

SPG Co., Ltd

MOTORES DC

Motores Direct drive
Motorreductores

PRELIMINAR Y



SPG Europe Oy, Co., Ltd

SOME BASIC THINGS ABOUT DC-MOTORS

There are, of course, a lot of differences between AC- and DC-motors but we want to pinpoint a few of them that affect to the motor selection for different applications. In addition try to explain some features in very simple way. The reason for the simplicity is not that we consider you simple but the space is limited to one page only.

1. Torque

In both cases -AC and DC - the informed output torque (m_n) is the max continuous torque that is possible to take out of the motor shaft.

The difference is that in AC-motor the difference for continuous and short time torque is rather limited because the motor will stall rather easily when overloading.

In case of a DC-motor the speed curve from NO-LOAD speed to stall is rather linear and totally usable. The current also rises along a linear curve from NO-LOAD current to stall current. More current means more heat in the winding. There is the current value that develops the max temperature for the winding when occur continuously. That is the nominal current and at that point we have the nominal power and nominal torque. Unlike AC-motors, are DC-Motors usable with a starting torque e.g. 4 times nominal torque, though the motor should be used with such a load only intermittently.

2. Voltage

The speed of a DC-Motor depends on the supply voltage. By using a double voltage, the speed will be double as well and by using half voltage, the speed is naturally half too.

The input power is: $P=U \times I$, where $I = U/R$ which gives $P = U^2 / R$

The above formula shows that when the supply voltage is doubled from the nominal voltage, the input power will be 4 times bigger. That means a lot of current to heat up the winding, hence a lot of attention should be paid to the duty cycle when using with over voltage, though the current depends on the torque.

The case with under voltage is the same. With half voltage the power will decrease to one quarter, hence PWM drive is recommended to use as speed control.

3. Current

As the supply is DC Voltage, the current is $I = U / R$ where R is the resistance of the winding. The reason that the current becomes smaller when the speed increases is that the running DC-Motor works as a generator at the same time when it works as a motor generating so called back EMF which has an opposite polarity than the supply voltage. So, the current is actually $(U_s - U_{EMF}) / R$. The higher the speed is, the bigger the back EMF and the smaller the current.

SOME FACTS AND INFORMATION ABOUT OUR RANGE

We have different speeds for direct drive motors (3000rpm) and the motors to be used with our standard spur gears (1800rpm). The reason for this is that we want to offer you high speed in case of direct use as it is often required, and a low noise level of spur gears because that is often a requirement in today's silent industrial environments.

1. Motors

This catalogue shows our standard range, which is stocked in Raisio, Finland. All motors are available with different speeds, different voltages and different shafts etc when there is a serious quantity on stake. For us even 50 pcs is a serious enough quantity for a shaft modifications but when it comes to the different windings - speed or voltage - the quantity should be a few hundred a year minimum.

2. Gear boxes

We supply the same gearboxes with AC and DC-motors and they are also all stocked in Raisio according to demand – the more you buy, the more we stock. The same possibility for a customized shaft is with gearboxes. Even slight changes to the gearbox body can be made when the quantity is reasonable big e.g. 2 000 P/A.

3. Combinations

There are some motors; 60W, 90W and 120W that can be used either with S9KC... or S9KD... gearboxes. The differences between those gears are the output torque - KC max. 19.6 Nm and KD max. 29.4 Nm - and the mounting. KC gears are mounted to the motor and to the application with the same screws while KD gears are mounted to the motor with short screws and from the load's point of view they are flange mounted.

4. Miscellaneous

Most of the motors can be delivered with electromechanical brake.

90Vdc is kind of factory standard, though we only stock 12V and 24V motors in Finland.

Also 300W motor exists but we do not have it in our catalogue because it is only available as 3000 rpm version so far.

All direct motors and gearboxes are available with straight shaft, key type shaft and D-cut shaft. In this catalogue we only show our stock types.

All motors bigger than 60mm frame size have exchangeable brushes. Changing the brushes will increase the life time to about 1,5 times the original. By having an extra pair of brushes, the motors can be used until the brushes wear out and then assemble new brushes and order a new motor.

STANDARD DC-MOTORS FOR GEARBOXES

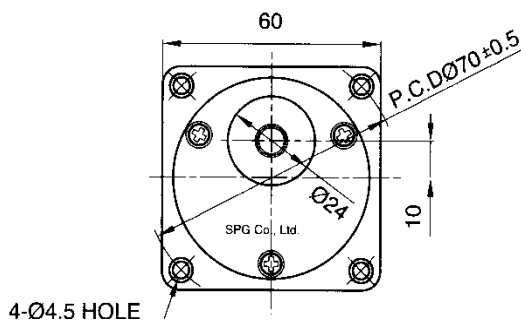
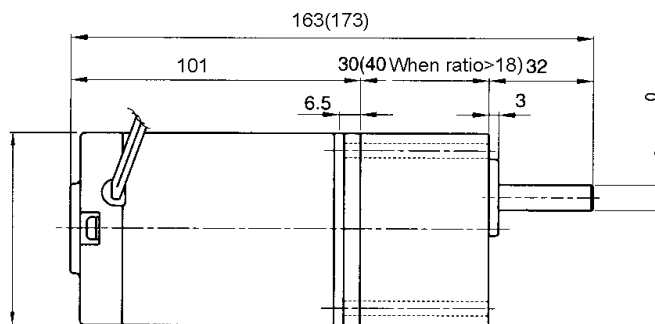
21C for world geared motor!



