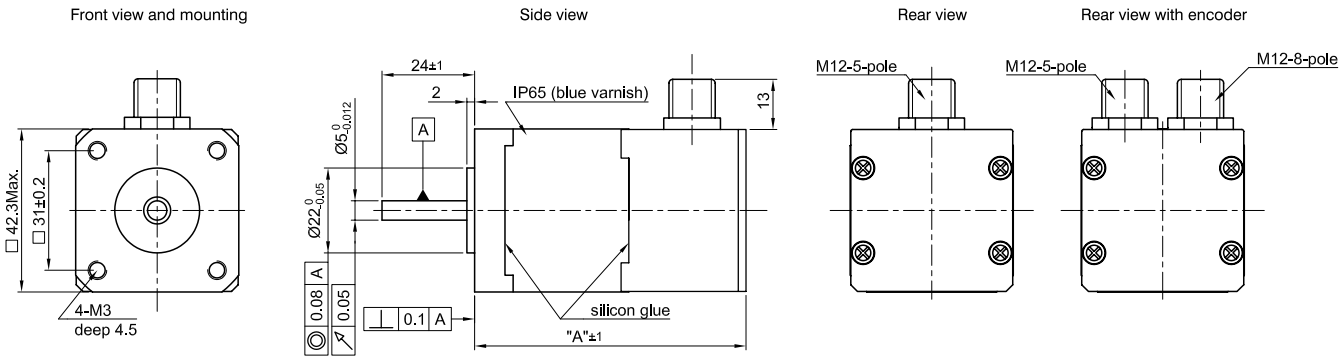
Type	Current	Holding torque	Resistance	Inductance	Rotor inertia	Weight	Length "A"	Encoder
	A/phase	Ncm	Ohm/phase	mH	g cm²	kg	mm	
AS2818S0604	0.67	7.1	5.60	4.0	9	0.13	51.0	
AS2818L0604	0.67	12.7	9.20	5.6	18	0.22	70.3	
AS4118L1804	1.80	50	1.75	3.3	82	0.34	70.4	
AS4118L1804-E	1.80	50	1.75	3.3	82	0.34	70.4	X
AS5918S2804	2.83	85	0.75	2.6	230	0.80	73.0	
AS5918S2804-E	2.83	85	0.75	2.6	230	0.80	73.0	X
AS5918M2804	2.82	105	0.85	3.6	300	0.85	77.0	
AS5918M2804-E	2.82	105	0.85	3.6	300	0.85	77.0	X
AS5918L4204	4.20	198	0.50	1.9	480	1.14	98.0	
AS5918L4204-E	4.20	198	0.50	1.9	480	1.14	98.0	X

