

High-performance motors for SV-M, SV-S & Compax series drives

Parker HDY Series brushless motors are available for use with the SV-M, SV-S and Compax ranges of servo drives. They offer high dynamic performance in a cost-effective package, and with the extensive list of available options they can be tailored to a wide range of applications.

HDY motors are three-phase designs using high-energy rare earth magnets in a low-inertia rotor. With their high resistance to demagnetisation, these magnets allow high acceleration currents to be applied for optimum performance in point-to-point positioning. For contouring applications, the skewed rotor design helps to achieve very smooth rotation over the entire speed range. Optional failsafe holding brakes ensure power-failure security in vertical axes. All motors are fitted with a resolver as standard and in addition have the option of accepting a variety of encoder types.

The robust brushless construction and IP65 enclosure protection (IP64 at the shaft) ensure a long maintenance-free life in all normal industrial environments. Replaceable bearings and seals guarantee extended motor life in arduous applications.

Typical application areas include textile, printing and packaging machines, automatic assembly equipment and general industrial automation.

HDY series features

- High-energy rare earth magnets
- Sinusoidal back-EMF
- Peak torque up to 3 times continuous rating
- Maximum speeds up to 5000 rpm
- Skewed stator design for smooth rotation
- Choice of four frame sizes
- Enclosure protection IP65, shaft sealing IP64
- Nitrile shaft seal
- Class F insulation
- Motor connections via terminal box or plug-in connector
- Integral resolver with removable connector
- High-resolution Sin-Cos feedback option
- Temperature sensors incorporated in windings
- Standard flanges to DIN 42955/IEC72
- All motors available with holding brake option
- Encoder mounting facility
- Extruded aluminium motor body
- Industry-standard keyed shafts
- Alternative shaft styles available
- Matt black paint finish



Options

HDY series motors can be supplied with a number of options as listed below. Please consult your supplier for ordering information.

Holding brake

All motor sizes may be fitted with a holding brake. This is installed behind the motor flange and in most cases does not affect the motor length. The addition of a brake to the HDY70C motor increases the body length by 27mm.

The brake must be energised to release and as standard operates from 24V DC. Alternative ratings of 90V DC and 110V AC can be supplied. There is also a high-torque brake available with certain motors.

SinCos feedback

As an alternative to the standard resolver feedback, a high-resolution SinCos encoder may be specified for use in conjunction with Compax drives.

Encoder mounting flange

If an encoder is required in addition to the integral resolver, a flange is fitted to the rear of the motor and the shaft is extended. An IP65 encoder cover is available.

Rotational tolerance

Motors are normally manufactured to DIN 42955 standard "N" for rotational tolerance (shaft/flange squareness and runout). For more critical applications, for instance when backlash-free gears are fitted, the motor can be supplied with a closer tolerance conforming to DIN tolerance "R".

Flat shaft

Standard motor shafts have a keyway as detailed in the dimension drawings. A shaft with a machined flat can be supplied as an alternative.

Threaded shaft

A tapped hole can be provided in the end of the shaft with the following dimensions:

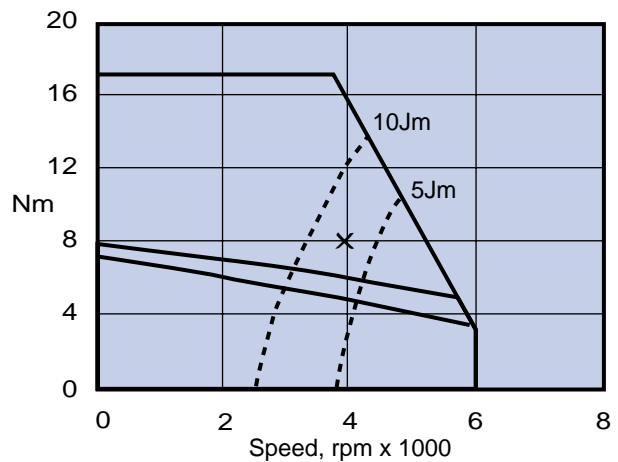
HDY70:	M5 x 10	HDY115:	M6 x 15
HDY92:	M5 x 10	HDY142:	M8 x 15

