



**MOTION TECHNOLOGIES
PTY LTD**

BRUSH DC MOTORS

BOOK 1 OF 2



2 Types:

a) TinCan Construction:

- 0.6 to 220 watts
- 1.2 to 24vDC
- Speeds to 20,000rpm

b) PMDC Industrial Motors

- 12 to 150 watts
- 12, 24 and 48vDC
- Speeds to 4200rpm

See Book 2 for more Brush DC Motors

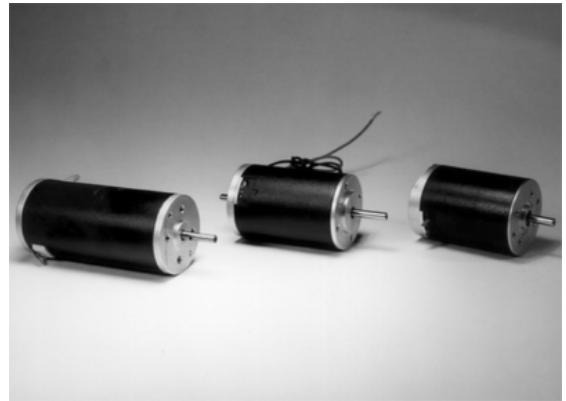
2 Types:

a) TinCan Construction:

- 0.7 to 105 watts
- 12 & 24vDC
- Speed from 500 to 30,000rpm

b) PMDC Industrial Motors

- 600 to 1100 watts
- 12, 24 & 48vDC
- Speed to 4000rpm



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Brush DC Motors

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DC Brush Motors theory

Principles of operation

Reference to the chart reveals useful performances information valid for all fulling servomotors.

It shows speed n , current I , output P and efficiency η plotted against torque M for a given supply voltage U .

Torque M is a function of the current I and the torque constant k (expressed in Nm/A). The motor develops its maximum torque M_s at stall ($n=0$), when the current is maximum and determined only by the supply voltage U and the rotor resistance R :

$$I_s = U/R$$

$$M_s = I_s \cdot k$$

With increasing speed, an increasing back EMF E is induced in the armature, which tends to reduce the current:

$$I = \frac{U-E}{R}$$

The value of E is the product of angular speed ω (expressed in rad/s) and the torque constant (expressed in V/rad/s= $V_s=Nm/A$): $E = k \omega$

Thus, the supply voltage splits into two parts: RI , necessary to establish the current I in the armature, which generates the torque M , and $k \omega$ to overcome the induced voltage, in order to generate the speed ω :

$$U = RI + k \omega$$

No-load speed n_o is a function of the supply voltage and is reached when E becomes almost equal to U ; no-load current I_o is a function of the friction torque:

$$n_o = \frac{U - RI_o}{k} \cdot \frac{30}{\pi} \quad (\text{rpm})$$

Power output P is the product of angular speed ω and torque M ($P=M \cdot \omega$); for a given voltage it reaches its maximum P_{max} at half the stall torque M_s , where efficiency is close to 50%. The maximum continuous output power is defined by an hyperbola delimiting the continuous and intermittent operation range.

Efficiency η is the mechanical to electrical power ratio ($\eta = P_m/P_{el}$). Maximum efficiency η_{max} occurs at relatively high speed. Its value depends upon the ratio of stall torque and friction torque and thus is a function of the supply voltage:

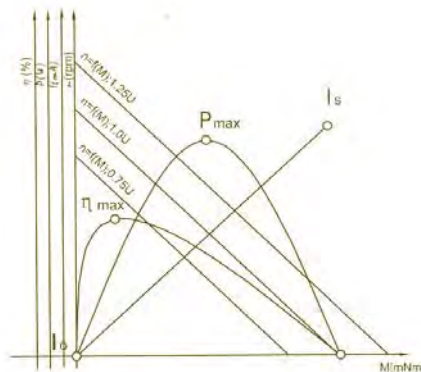
$$\eta_{max} = (1 - \text{SQR}(I_o - I_d))^2$$

The maximum continuous torque depends upon dissipated power (I^2R), its maximum value determined by:

$$M_{max} = K \sqrt{P_{diss} / R_{max}} = K \cdot I_{max} = K \sqrt{\frac{T_{max} - T_{amb}}{R_{max} \cdot R_{th}}}$$

Where T_{max} is the maximum tolerated armature temperature, T_{amb} is the ambient temperature, R_{max} is the rotor resistance at temperature T_{max} and R_{th} is the total thermal resistance (rotor-body-ambient).

At a given torque M , increasing or decreasing the supply voltage will increase or decrease the speed. The speed-torque function varies proportionally to the supply voltage U .



DC BRUSH MOTOR

JFF-M20S SERIES

Precious Metal-Brush Motors

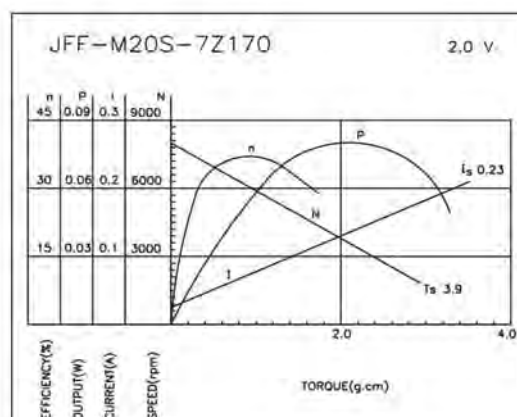
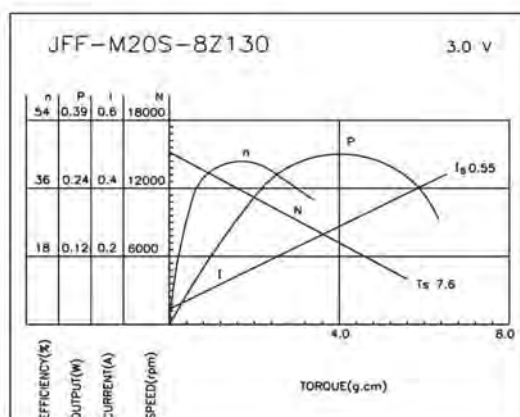
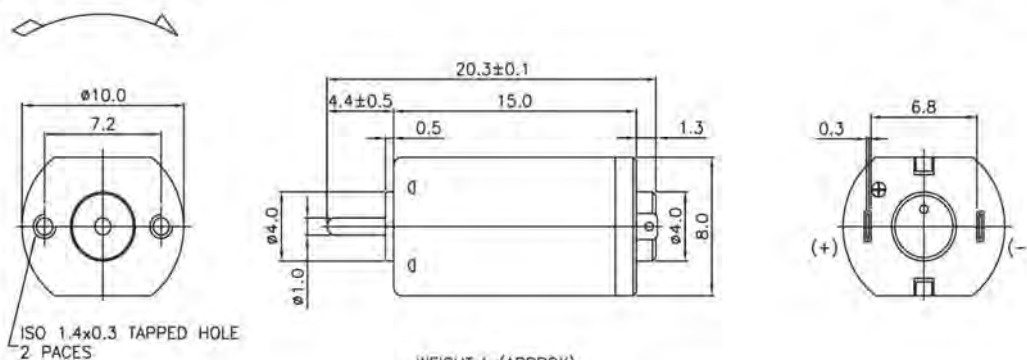
Typical Applications/Audio and Visual Equipments

- Camcorder
- Precision Instruments
- Camera

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL TORQUE
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	
			rpm	A	rpm	A	g.cm	W	%	
JFF-M20S-8Z130	2.0~3.0	3.0V CONSTANT	15200	0.045	11820	0.16	1.70	0.21	43.0	7.6
JFF-M20S-10100	1.2~3.5	2.4V CONSTANT	15800	0.056	12410	0.20	1.80	0.23	47.7	8.6
JFF-M20S-7Z170	2.0~4.0	2.0V CONSTANT	8000	0.025	6020	0.08	0.96	0.06	37.0	3.9
JFF-M20S-1260	1.5~3.5	1.5V CONSTANT	20000	0.120	13500	0.43	2.00	0.28	43.4	6.2

DIRECTION OF ROTATION

UNIT: MILLIMETERS



DC BRUSH MOTOR

Precious Metal-Brush Motors

Typical Applications/Audio and Visual Equipments

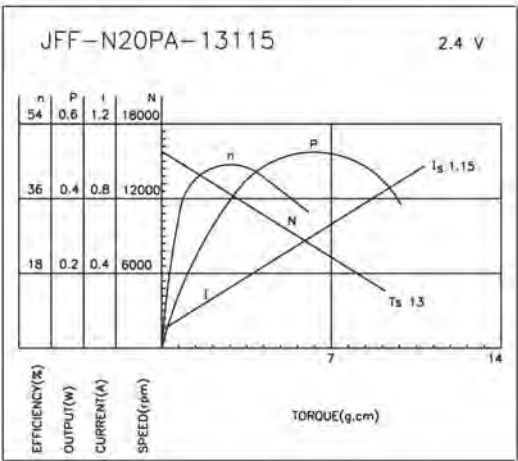
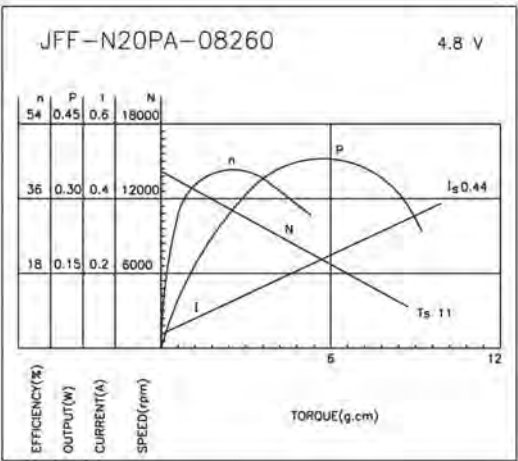
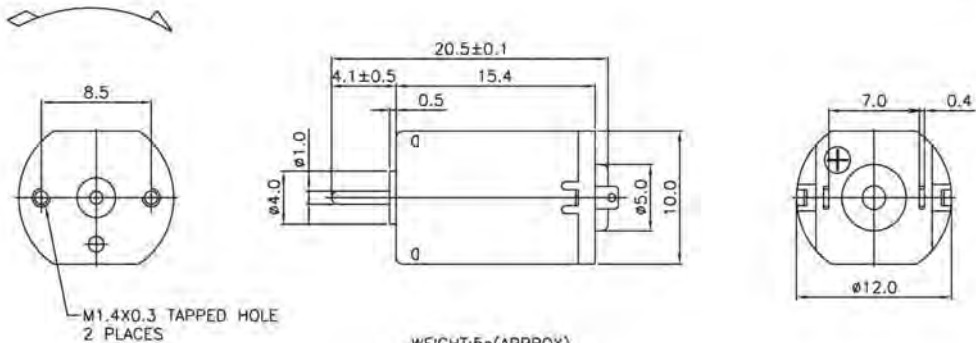
- Camcorder
- Precision Instruments
- Camera
- Toys and Models
- Motorized Toys/
Motorized Plastic Models/
Radio Control Models

JFF-N20PA SERIES

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFF-N20PA-08260	2.0~5.0	4.8V CONSTANT	14200	0.037	10900	0.13	2.4	0.268	43.0	11.0
		5.0V CONSTANT	14700	0.038	11100	0.13	2.4	0.273	42.0	10.0
JFF-N20PA-13115	1.2~3.0	2.4V CONSTANT	15800	0.06	12200	0.33	2.8	0.350	44.2	13.0
JFF-N20PA-06310	3.0~6.0	5.0V CONSTANT	9820	0.02	6680	0.07	2.0	0.137	39.2	6.25

DIRECTION OF ROTATION

UNIT: MILLIMETERS



DC BRUSH MOTOR

Precious Metal-Brush Motors

JFF-N30PA SERIES

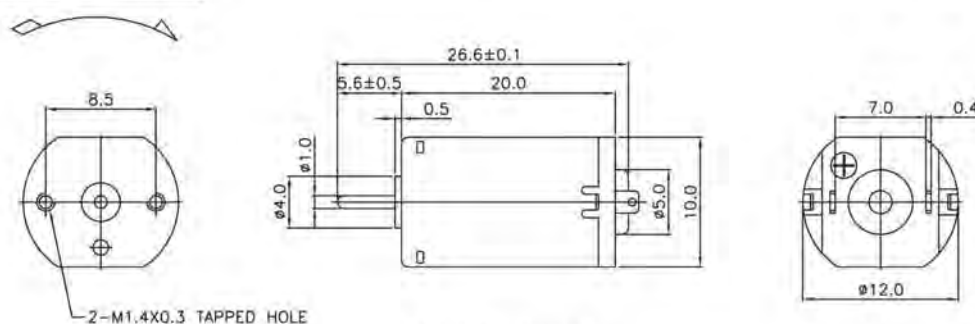
Typical Applications/Audio and Visual Equipments

- CD Player
- MD Player

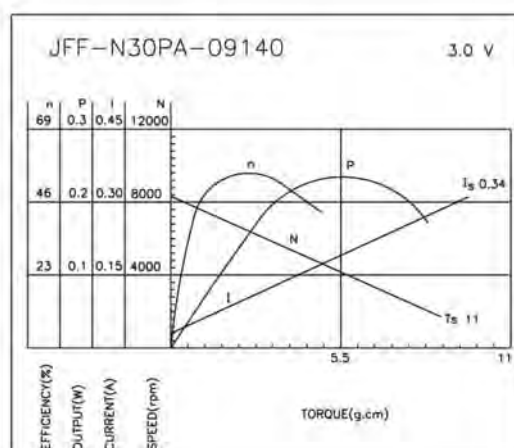
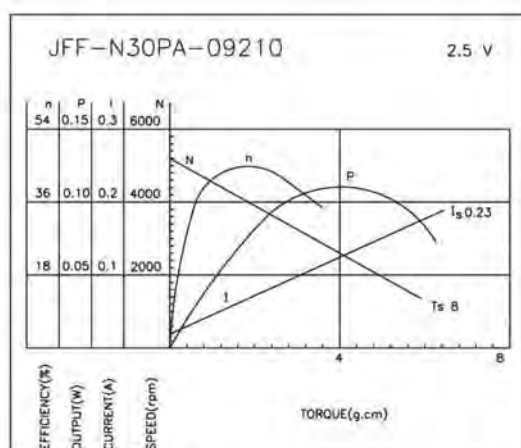
MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFF-N30PA-08180	2.0~5.0	3.0V CONSTANT	6220	0.030	4800	0.073	1.6	0.079	40.0	7.0
JFF-N30PA-09210	2.0~5.0	2.5V CONSTANT	5200	0.019	4000	0.066	1.8	0.074	44.8	8.0
JFF-N30PA-09140	2.0~5.0	3.0V CONSTANT	8320	0.030	6353	0.103	2.6	0.170	55.0	11.0
JFF-N30PA-10140	2.0~5.0	4.5V CONSTANT	13300	0.050	10175	0.163	4.0	0.417	56.9	17.0

DIRECTION OF ROTATION

UNIT: MILLIMETERS



WEIGHT: 7.5g (APPROX)



DC BRUSH MOTOR

Precious Metal-Brush Motors

Typical Applications/Audio and Visual Equipments

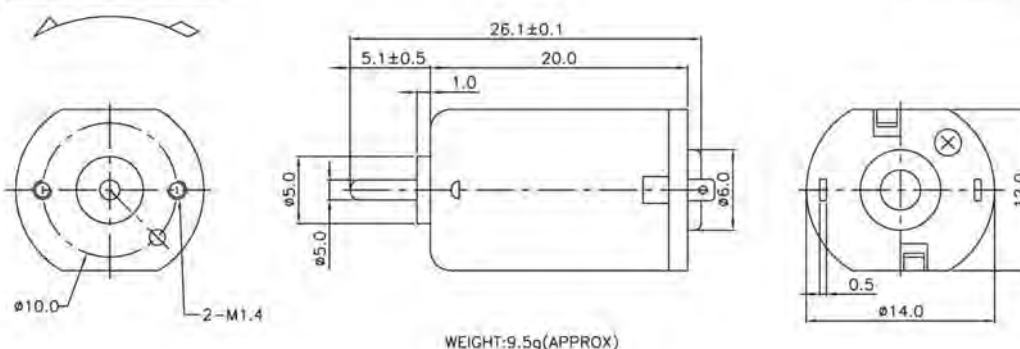
- CD Player
- LD Player
- Cassette Tape Recorder
- Camcorder
- Rolling Pump

JFF-040S SERIES

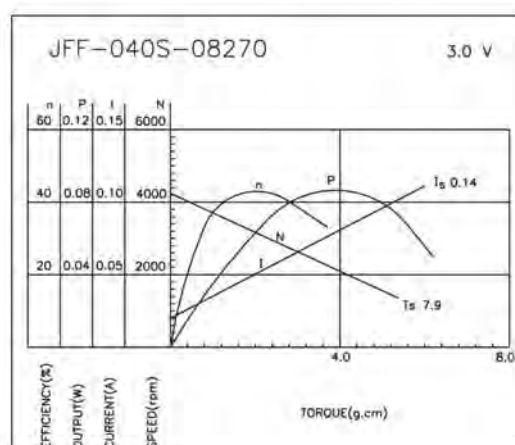
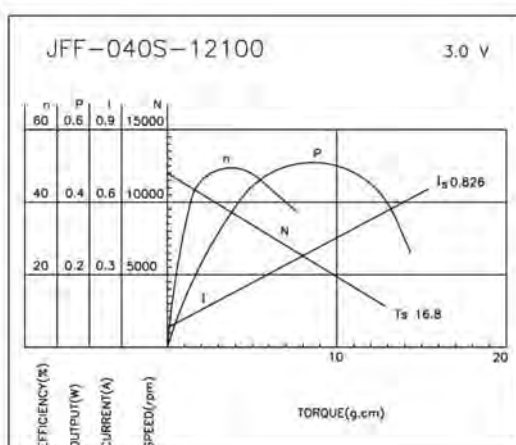
MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFF-040S-08270	2.0~4.0	3.0V CONSTANT	4240	0.02	3165	0.05	2.0	0.065	43.3	7.90
JFF-040S-12100	2.0~4.0	3.0V CONSTANT	12000	0.08	9100	0.25	4.0	0.37	49.8	16.8
JFF-040S-1480	3.0~9.0	4.5V CONSTANT	22400	0.14	17400	0.52	8.0	1.43	61.1	36.0
JFF-040S-12100	3.0~9.0	4.5V CONSTANT	30000	0.30	23480	1.06	6.8	1.64	34.4	31.3