Outline drawing AS28, AS41, AS59 for flange size 28, 42 and 56

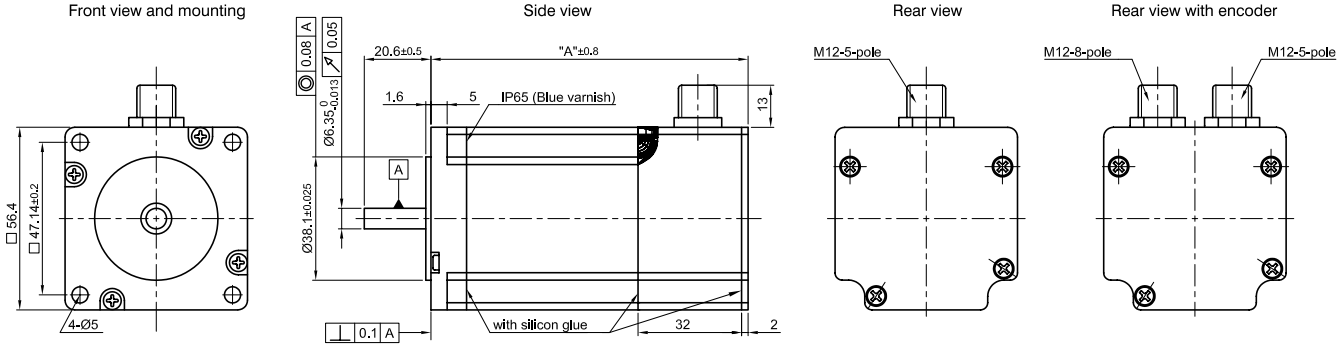
AS2818



AS4118

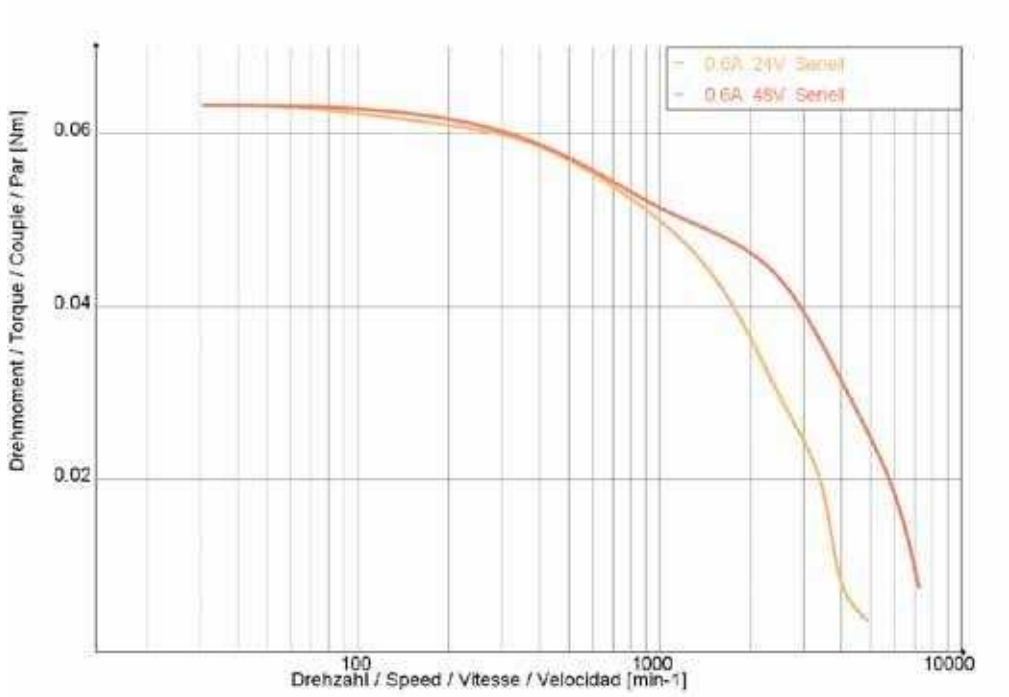


AS5918

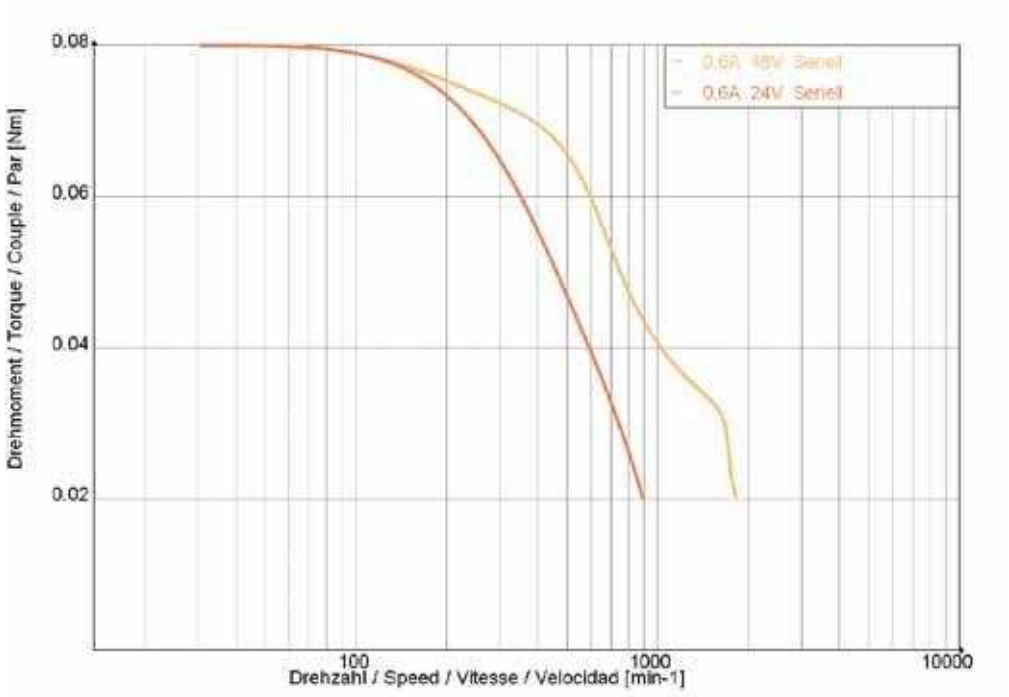


Speed/torque curves

AS2818S0604

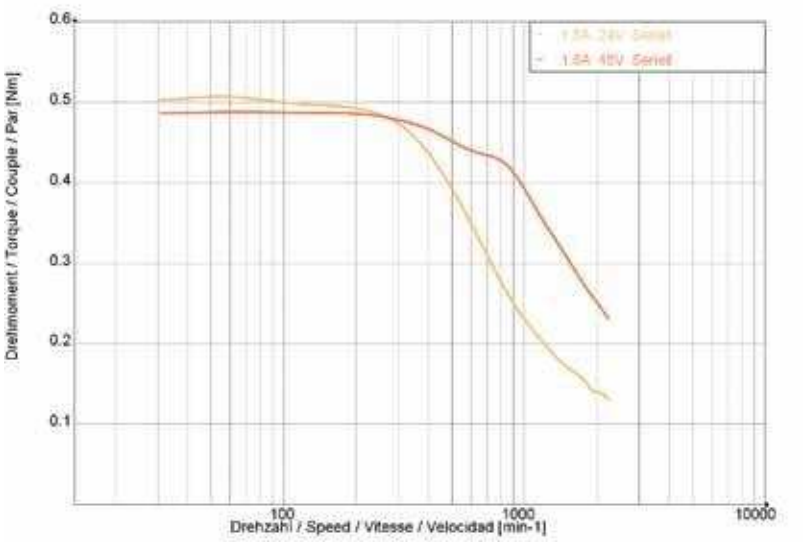


AS2818L0604

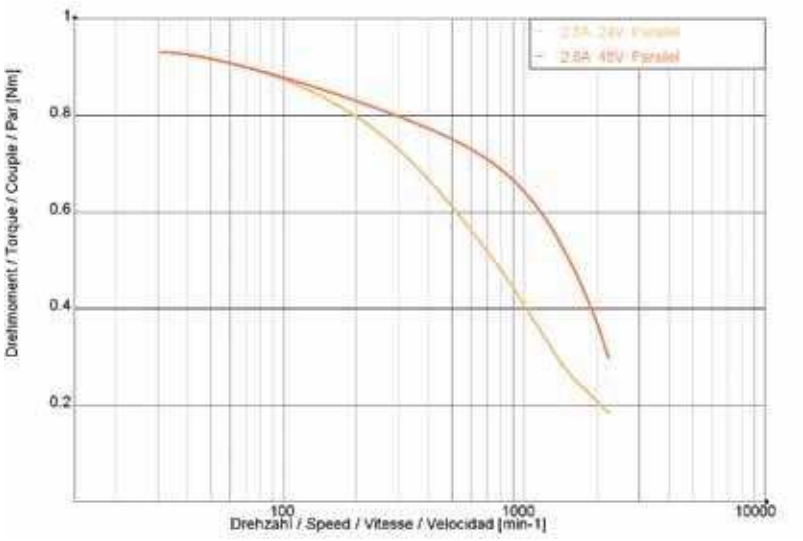


Speed/torque curves

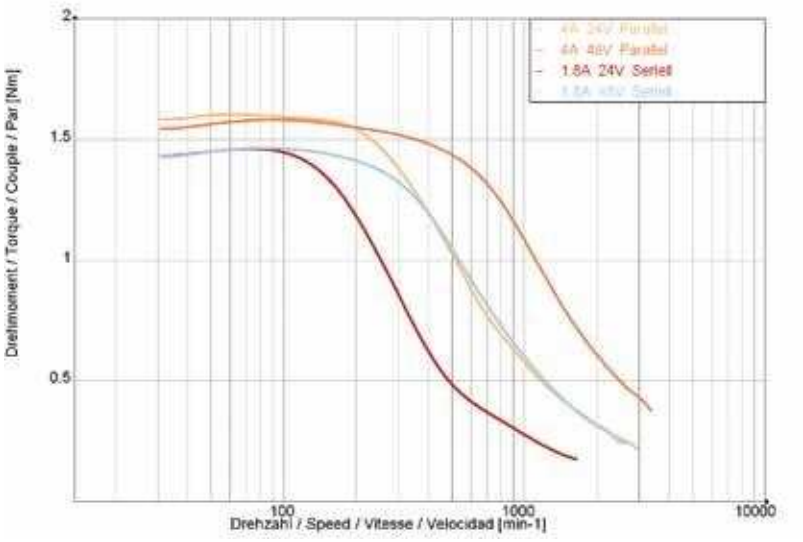
AS4118L1804



AS5918S2804



AS5918L4204



Stepper motors in protection class IP65

AP8918 stepper motor with junction box

Option

Cable connection

Cable connector M16 (MOTOR)		
Cable no.	Color	assignment
1	BLACK (MARKED WITH CABLE NO.)	A
2		A\
3		B
4		B\
5		Housing

Cable connector M16 (ENCODER)		
Cable no.	Color	assignment
1	White	A
2	Brown	A\
3	Green	B
4	Yellow	B\
5	Gray	GND
6	Pink	I
7	Blue	I\
8	Red	Vcc

Through their electrical and mechanical interchangeability with the standard motors, the machine-compliant stepper motors up to a protection class of IP 65 (except for shaft output) offer a consistent drive concept.
The extremely compact motor with junction box is only 16 mm longer than standard motors.

Prefabricated cables enable fast and faultless wiring and commissioning when used under extreme ambient conditions, and reduce filtering and EMC requirements.

The motors are delivered with a 5-pin shielded cable and an 8-pin shielded cable for the encoder as standard. The cable length is 2 m in each case.

Encoder:
500 increments/rev., line controller and index (one pulse at 360°), 5 V TTL signal (other encoders available on request!)

Order identifier

A P 8918M6404 - ○

P = PG gland

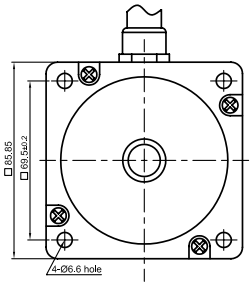
without option = with junction box

E = with encoder

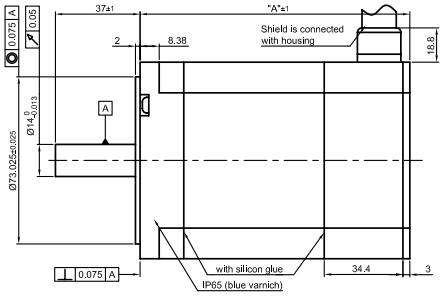
Outline drawing (mm) AP8918 for flange size 86

AP8918

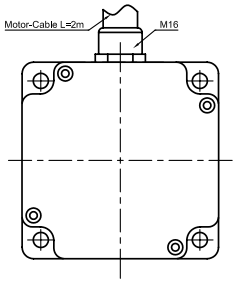
Front view and mounting



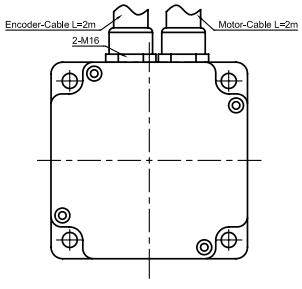
Side view



Rear view



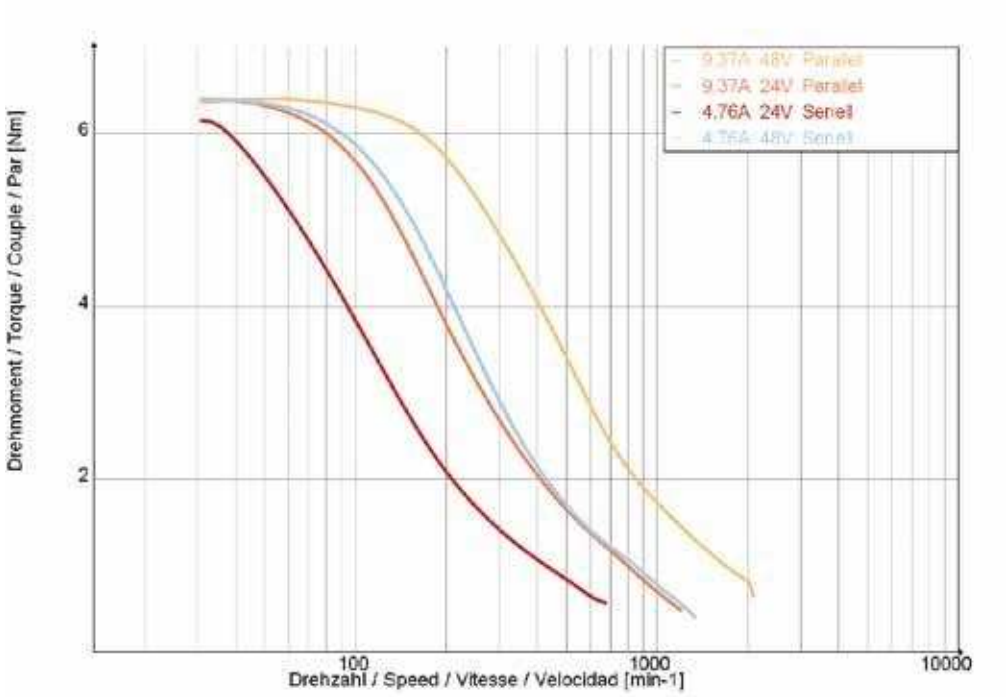
Rear view with encoder



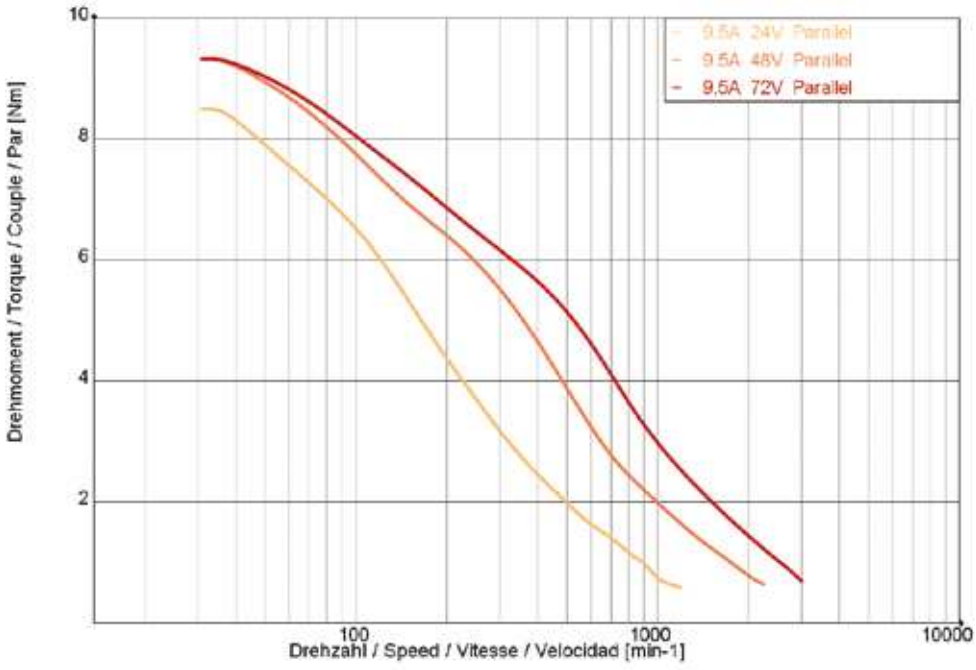
Available performance categories (others on request)								
Type	Current	Holding torque	Resistance	Inductance	Rotor inertia	Weight	Length "A"	Encoder
	A/phase	Ncm	Ohm/phase	mH	g cm²	kg	mm	
AP8918M6404	6.4	594	0.33	3.00	2700	3.4	118.0	
AP8918M6404-E	6.4	594	0.33	3.00	2700	3.5	118.0	X
AP8918L9504	9.5	933	0.23	2.70	3000	4.6	148.0	
AP8918L9504-E	9.5	933	0.23	2.70	3000	4.7	148.0	X