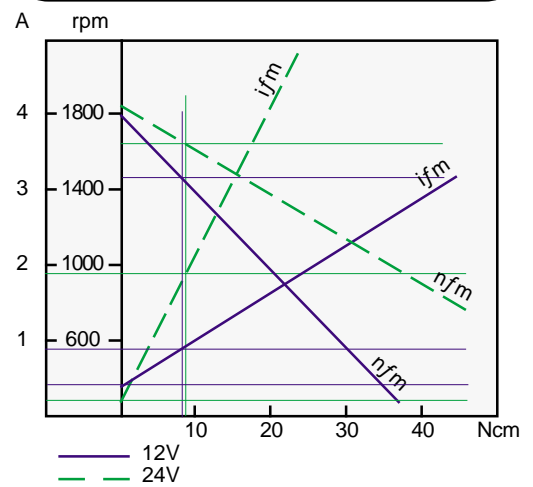
S6 SERIES 15 W

- Motor speed < 2000rpm, hence silent operation
- Guaranteed life time 2000hrs
- Different shafts available
- Also customised motors

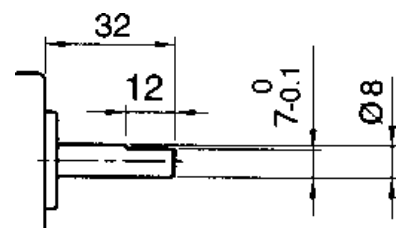
DIMENSIONS



CHARACTERISTIC CURVE



SHAFT DIMENSIONS



Stock type. Other shafts on request.

GEAR HEAD RATED LOAD

All numbers are according to S6D15-24A-18 and they are slightly different with 12V version

GEAR RATIO	3	3,6	5	6	7,5	9	10	12,5	15	18	20	25	30	36	40	50	60	75	90	100	120	150	180	200
MODEL rpm	550	458	330	275	220	183	165	132	110	92	83	66	55	46	41	33	28	22	18	17	14	11	9	8
S6DA□B Nm	0,21	0,25	0,35	0,42	0,53	0,64	0,71	0,88	1,06	1,27	1,27	1,59	1,91	2,29	2,54	2,87	2,94	2,94	2,94	2,94	2,94	2,94	2,94	2,94
Type	Supply voltage	Speed		Current		Rated Torque		Weight																
		No-load	Rated	No-Load	Rated																			
S6D15-12A-18	12Vdc	1800	1470	0,4A	1,9A	9,8 Ncm	0,9 kg																	
S6D15-24A-18	24Vdc	1850	1650	0,2A	0,9A	8,7 Ncm	0,9 kg																	

STANDARD DC-MOTORS FOR GEARBOXES

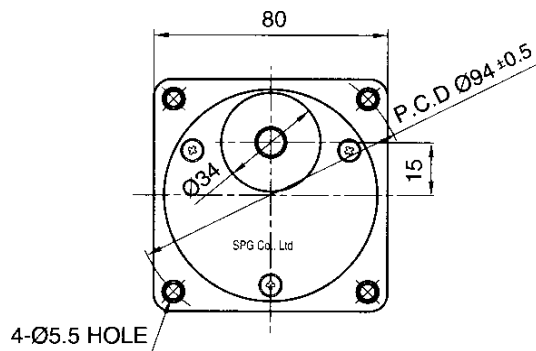
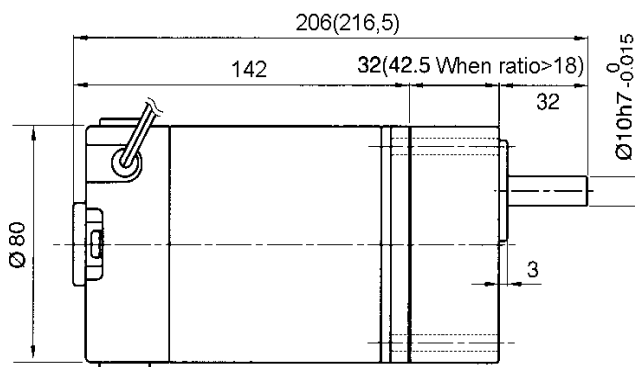
21C for world geared motor!