	Stall Torque	Stall Current	Torque constant	Rotor ^① inertia	Weight	Motor length w/wo brake	Supply voltage	Rated ^② speed	Rated ^③ torque	Rated current	Rated power
HDY...	M _O Nm	I _O A	K _T Nm/A	J kgmm ²	m kg	A mm	U V	n _n min ⁻¹	M _n Nm	I _n A _{eff}	P _n kW
55C4-32S	0.4	1.1	0.125	24	1.4	140/176	230	5000	0.35	1.04	0.18
							400	5000	0.35	1.04	0.18
70C4-44S	1.2	2.3	0.17	60	2.4	158/185	230	4400	1.15	2.30	0.53
							400	5000	1.10	2.30	0.58
70E4-44S	1.8	3.5	0.17	80	3.2	185/212	230	4400	1.75	3.40	0.81
							400	5000	1.70	2.30	0.89
92C4-44S	1.5	2.9	0.17	85	4.3	230	230	4400	1.20	2.4	0.55
							400	5000	1.16	2.35	0.61
92E4-44S	2.2	4.3	0.17	118	5.2	250	230	4400	1.85	3.70	0.85
							400	5000	1.80	3.60	0.94
115A6-64S	3.7	4.9	0.25	240	6.6	235	230	2800	3.40	4.30	1.00
115A6-88S	3.7	3.6	0.34	240	6.6	235	400	3800	3.20	3.00	1.27
							460	4400	3.20	3.00	1.47
115C 6-88S	6.8	6.6	0.34	460	9.0	275	230	2000	6.00	5.80	1.25
							400	3800	5.20	5.10	2.07
							460	4400	4.90	4.90	2.26
115E6-88S	9.8	9.5	0.34	680	11.4	315	400	3800	7.50	7.30	3.00
							460	4400	7.00	6.90	3.23
115G6-88S	13.0	12.6	0.34	900	13.8	355	400	3800	10.0	9.40	4.00
							460	4400	9.30	9.30	4.29
142C6-88S	11.3	11.0	0.34	1150	14.0	295	400	3800	8.60	8.50	3.42
							460	4400	8.30	8.30	3.82
142G6-88S	21.0	20.0	0.34	2200	21.0	375	400	3800	16.0	15.6	6.36
							460	4400	15.5	15.0	7.14
HJ...											
190J8-150S	91.0	52.0	0.58	21000	50.0	695	400	2400	70.0	40.0	17.6