Speed/torque curves

AP8918M6404



AP8918L9504

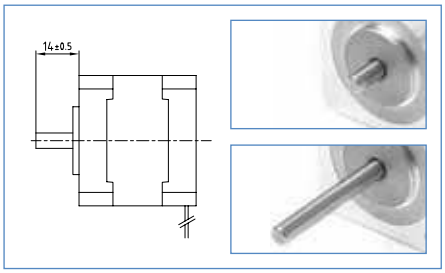


Stepper motors in protection class IP65

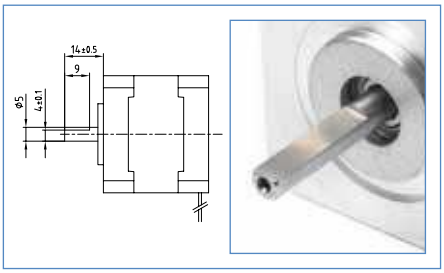
Special shaft versions for all motors

Adapted, ready to assemble shaft versions allow the constructor and assembly team fast, economic and reliable machine and device adaptation.
For other example and details, see the website.
Depending on the complexity of the machine setting, we offer machining from 1, 25 or 250 pieces.
Not all machining options are available for all motor series.

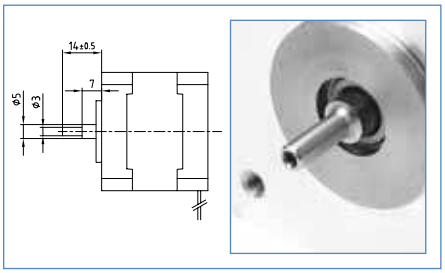
Shorter (longer) shaft



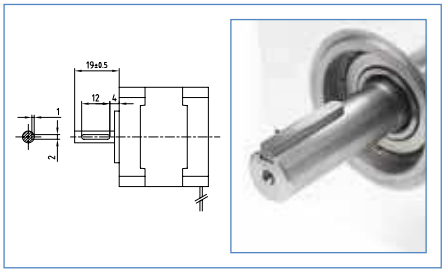
Flat-sided shaft (D-cut)



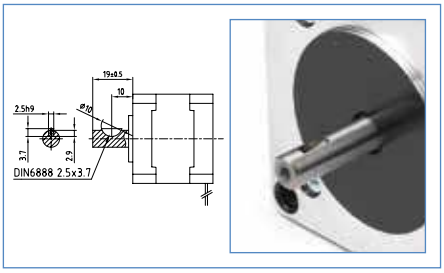
Lathe-machined shaft



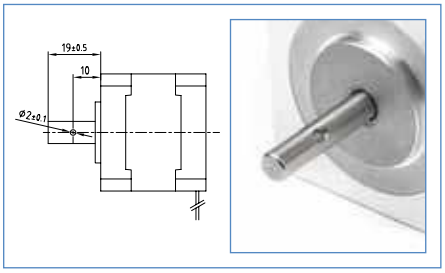
Shaft with wedge spring notch



Shaft with Woodruff key notch



Motor shaft with side-drilled hole



Bigger shaft

Larger or thicker shafts are used primarily to enable higher radial forces. Possible for all motors of the ST and DB series.

Shaft with groove

Motors with shaft groove facilitate the attachment of safety disks for axial fixing of timing pulleys, spur gears, etc.
Possible for all motors of the ST and DB series.

Hollow shaft

As well as the actual drive, hollow shafts also enable the feeding of cables, tubes or even laser beams through the motor.
Possible for selected motors of the ST series.

Motor shaft with timing belt wheel

Motors with pinion or direct gearing mounted on the motor shaft considerably facilitate direct mounting on existing reduction ratios, gears provided by the customer, linear axes etc.

Shaft with metric thread

Not only is a thread useful for fixing rotating parts on the motor shaft, but creative constructors also use this low-priced and simple method for the realization of a linear positioning drive with low positioning speed.

Toothed shaft

Motors with a toothed shaft facilitate direct mounting on existing reduction ratios, gears, etc. Direct gearing is the best technical and most economical solution for many applications.

Special transmission elements

In addition to standard-drive elements, Nanotec also offers its stepper and servomotors with a large number of other transmission elements made of a wide variety of different materials.

Shaft with spur gear/pinion

Motors withpinion or direct gearing mounted on the motor shaft considerably facilitate direct mounting on existing reduction ratios, gears, toothed racks, etc.

Shaft with worm gear

Motors withworm gear can be installed at an angle of 90° to the load which has an extremely favorable effect on some applications. In addition, they offer high reductionratios in the smallest space.

Cable assembly

Customer-specific connector versions and cable assembly provide the constructor and assembly team with an easy, fast, economic and reliable electric connection to the machine. Nanotec offers a large number of different connectors for the most favorable and secure solution in each case. For orders of more than 100 pieces, the connector or cable assembly can be carried out very economically.

with differently attached connectors

JST connectors

JST connectors

Berg connectors

Lumberg connectors

AMP connectors

Wago connectors

Insulation displacement connecting technology

Sub-D connectors

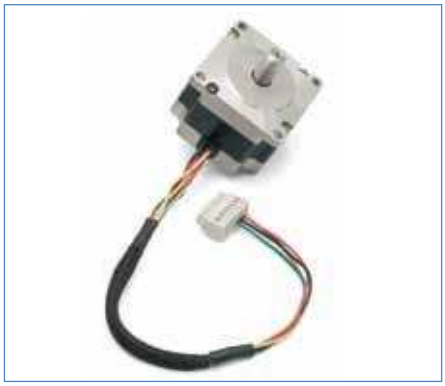
Sub-D connectors

M12 connectors

with different cable assemblies

Heat shrink sleeving

Protective braid



Braiding

with integrated plug

Twintus connector

M12 connectors

Sub D-9 or D-15

JST connectors

M12 connectors

Options

Motor modular system More than 4000 possible versions available in stock

We can construct the optimum drive for you in just a few days from our versatile range of stepper motors and BLDC motors in many sizes and windings, plus a wide range of accessories consisting of gears, safety brakes, optical encoders and other options such as vibration dampers, shaft couplings, connection cables, etc. More than 4000 combinations are possible with our stepper motor modular construction kit system.

Also available for other sizes


Size 20 mm


Size 42 mm


Size 60 mm


Size 86 mm


Size 110 mm

Example: ST5918 (NEMA 23) stepper motor with options

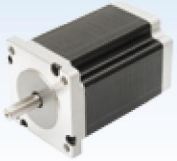
Gears


GPLE precision gear series from 22 to 80 mm, long expected service life


GSGE angular gear series for Nema 23 and Nema 34 motors


Economy planetary gear Economic GPLL series for l arge series (22 to 56 mm)

Motor


Hybrid stepper motors with a large range of services at favorable prices


BLDC motors (22 to 86 mm) for high speed and dynamics


Economic permanent magnet stepper motors from a size of 6 mm

Brake


BKE safety brake series for a wide range of motor sizes

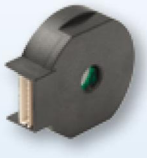

Customer-specific brakes are also possible (up to 9 Nm)


BL safety brake series econo- mically in the series

Encoder


New WEDS5541 1000 incr./rev encoder series


Miniature encoder to 200 incr./rev. incl. connection cable


24 V encoder of the NEDL series Nanotec encoders for high interference immunity.

Optical encoder - WEDS/WEDL series

Features

- Low-priced
- Resolution: 500 increments/rev.
  1000 increments/rev.
- Compact housing (also for hollow shaft with 10 mm diameter)
- TTL-compatible
- 3-channel (A/B track and index signal)
- Easy installation
- For 5 mm, 6.35 mm and 10 mm shaft diameter (hollow shaft)

The encoders of the WEDS/WEDL5541 series are powerful, 3-channel incremental encoders. The module includes the sender with LED source, the receiver and the code disc that rotates between the sender and receiver. In WEDL encoders, the signals prepared via a driver module are output as a differential signal which increases the immunity to interference. The interface to the application is formed by a pluggable flat ribbon cable or, optionally, a screened round cable.