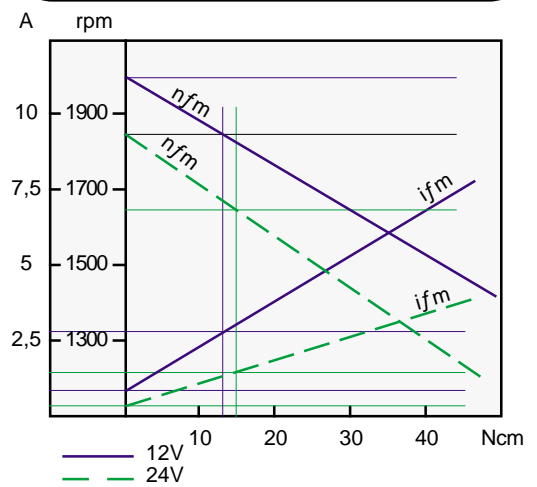
S8 SERIES 25 W

- Motor speed < 2000rpm, hence silent operation
- Guaranteed life time 2000hrs
- Different shafts available
- Also customised motors

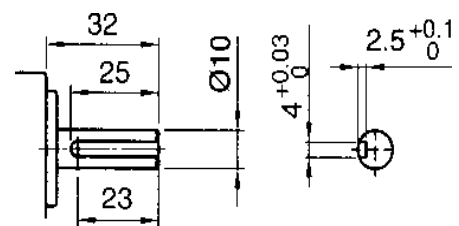
DIMENSIONS



CHARACTERISTIC CURVE



SHAFT DIMENSIONS



Stock type. Other shafts on request.

GEAR HEAD RATED LOAD

All numbers are according to S8D25-24A-18 and they are slightly different with 12V version

GEAR RATIO	3	3,6	5	6	7,5	9	10	12,5	15	18	20	25	30	36	40	50	60	75	90	100	120	150	180	200
MODEL rpm	550	458	330	275	220	183	165	132	110	92	83	66	55	46	41	33	28	22	18	17	14	11	9	8
S8KA□B Nm	0,36	0,43	0,60	0,71	0,89	1,07	1,19	1,49	1,79	2,14	2,15	2,68	3,22	3,86	4,29	4,85	5,82	7,28	7,84	7,84	7,84	7,84	7,84	7,84
Type	Supply voltage	Speed		Current		Rated Torque		Weight																
		No-load	Rated	No-Load	Rated																			
S8D25-12-18A	12Vdc	2000	1850	0,9A	2,9A	12,9 Ncm	1,8 kg																	
S8D25-24-18A	24Vdc	1850	1650	0,4A	1,5A	14,7 Ncm	1,8 kg																	

STANDARD DC-MOTORS FOR GEARBOXES

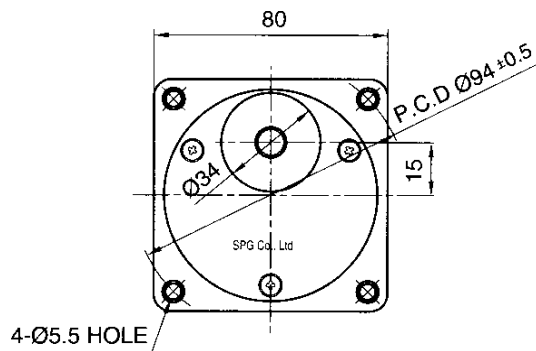
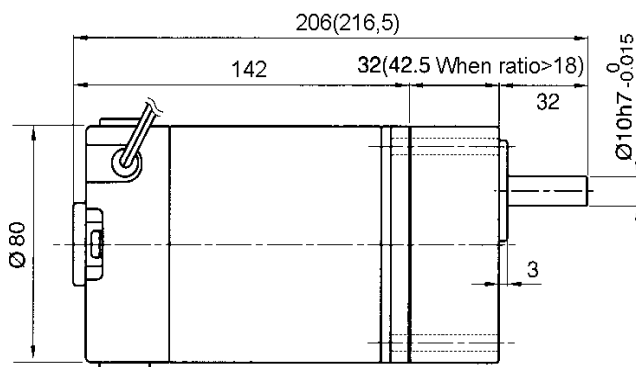
21C for world geared motor!



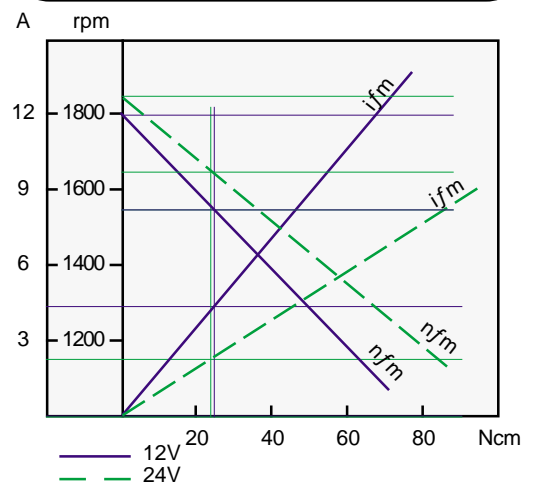
S8 SERIES 40 W

- Motor speed < 2000rpm, hence silent operation
- Guaranteed life time 2000hrs
- Different shafts available
- Also customised motors

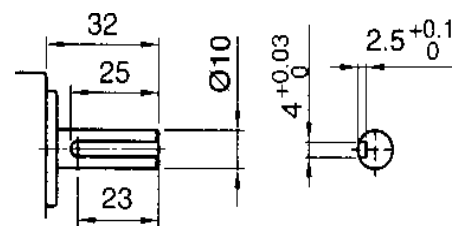
DIMENSIONS



CHARACTERISTIC CURVE



SHAFT DIMENSIONS



Stock type. Other shafts on request.