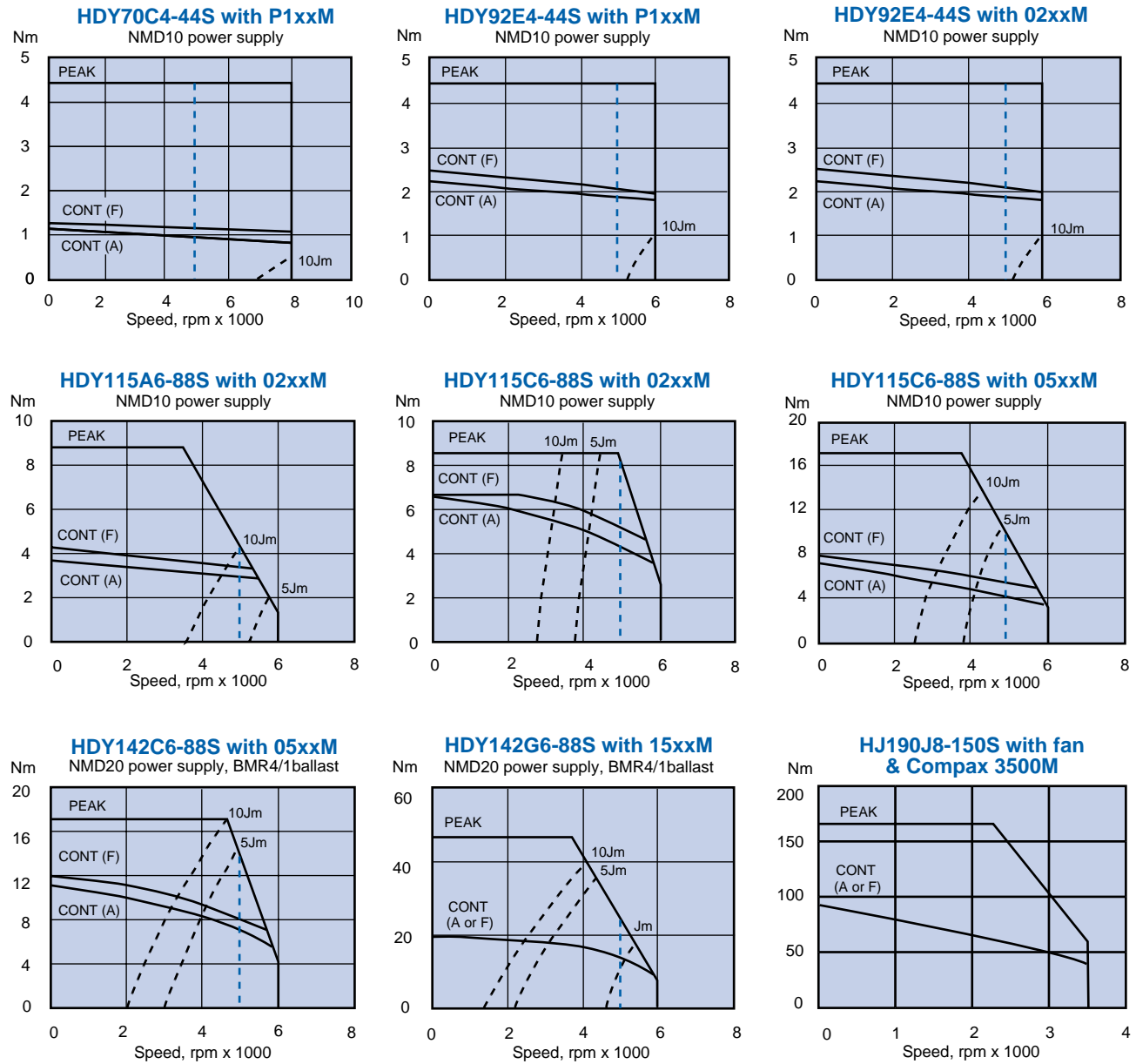
Power dump safe operating area

In addition to torque-speed data, the performance graphs also give an indication of the safe operating area of the power dump circuit in repetitive start-stop operation. The data is based on a 'worst case' system performing repeated trapezoidal moves with no dwell in between. The time at maximum speed is as short as the thermal rating of the motor will allow. Under these conditions, for any given load inertia, the power in the ballast resistor depends on the peak torque during deceleration and the maximum speed. The broken lines represent different load inertias as a ratio of the motor inertia J_m. When the application requirements have been calculated, plot the point representing peak torque and maximum speed on the performance graph. If this point lies to the left of the corresponding inertia line, the resistor rating will not be exceeded. If it lies to the right, there is not necessarily a problem but further calculation is required to establish the dump power more accurately - please consult your supplier.

In the example shown, a peak torque of 8Nm and a maximum speed of 4000 rpm are acceptable with a load of 5 times the motor inertia. Note that this information is for general guidance purposes only and will not apply to light duty cycles.