Technical specification

Electrical specification	WEDS	WEDL
Signal form, output	Square wave signal	
Output signals	Phase A, B, I	Phase A, A\, B, B\, I, I\
Current consumption	≤ 60 mA	
Output current	0 ~ 5 mA	
Limit frequency	100 KHz	
Phase angle of the output signal	90° ± 45°	
Connection voltage	5 V DC	
Signal level	VH 85% VCC, VL ≤ 0.3 V	
Number of pulses per revolution	500, 1000 (others on request)	

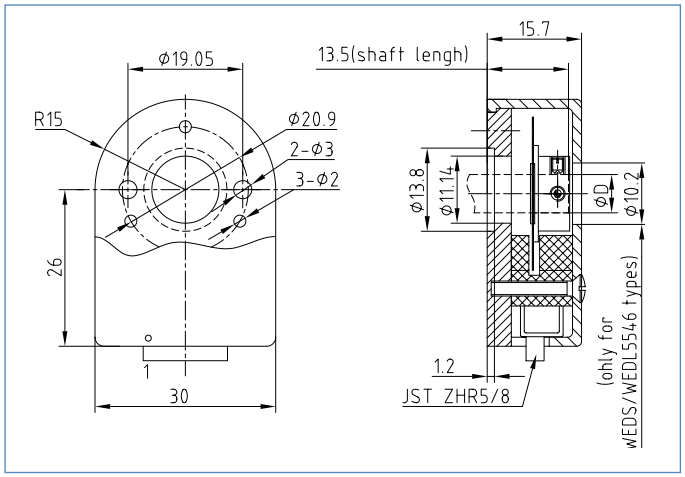
Technical specification

Mechanical specification	WEDS/WEDL
Mass inertia of the code wheel	Approx. 0.6 g cm²
Impact resistance	980 m/s², 6 ms, 2 hours each in XYZ
Vibration test	50 m/s², 10 ~ 200 Hz, 2 hours each in XYZ
Average service life	MTBF 50000 h (+25 °C, 2000 rpm)
Weight	Approx. 20 g (with 0.5 meter cable)
Ambient conditions	
Operating humidity	30 ~ 85 % (no condensation)
Storage temperature	-40 °C ~ 100 °C
Working temperature	-25 °C ~ 100 °C

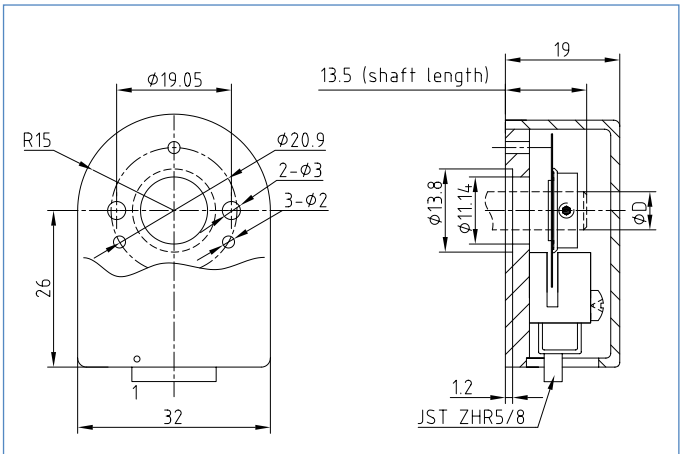
Connector configuration

Driver output	0 V	I	A	Vcc	B			
Coding system of the flat ribbon cable	1 (red)	2	3	4	5			
Core color WEDS-9000 cable	Black	Yellow	Green	Red	White			
Line driver output	0 V	Vcc	A	A\	B\	B	I	I\
Coding system of the flat ribbon cable	1 (red)	2	3	4	5	6	7	8
Core color WEDL-9000 cable	Black	Red	Green	Brown	Gray	White	Yellow	Orange

WEDS/WEDL 500 incr./rev., outline drawing in (mm)

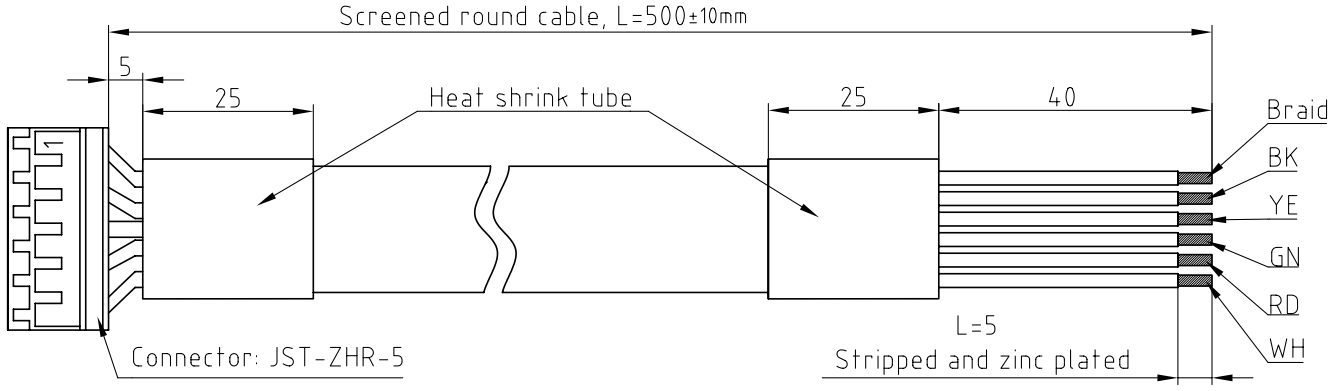


WEDS/WEDL 1000 incr./rev. outline drawing in (mm)

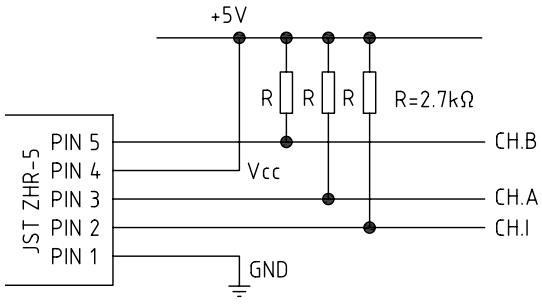


Optical encoder: Standard encoder for stepper motor mounting				
Order identifier	**Pulses per revolution**	**for shaft diameter (mm)**	**Type**	**Connector**
WEDS-5541 A14	500	5.00		JST-ZHR-5
WEDS-5541 A06	500	6.35		
WEDS-5546 A10	500	10.00	Hollow shaft	
WEDS-5541 B14	1000	5.00		
WEDS-5541 B06	1000	6.35		
Encoder with line controller (for extremely interference-proof operating conditions or long supply cables)				
WEDL-5541 A14	500	5.00		JST-ZHR-8
WEDL-5541 A06	500	6.35		
WEDL-5546 A10	500	10.00	Hollow shaft	
WEDL-5541 B14	1000	5.00		
WEDL-5541 B06	1000	6.35		
Flat ribbon cable, L=500		**Screened round cable, L=500**		
ZK-WEDS-5-500		ZK-WEDS-5-500-S		JST-ZHR-5
ZK-WEDL-8-500		ZK-WEDL-8-500-S		JST-ZHR-8

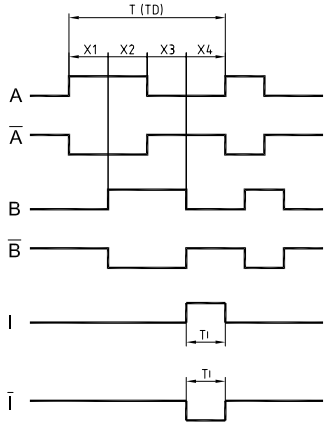
ZK-HEDS/L-5/8-500-S



WEDS encoder connector configuration



WEDL encoder with line driver output signals



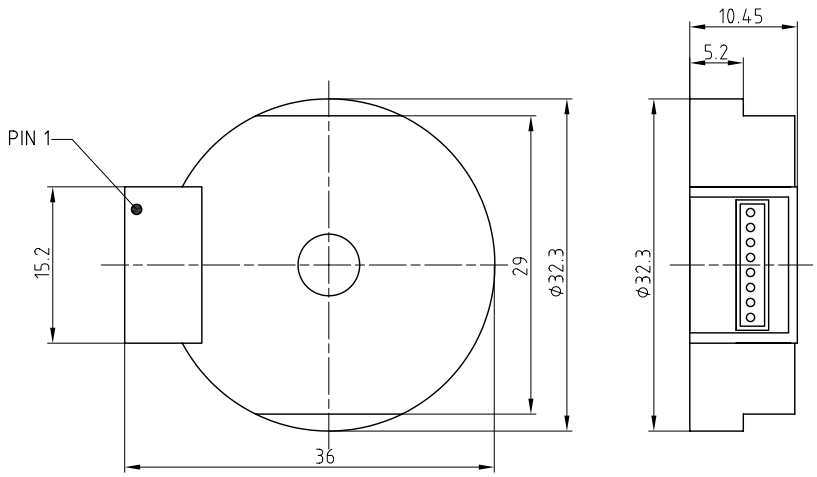
Optical encoder - NEDL series

In addition to their very compact shape (flatter than WED) and low inherent mass, the 3-channel encoders are primarily distinguished by their quick and easy assembly. (In addition, they are more cost effective than WED..) The 24 V version is suitable for direct connection to PLC controllers.

Technical data NEDL

Operating voltage:	12 to 32 V DC
Max. current consumption:	40/25/20 mA at 12/24/32 V Output voltage H/L: Vcc -0.6 V/0 - 0.5 V) Output current H/L: Max. 50/50 mA
Pulse width:	180°± 75°
Signal phase angle:	90°±60°
Signal rise/fall time:	0.8/0.5 µs
Limit frequency:	up to 60 kHz (4500 rpm)
Output signals:	Channel A/B and index
Pulses per revolution:	500 (2000 quadrature)
Operating temperature:	0 °C to +85 °C

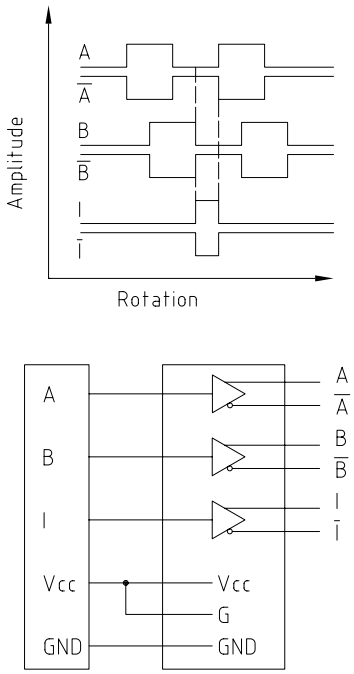
NEDL outline drawing (mm)