GEAR HEAD RATED LOAD

All numbers are according to S8D40-24A-18 and they are slightly different with 12V version. Pay attention not to exceed the max. torque with the high ratios.

GEAR RATIO	3	3,6	5	6	7,5	9	10	12,5	15	18	20	25	30	36	40	50	60	75	90	100	120	150	180	200	
MODEL rpm	550	458	330	275	220	183	165	132	110	92	83	66	55	46	41	33	28	22	18	17	14	11	9	8	
S8KA□B Nm	0,57	0,69	0,95	1,14	1,43	1,71	1,90	2,38	2,86	3,43	3,43	4,29	5,15	6,18	6,87	7,76	7,84	7,84	7,84	7,84	7,84	7,84	7,84	7,84	7,84
Type	Supply voltage	Speed		Current		Rated Torque		Weight																	
		No-load	Rated	No-Load	Rated																				
S8D40-12-18A	12Vdc	1800	1550	0,7A	4,4A	24,5 Ncm	1,9 kg																		
S8D40-24-18A	24Vdc	1850	1650	0,4A	2,3A	23,54 Ncm	1,9 kg																		

STANDARD DC-MOTORS FOR GEARBOXES

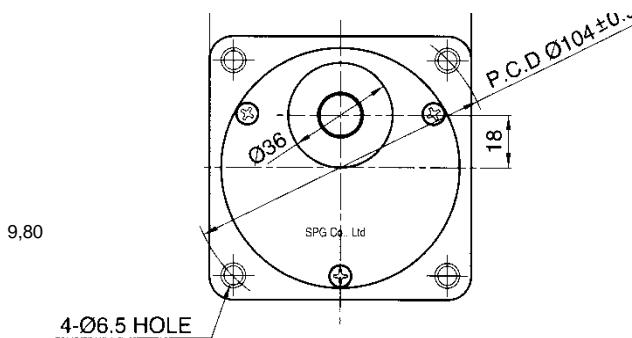
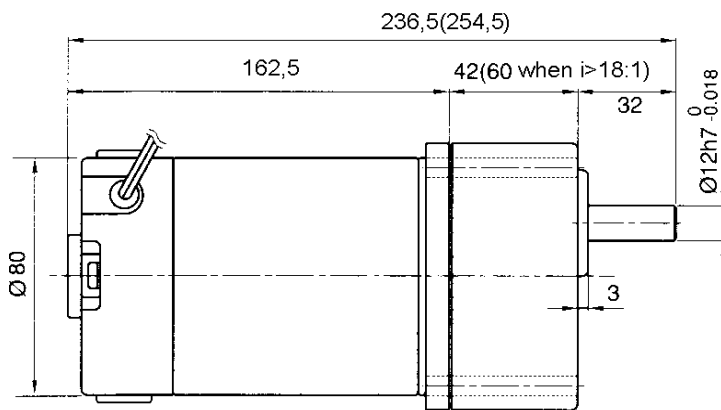
21C for world geared motor!



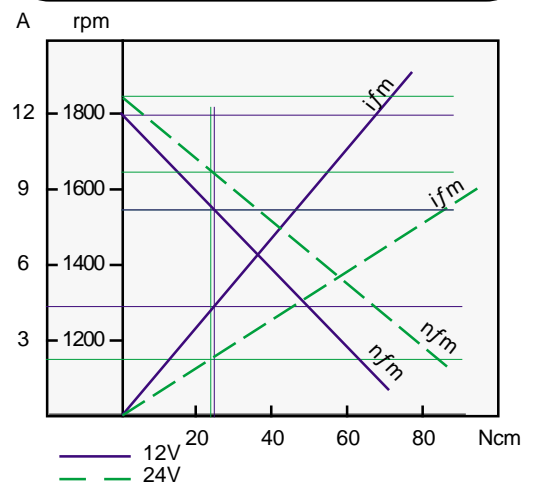
S9 SERIES 40 W

- Motor speed < 2000rpm, hence silent operation
- Guaranteed life time 2000hrs
- Different shafts available
- Also customised motors

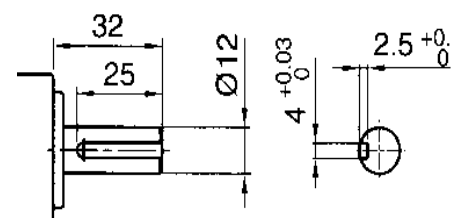
DIMENSIONS



CHARACTERISTIC CURVE



SHAFT DIMENSIONS



Stock type. Other shafts on request.