HDY series motors with SV-M & Compax-M series drives



Note: Speed is limited to 5000rpm when using SV-M series drives (shown by broken blue line)

Holding brake data (24V DC type)

Motor type	Holding torque (Nm)	Brake inertia (kg-mm ²)	Brake current (A)
HDY55	1	1	0.29
HDY70	1 (2)	2 (4)	0.26 (0.35)
HDY92	5 (10)	13 (17)	0.5 (0.5)
HDY115	10 (13.5)	17 (17)	0.5 (0.5)
HDY142	18 (40)	200 (200)	1.0 (1.0)
HJ190	80	3180	1.5

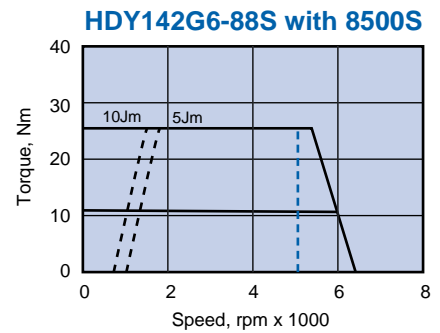
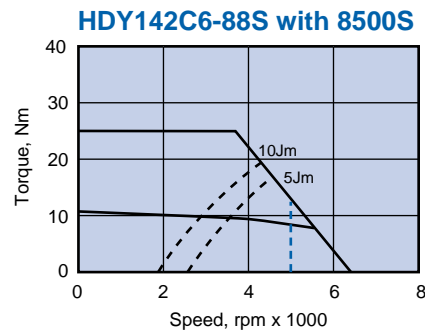
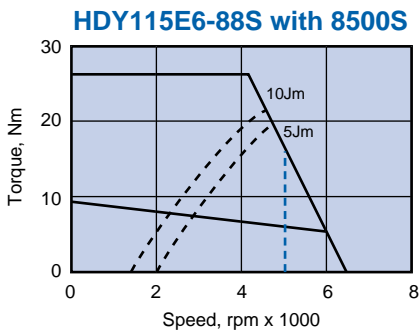
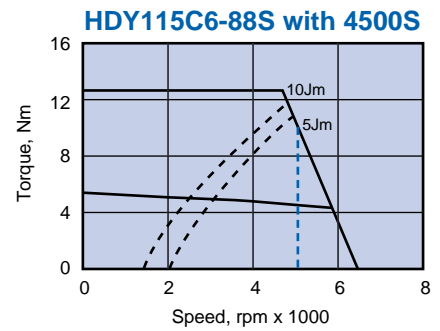
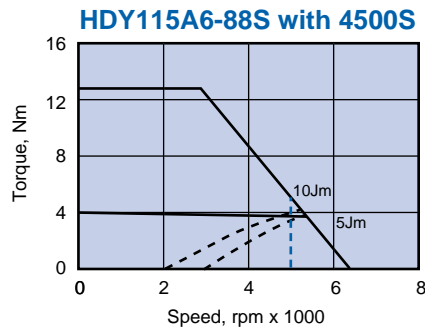
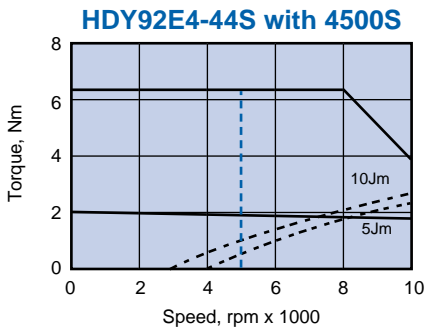
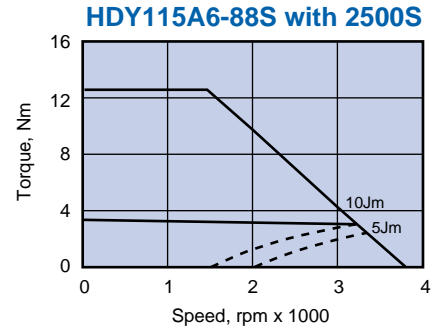
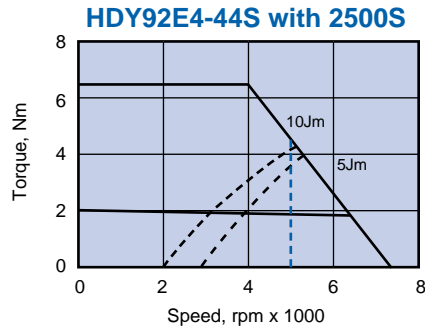
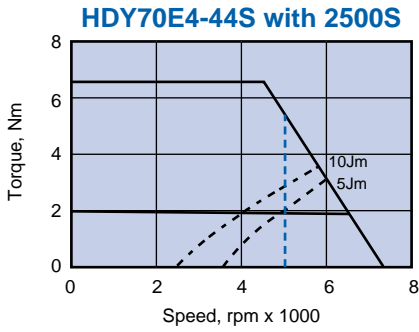
Figures in brackets are for the high-torque version.