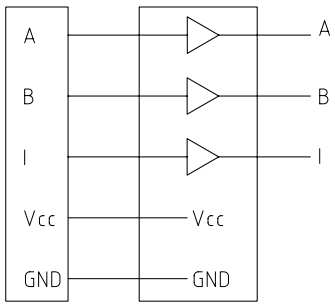
Corresponding connection cable for NEDL:
Order identifier: NEDL cable, 300 mm length

Output signals

Line controller for 8 connections



Line controller (push-pull controller with 5 connections)



Output signals

PIN assignment		
NO.	**COLOR**	**PARAMETER**
1	Red	+24 V DC
2	Black	GND
3	Orange	B
4	Yellow	B\
5	Blue	A
6	Brown	A\
7	Green	I
8	White	I\

NEDL connector plug:
Connector: JST-ZHR-8
Contact: SZH-002T-P0.5
Cable: NEDL cable

Gears

Application fields:

The compact and proven gears from Nanotec are ideal for use in the following tasks:

- Increase and matching of the output torques
  $M_{dgear.} = M_{dMot} \times i \times \eta$
- Reduction of the output torque
  $n_2 = n_{Mot} / i$
- Quadratic reduction of ext. moments of inertia
  $J_{red} = J_{ex} / i^2$
- Reduction of the step angle
  $\alpha_{Outp} = \alpha_{Mot} / i$

Advantages

- Large speed reduction bandwidth
- Wide torque spectrum
- High running smoothness
- Maintenance-free due to permanent lubrication
- Versatile combination options

! Note: In the selection of the gears, it is essential to pay attention to the following criteria:

a) **Output torques**
Output torques rise in proportion to the speed reduction and can lead to damage of the gearing (do not exceed max. admissible power take-off values!).

b) **Radial and axial forces**
Radial and axial forces mainly impair the expected service life of the bearing and the shaft strength in some cases.

c) **Working temperatures**
Working temperatures affect the thermal loading of the bearing.

d) **Load types**
Various types of load lead to high gear, shaft and bearing stresses and hence reduce the service life.

Which type of gear is advantageous?

1) Planetary gear	Due to the triple meshing, these gears offer the highest torque at comparable volume and have the highest efficiency with concentric shaft output
2) Worm gear	Enable smooth running performance and, due to the 90° force transfer, have a low installation depth and offer a self-locking torque due to continuous power transmission at higher reduction ratios.

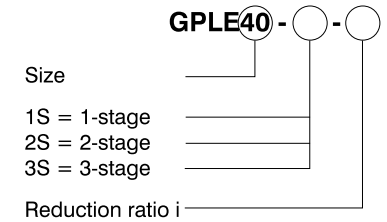
Precision planetary gear GPLE

The low-play planetary gear from Nanotec are developed to state of the art in gearing technology and are manufactured to DIN/ISO 9001. The designers have a powerful gearing unit available through minimizing and standardization of the gearing parts.

Advantages

- High output torques
- High torsional rigidity
- Low circumferential backlash
- High admissible axial and radial shaft loading
- Low running noise
- Easy motor/gear assembly
- Protection class IP54
- 30,000 hours service life, 10,000 hours for GPLE22

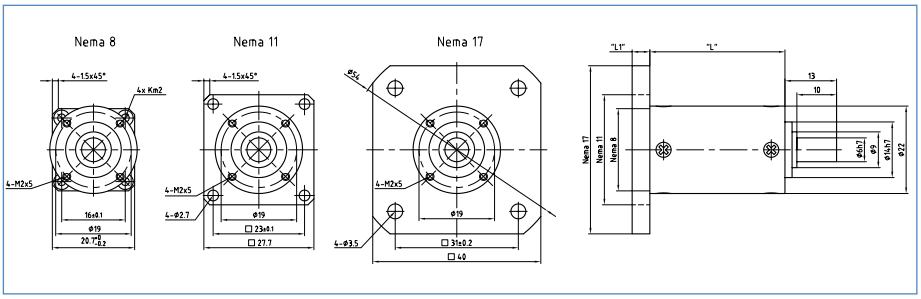
Order identifier



When ordering, it is important to specify the motor onto which the gear will be mounted.

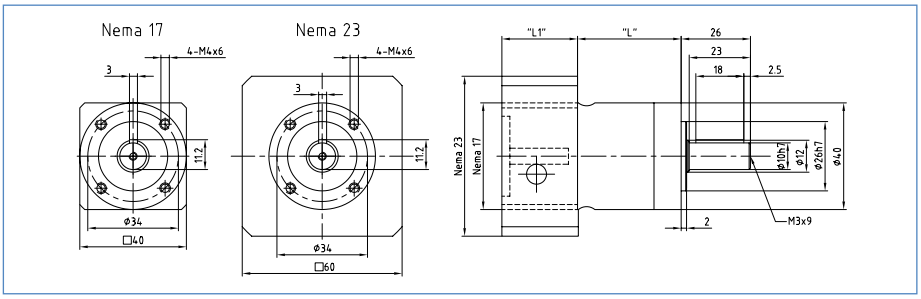
GPLE22

Outline drawing (mm)



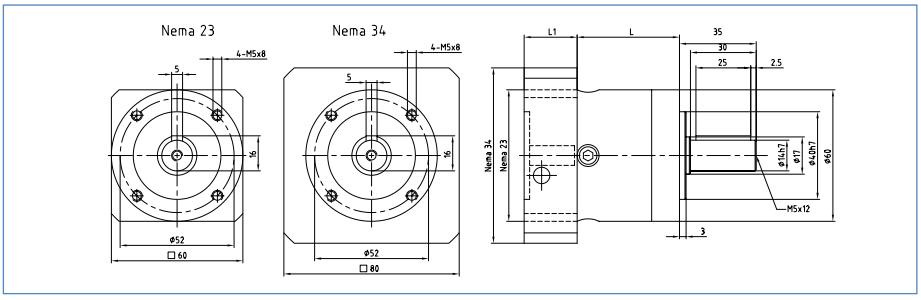
GPLE40

Outline drawing (mm)



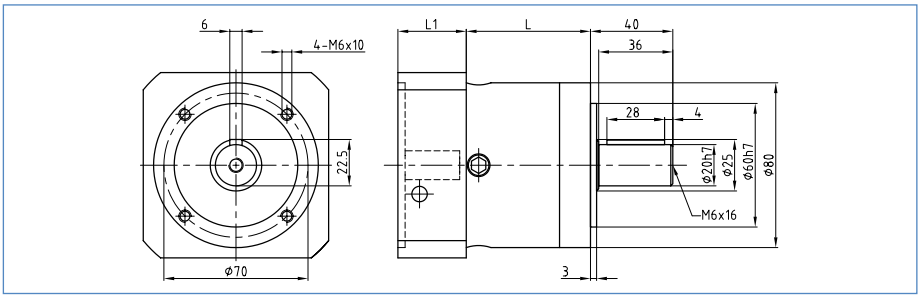
GPLE60

Outline drawing (mm)



GPLE80

Outline drawing (mm)



Precision planetary gear GPLE

Available versions (others on request)												
Type		**Backlash Angle minutes**	**Efficiency under full load %**	**Weight kg**	**Length L mm**	**Reduction ratio**	**Output torque Nm Ratings (*1)**	**Output torque Nm Max. value (*2)**	**Moment of inertia kg mm²**	**Intermediate flange L1 mm**	**Combination option with motor**	**Admissible radial/axial shaft loading (N) 10,000 h service life (30,000 h service life)**
GPLE22	2-stage	<55	94	0.1	34	9	1.5	n.a.	0.09	4.5	ST20, ST28 ST41,ST42… (Nema 8,11,17)	20/20
						12						
						15						
GPLE40	1-stage	<24	96	0.35	39	3	11.0	17.6	3.1	27.5	ST41, ST42, DB42… (Nema 17)	200/200
						4	15.0	24	2.2			
						5	14.0	22	1.9			
						8	6.0	10	1.7			
	2-stage	<28	94	0.45	52	9	6.5	26	3.0			
						12	20.0	32	2.9			
						15	18.0	29	2.3			
						16	20.0	32	2.2			
						20	20.0	32	1.9			
						25	18.0	29	1.9			
						32	20.0	32	1.7			
						40	18.0	29	1.6			
						64	7.5	12	1.6			
	3-stage	<30	90	0.55	64.5	60	20.0	32	2.9	24.5	ST57, ST59, DB57… (Nema23) (not combined with ST5918D...)	(160/160)
						80	20.0	32	1.9			
						100	20.0	32	1.9			
						120	18.0	29	2.9			
						160	20.0	32	1.6			
						200	18.0	29	1.6			
						256	20.0	32	1.6			
						320	18.0	29	1.6			
						512	7.5	12	1.6			
GPLE60	1-stage	<16	96	0.9	47	3	28.0	45	13.5	24.5	ST57, ST59, DB57… (Nema 23) (for ST5918D… not all variants available)	500/600
						4	38.0	61	9.3			
						5	40.0	64	7.8			
						8	18.0	29	6.5			
	2-stage	<20	94	1.1	59	9	44.0	70	13.1			
						12	44.0	70	12.7			
						15	44.0	70	7.7			
						16	44.0	70	8.8			
						20	44.0	70	7.5			
						25	40.0	64	7.5			
						32	44.0	70	6.4			
						40	40.0	64	6.4			
						64	18.0	29	6.4			
	3-stage	<22	90	1.3	72	60	44.0	70	7.5	33.5	ST89, DB87… (Nema 34)	(340/450)
						80	44.0	70	7.5			
						100	44.0	70	7.5			
						120	44.0	70	6.4			
						160	44.0	70	6.4			
						200	40.0	64	6.4			
						256	44.0	70	6.4			
						320	40.0	64	6.4			
						512	18.0	29	6.4			
GPLE80	1-stage	<9	96	2.1	60	3	85.0	126	77.0	41.5	ST89… (Nema 34)	950/1200
						4	115.0	184	52.0			
						5	110.0	176	45.0			
						8	50.0	80	39.0			
	2-stage	<14	94	2.6	77.5	9	130.0	208	74.0			
						12	120.0	192	72.0			
						15	110.0	176	71.0			
						16	120.0	192	50.0			
						20	110.0	192	44.0			
						25	110.0	176	44.0			
						32	120.0	192	39.0			
						40	110.0	176	39.0			
						64	50.0	80	39.0			
	3-stage	<16	90	3.1	95	60	110.0	176	51.0			(650/900)
						80	120.0	192	50.0			
						100	120.0	192	44.0			
						120	110.0	176	70.0			
						160	120.0	192	39.0			
						200	110.0	176	39.0			
						256	120.0	192	39.0			
						320	110.0	176	39.0			
						512	50.0	80	39.0			

Long-term gearing rated, hardened
Working temperature: -25° to 90°
Service life lubricated, protection class IP54

*1. Continuous output torque at the output shaft with fluctuating loads of 100 min^{-1}, and application factor KA=1 and operating mode S1.
*2. Admissible for 30,000 revolutions of output shaft

Economy planetary gear GPLL

The GPLL series economy planetary gear is ideal for applications in which the increased torque of a motor with gearing is needed with the same construction volumes.
The slightly higher circumferential backlash is not relevant for many applications such as transport drives or positioning in one rotation direction, many controllers also already offer automatic play compensation (such as SMCI..) and hence compensates the backlash electronically.