GEAR HEAD RATED LOAD

All numbers are according to S9D40-24A-18 and they are slightly different with 12V version

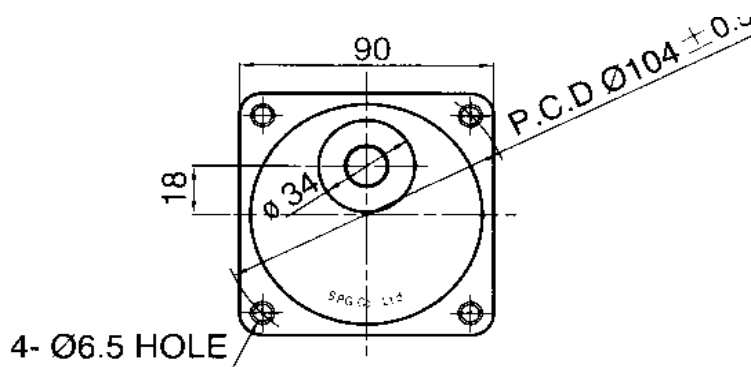
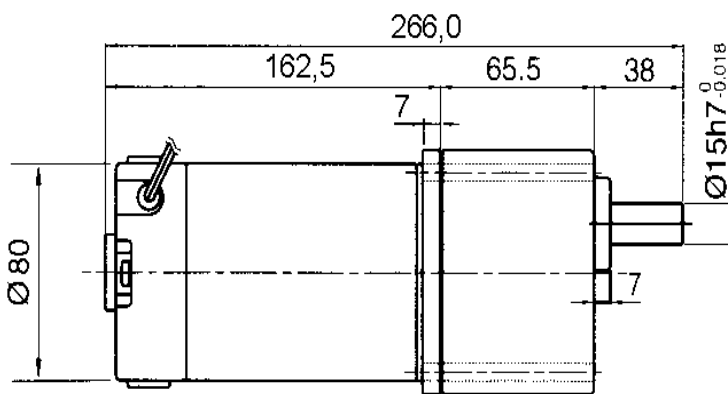
GEAR RATIO	3	3,6	5	6	7,5	9	10	12,5	15	18	20	25	30	36	40	50	60	75	90	100	120	150	180	200
MODEL rpm	550	458	330	275	220	183	165	132	110	92	83	66	55	46	41	33	28	22	18	17	14	11	9	8
S9KB□BH Nm	0,57	0,69	0,95	1,14	1,43	1,71	1,90	2,38	2,86	3,43	3,43	4,29	5,15	6,18	6,86	7,76	9,31	9,80	9,80	9,80	9,80	9,80	9,80	9,80
Type	Supply voltage	Speed		Current		Rated Torque		Weight																
		No-load	Rated	No-Load	Rated																			
S9D40-12-18A	12Vdc	1800	1550	0,7A	4,4A	24,5 Ncm	1,7 kg																	
S9D40-24-18A	24Vdc	1850	1650	0,4A	2,3A	23,5 Ncm	1,7 kg																	



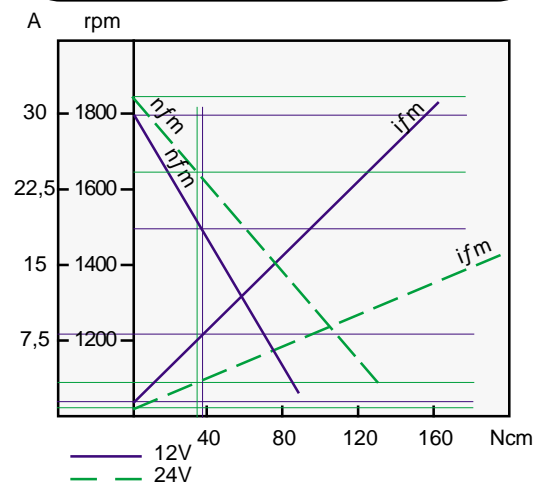
S9 SERIES 60 W

- Motor speed < 2000rpm, hence silent operation
- Guaranteed life time 2000hrs
- Different shafts available
- Also customised motors

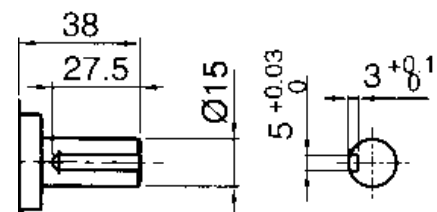
DIMENSIONS



CHARACTERISTIC CURVE



SHAFT DIMENSIONS



Stock type. Other shafts on request.

GEAR HEAD RATED LOAD

All numbers are according to S9D60-24A-18 and they are slightly different with 12V version. In case of the high ratios, please choose S9KD... gearbox instead.