DIRECTION OF ROTATION

UNIT: MILLIMETERS



WEIGHT: 9.5g (APPROX)



DC BRUSH MOTOR

JFF-130SH SERIES

Precious Metal-Brush Motors

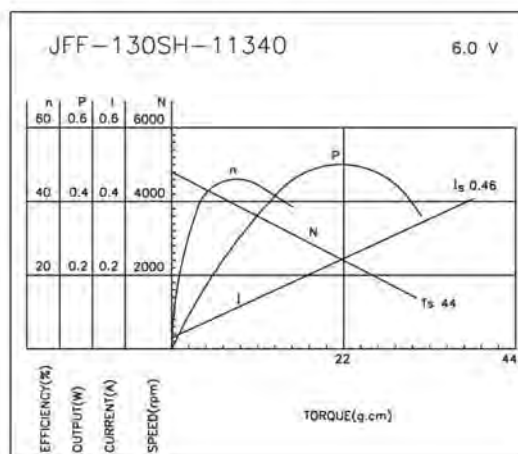
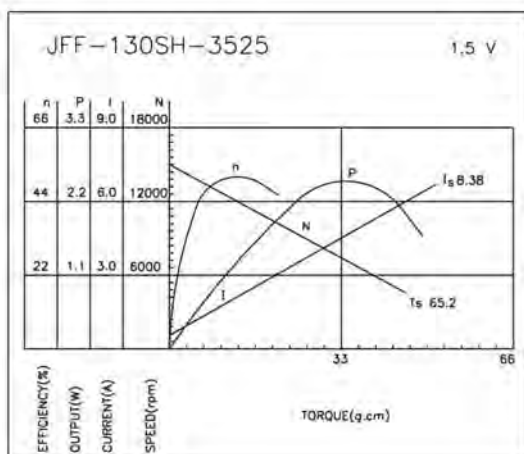
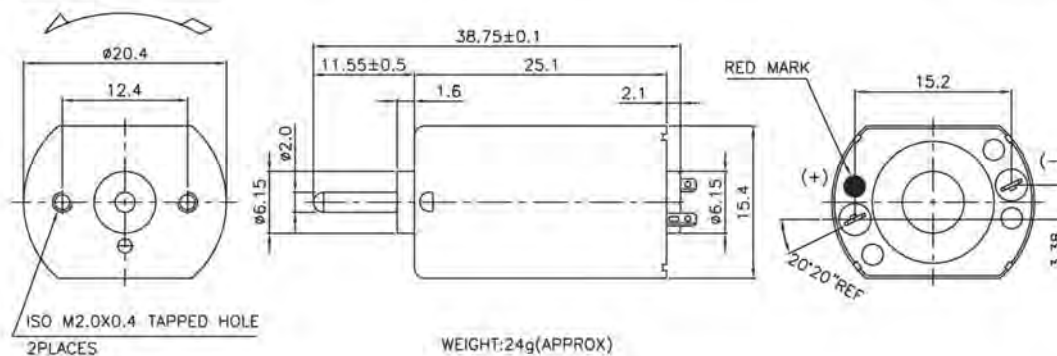
Typical Applications/Audio and Visual Equipments

- CD Player/Tape Cassette Adapter
- Household Appliances
- Electric Shaver
- Office Automation Equipments
- CD-ROM
- Automotive Products
- Air Conditioning Damper Actuators

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	
			rpm	A	rpm	A	g.cm	W	%	
JFF-130SH-3525	1.0~1.5	1.5V CONSTANT	15000	0.550	11940	2.15	13.3	1.63	50.6	65.2
JFF-130SH-11340	3.0~12	6.0V CONSTANT	4800	0.030	3800	0.12	8.5	0.33	46.0	44.0
		9.0V CONSTANT	7300	0.035	5900	0.15	12.0	0.73	54.0	67.0
JFF-130SH-14230	2.0~8.0	3.0V CONSTANT	3600	0.035	2900	0.12	6.0	0.18	50.0	36.0

DIRECTION OF ROTATION

UNIT: MILLIMETERS



DC BRUSH MOTOR

Precious Metal-Brush Motors

Typical Applications/Audio and Visual Equipments

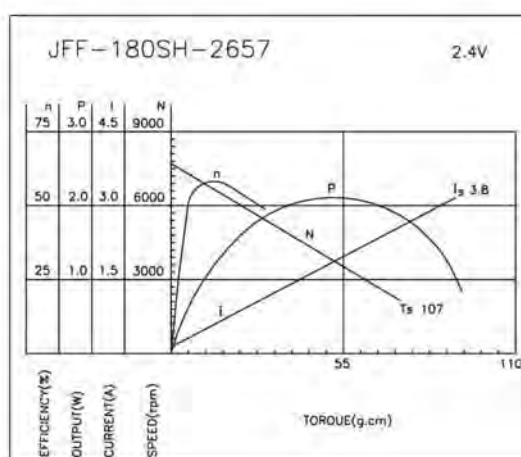
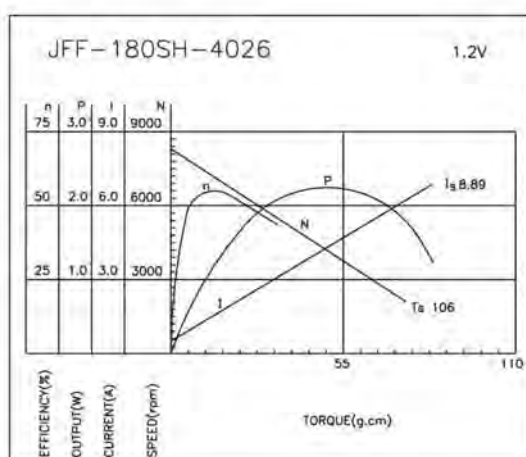
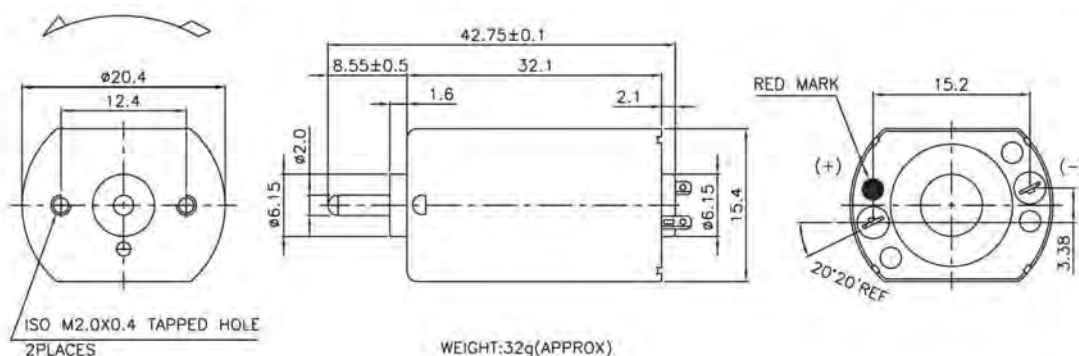
- CD Player
- VTR
- Household Appliances
- Electric Shaver
- Tooty Brushes

JFF-180PH/SH SERIES

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFF-180SH-4026	1.0~1.5	1.2V CONSTANT	8300	0.30	6900	1.60	15.0	1.06	55.0	106
JFF-180SH-2657	1.0~3.0	2.4V CONSTANT	7700	0.13	6400	0.70	15.0	0.98	58.6	107
JFF-180PH-4022	1.0~1.5	1.2V CONSTANT	9400	0.40	8000	1.80	15.0	1.23	57.0	107
JFF-180PH-2852	1.0~3.0	2.4V CONSTANT	8300	0.16	6900	0.85	18.0	1.27	62.4	116

DIRECTION OF ROTATION

UNIT: MILLIMETERS



DC BRUSH MOTOR

Carbon-brush motors

Typical Applications/ Toys and Models

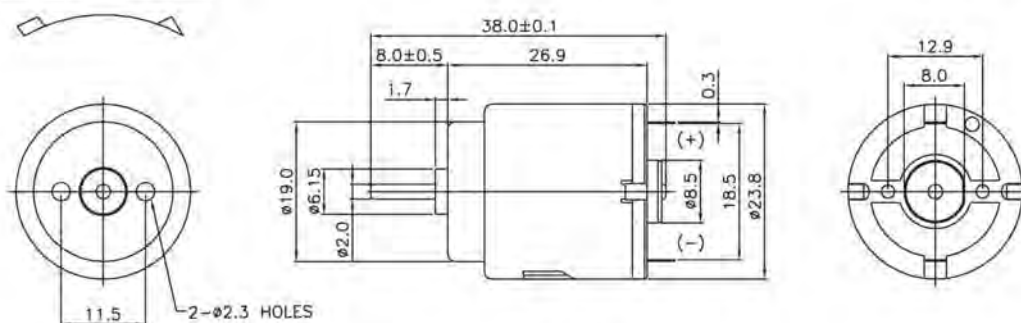
- Motorized Toys/
Motorized Plastic Models
- Household Appliances
- Hair Dryer

JRC-260SA SERIES

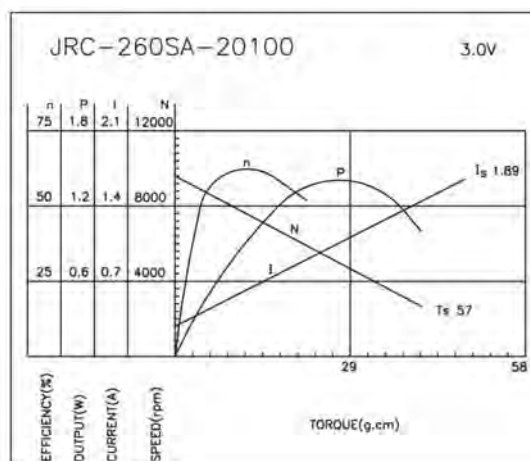
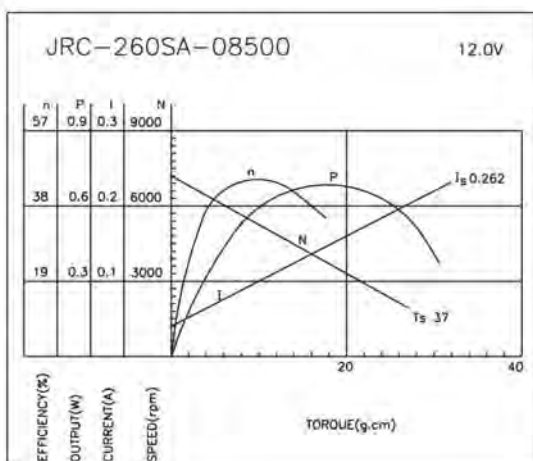
MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRC-260SA-08500	1.5~12.0	12.0V CONSTANT	7200	0.04	5140	0.10	10.0	0.53	43.9	37
JRC-260SA-20100	1.5~12.0	3.0V CONSTANT	9600	0.13	7600	0.50	12.0	0.94	62.4	57
JRC-260SA-2295	3.0~ 6.0	4.5V CONSTANT	10100	0.15	8600	0.70	20.0	1.76	56.0	136
JRC-260SA-2670	3.0~ 4.5	4.5V CONSTANT	13800	0.25	11700	1.10	25.0	3.00	61.0	170

DIRECTION OF ROTATION

UNIT: MILLIMETERS



WEIGHT: 28g (APPROX)



DC BRUSH MOTOR

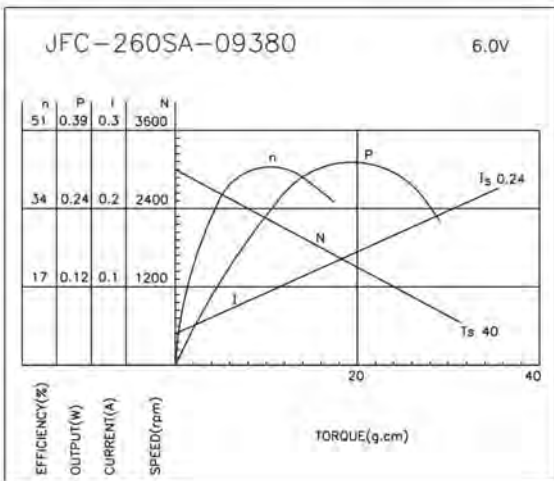
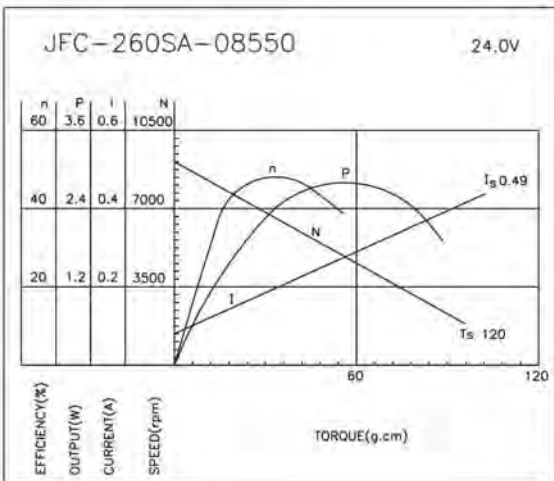
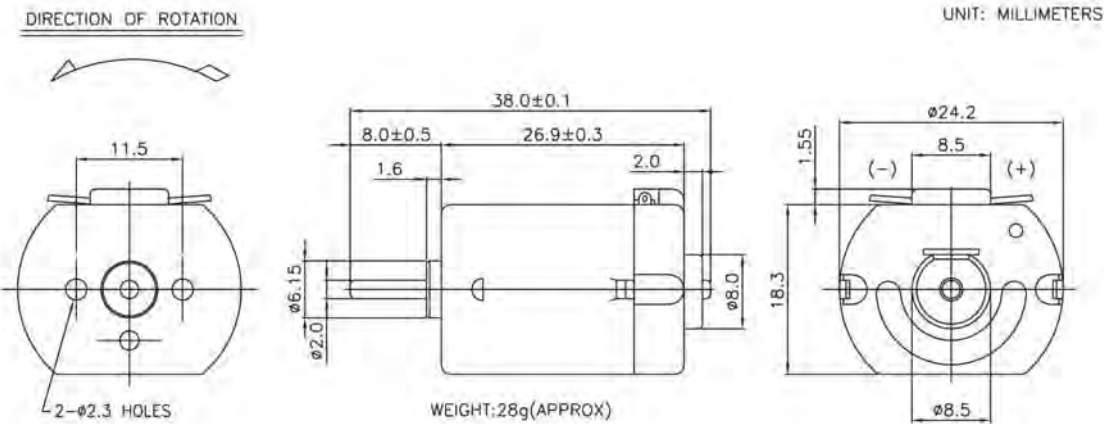
JFC-260SA SERIES

Carbon-Brush Motors

Typical Applications/Household Appliances

• Hair Dryer

MODEL	VOLTAGE		NO. LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFC-260SA-07600	12.0~30.0	24.0V CONSTANT	8000	0.05	5720	0.13	20.0	1.20	37.6	70
JFC-260SA-08550	12.0~30.0	24.0V CONSTANT	9100	0.08	6447	0.20	35.0	2.31	48.2	120
JFC-260SA-09380	6.0 ~15.0	6.0V CONSTANT	3000	0.04	2100	0.10	12.0	0.26	43.1	40
JFC-260SA-2670	3.0 ~6.0	4.5V CONSTANT	14000	0.27	11600	1.33	29.0	3.45	57.6	180



DC BRUSH MOTOR

Precious Metal-Brush Motors

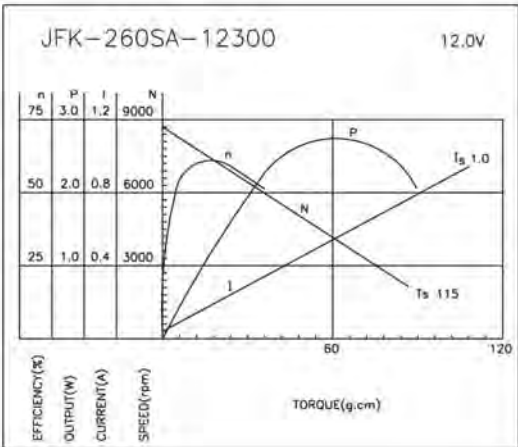
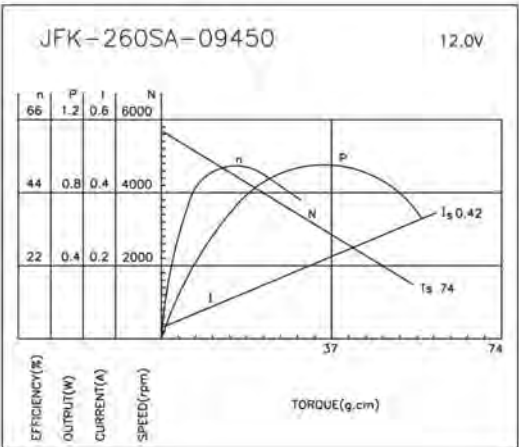
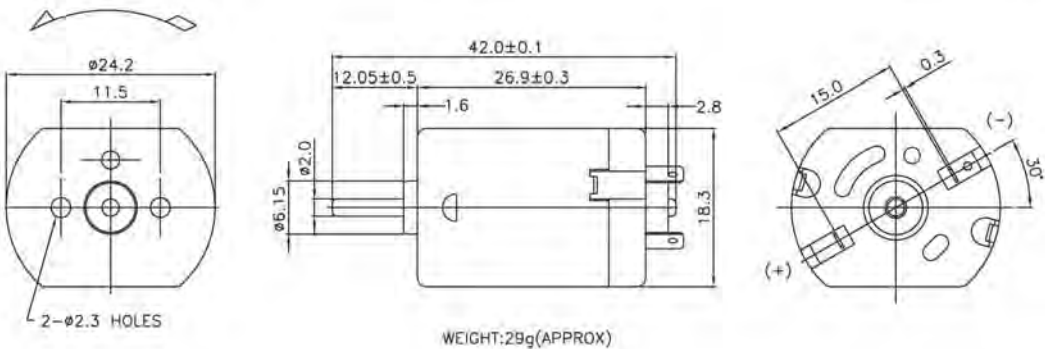
JFK-260SA SERIES