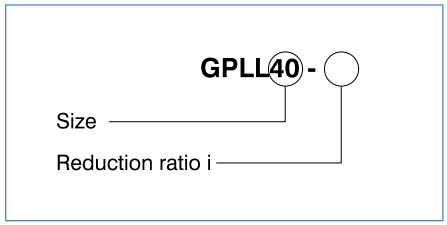
Gears

Circumferential backlash: Axial/radial play:

GPLL22	2.5°	< = 0.3/< = 0.04 mm
GPLL40	3°	< = 0.3/< = 0.04 mm
GPLL52	3°	< = 0.3/< = 0.04 mm

Service life Lh10 > 1000 h

Order identifier

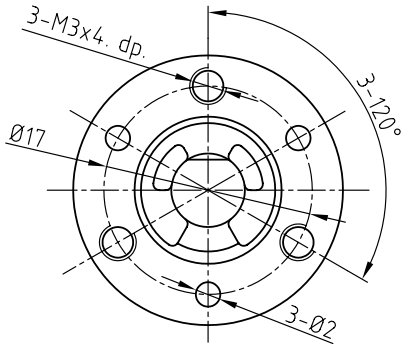


Available versions (others on request)

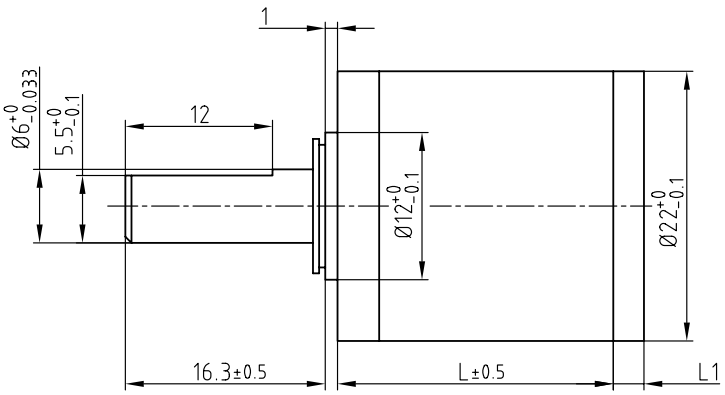
Type	Reduction ratio	Nominal torque Ncm	Max. torque Ncm	Efficiency	Weight kg	Length mm	Intermediate flange L1 mm	Combination option with motor	Axial/radial force N
GPLL22-5	5:1($4_{2/3}$:1)	20	60	80%	0.046	23.3	without	DB28	
GPLL22-25	25:1($25_{1/5}$:1)	30	90	70%	0.051	29.5	5.0	ST20, 28	7.2
GPLL22-90	90:1($89_{121/169}$:1)	40	120	60%	0.058	35.7			
GPLL40-14	14:1(14:1)	100	300	70%	0.191	39.2	6.0	ST40, 41, 42	
GPLL40-24	24:1(24:1)	100	300	70%	0.191	39.2	6.0	DB42	30/80
GPLL40-49	49:1(49:1)	180	540	60%	0.231	45.9			
GPLL52-4	4:1($4_{1/3}$:1)	150	450	80%	0.475	53.0	6.0	ST40, 41, 42	
GPLL52-15	15:1($15_{1/6}$:1)	500	1500	70%	0.660	68.5	6.0	ST57, 58, 59, 60	100/200
GPLL52-53	53:1($53_{1/12}$:1)	1000	3000	60%	0.850	84.0	6.0	DB57	
GPLL52-100	100:1($100_{2/7}$:1)	1000	3000	60%	0.850	84.0	(on request)	DB87	

GPLL22 Outline drawing (in mm)

Front view and mounting

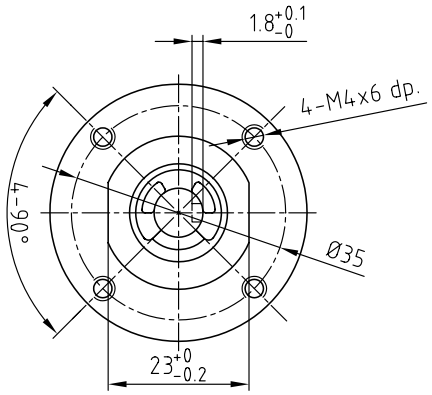


Side view

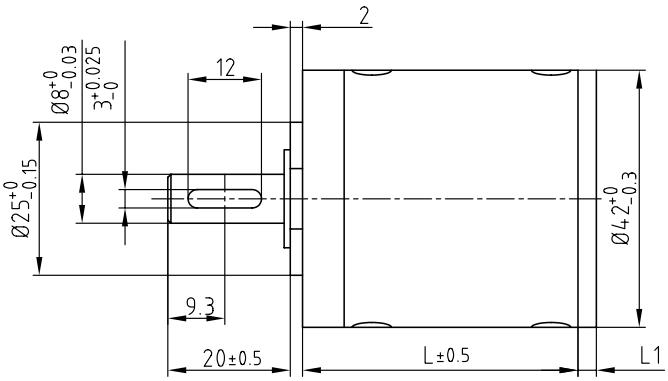


GPLL40 Outline drawing (in mm)

Front view and mounting

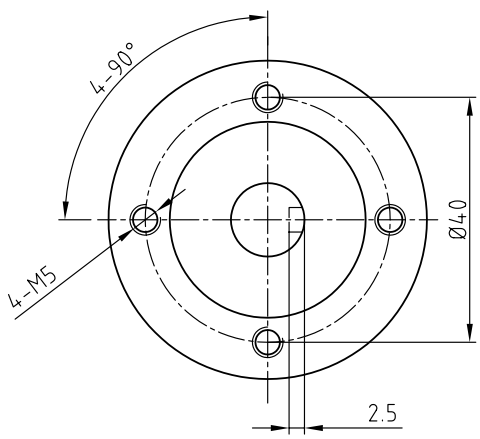


Side view

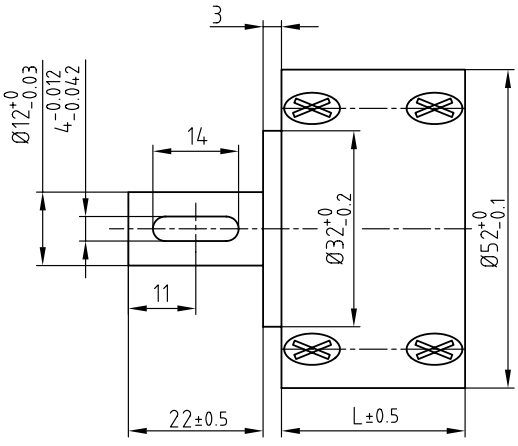


GPLL52 Outline drawing (in mm)

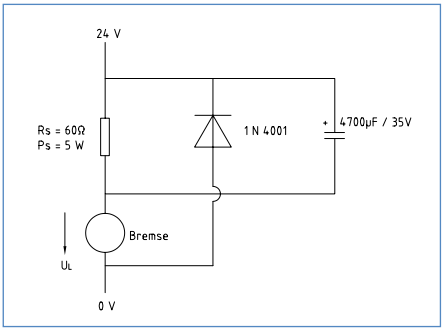
Front view and mounting



Side view



Brakes



The safety brakes from Nanotec have a compact flange construction, are low wear, and are equipped with asbestos-free friction linings. They are fast and easy to install due to the permanently set air gap. The brakes are electromagnetically ventilated andcan be used anywhere where moving masses are to be slowed in a very short time or defined to be maintained and the brake torque generated must be available – even if there is a power failure. The braking force is applied with the aid of a pressure spring (BW and BL brakes) or a permanent magnet (BKE brake). A voltage of 24 V DC must be applied to all brakes for venting.