GEAR RATIO	3	3,6	5	6	7,5	9	10	12,5	15	18	20	25	30	36	40	50	60	75	90	100	120	150	180	200
MODEL rpm	533	444	320	267	213	178	160	128	107	89	80	64	53	44	40	32	27	21	18	16	13	11	9	8
S9KC□BH Nm	0,88	1,06	1,47	1,76	2,21	2,65	2,94	3,31	3,97	4,77	5,30	5,99	7,19	8,62	9,58	12,0	14,4	16,1	19,3	19,6	19,6	19,6	19,6	19,6
Type	Supply voltage	Speed		Current		Rated Torque	Weight																	
		No-load	Rated	No-Load	Rated																			
S9D60-12-18A	12Vdc	1800	1500	1,6A	7,8A	38,3 Ncm	2,2 kg																	
S9D60-24-18A	24Vdc	1850	1600	1,0A	3,5A	36,3 Ncm	2,2 kg																	

STANDARD DC-MOTORS FOR GEARBOXES

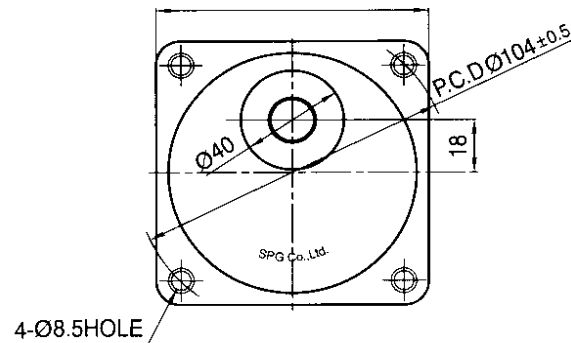
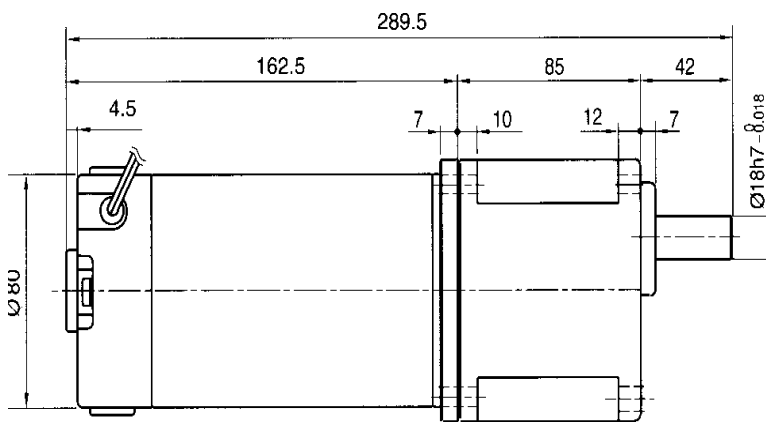
21C for world geared motor!



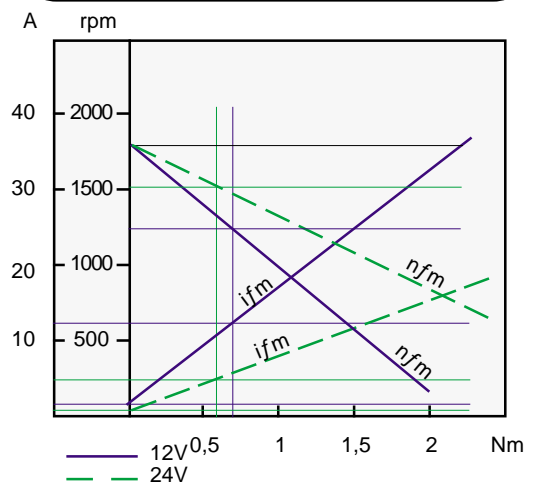
S9 SERIES 90 W

- Motor speed < 2000hrs, hence silent operation
- Guaranteed life time 2000hrs
- Different shafts available
- Also customised motors

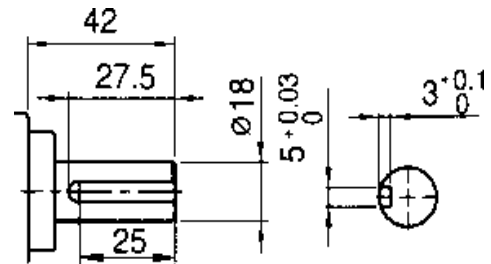
DIMENSIONS



CHARACTERISTIC CURVE



SHAFT DIMENSIONS



Stock type. Other shafts on request.

GEAR HEAD RATED LOAD

All numbers are according to S9D90-24A-18 and they are slightly different with 12V version. In case of small ratios, the S9KC... gear could be more economic alternative.