- Typical Applications/ Automotive Products
- Door Lock Actuator
 - Rearview Mirror

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL TORQUE
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	
			rpm	A	rpm	A	g.cm	W	%	
JFK-260SA-09450	12.0~24.0	12.0V CONSTANT	5700	0.03	4400	0.11	15	0.68	51.3	74
JFK-260SA-12300	10.0~15.0	12.0V CONSTANT	8700	0.04	7500	0.18	17	1.31	61.0	115

DIRECTION OF ROTATION

UNIT: MILLIMETERS



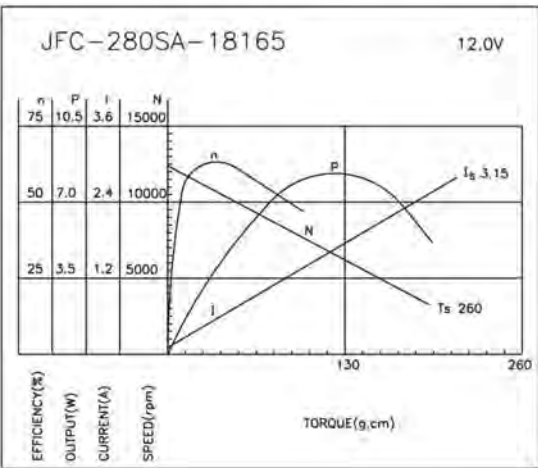
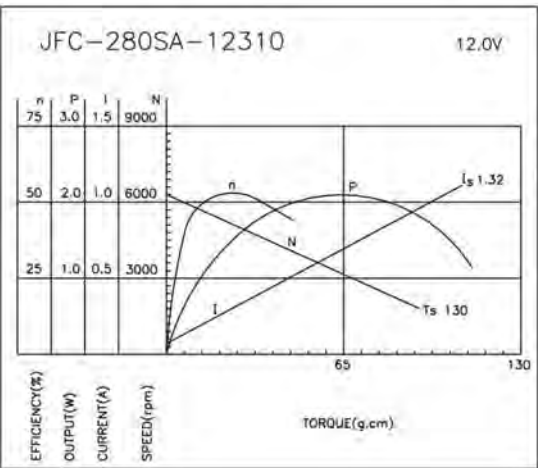
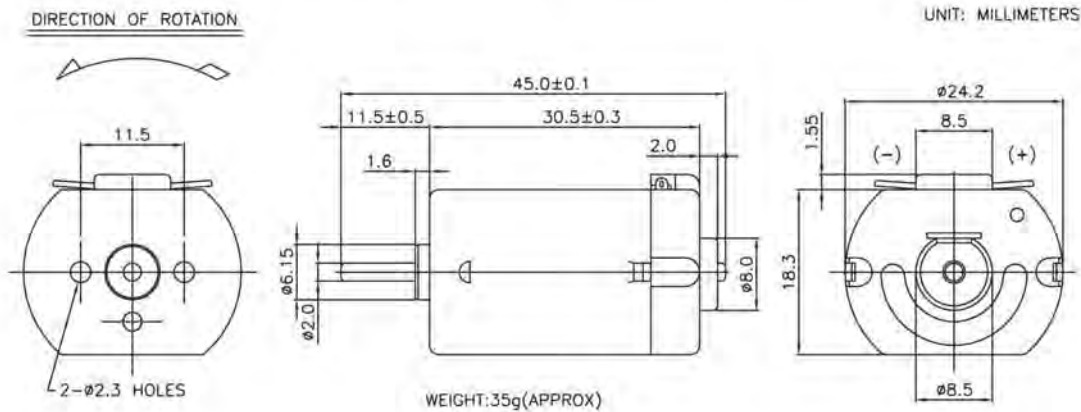
DC BRUSH MOTOR

JFC-280SA SERIES

Carbon-Brush Motors

Typical Applications/ Automotive Products
• Door Lock Actuator

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFC-280SA-12310	10.0~15.0	12.0V CONSTANT	6300	0.06	4940	0.22	28.0	1.42	53.7	130
JFC-280SA-16200	10.0~15.0	12.0V CONSTANT	10000	0.07	8800	0.31	25.0	2.26	60.7	220
JFC-280SA-18165	10.0~15.0	12.0V CONSTANT	12400	0.10	10700	0.51	35.0	3.84	62.8	260
JFC-280SA-20150	10.0~15.0	12.0V CONSTANT	13500	0.10	11600	0.70	40.0	4.76	56.7	290



DC BRUSH MOTOR

JFK-280SA SERIES

Carbon-Brush Motors

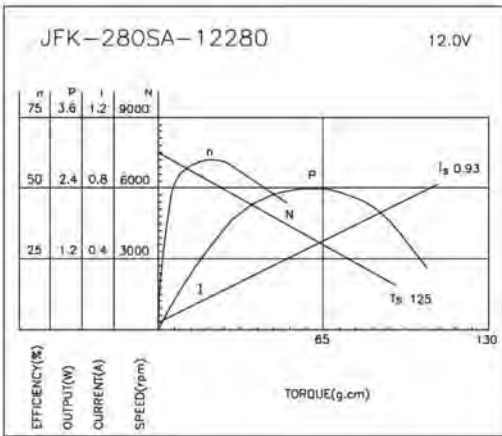
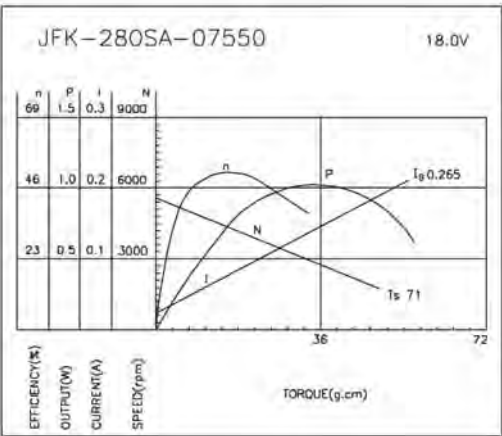
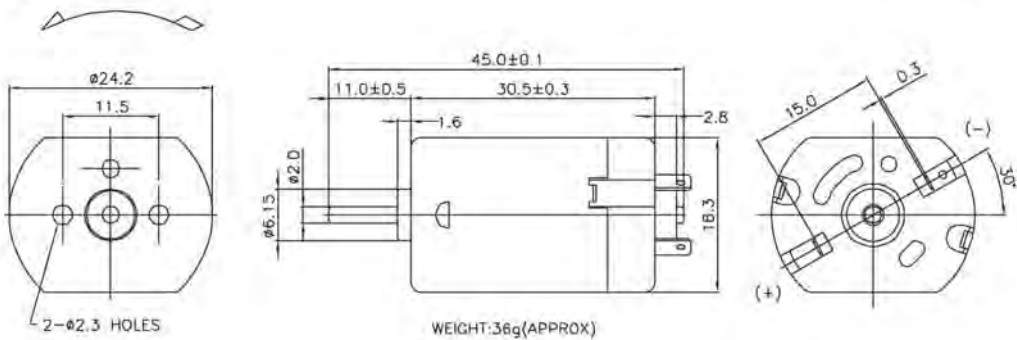
Typical Applications/ Automotive Products

- Door Lock Actuator
- Retractable Rearview Mirror

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFK-280SA-07550	12.0~24.0	18.0V CONSTANT	5600	0.023	4326	0.078	16.2	0.72	51.2	71
JFK-280SA-12280	6.0 ~24.0	12.0V CONSTANT	7500	0.04	6210	0.19	21.5	1.37	60.0	125
JFK-280PA-18165	10.0~15.0	12.0V CONSTANT	10800	0.09	9300	0.54	42.0	4.00	61.8	295
JFK-280PA-20150	10.0~15.0	12.0V CONSTANT	12000	0.10	10300	0.70	45.0	4.76	56.6	325

DIRECTION OF ROTATION

UNIT: MILLIMETERS



DC BRUSH MOTOR

JRC-280SA SERIES

Carbon-Brush Motors

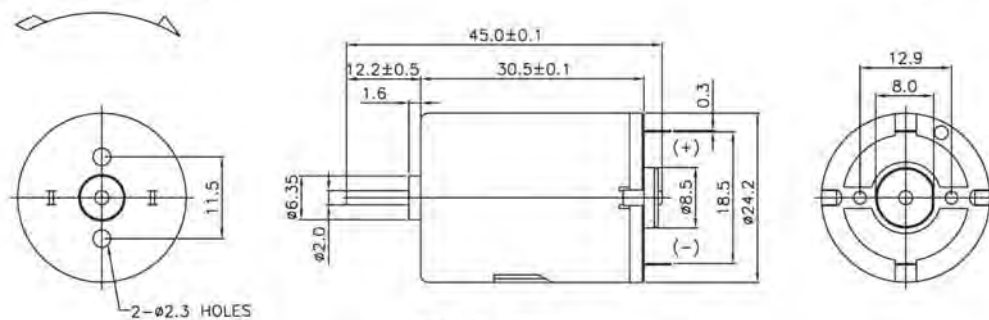
Typical Applications/ Toys and Model

- Motorized Toys
- Radio Control Models

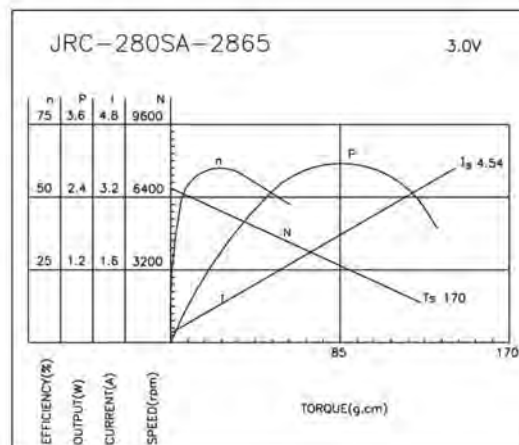
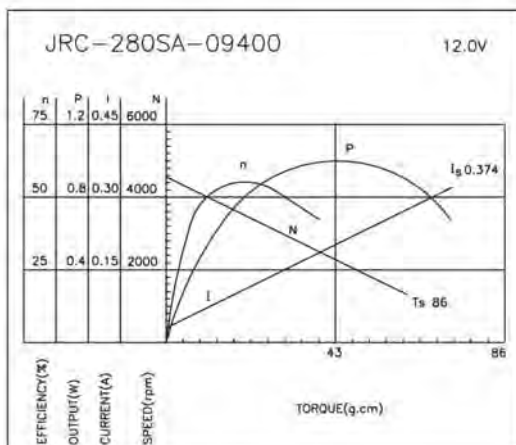
MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRC-280SA-09400	6.0~12.0	12.0V CONSTANT	4560	0.03	3500	0.11	20.0	0.72	54.4	86
JRC-280SA-20120	6.0~12.0	6.0V CONSTANT	7700	0.12	6400	0.57	29.0	1.90	55.7	175
JRC-280SA-2865	1.5~ 4.5	3.0V CONSTANT	6800	0.21	5608	0.97	29.8	1.71	59.2	170
JRC-280SA-3155	3.0~ 6.0	6.0V CONSTANT	14000	0.30	12030	1.78	45.0	5.60	52.0	320

DIRECTION OF ROTATION

UNIT: MILLIMETERS



WEIGHT:42g(APPROX)



DC BRUSH MOTOR

JRF/RK-370 SERIES

Precious Metal-Brush Motors

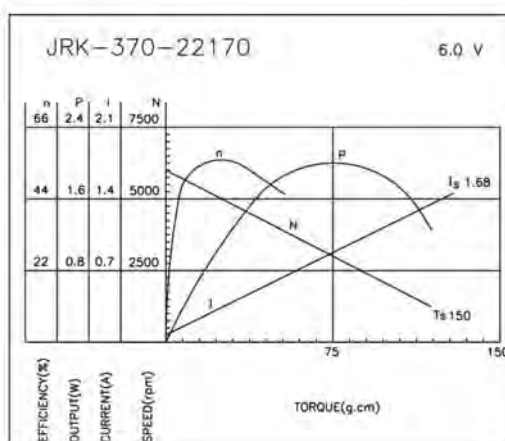
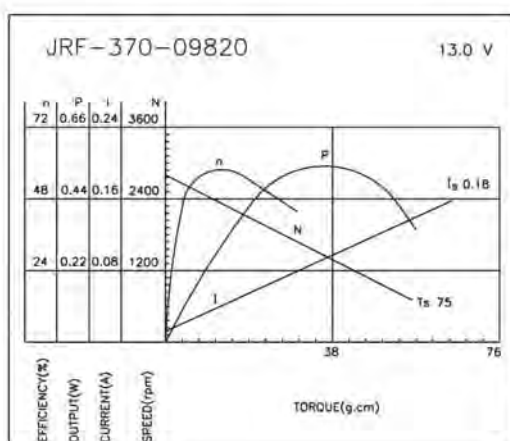
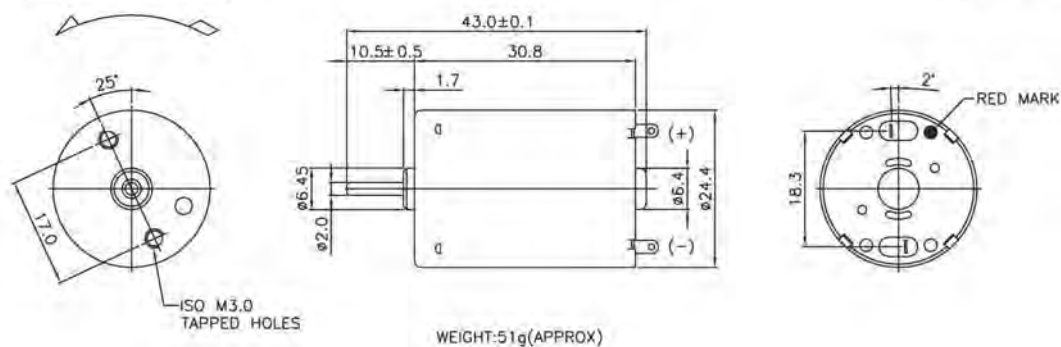
Typical Applications/Audio and Visual Equipments

- CD Player/VTR/LD Player
- Household Appliances
- Kitchen Appliances

MODEL	VOLTAGE		NO. LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRF-370-09820	4.0~24.0	13.0V CONSTANT	2800	0.012	2280	0.044	14.0	0.33	57.7	75
JRF-370-1490	3.0~12.0	3.0V CONSTANT	6350	0.120	4870	0.350	9.30	0.47	44.5	40
JRK-370-18230	4.0~24.0	8.4V CONSTANT	8430	0.040	5555	0.211	20.0	1.14	64.3	147
JRK-370-22170	3.0~24.0	6.0V CONSTANT	6000	0.070	4885	0.370	24.7	1.24	55.9	150

DIRECTION OF ROTATION

UNIT: MILLIMETERS



DC BRUSH MOTOR

JRS-360SM SERIES

Carbon-Brush Motors

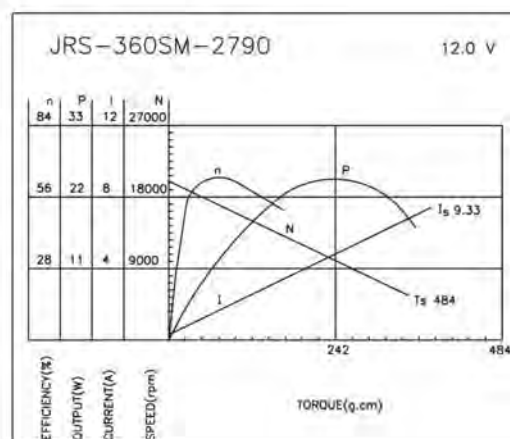
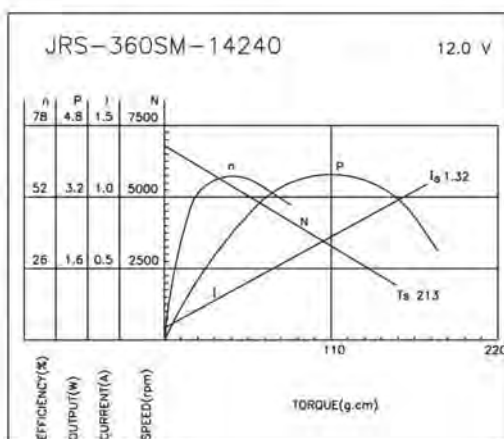
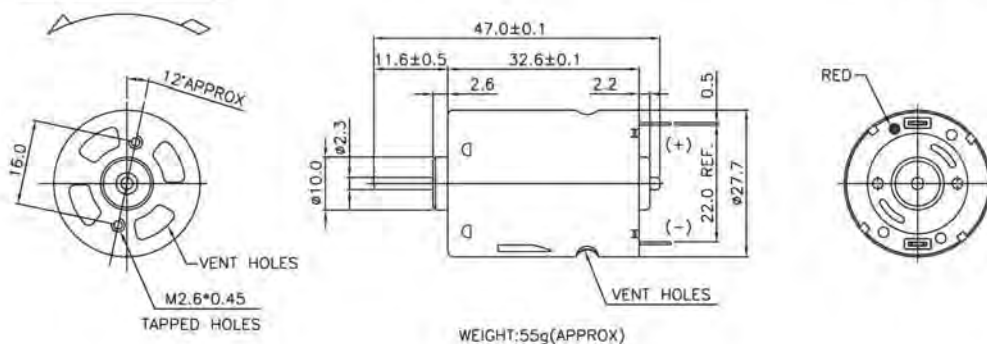
Typical Applications/Precision Instruments