Brake type BL

Technical data

Electrical data: 24 V DC/5 W
Moment of inertia: 0.01 kgcm²
Switch-on/switch-off time: 11 ms/17 ms
Nominal torque: 0.24 Nm
Hub: Borehole Ø5H7 with 2 puncture screws M3
Mounting: with 3 screws M2.5
Connection: Leads L=400 mm
Weight 0.1 kg

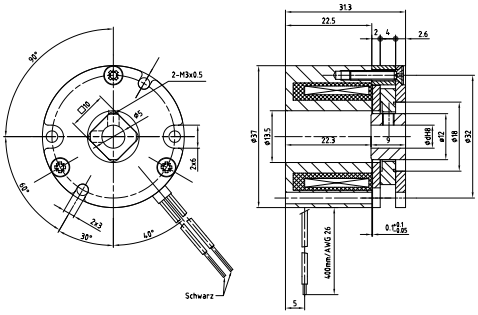
Mounting possibilities: 40-series motor with B shaft

Order identifier

BRAKE-BL - 0.24 - 5.0

5.0 = ID hub borehole 5.0

Outline drawing (in mm)



Brake type BW

Technical data

Electrical data: 24 V DC/10 W
Moment of inertia: 0.1 kgcm²
Switch-on/switch-off time: 35 ms/25 ms
Nominal torque: 1.4 Nm
Hub: Borehole … H7 with 2 puncture screws M4
Mounting: With 2 studs M3 or M4
Connection: Lead L = 400 mm
Weight 0.5 kg

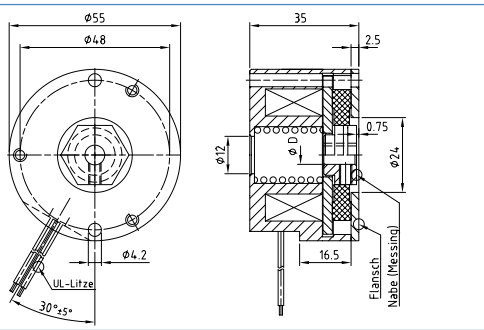
Mounting possibilities: 56-series motor with B shaft

Order identifier

BRAKE-BW - 1.4 - 6.3

6.3 = hub borehole 6.35
9.5 = hub borehole 9.525

Outline drawing (in mm)



Brakes

Integrated brakes with plug connection allow operation in tough environmental conditions (IP54) and ensure fast and mistake-free wiring.
The BKE brakes with the Nano brake module are used for this purpose.

The Nano brake module (PWM controller) reduces the power and heat losses of the brake by 35% thus enabling a higher stopping and activation time of the motor.

The anti-surge diode for the brake is also already integrated in the module.

Technical data

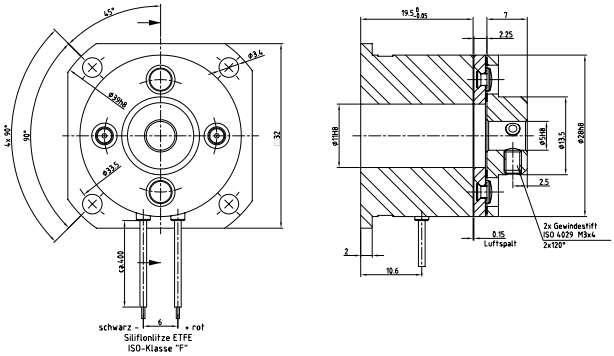
Electrical data:	24 V DC/8 W
Moment of inertia:	0.013 kgcm²
Switch-on/switch-off time:	10 ms/6 ms
Nominal torque:	0.4 Nm
Hub:	Borehole ... H8 with 2 puncture screws AM3x4
Mounting:	with 4 screws M3
Connection:	Lead L = 400 mm
Weight	0.08 kg

Order identifier

BRAKE-BKE - 0,4 - 5,0

5.0 = ID hub borehole 5.0

Outline drawing (in mm)



Technical data

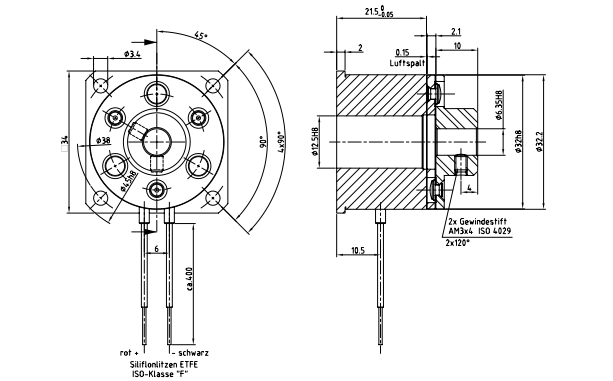
Electrical data:	24 V DC/10 W
Moment of inertia:	0.021 kgcm²
Switch-on/switch-off time:	12 ms/6 ms
Nominal torque:	1 Nm
Hub:	Borehole ... H8 with 2 puncture screws AM3x4
Mounting:	with 4 screws M3
Connection:	Lead L = 400 mm
Weight	0.11 kg

Order identifier

BRAKE-BKE - 1.0 - 6.35

6.35 = ID hub borehole 6.35

Outline drawing (in mm)



Technical data

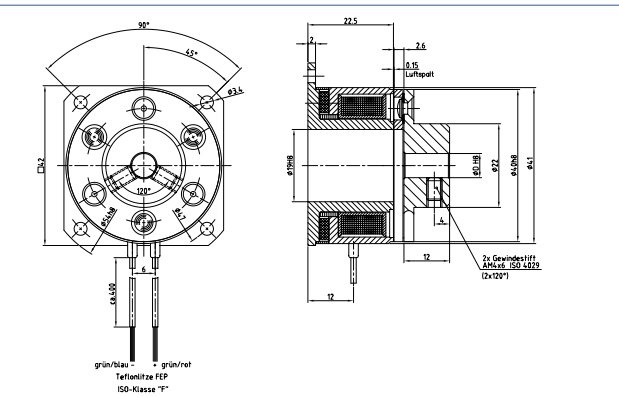
Electrical data:	24 V DC/11 W
Moment of inertia:	0.067 kgcm²
Switch-on/switch-off time:	25 ms/6 ms
Nominal torque:	2 Nm
Hub:	Borehole ... H8 with 2 puncture screws AM4x6
Mounting:	with 4 screws M3
Connection:	Lead L = 400 mm
Weight	0.185 kg

Order identifier

BRAKE-BKE - 2,0 - 6,35

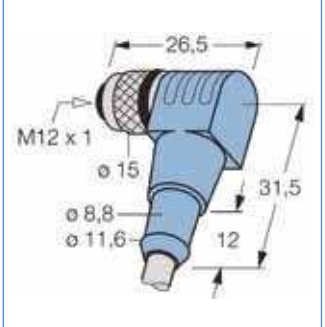
6.35 = ID hub borehole 6.35
8.0 = ID hub borehole 8.0

Outline drawing (in mm)

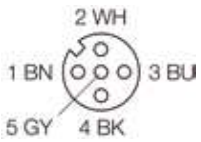


Connection cable

Order identifier	
M12 cable for AS.. and AD.. motors with encoder	
ZK-M12-8-2M-1-PUR-S	8-pin, 2 m, straight connector, shielded
ZK-M12-8-5M-1-PUR-S	8-pin, 5 m, straight connector, shielded
ZK-M12-8-2M-2-PUR-S	8-pin, 2 m, angled connector, shielded
ZK-M12-8-5M-2-PUR-S	8-pin, 5 m, angled connector, shielded

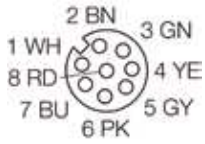


Order identifier	
M12 motor connection for AS.. motors	
ZK-M12-5-2M-1-PUR-S	5-pin, 2 m, straight connector, shielded
ZK-M12-5-5M-1-PUR-S	5-pin, 5 m, straight connector, shielded
ZK-M12-5-2M-2-PUR-S	5-pin, 2 m, angled connector, shielded
ZK-M12-5-5M-2-PUR-S	5-pin, 5 m, angled connector, shielded



No.	COLOR
1	Brown
2	White
3	Blue
4	Black
5	Gray

Shield placed on union nut



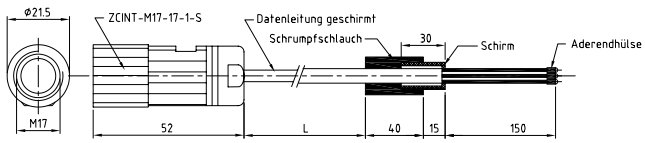
No.	COLOR
1	White
2	Brown
3	Green
4	Yellow
5	Gray
6	Pink
7	Blue
8	Red

Shield placed on union nut

Order identifier	
M17 motor cable for ADB87 motors	
ZK-M17-4-2M	Motor cable, 4-pin, 2 m
ZK-M17-4-5M	Motor cable, 4-pin, 5 m
ZK-M17-4-7M	Motor cable, 4-pin, 7 m

Order identifier	
M17 signal cable for ADB87 motors	
ZK-M17-12-2M	Signal cable, 12-pin, 2 m
ZK-M17-12-5M	Signal cable, 12-pin, 5 m
ZK-M17-12-7M	Signal cable, 12-pin, 7 m

ZK-M17



M17 - 4-pin	
No.	**COLOR**
1	White
2	Yellow
3	Green
4	Brown

M17 - 17-pin	
No.	**COLOR**
1	Red
2	Black
3	Blue
4	White
5	Green
6	Yellow
7	Brown
8	Gray
9	Gray/pink
10	Purple
11	Red/blue
12	White/green
13	N.C.
14	
15	
16	
17	

Order identifier	
Diverse cable sets	
ZK-SMC11	Pre-assembled cable set for SMC11/G/GE, L=300 mm
ZK-SMCI12	Pre-assembled cable set for SMCI12
ZK-SMCI12-3	Pre-assembled cable set for SMCI12 with CAN Open
ZK-USB	Programming cable for SMCI33-1

Damper

The D28, D40 and D56 dampers from Nanotec can be mounted on all stepper motors with a second shaft end (28-58 mm construction size). In addition to the improved settling time system, resonances are suppressed as well as vibrations and motor noise greatly reduced.
The equipment commissioning is made considerably easier for equipment-specific resonance and noise problems by attaching the damper.

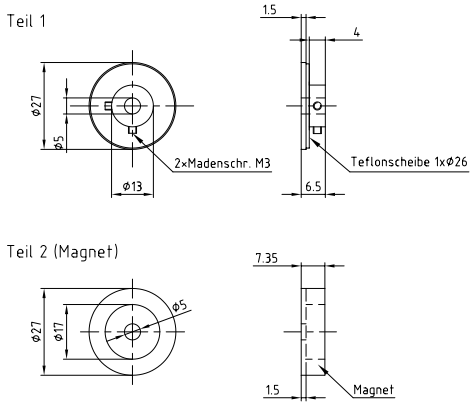
ZD-D28

For all stepper motors with a shaft diameter of 5.0 mm and B shaft, weight: 26 g. Adapted for stepper motor size ST28.