GEAR RATIO	3	3,6	5	6	7,5	9	10	12,5	15	18	20	25	30	36	40	50	60	75	90	100	120	150	180	200
MODEL rpm	500	417	300	250	200	167	150	120	100	83	75	60	50	42	38	30	25	20	17	15	13	10	8,3	7,5
S9KD□B Nm	1,41	1,69	2,34	2,81	3,52	4,22	4,69	5,28	6,34	7,61	8,45	9,55	11,5	13,8	15,3	19,1	22,9	25,6	29,4	29,4	29,4	29,4	29,4	29,4
Type	Supply voltage	Speed		Current		Rated Torque		Weight																
		No-load	Rated	No-Load	Rated																			
S9D90-12-18A	12Vdc	1800	1250	1,8A	12,5A	68,7 Ncm	2,2 kg																	
S9D90-24-18A	24Vdc	1800	1500	1,0A	5,0A	57,9 Ncm	2,2 kg																	

STANDARD DC-MOTORS FOR GEARBOXES

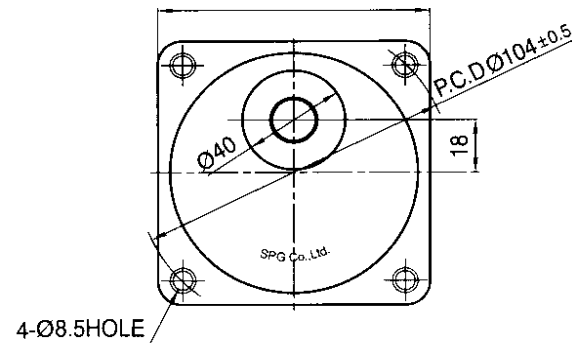
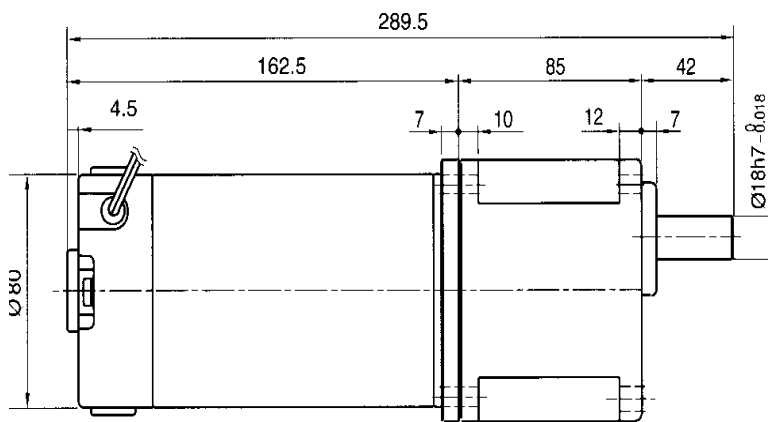
21C for world geared motor!



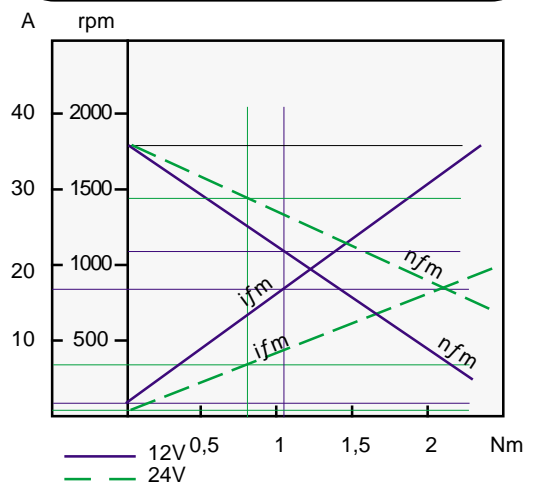
S9 SERIES 120 W

- Motor speed < 2000rpm, hence silent operation
- Guaranteed life time 2000hrs
- Different shafts available
- Also customised motors

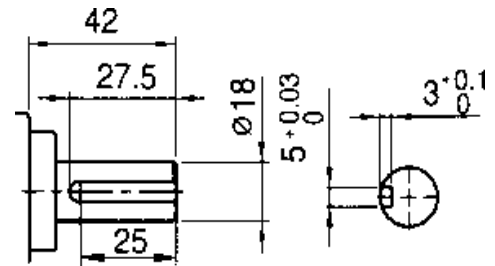
DIMENSIONS



CHARACTERISTIC CURVE



SHAFT DIMENSIONS



Stock type. Other shafts on request.

GEAR HEAD RATED LOAD

All numbers are according to S9D120-24A-18 and they are slightly different with 12V version. In case of small ratios, the S9KC... gear could be more economic alternative.