- Automatic Vending Machines
- Household Appliances
- Tooth Brushes
- Office Automation Equipments
- Electronic Typewriter

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-360SM-14240	3.0~24.0	12.0V CONSTANT	6800	0.09	5423	0.33	43.0	2.40	60.4	213
JRS-360SM-21140	3.0~24.0	12.0V CONSTANT	12500	0.22	10170	0.96	60.0	6.36	55.2	322
JRS-360SM-2585	3.0~24.0	6.0V CONSTANT	10000	0.30	8140	1.27	52.0	4.35	57.1	278
JRS-360SM-2790	3.0~24.0	12.0V CONSTANT	20000	0.30	16959	1.67	74.0	12.8	64.2	484

DIRECTION OF ROTATION

UNIT: MILLIMETERS



DC BRUSH MOTOR

Carbon-Brush Motors

JRS-365SA SERIES

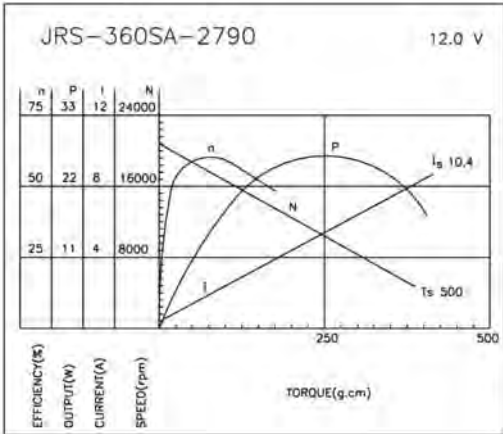
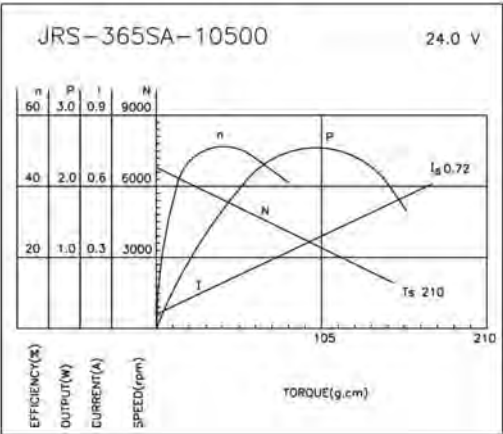
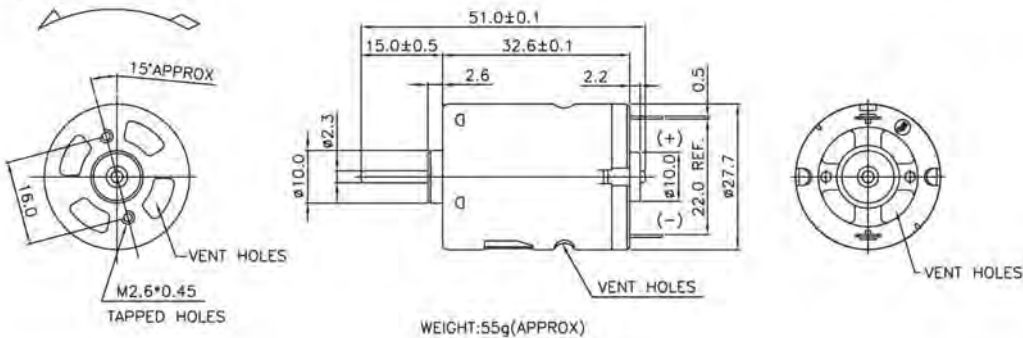
Typical Applications/Precision Instruments

- Automatic Vending Machines
- Household Appliances
- Tooth Brushes
- Office Automation Equipments
- Electronic Typewriter

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-365SA-10500	12.0~30.0	24.0V CONSTANT	6800	0.06	5360	0.20	44.5	2.45	51.0	210
JRS-365SA-14150	12.0~30.0	12.0V CONSTANT	6500	0.13	4894	0.40	45.9	2.30	47.9	186
JRS-365SA-2357	12.0~30.0	12.0V CONSTANT	19600	0.36	15731	1.46	63.0	10.2	58.1	320
JRS-365SA-2790	12.0~30.0	12.0V CONSTANT	20800	0.38	17472	1.98	80.0	14.3	60.2	500

DIRECTION OF ROTATION

UNIT: MILLIMETERS



DC BRUSH MOTOR

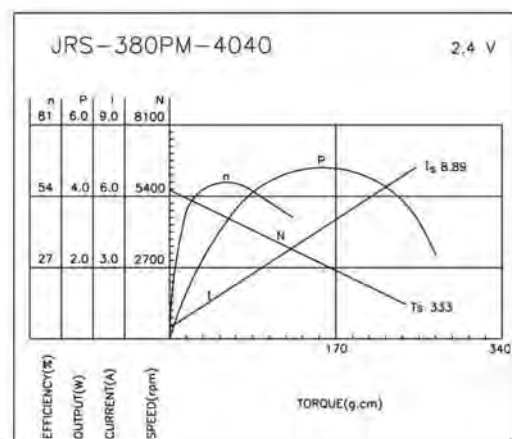
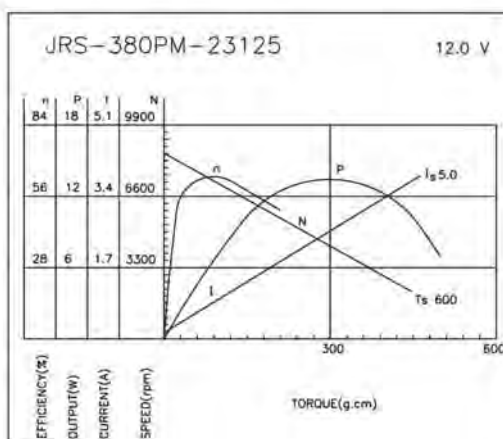
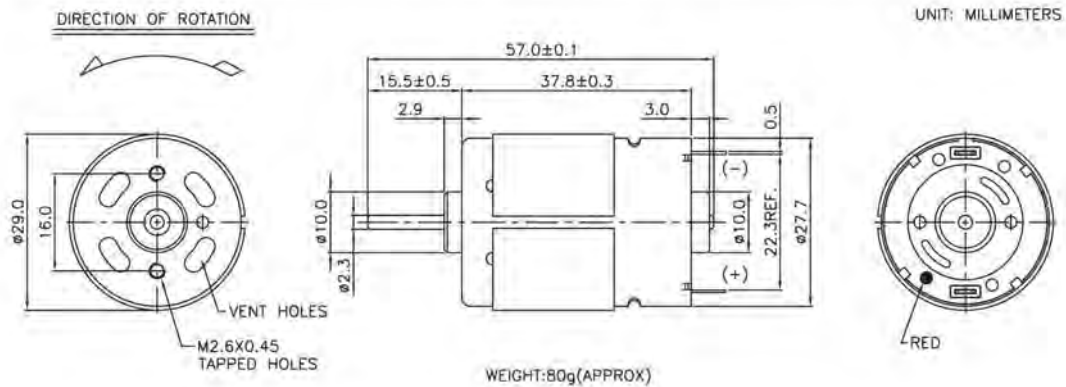
Carbon-Brush Motors

JRS-380PM SERIES

Typical Applications/Cordless Power Tools

- Drills & Screwdrivers
- Household Appliances
- Vacuum Cleaner
- Automotive Products
- Car Antenna

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL TORQUE
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	
			rpm	A	rpm	A	g.cm	W	%	
JRS-380PM-23125	4.5~15.0	12.0V CONSTANT	8600	0.15	7310	0.88	90	6.8	63.9	600
JRS-380PM-3564	4.5~15.0	12.0V CONSTANT	17400	0.34	14920	2.05	113	17.3	70.3	790
JRS-380PM-4040	2.4~ 9.0	2.4V CONSTANT	5640	0.47	4586	2.04	62	2.9	59.7	333
JRS-380PM-5035	3.0~ 9.0	6.0V CONSTANT	17000	0.63	14500	3.34	90	13.4	66.9	613



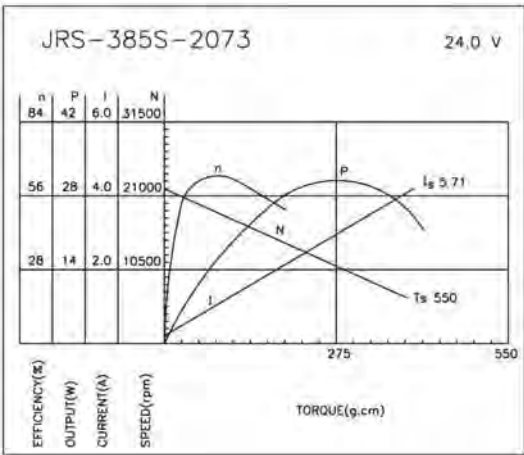
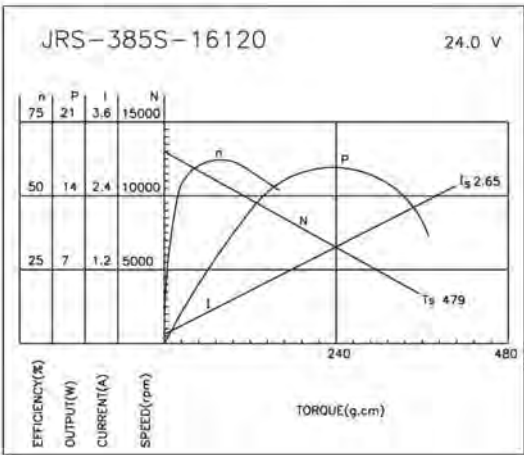
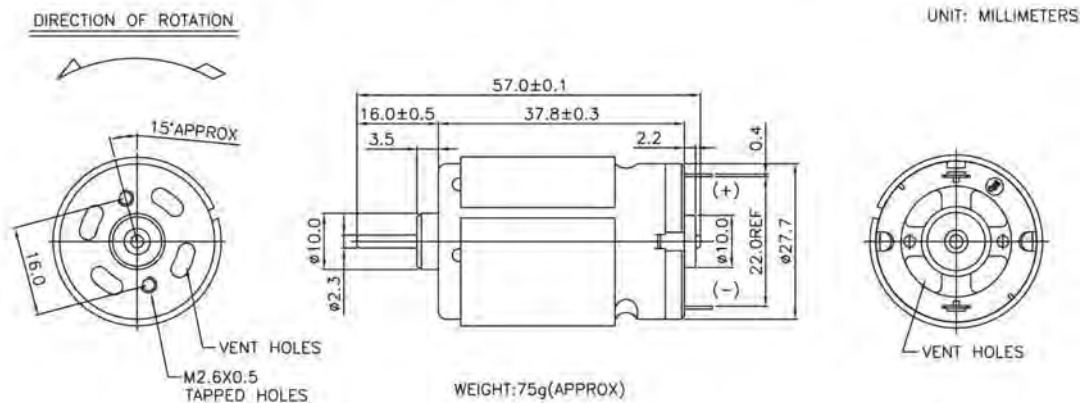
DC BRUSH MOTOR

JRS-385S SERIES

Carbon-Brush Motors

Typical Applications/Household Appliances
•Hair Dryer

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-385S-16120	12.0~26.0	24.0V CONSTANT	11600	0.11	9640	0.54	81	8.0	61.8	479
JRS-385S-17102	12.0~24.0	24.0V CONSTANT	14500	0.16	12130	0.81	85	10.6	54.5	520
JRS-385S-2073	12.0~24.0	24.0V CONSTANT	22000	0.21	18460	1.10	89	16.8	63.5	550
JRS-385S-3135	12.0~18.0	13.0V CONSTANT	24600	0.55	20739	2.97	110	23.4	60.6	700



DC BRUSH MOTOR

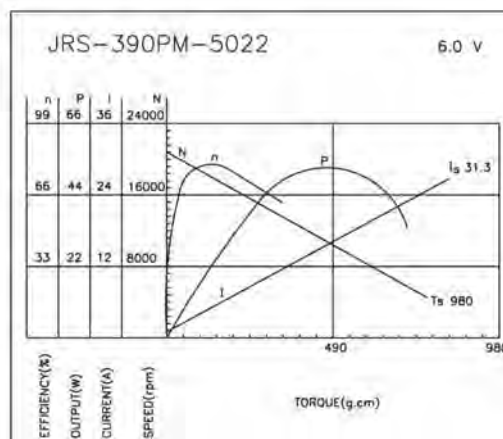
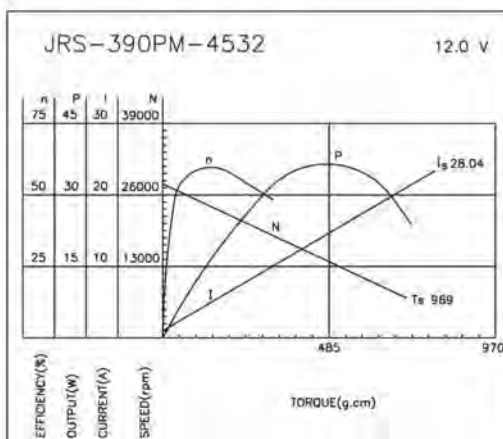
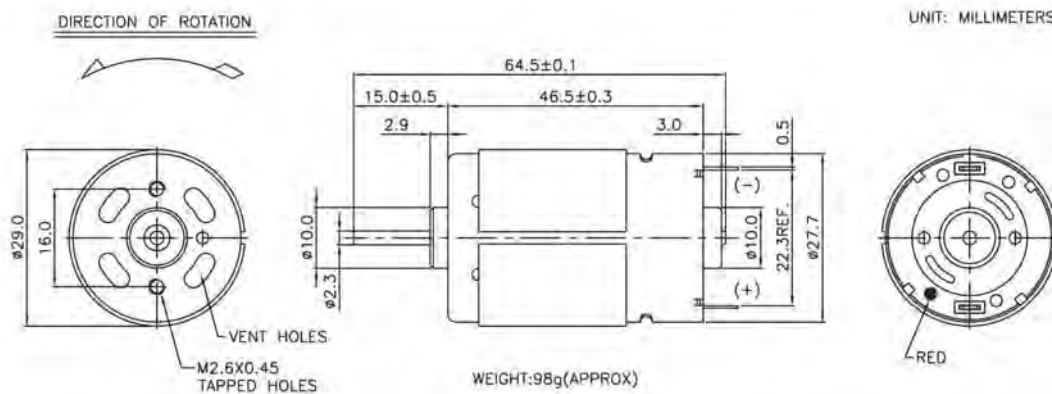
Carbon-Brush Motors

JRS-390PM SERIES

Typical Applications/In Cordless Tools

- Screwdriver/Drill/
- Bilge Pump/
- Marine Extractor Fan/
- Vending Machine

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-390PM-19150	6.0~24.0	24.0V CONSTANT	12000	0.18	9900	0.87	140	14.2	68.0	800
JRS-390PM-4532	6.0~24.0	12.0V CONSTANT	28000	0.91	23665	5.11	150	36.4	59.4	969
JRS-390PM-5022	6.0~12.0	6.0V CONSTANT	20800	1.00	17830	5.34	140	25.6	80.0	980
JRS-390PM-5615	2.4~ 4.8	4.8V CONSTANT	23250	1.83	19370	8.83	140	27.8	65.6	840



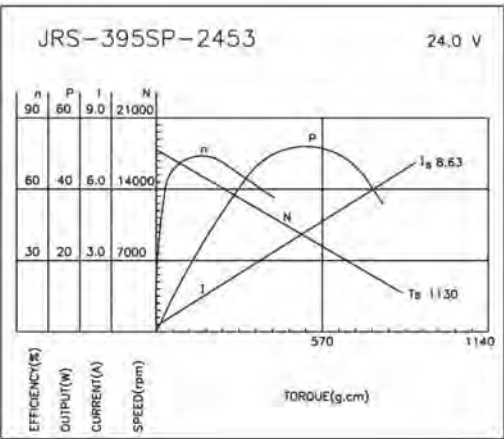
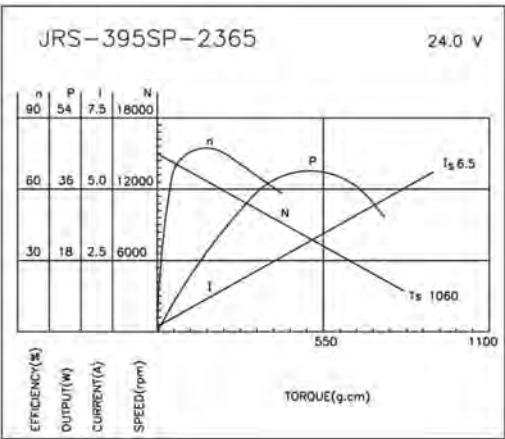
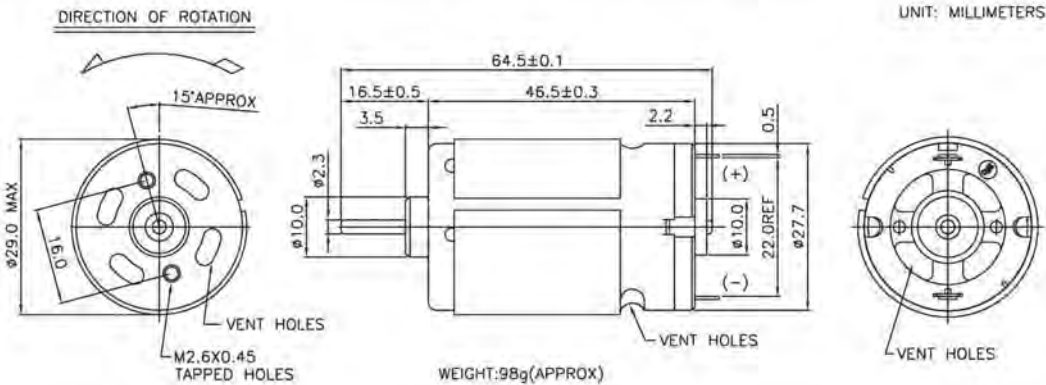
DC BRUSH MOTOR

