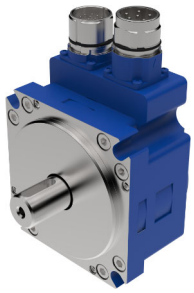
Swedish Innovative Servo Motion Engineering Since 1994



HDT 09E - Data sheet

Electric data

Value	Unit	Winding	
		Ma (400VAC)	Ja (230VAC)
Number of poles		10	10
Number of pole pairs		5	5
Inductance/Phase	mH	17.3	1.7
Resistance/Phase	Ohm	4.2	0.4
Resistance/Phase-Phase	Ohm	8.4	0.8
Back EMF/Phase-Phase RMS	Vs/rad	0.40	0.13
Back EMF @ 1000 rpm	V	41.5	13.1
Torque constant (RMS)	Nm/A	0.69	0.22
Max rail voltage	V	750	750

For higher torques, see next page.

Mechanical data (resolver feedback)

Value	Unit	HDT09E	
		no brake	brake
J	kgcm2	0.51	0.9
Mass	kg	1.7	2.3

Holding brake

Value	Unit	
Torque	Nm	9
J	kgcm2	0.4
Voltage	V DC	24
Power	W	12

Thermistors

Overheat protection consists of triple PTC thermistors. One on each phase.	
R @ 25 C	100 to 350 Ohm
R @ 145 C	< 1650 Ohm
R @ 155 C	> 4 kOhm

Protection class

HDD motors comply with the requirements for IP 65. IP-67 is available on request.

Insulation class

The insulation system complies with the requirements of EEC LV Directive 73/23/EEC and 93/68/EEC. Test report E9911111E01.

Motor name structure

Type	Flange size	Stator length	Winding	Feedback	Power connector	Brake	Shaft key	Options
HDT	09	E	-Ma	-A	-A	-A	-A	-AAA

Type HDT = 10 pole shaft motor.
Flange size Approximate in cm. 09 = 92 mm.
Stator length E(shortest), J, N(longest).
Winding Suitable rail voltage at 6000 rpm.

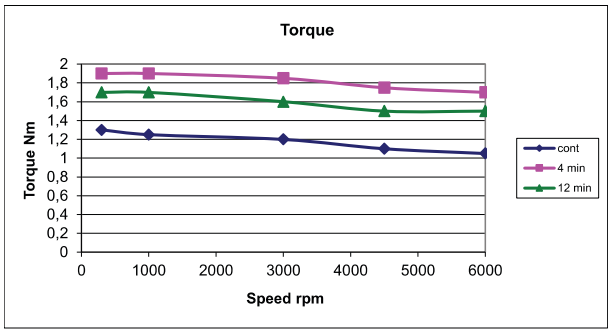
Ma	560V
Ja	320V

Feedback See the feedback list on www.hddservo.com/product-options/
Power connector Many different pinouts available; see www.hddservo.com/product-options/
Brake A = no brake, D = holding brake. Data see above.
Shaft key A = shaft with key, B = shaft without key.
Options AAA = standard. For other options please contact HDD.

Torque

Torque in Nm at 90ºC temp rise (median temp rise, i.e. average between min and max temp for 25% cycle).

Duty cycle	100%	25%	25%
		4min	12min
300rpm	1.3	1.9	1.7
1000rpm	1.25	1.9	1.7
3000rpm	1.2	1.85	1.6
4500rpm	1.0	1.75	1.5
6000rpm	1.05	1.7	1.5



Current

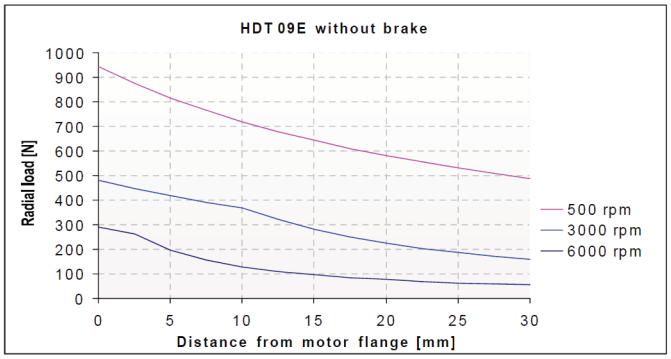
Current at 90ºC temp rise, in Ampere rms.

Winding	Ma			Ja		
Duty cycle	100%	25%	25%	100%	25%	25%
		4min	12min		4min	12min
300rpm	2.1	3.4	2.8	6.7	10.8	8.9
1000rpm	2.05	3.4	2.8	6.5	10.8	8.9
3000rpm	2.05	3.35	2.75	6.5	10.6	8.7
4500rpm	2.05	3.35	2.7	6.5	10.6	8.6
6000rpm	2.05	3.3	2.7	6.5	10.5	8.6

Data were measured on an HDT 09E-Ma series motor mounted on a vertical 260 x 200 x 12 mm aluminum plate in free air, with a maximal winding temperature rise of 90ºC and driven by a commercially available nverter. Data are given for continuous operation and two drive cycles: 1 min on and 3 min off, and 3 min on and 9 min off, respectively. Data for other winding types are calculated.

Important note on peak torque and currents

HDT motors are capable of high peak torques. At very high peak torques the permitted pulse time is very limited as a high current in a very small motor causes rapid temperature rise in the copper winding. The protection thermistor will not react fast enough to protect the winding during high pulse loads.

Maximum load on shaft at life expectancy 20,000 h (shaft motors only)

Maximal axial load (push): 350 N at 500 rpm, 100 N at 3000 rpm, 35 N at 6000 rpm. Maximal axial load (pull): 50 N at all speeds. Maximal radial load at zero axial load is given by the curves below. For special cases please contact HDD for calculations.