Radial shaft loading

The following table shows the maximum load at the stated speed for a load applied half way along the shaft, and is based on a service life of 30,000 hours. Avoid applying large radial loads near the end of the shaft.

Motor	speed (rpm)	load (N)
HDY55	8000	150
HDY70	8000	200
HDY92	6000	200
HDY115	6000	350
HDY142	6000	600
HJ190	4000	1150

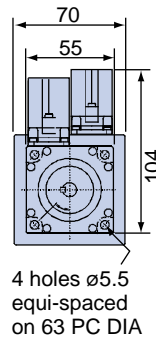
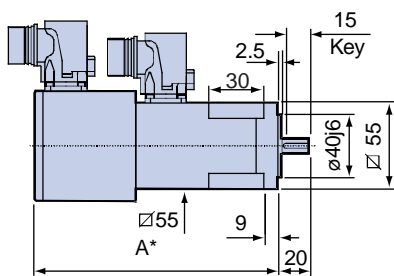
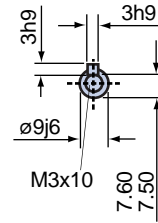
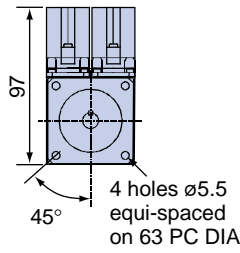
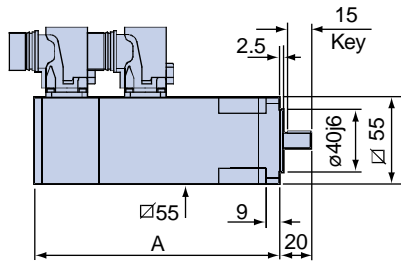
HDY Series motors with SV-S and Compax S series drives



Note: Speed is limited to 5000rpm when using SV-S series drives (shown by broken blue line)

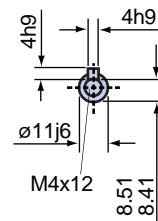
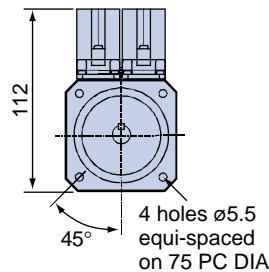
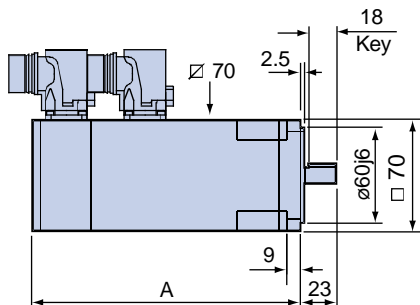
HDY55C4-32S

For dimension 'A' please see table on page 32



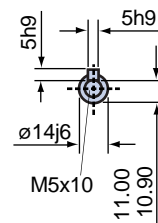
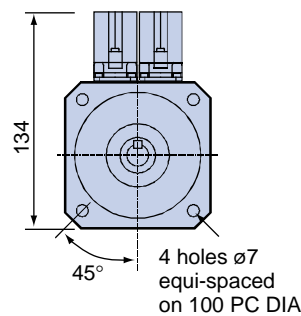
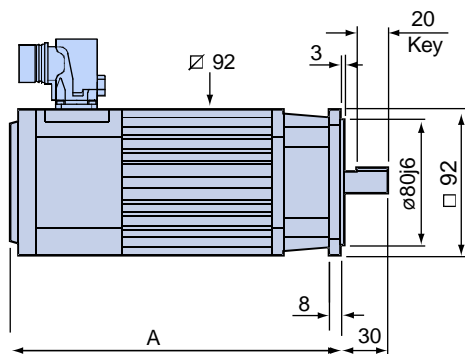
HDY70C4-44S / HDY70E4-44S