JRS-395SP SERIES

Carbon-Brush Motors

- Typical Applications/In Cordless Tools
- Screwdriver/Drill
In Household Appliances
 - Heater Fan
In Personal Care
 - Hair Dryer
In Office Automation
 - Typewriter/Printer

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-395SP-17115	12.0~26.0	24.0V CONSTANT	8480	0.08	7200	0.45	115	8.5	79.1	770
JRS-395SP-2365	12.0~26.0	24.0V CONSTANT	15000	0.18	12870	1.07	150	19.8	77.1	1060
JRS-395SP-2453	12.0~26.0	24.0V CONSTANT	17900	0.23	15370	1.42	160	25.2	74.0	1130
JRS-395SP-3527	12.0~26.0	12.0V CONSTANT	18800	0.55	16235	3.60	1150	25.0	57.9	1100



DC BRUSH MOTOR

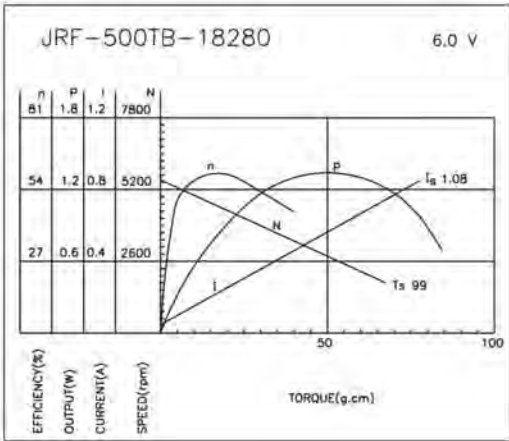
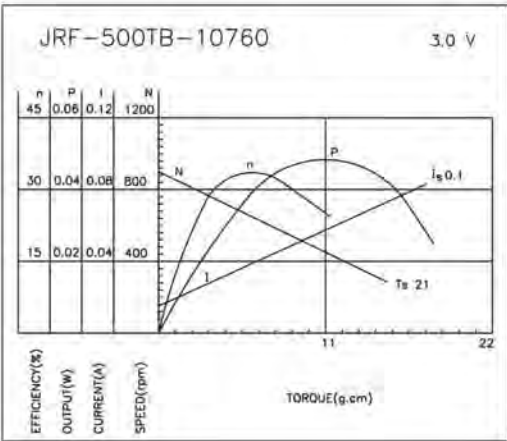
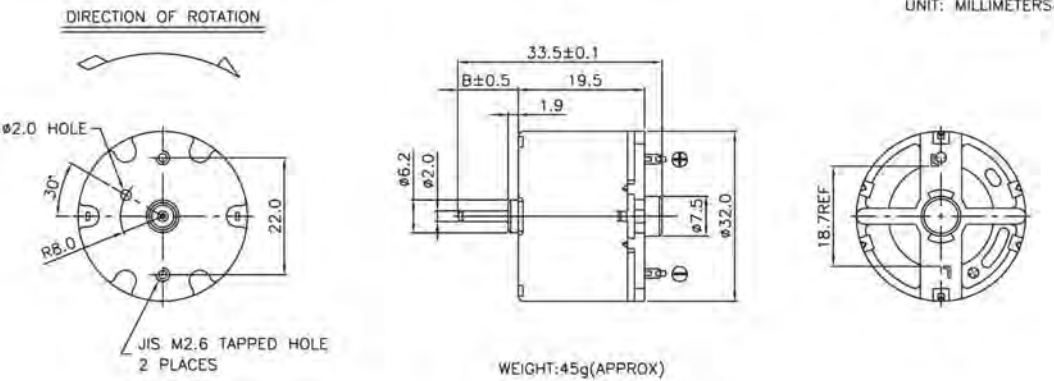
JRF-500TB SERIES

Precious Metal-Brush Motors

Typical Applications/Audio and Visual Equipments

- CD Player
- Cassette Tape Recorder
- VTR
- LD Player

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL TORQUE
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	
			rpm	A	rpm	A	g.cm	W	%	
JRF-500TB-091120	2.0~15.0	12.0V CONSTANT	2700	0.006	2271	0.032	10.3	0.24	62.5	64.8
JRF-500TB-10760	2.0~15.0	3.0V CONSTANT	900	0.015	649	0.039	5.90	0.04	33.6	21.0
JRF-500TB-14415	2.0~15.0	6.0V CONSTANT	3734	0.020	3123	0.102	12.2	0.39	63.9	74.5
JRF-500TB-18280	2.0~15.0	6.0V CONSTANT	5540	0.045	4600	0.220	16.8	0.79	60.0	99.0



DC BRUSH MOTOR

JRF-520C SERIES

Precious Metal-Brush Motors

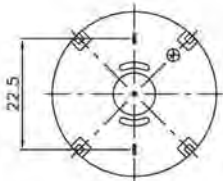
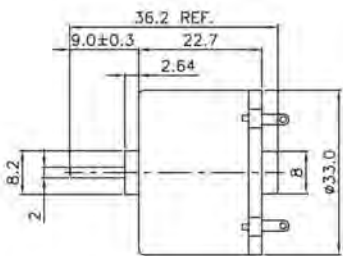
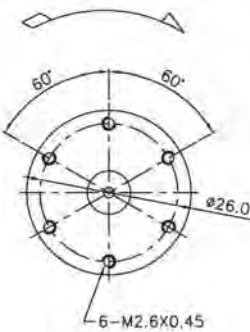
Typical Applications/Office Automation Equipments

- Computer Peripherals/Printer
- Automotive Products
- Car Antenna/Lumbar Support

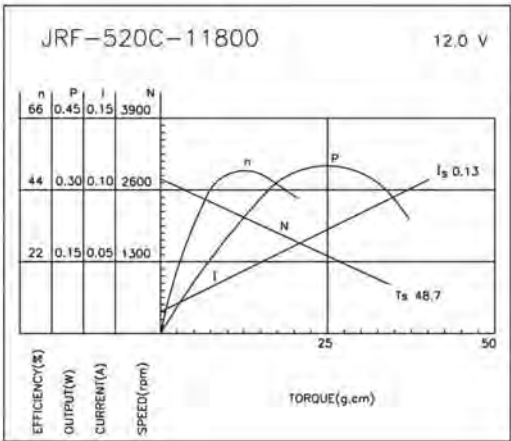
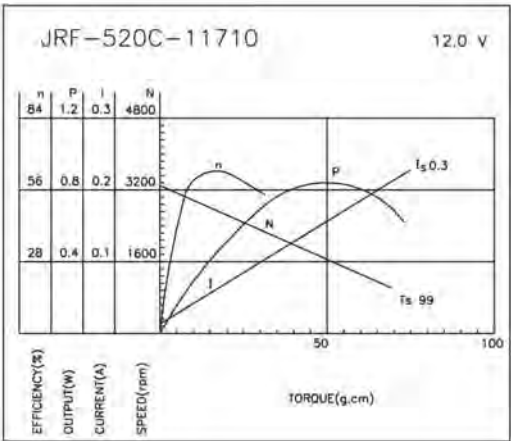
MODEL	VOLTAGE		NO. LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRF-520C-11710	3.0~15.0	12.0V CONSTANT	3300	0.013	2733	0.063	17.0	0.477	63.1	99.0
JRF-520C-11800	3.0~15.0	12.0V CONSTANT	2800	0.015	2090	0.044	12.4	0.265	50.2	48.7
JRF-520C-13570	3.0~15.0	6.0V CONSTANT	2000	0.025	1566	0.090	21.7	0.350	64.8	100.0
JRF-520C-19360	3.0~15.0	12.0V CONSTANT	6539	0.032	5630	0.198	29.1	1.683	70.8	209.6

DIRECTION OF ROTATION

UNIT: MILLIMETERS



WEIGHT:53.3g(APPROX)



DC BRUSH MOTOR

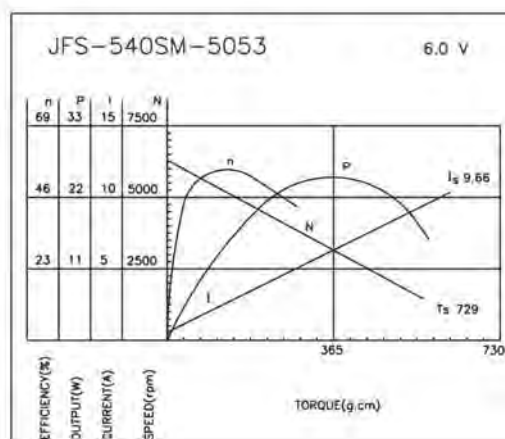
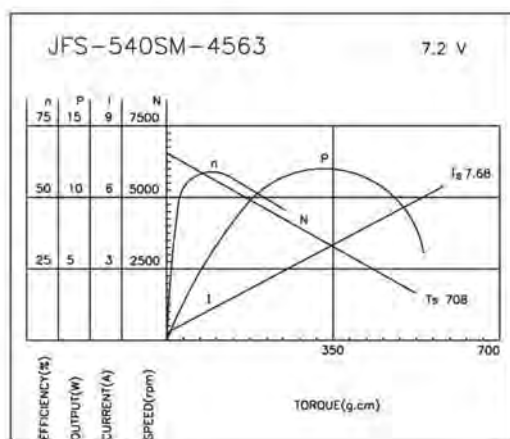
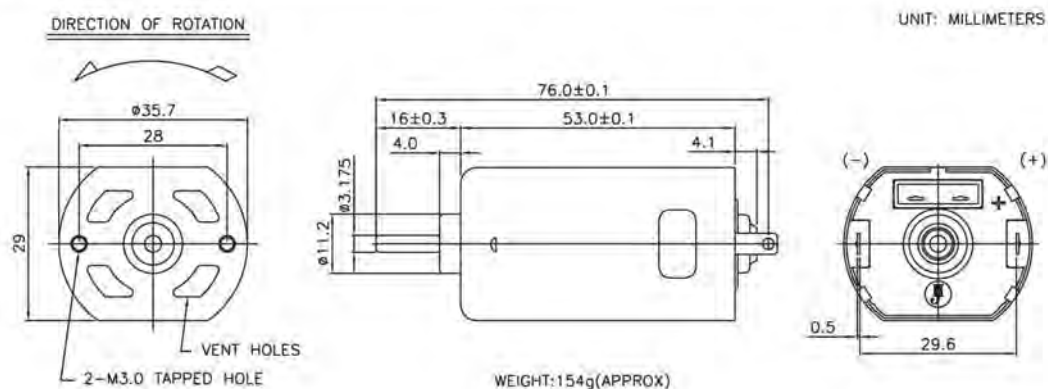
JFS-540SM SERIES

Carbon-Brush Motors

Typical Applications/Household Appliances

- Vacuum Cleaner
- Cordless Power Tools
- Air Compressor/Drills/
- Cordless Tools/Screwdrivers
- Toys and Models
- Radio Control Models

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFS-540SM-4563	6.0~24.0	7.2V CONSTANT	6550	0.32	5439	1.56	120	6.70	59.3	708
		12.0V CONSTANT	11260	0.36	9539	1.99	156	15.3	64.0	1023
JFS-540SM-5053	6.0~24.0	6.0V CONSTANT	6300	0.45	5182	2.09	129	6.87	54.8	729



DC BRUSH MOTOR

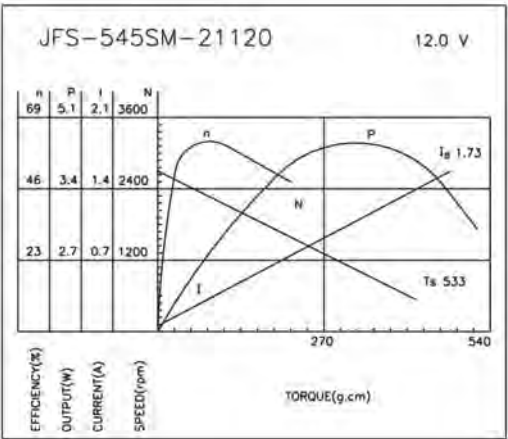
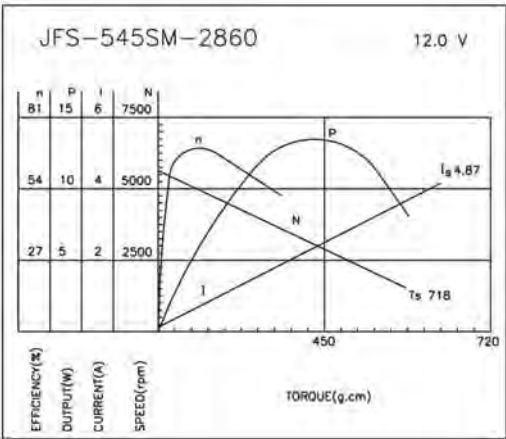
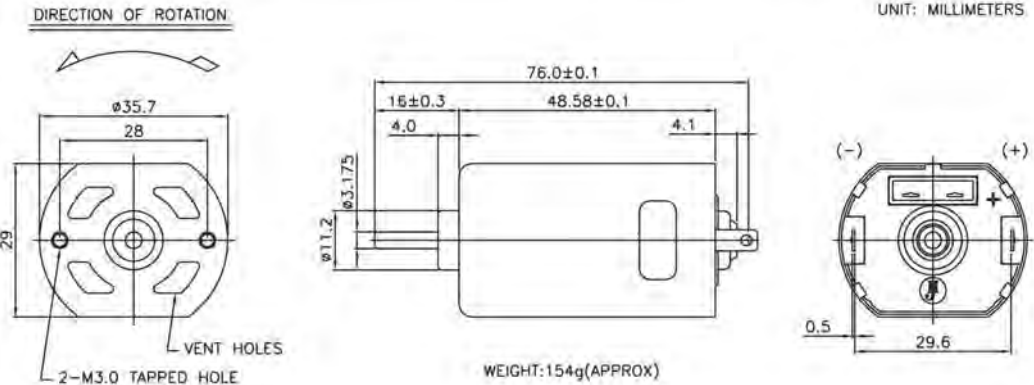
Carbon-Brush Motors

Typical Applications/Household Appliances

- Vacuum Cleaner/Bilge Pump Automotive Products
- Car Accessories
- Automatic Cruise Control
- Lumbar Support

JFS-545SM SERIES

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFS-545SM-2860	12.0~30.0	12.0V CONSTANT	6630	0.15	5640	0.86	107	6.20	60.5	718
		24.0V CONSTANT	13560	0.21	11773	1.38	174	21.1	63.5	1324
JFS-545SM-21120	12.0~30.0	12.0V CONSTANT	3280	0.08	2700	0.37	94.3	2.60	58.5	533
		24.0V CONSTANT	6840	0.09	5856	0.54	142	8.50	66.2	984



DC BRUSH MOTOR

JRS-540SM SERIES

Carbon-Brush Motors

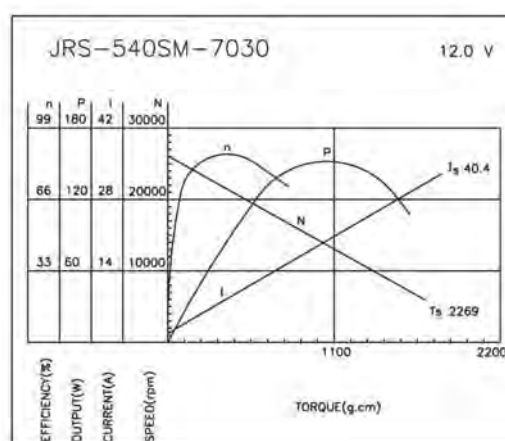
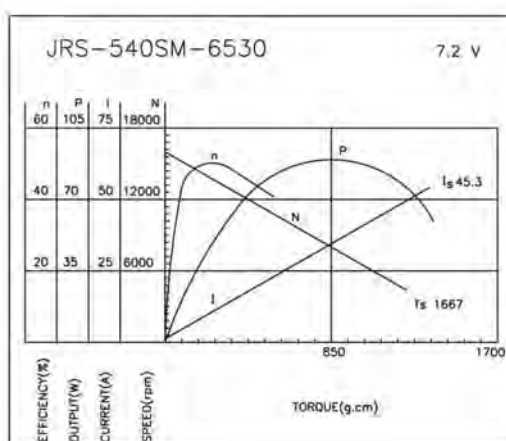
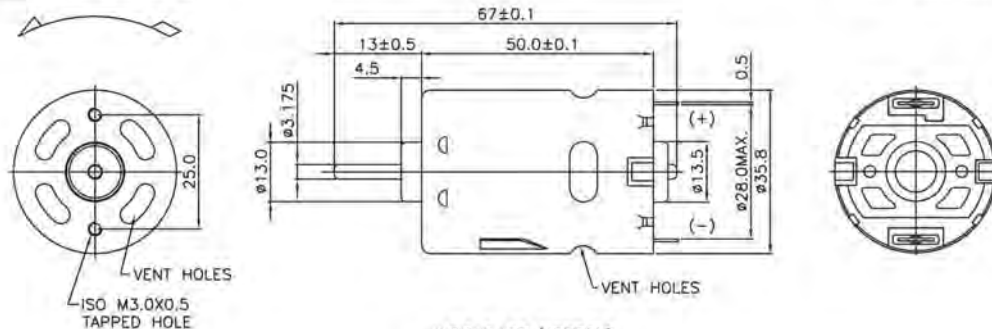
Typical Applications/Household Appliances

- Vacuum Cleaner
- Cordless Power Tools
- Drills & Screwdrivers/
- Cordless Tools/Air Compressor
- Toys and Models
- Radio Control Models

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-540SM-6035	4.5~15.0	12.0V CONSTANT	21300	1.01	18320	6.20	237	44.5	59.9	1693
JRS-540SM-6530	4.5~15.0	7.2V CONSTANT	15300	1.20	13157	7.37	233	31.5	59.4	1667
JRS-540SM-7030	4.5~15.0	12.0V CONSTANT	26100	1.60	22075	7.59	350	79.2	87.0	2269
JRS-540SM-7515	4.5~15.0	7.2V CONSTANT	25000	2.40	21067	12.9	269	58.1	62.7	1707