Order identifier

ZD-D28

Outline drawing (in mm)



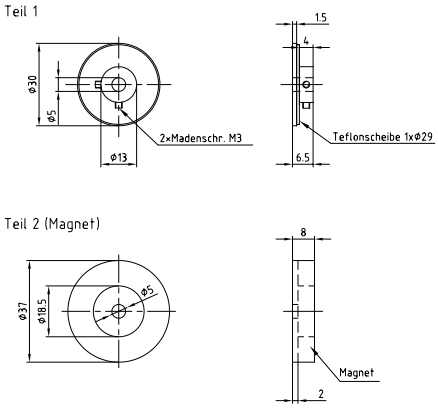
ZD-D40

For all stepper motors with a shaft diameter of 5.0 mm and B shaft, weight: 40 g. Adapted for stepper motor sizes ST41.., ST42..

Order identifier

ZD-D40

Outline drawing (in mm)



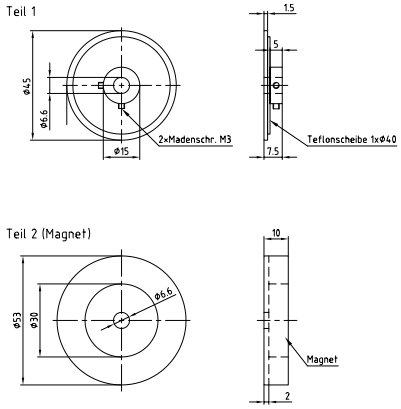
ZD-D56

For all stepper motors with a shaft diameter of 6.35 mm and B shaft, weight: 100 g. Adapted for stepper motor sizes ST57.., ST59..

Order identifier

ZD-D56

Outline drawing (in mm)



Damper for mounting flange

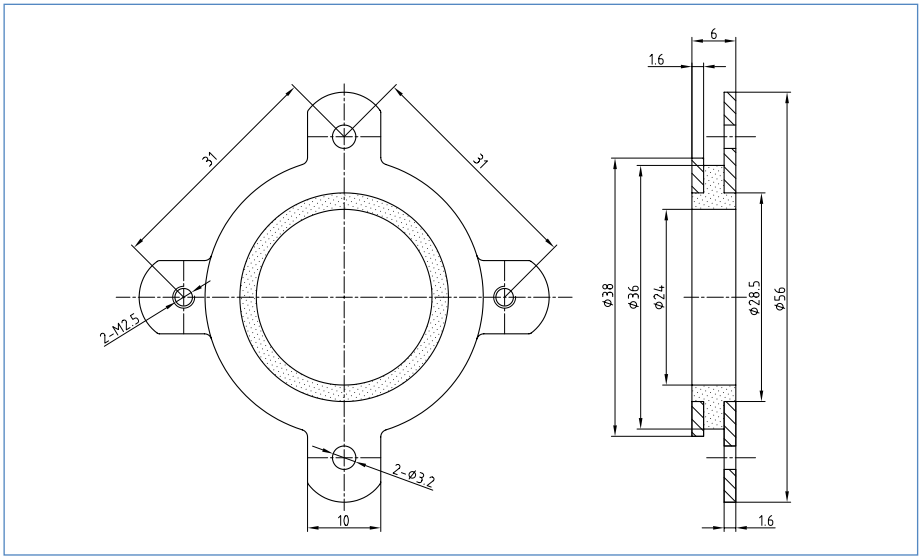
The rubber vulcanized onto the 2 flange rings is used primarily by the ZD-.. damper for attenuating the structure-borne noise* which can be reduced to approx. 3-10 dB(A) compared to direct flange mounting and its size, construction and stability and depending on the frequency. The different speeds of sound (steel/air/rubber = 5000/331/50 m/s) and the damping vibration tendency of the ZD-DF.. damper make cost-effective noise damping possible.

Compared to the well-known rubber silencer, the ZD silencer still provides an acceptable setting of the often important axis spacing between motor shaft and shaft to be driven.

The interrupted flange cooling surface (additional cooling surface that is often utilized for direct flange mounting) must be taken into account at the admissible motor temperature.

*** The generation of noise arises** initially as structure-borne noise and are only then emitted as air noise. If these air noise waves strike a component, such as a casing wall, this causes it to vibrate. The vibration of this wall (smallest bending vibrations) causes the air present in the room to be excited in turn which develops into air noise that is perceptible to the human hearing. As each component has its own resonant frequency, countless other noise sources can be excited and hence amplified too.

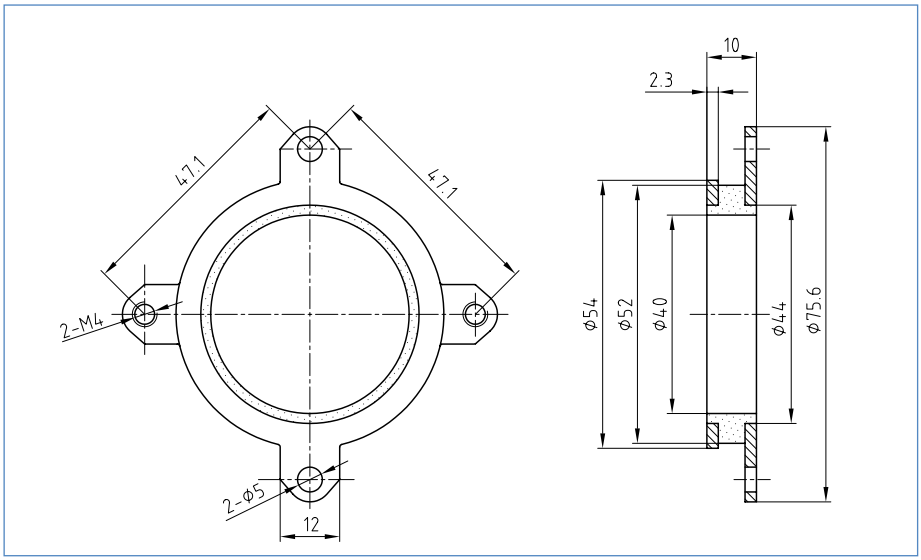
ZD-DF40



Order identifier

ZD-DF40

ZD-DF56



Order identifier

ZD-DF56

Shaft couplings

The Oldham couplings from Nanotec are easy to install due the short construction and can transfer high forces with low shaft offset. Damage to the shaft is excluded by the clamp fastening.
A nylon transmission disc attenuates noise and provides excellent insulation properties (3 kV between two shafts) with potential-free mounting.

Use
Wherever play-free power transmission is needed: Stepper motors, servomotors, encoders, tacho generator, etc.

Temperature range: -20 °C to +60 °C
Materials: 2011T3 and 2011T8 BS4300/5FC1 aluminum alloy hub
Transmission disc: Nylon 11 (colorless)
Blind hole: Length of parallel borehole ±0.2.
Boreholes end with 118° angle

Operating factors

Maximum torques based on drives with no displacement or axial movement.
The operating ratios are multiplied by the load moments as explained, e.g.

Load moment of the application = 1 Nm
Operating factor = 2
Required torque = 2 Nm

Load duration	Operating factor
Momentary load	1
1 hours per day	2
3 hours per day	4
6 hours per day	6
12 hours per day	8

Order identifier

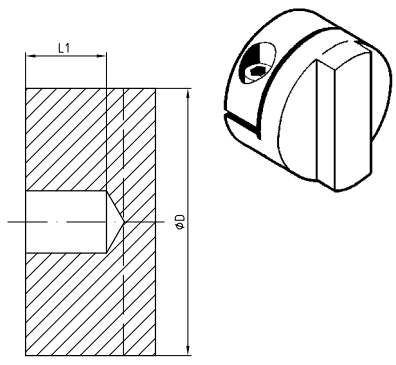
ZW-X (e.g. ZW-235-19-20)

Order 2 hubs + 1 transmission disc

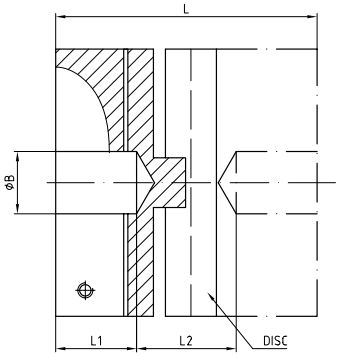
From 50 pcs, special boreholes are possible!

Order number for special hub boreholes:
e.g. 8.0 mm= ZW-235-19-99-8.0

Hubs with blind hole



Outline drawing (in mm)



Coupling-specific parameters

Size	Sudden torque Nm	Max. displacement @3000 r.p.m.			Static rupture torque Nm
		Angle ±°	Radial ±mm	Axial ±mm	
19	1.7	0.5	0.2	0.10	10
25	4.0	0.5	0.2	0.10	13
41	17.0	0.5	0.2	0.15	57

Available shaft couplings

Hubs	Size	Hub borehole +0.03/-0 mm	Dimensions				Fixing screws		Moment of inertia kgm^2x10^{-8}	Weight	Transmission disc
			Ø D	L	L1	L2	Setscrew	Take-off torque Nm			Order number
235-19-20	19	5	19.1	22.0	6.3	9.4	M3	0.94	67	12	**235-19-0**
235-19-99	19	X	19.1	22.0	6.3	9.4	M3	0.94	67	12	**235-19-0**
234-25-24	25	6.35	25.4	28.4	8.6	11.2	M4	2.27	252	31	**234-25-0**
234-25-28	25	8	25.4	28.4	8.6	11.2	M4	2.27	252	31	**234-25-0**
234-25-99	25	X	25.4	28.4	8.6	11.2	M4	2.27	252	31	**234-25-0**
234-41-31	41	9.525	41.3	50.8	16.7	17.4	M5	4.62	3327	148	**234-41-0**
234-41-38	41	14	41.3	50.8	16.7	17.4	M5	4.62	3327	148	**234-41-0**
234-41-99	41	X	41.3	50.8	16.7	17.4	M5	4.62	3327	148	**234-41-0**

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