GEAR RATIO	3	3,6	5	6	7,5	9	10	12,5	15	18	20	25	30	36	40	50	60	75	90	100	120	150	180	200
MODEL rpm	483	403	290	242	193	161	145	116	97	81	73	58	48	40	36	29	24	19	16	15	12	9,7	8,1	7,3
S9KD□B Nm	1,93	2,32	3,22	3,86	4,83	5,80	6,44	7,25	8,71	10,5	11,6	13,1	15,7	18,9	20,1	26,2	29,4	29,4	29,4	29,4	29,4	29,4	29,4	29,4
Type	Supply voltage	Speed		Current		Rated Torque		Weight																
		No-load	Rated	No-Load	Rated																			
S9D120-12-18A	12Vdc	1800	1100	1,9A	17A	104 Ncm	2,2 kg																	
S9D120-24-18A	24Vdc	1800	1450	1,0A	7,0A	79,5Ncm	2,2 kg																	

STANDARD DC-MOTORS FOR GEARBOXES

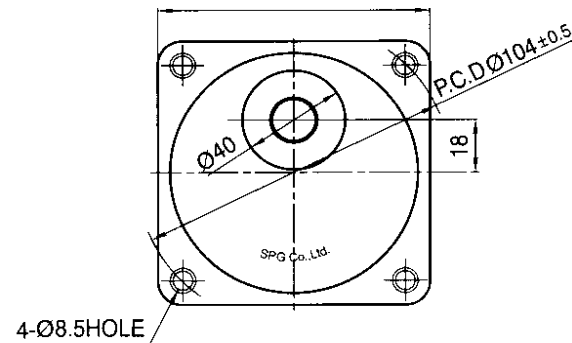
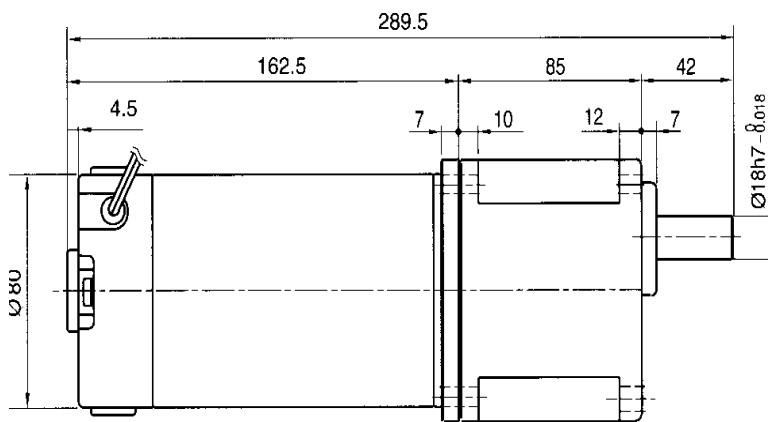
21C for world geared motor!



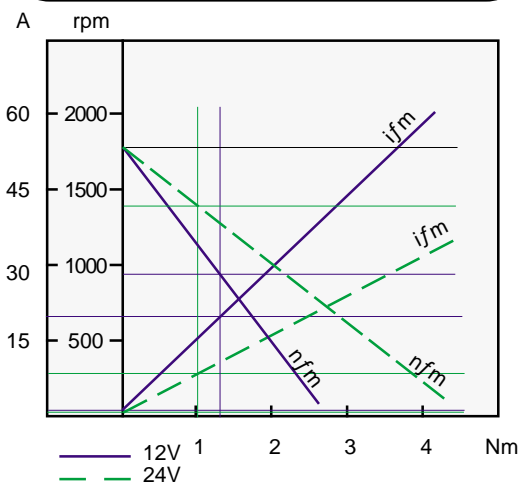
S9 SERIES 150 W

- Motor speed < 2000rpm, hence silent operation
- Guaranteed life time 2000hrs
- Different shafts available
- Also customised motors

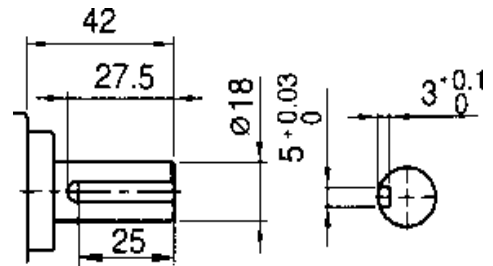
DIMENSIONS



CHARACTERISTIC CURVE



SHAFT DIMENSIONS



Stock type. Other shafts on request.

GEAR HEAD RATED LOAD

All numbers are according to S9D150-24A-18 and they are slightly different with 12V version. Pay attention not to exceed the max. torque with the high ratios.

GEAR RATIO	3	3,6	5	6	7,5	9	10	12,5	15	18	20	25	30	36	40	50	60	75	90	100	120	150	180	200	
MODEL rpm	467	389	280	233	187	156	140	112	93	78	70	56	47	39	35	28	23	19	16	14	12	9,3	7,8	7,0	
S9KH□ B Nm	2,5	3,0	4,2	5,0	6,3	7,5	8,3	9,4	11,3	13,5	15,0	17,0	20,4	24,5	27,2	29,4	29,4	29,4	29,4	29,4	29,4	29,4	29,4	29,4	29,4
Type	Supply voltage	Speed		Current		Rated Torque		Weight																	
		No-load	Rated	No-Load	Rated																				
S9D150-12-18A	12Vdc	1800	1050	1,6A	20A	136 Ncm	2,8 kg																		
S9D150-24-18A	24Vdc	1800	1400	0,9A	8,8A	103 Ncm	2,8 kg																		

BUNGE SHIN GEARED MOTOR



INDUCTION MOTOR

www.spg-motors.com