DIRECTION OF ROTATION

UNIT: MILLIMETERS



DC BRUSH MOTOR

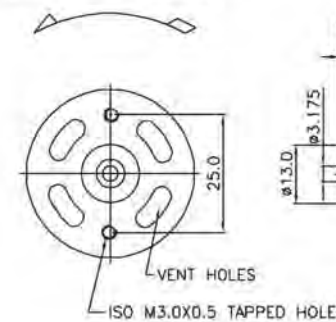
Carbon-Brush Motors

JRS-545S SERIES

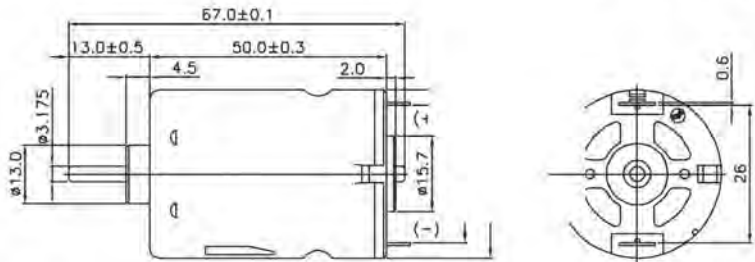
- Typical Applications/Household Appliances
- Vacuum Cleaner/Bilge Pump
 - Automotive Products
 - Car Accessories
 - Automatic Cruise Control
 - Lumber Support

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-545S-18150	12.0~32.0	24.0V CONSTANT	5600	0.12	4500	0.53	160	9.20	58.0	900
JRS-545S-22100	12.0~24.0	12.0V CONSTANT	4200	0.16	3500	0.55	100	3.60	65.3	620
JRS-545S-2485	12.0~30.0	12.0V CONSTANT	5150	0.20	4210	0.89	146	6.30	58.9	800
JRS-545S-4045	6.0~ 18.0	12.0V CONSTANT	10000	0.50	8360	2.55	229	19.5	64.1	1395

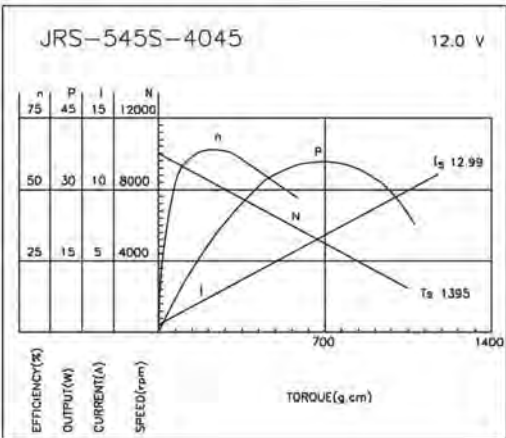
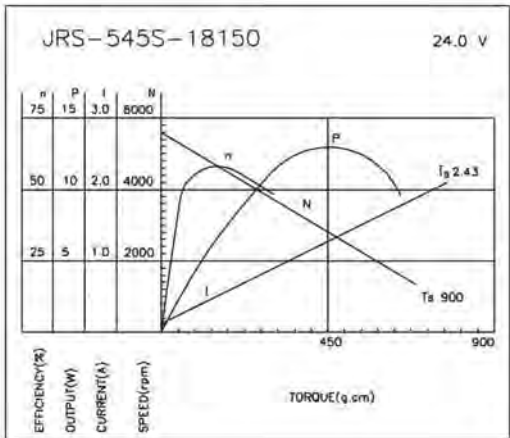
DIRECTION OF ROTATION



UNIT: MILLIMETERS



WEIGHT: 156g (APPROX)



DC BRUSH MOTOR

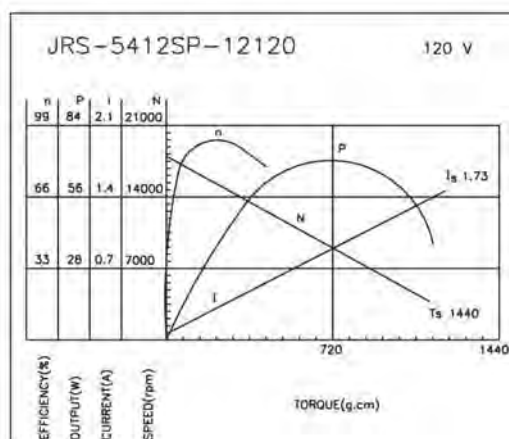
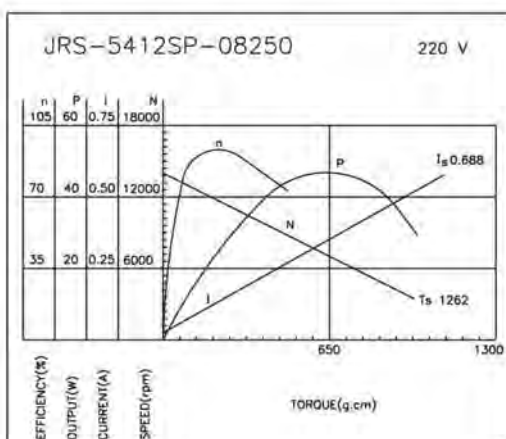
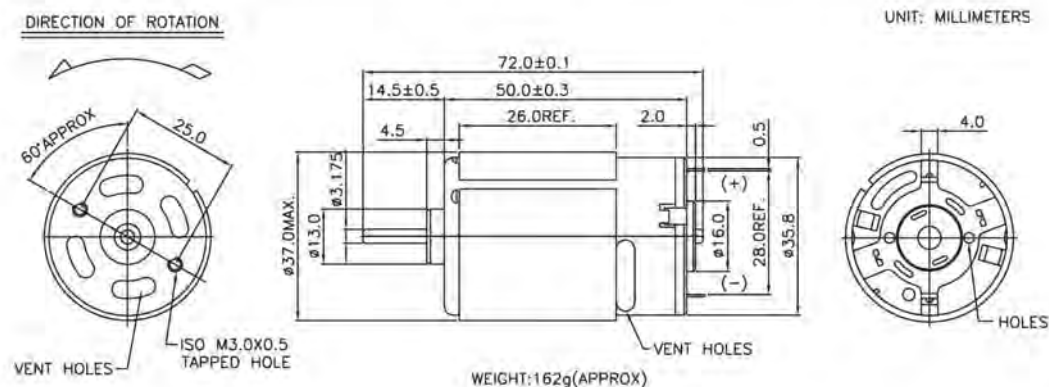
Carbon-Brush Motors

JRS-5412SP SERIES

Typical Applications/Household Appliances

- Food Chopper
- Hand Held Mixer
- Curving Knife

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-5412SP-06350	100~240	220V CONSTANT	10800	0.02	8756	0.086	146	13.12	69.3	771
JRS-5412SP-08250	100~240	220V CONSTANT	14500	0.027	12102	0.136	209	25.9	86.6	1262
JRS-5412SP-09220	100~240	110V CONSTANT	8200	0.025	6461	0.091	100	6.63	66.2	520
JRS-5412SP-12120	100~240	120V CONSTANT	18000	0.06	15274	0.310	218	34.2	92.0	1440



DC BRUSH MOTOR

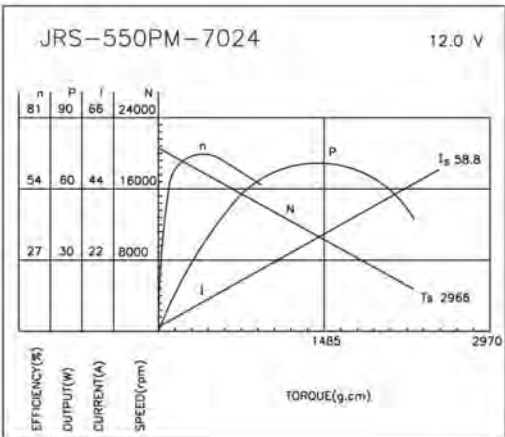
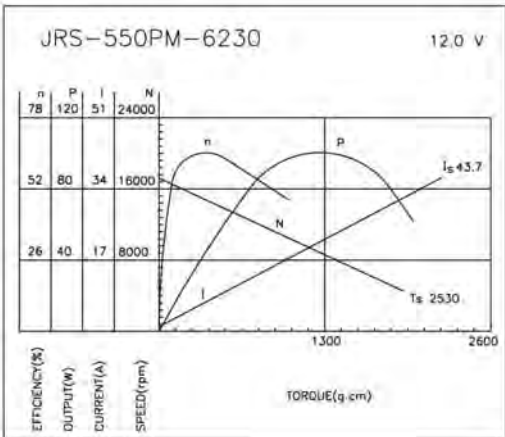
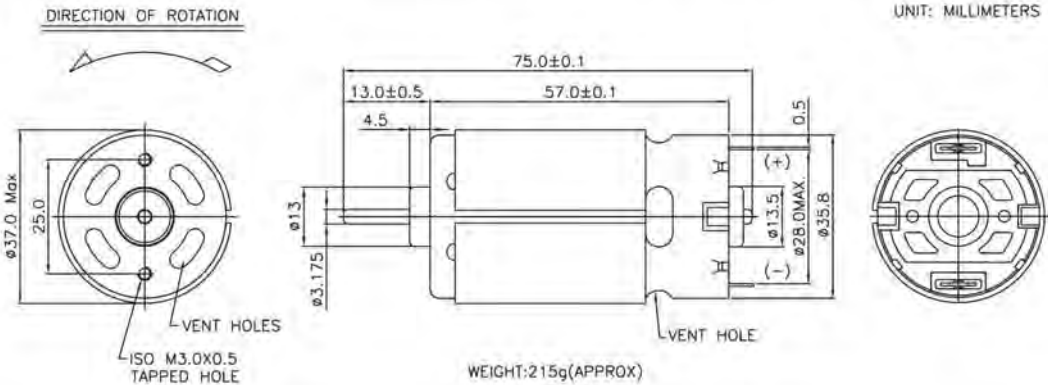
JRS-550PM SERIES

Carbon-Brush Motors

Typical Applications/Cordless Power Tools

- Drills & Screwdrivers
- Air Compressor
- Cordless Garden Tools
- Toys and Models
- Radio Control Models

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-550PM-5639	6.0 ~30.0	18.0V CONSTANT	20000	0.85	17325	5.50	364	64.7	65.4	2720
JRS-550PM-6230	6.0 ~30.0	12.0V CONSTANT	17200	0.98	14959	6.54	330	50.6	64.5	2530
JRS-550PM-7024	6.0 ~30.0	12.0V CONSTANT	20600	1.32	17916	8.81	386	71.0	67.2	2966
JRS-550PM-8514	6.0 ~30.0	7.2V CONSTANT	21800	2.30	18717	14.0	402	77.3	76.7	2844



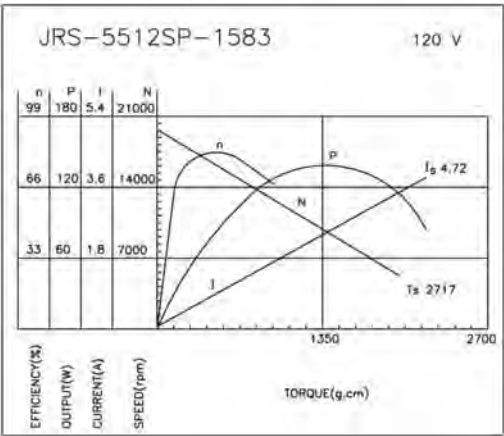
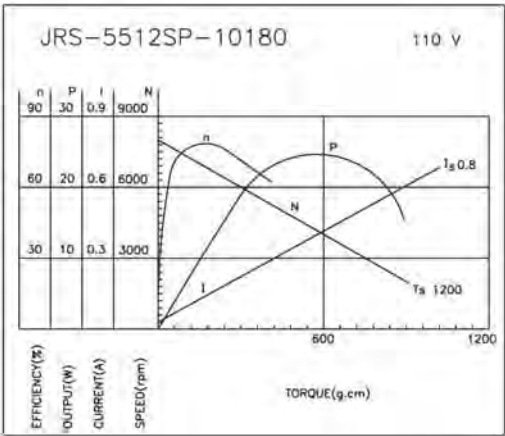
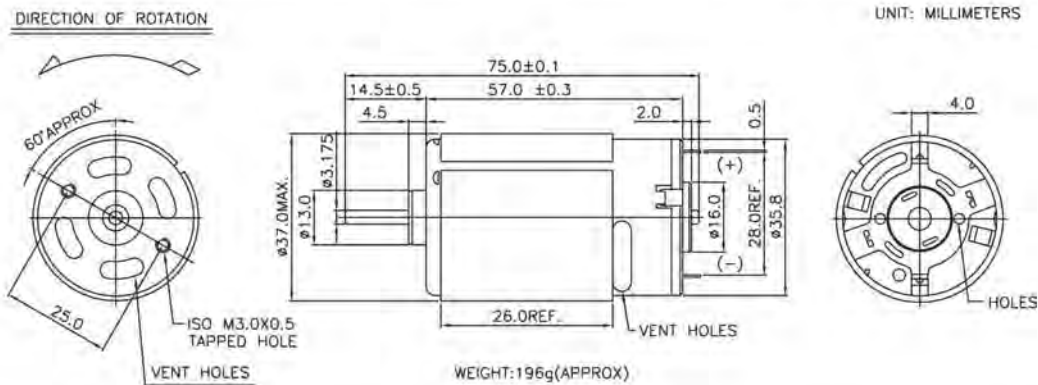
DC BRUSH MOTOR

JRS-5512SP SERIES

Carbon-Brush Motors

- Typical Applications/Precision Instruments
- Automatic Vending Machines
 - Household Appliances
 - Food Chopper
 - Hand Held Mixer
 - Curving Knife

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-5512SP-08250	100~230	230V CONSTANT	12500	0.020	10261	0.092	179	18.9	89.1	1000
JRS-5512SP-10180	100~230	110V CONSTANT	8000	0.035	6660	0.158	200	13.7	78.8	1200
JRS-5512SP-12130	100~120	120V CONSTANT	11300	0.040	9176	0.170	177	16.7	81.7	942
JRS-5512SP-1583	100~230	120V CONSTANT	19700	0.065	17630	0.550	285	51.6	78.2	2717



DC BRUSH MOTOR

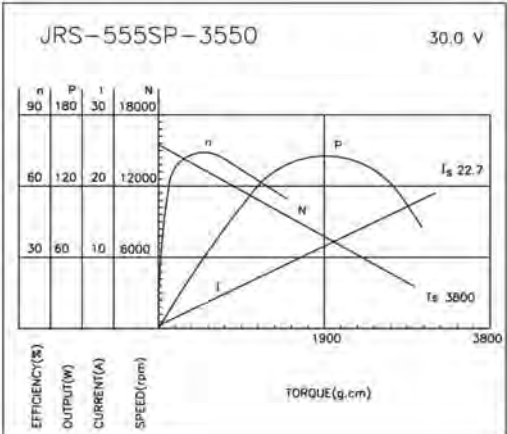
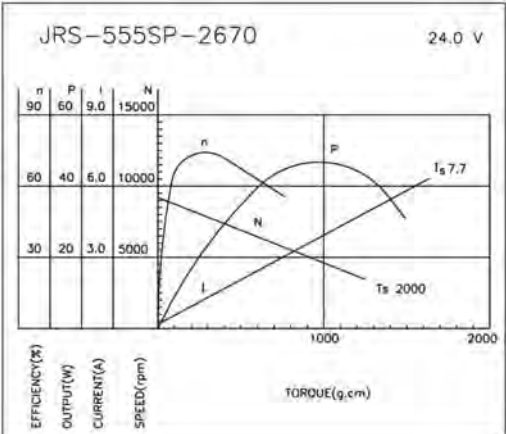
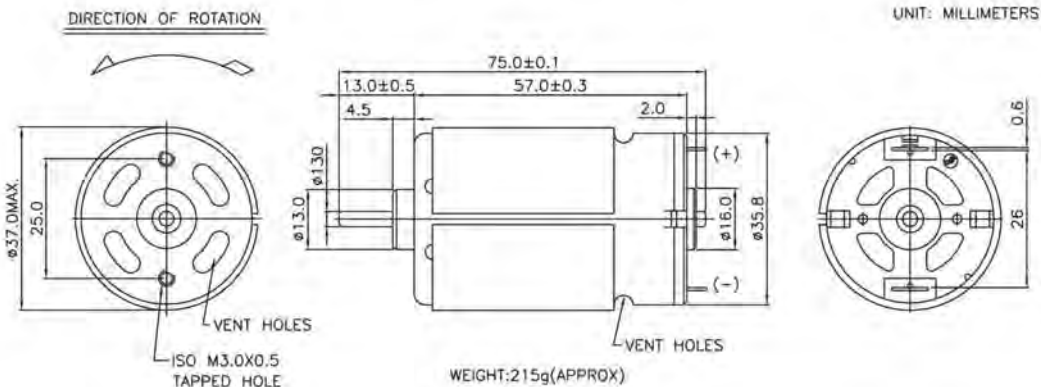
Carbon-Brush Motors

Typical Applications/Office Automation Equipments

- Computer Peripherals/Printer
- Automotive Products
- Car Accessories
- Lumber Support

JRS-555SP SERIES

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	
			rpm	A	rpm	A	g.cm	W	%	
JRS-555SP-19120	9.0~30.0	24.0V CONSTANT	5300	0.15	4184	0.59	215	9.24	64.8	1129
JRS-555SP-2588	9.0~32.0	24.0V CONSTANT	7000	0.17	5910	0.92	240	14.5	65.9	1540
JRS-555SP-2670	9.0~30.0	24.0V CONSTANT	9100	0.21	7800	1.27	283	22.6	74.1	2000
JRS-555SP-3550	9.0~32.0	30.0V CONSTANT	15500	0.42	14030	2.48	382	54.9	73.8	3800