For dimension 'A' please see table on page 32

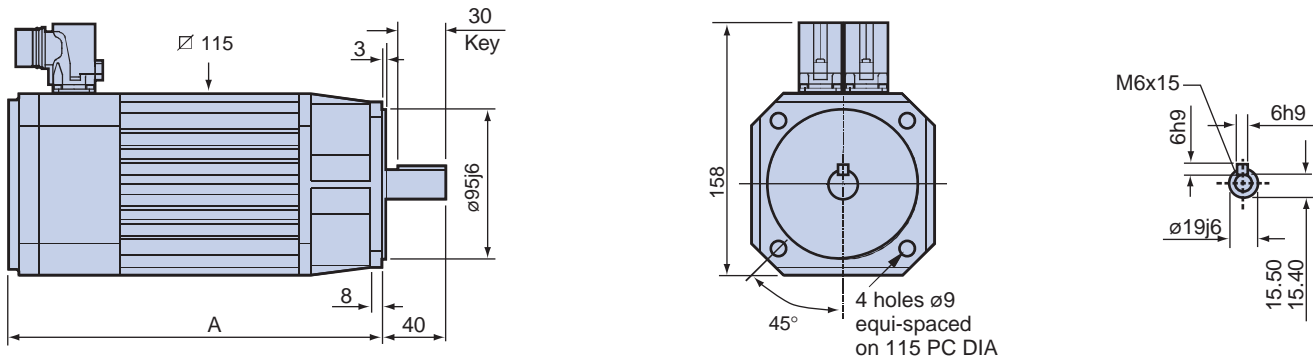


HDY92C4-44S / HDY92E4-44S

For dimension 'A' please see table on page 32

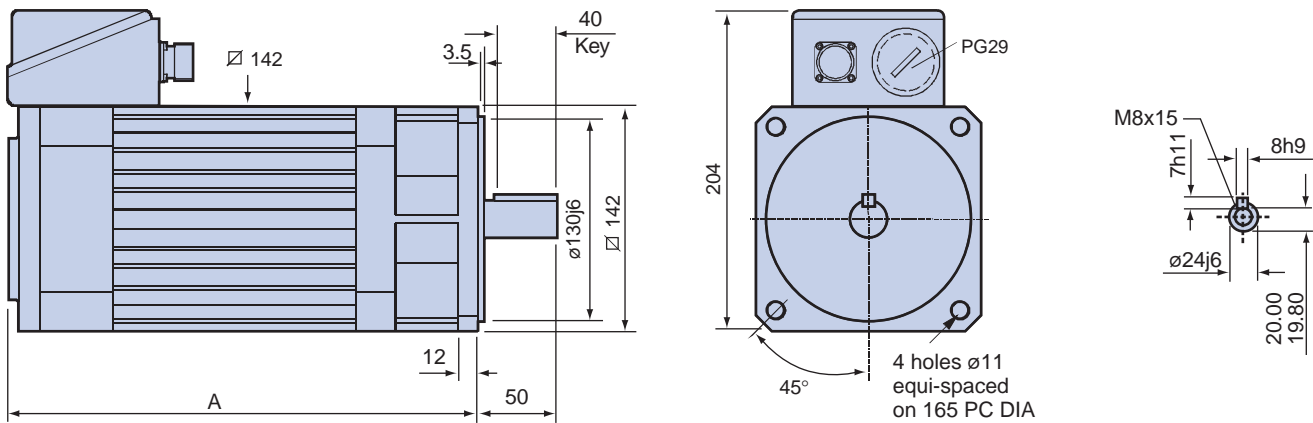


HDY115A6-64S / HDY115A6-88S / HDY115C6-88S / HDY115E6-88S / HDY115G6-88S



For dimension 'A' please see table on page 32

HDY142C6-88S / HDY142G6-88S



For dimension 'A' please see table on page 32

HJ190J8-150S with fan