DC BRUSH MOTOR

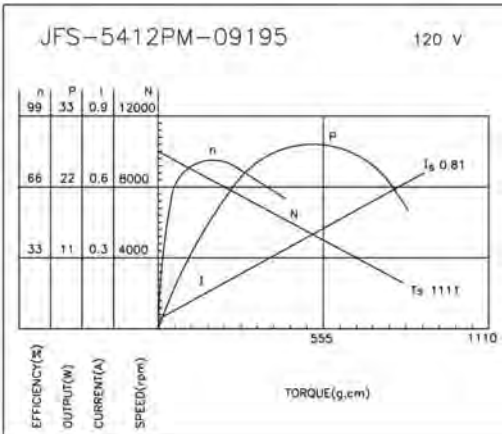
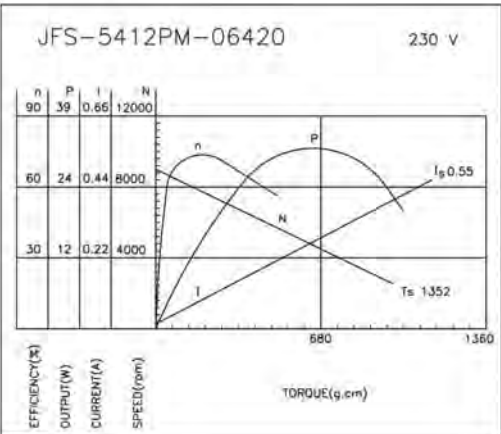
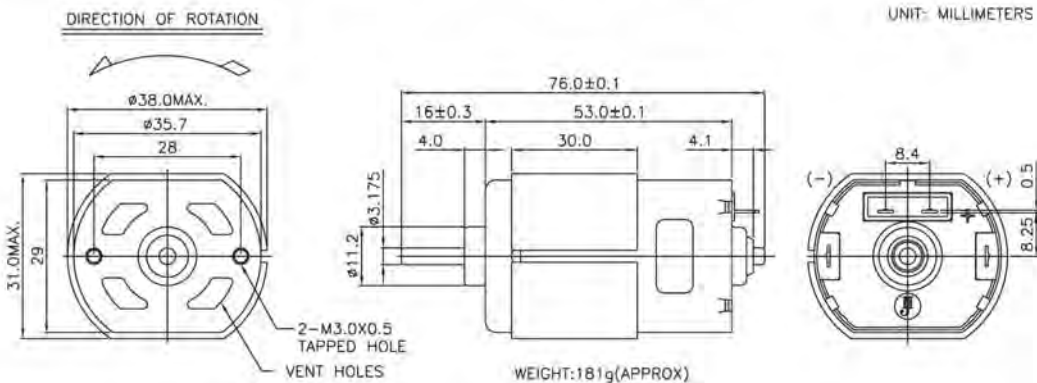
Carbon-Brush Motors

Typical Applications/In Home Appliance

- Power Brush/Water Purifier
- In Business Equipment and Multimedia
- Shredder
- In Power Tools
- Rotary Sander/Rotary Cutter

JFS-5412PM SERIES

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL TORQUE
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	
			rpm	A	rpm	A	g.cm	W	%	
JFS-5412PM-06420	100~240	230V CONSTANT	9000	0.015	7720	0.09	192	15.23	73.2	1352
JFS-5412PM-08240	100~240	120V CONSTANT	9000	0.030	7553	0.16	226	17.50	93.3	1406
JFS-5412PM-09195	100~240	120V CONSTANT	10000	0.040	8184	0.18	201	16.90	78.2	1111



DC BRUSH MOTOR

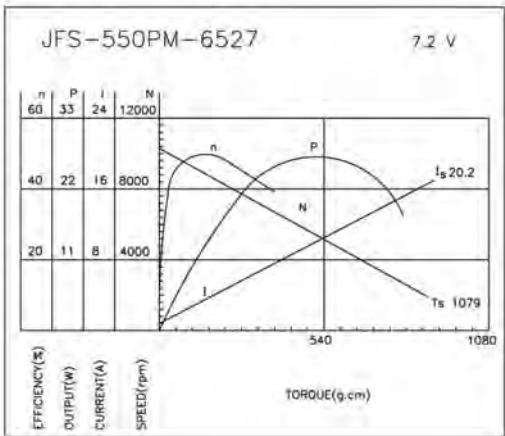
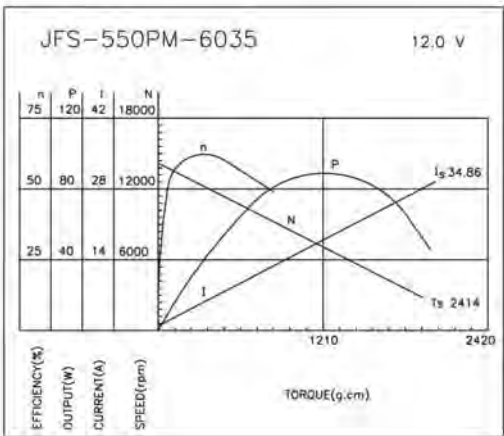
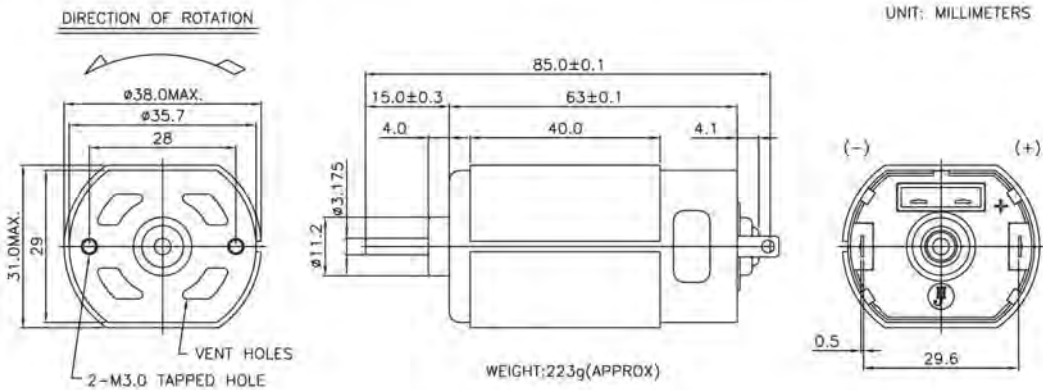
Carbon-Brush Motors

Typical Applications/Cordless Power Tools

- Drill & Screwdrivers
- Cordless Garden Tools
- Air Compressor
- Toys and Models
- Ride-on Toys
- Radio Control Models

JFS-550PM SERIES

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFS-550PM-6035	6.0~24.0	6.0V CONSTANT	6900	0.75	5783	3.88	223	13.25	56.9	1380
		12.0V CONSTANT	14200	0.92	12215	5.66	337	42.28	62.2	2414
JFS-550PM-6527	6.0~24.0	6.0V CONSTANT	8270	0.62	7024	3.50	176.7	12.7	60.7	1173
		7.2V CONSTANT	10300	0.80	8591	4.00	179	15.8	54.5	1079



DC BRUSH MOTOR

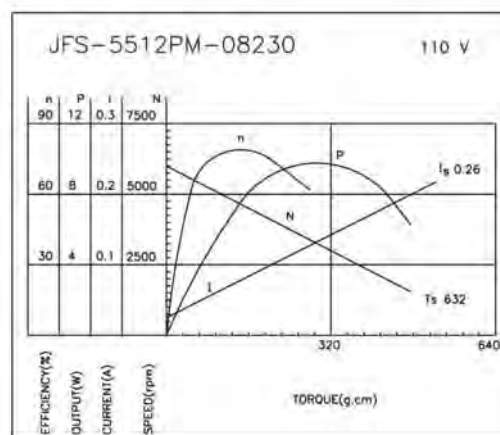
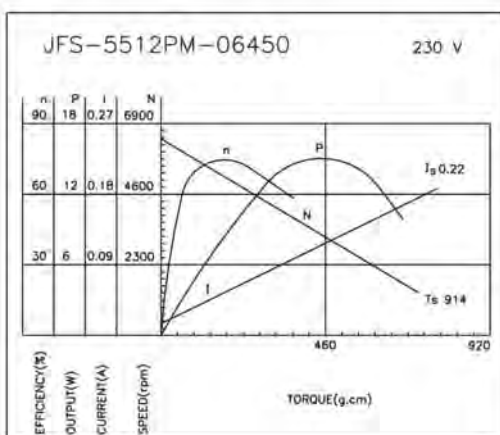
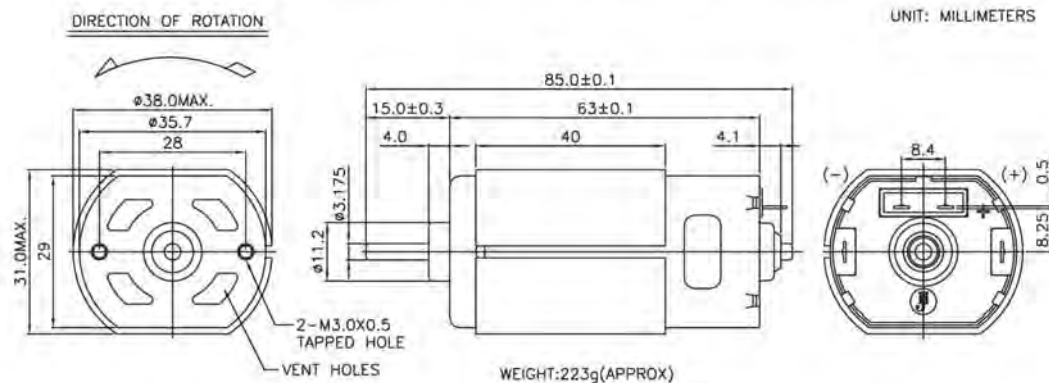
Carbon-Brush Motors

JFS-5512PM SERIES

Typical Applications/In Home Appliance

- Power Brush/Water Purifier
- In Power Tools
- Rotary Sander/Rotary Cutter
- In Business Equipment and Multimedia
- Shredder

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFS-5512PM-06450	100~240	110V CONSTANT	6000	0.025	4584	0.081	149	7.01	78.8	632
JFS-5512PM-08230	100~240	230V CONSTANT	6400	0.015	5076	0.058	189	9.85	74.4	914
		230V CONSTANT	13000	0.030	10508	0.127	241	26.0	89.4	1258



DC BRUSH MOTOR

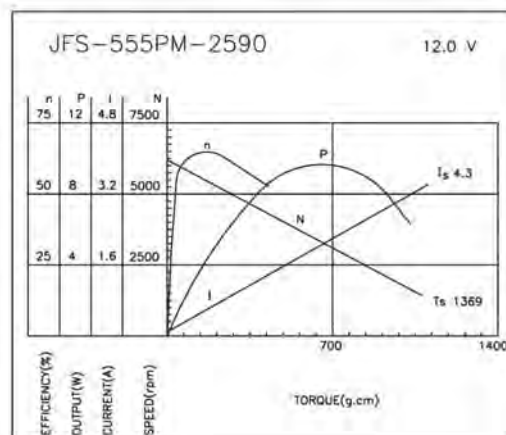
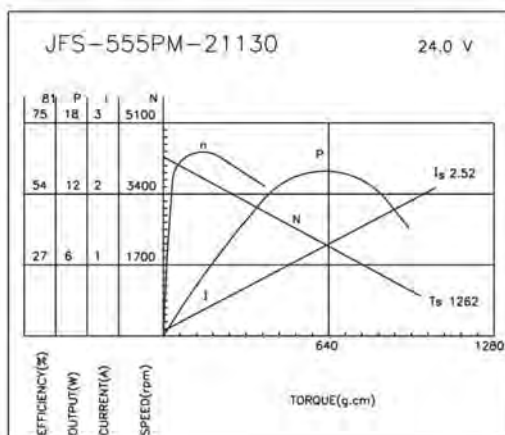
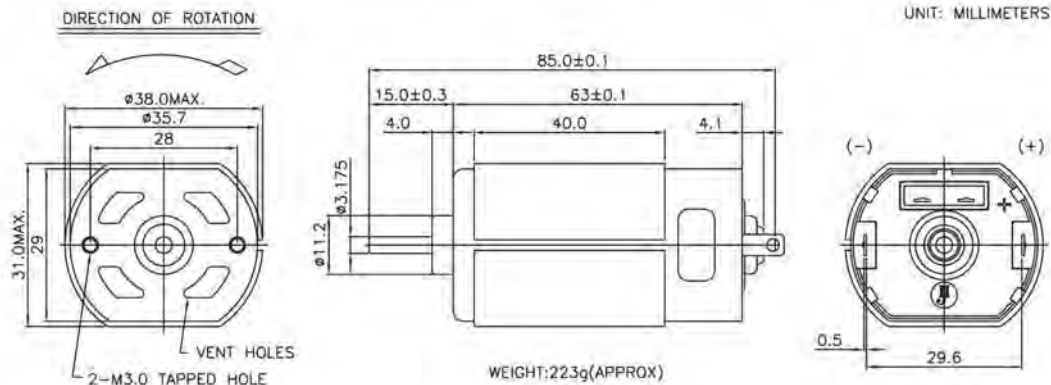
JFS-555PM SERIES

Carbon-Brush Motors

Typical Applications/Office Automation Equipments

- Computer Peripherals
- Printer
- Automotive Products
- Car Antenna
- Lumbar Support

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JFS-555PM-21130	6.0~30.0	21.0V CONSTANT	3750	0.07	3180	0.39	200	6.50	79.7	1316
		24.0V CONSTANT	4290	0.07	3677	0.42	180	6.80	67.5	1262
JFS-555PM-2590	6.0~30.0	12.0V CONSTANT	3050	0.08	2517	0.43	116	3.07	57.9	740
		24.0V CONSTANT	6200	0.09	5414	0.62	173	9.63	64.7	1369



DC BRUSH MOTOR

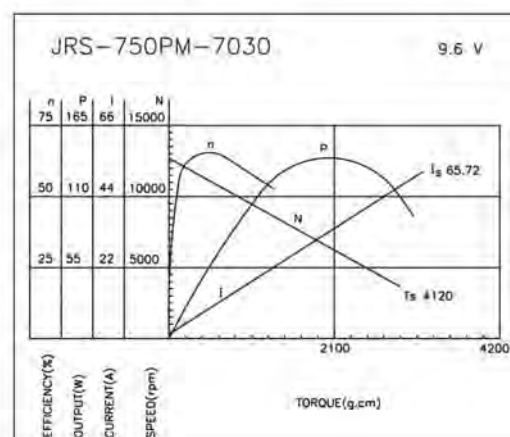
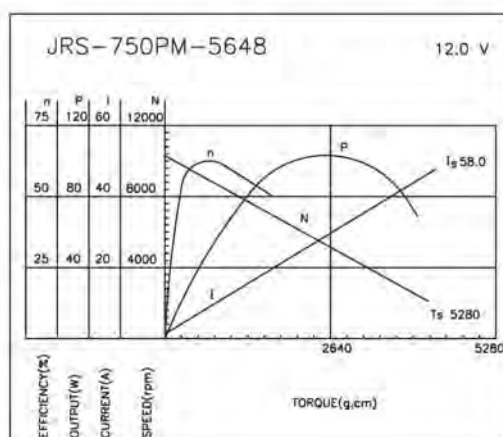
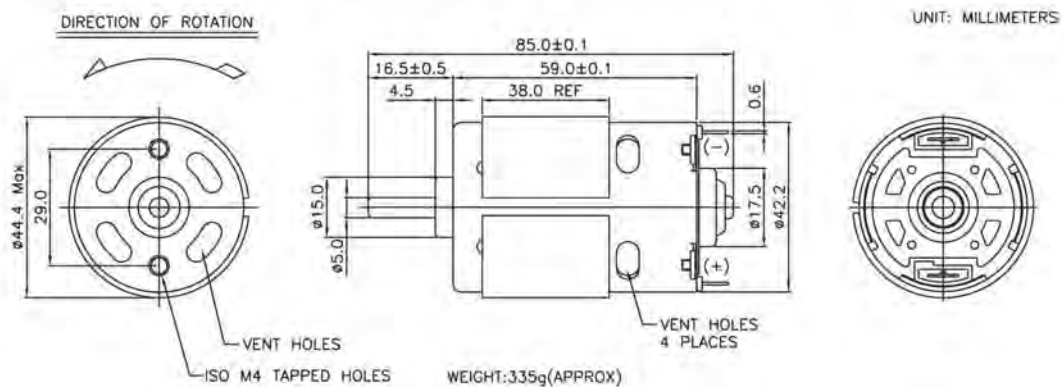
Carbon-Brush Motors

JRS-750PM SERIES

Typical Applications/In Power Tools

- Blower (Garden Tools)
- /Drill/Jig Saw
- /Gross Trimmer
- /Screwdrivers

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	
			rpm	A	rpm	A	g.cm	W	%	
JRS-750PM-5648	6.0~12.0	12.0V CONSTANT	10300	1.30	8580	10.6	880	77.5	60.8	5280
JRS-750PM-6045	6.0~12.0	12.0V CONSTANT	10420	1.16	9230	7.53	822	77.8	86.1	7200
JRS-750PM-7030	6.0~12.0	9.6V CONSTANT	12700	1.30	11008	9.90	550	62.1	65.3	4120
JRS-750PM-8022	6.0~12.0	12.0V CONSTANT	22000	3.00	19235	20.7	950	187	75.4	7560



DC BRUSH MOTOR

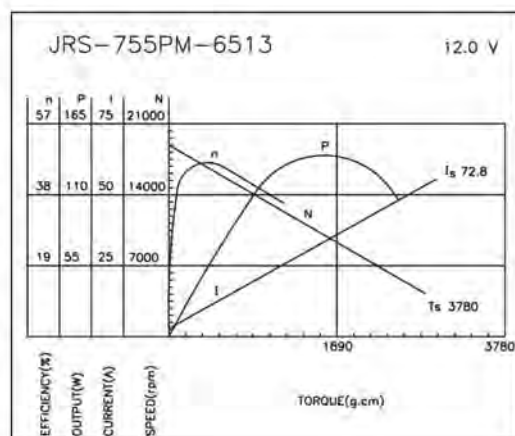
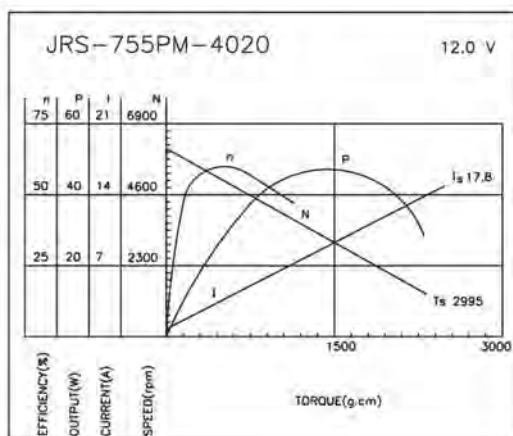
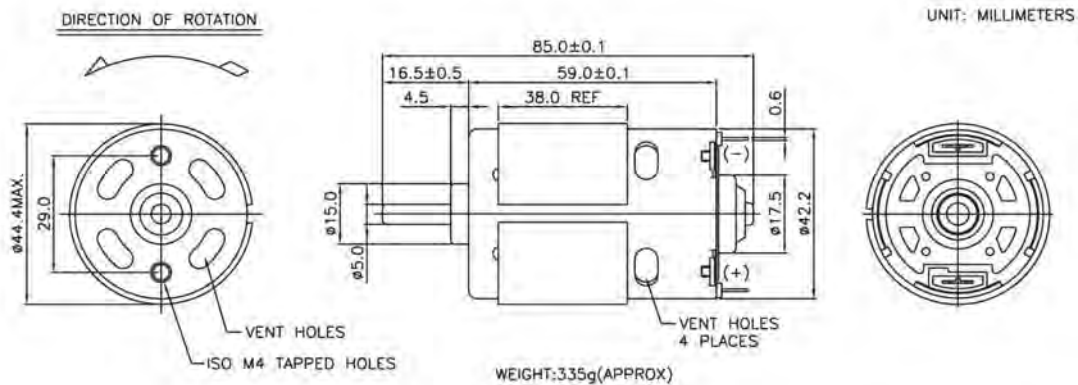
Carbon-Brush Motors

JRS-755PM SERIES

Typical Applications/Household Appliance

- Fan/Sewing Machine
- In Power Tools
- Grass Trimmer / Drill

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-755PM-3280	12.0~30.0	12.0V CONSTANT	3000	0.34	2402	1.36	374	9.2	56.4	1875
JRS-755PM-4020	12.0~30.0	12.0V CONSTANT	6100	0.75	5062	3.66	510	26.5	60.0	2995
JRS-755PM-5518	12.0~30.0	12.0V CONSTANT	13870	1.80	11460	9.00	480	56.4	52.3	2853
JRS-755PM-6513	8.4 ~24.0	12.0V CONSTANT	18900	2.85	15995	13.2	581	95.4	60.2	3780



DC BRUSH MOTOR

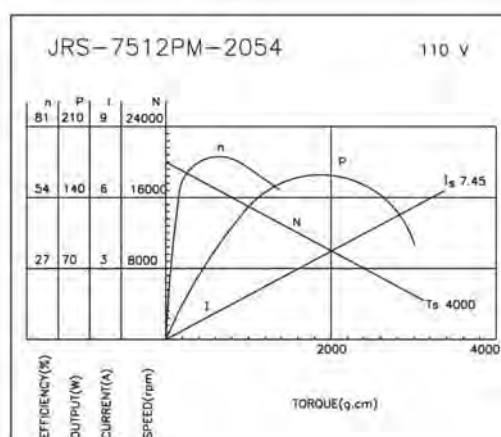
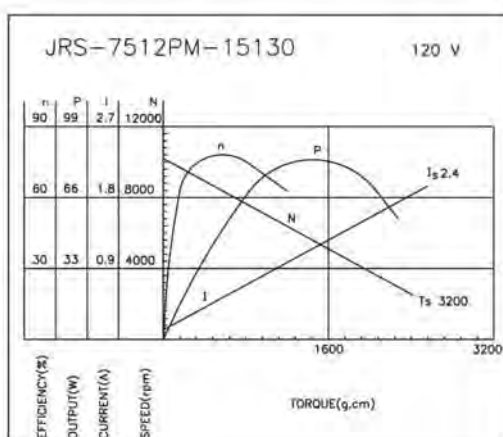
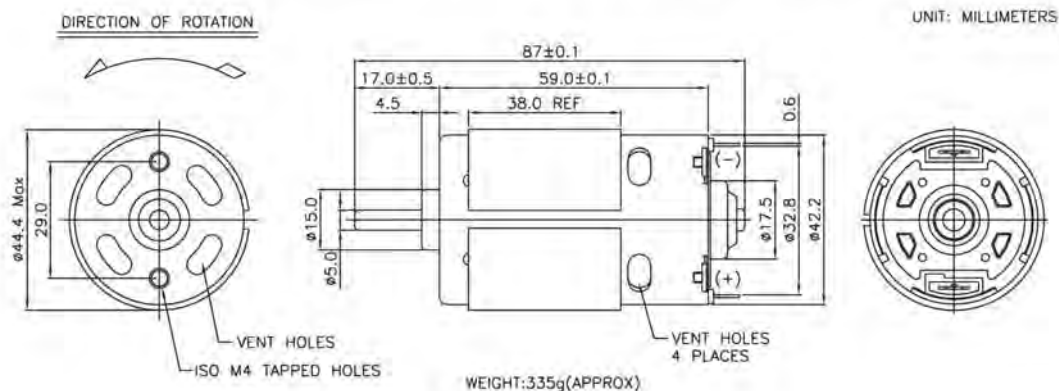
Carbon-Brush Motors

JRS-7512PM SERIES

Typical Applications/Household Appliance

• Drill/Glass Trimmer

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-7512PM-15130	100~240	120V CONSTANT	10200	0.12	8350	0.53	580	49.7	78.1	3200
JRS-7512PM-2054	100~240	110V CONSTANT	20000	0.30	16000	1.48	660	108.3	66.5	4000



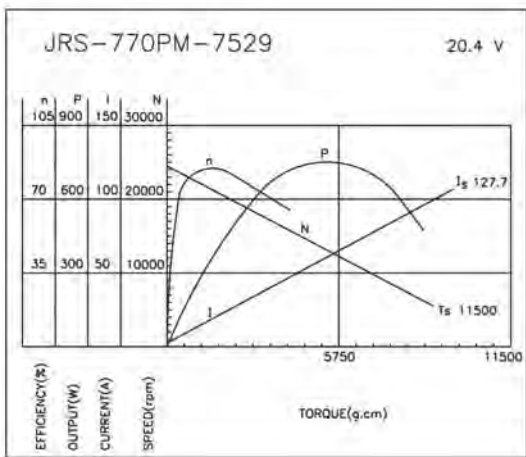
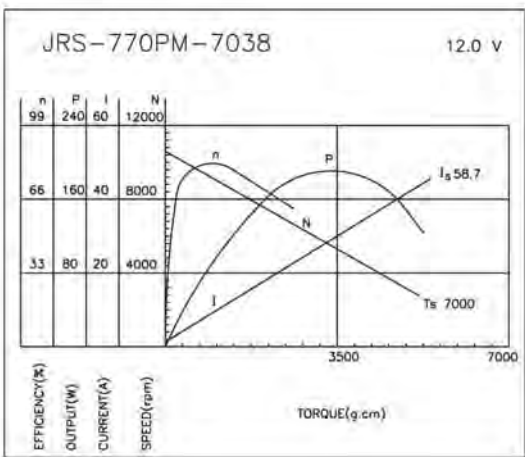
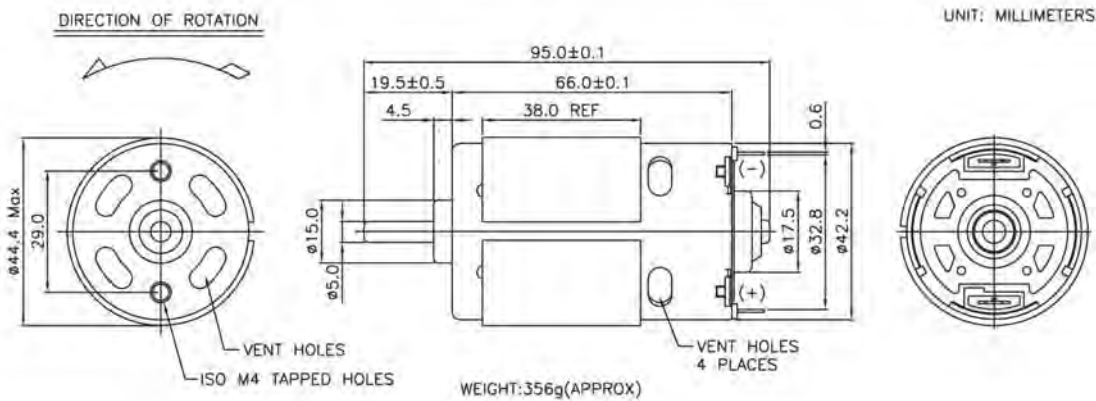
DC BRUSH MOTOR

JRS-770PM SERIES

Carbon-Brush Motors

Typical Applications/In Power Tools
• String Trimmer

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-770PM-7038	12.0~18.0	12.0V CONSTANT	10600	1.30	9162	9.10	950	89	81.7	7000
	12.0~24.0	20.4V CONSTANT	28500	3.50	24580	21.6	1650	416	94.2	12000
JRS-770PM-7529	12.0~24.0	20.4V CONSTANT	24500	2.50	21520	17.9	1400	309	84.6	11500



DC BRUSH MOTOR

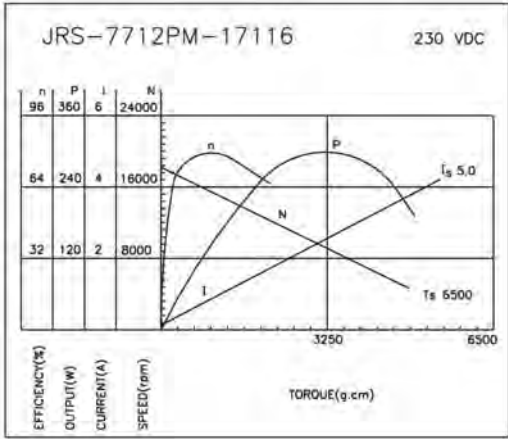
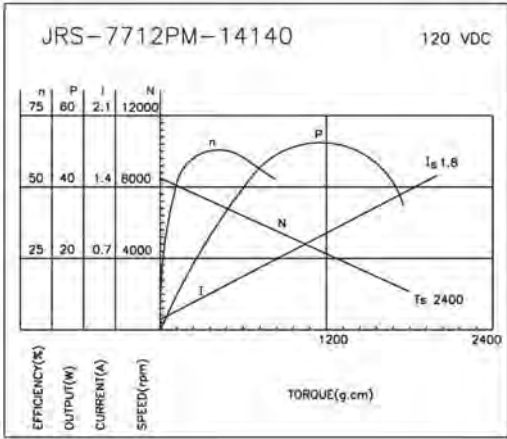
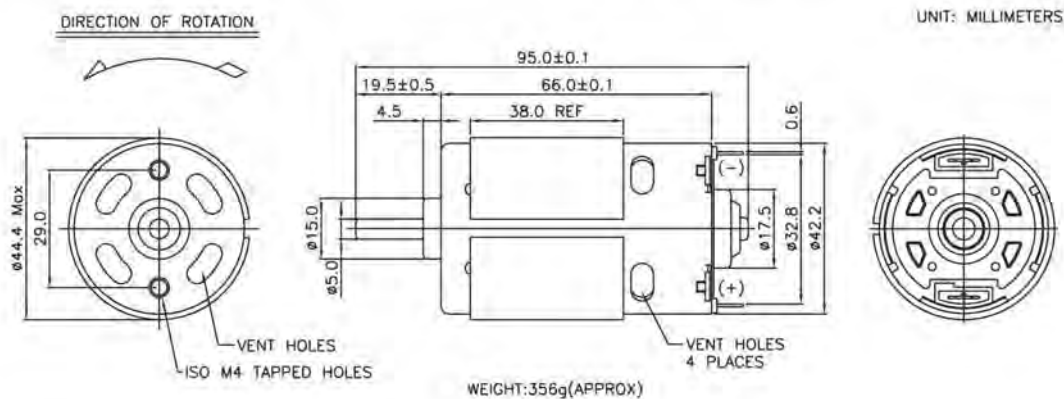
Carbon-Brush Motors

Typical Applications/Household Appliance

★ Blender/Power Brush

JRS-7712PM SERIES

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-7712PM-10180	100~230	230V CONSTANT	13500	0.08	10900	0.34	550	62.0	78.6	2900
JRS-7712PM-12160	100~230	230V CONSTANT	15500	0.08	12975	0.41	570	75.8	80.4	3500
JRS-7712PM-14140	100~120	120V CONSTANT	8500	0.10	6870	0.43	460	32.4	62.8	2400
JRS-7712PM-17116	100~240	230V CONSTANT	18200	0.13	15680	0.80	900	145	78.7	6500



DC BRUSH MOTOR

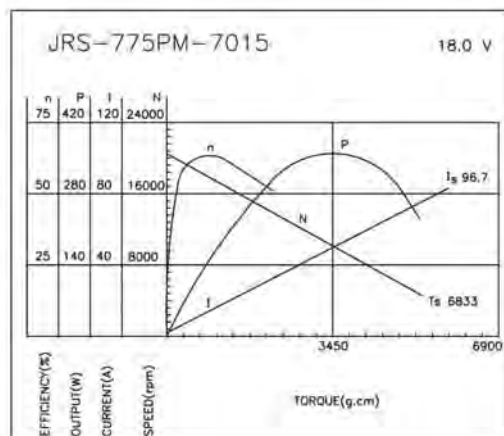
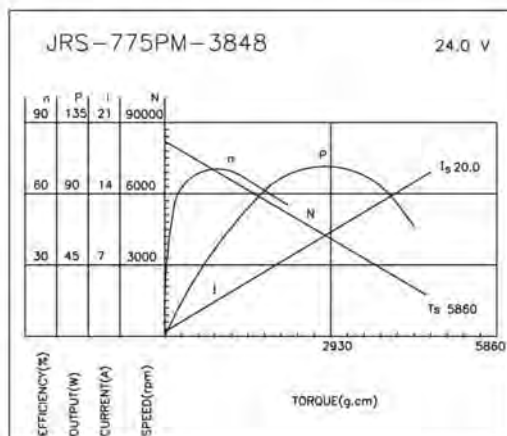
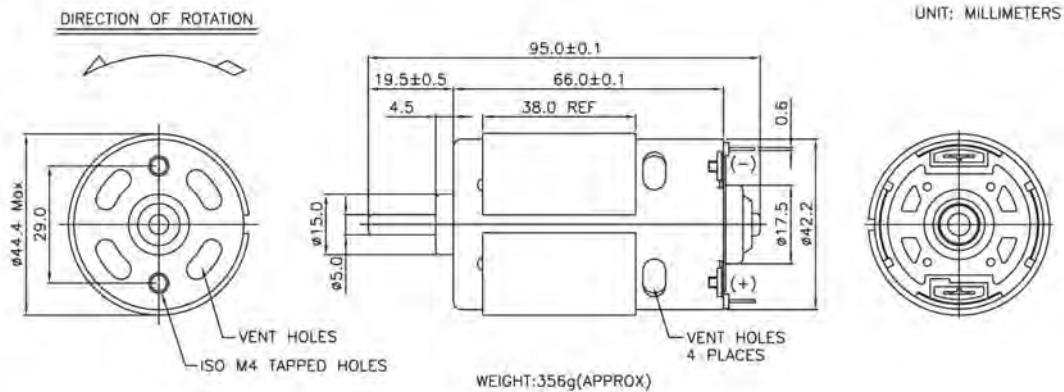
JRS-775PM SERIES

Carbon-Brush Motors

Typical Applications/Household Appliance

- Sewing Machine/Water Pump
- In Power Tools
- Drill/Gross Trimmer/Jig Saw
- /String Trimmer/Hedge Trimmer
- In Personal Care and Use
- Hair Dryer

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-775PM-2765	6.0 ~30.0	24.0V CONSTANT	7600	0.37	5810	2.22	750	44.7	83.0	3186
JRS-775PM-3848	6.0 ~30.0	24.0V CONSTANT	8210	0.46	7160	2.96	750	55.1	77.6	5860
JRS-775PM-7015	6.0 ~30.0	18.0V CONSTANT	20500	1.90	17914	13.86	862	158	63.3	6833
JRS-775PM-7513	6.0 ~15.0	12.0V CONSTANT	16500	2.70	14007	15.16	982	141.2	77.6	6501



DC BRUSH MOTOR

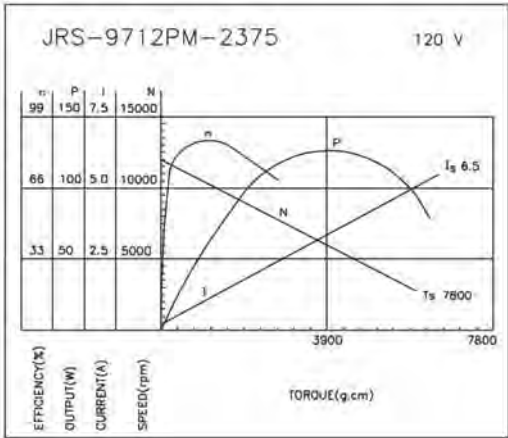
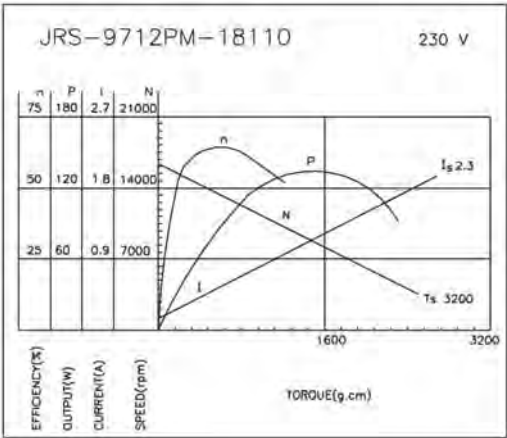
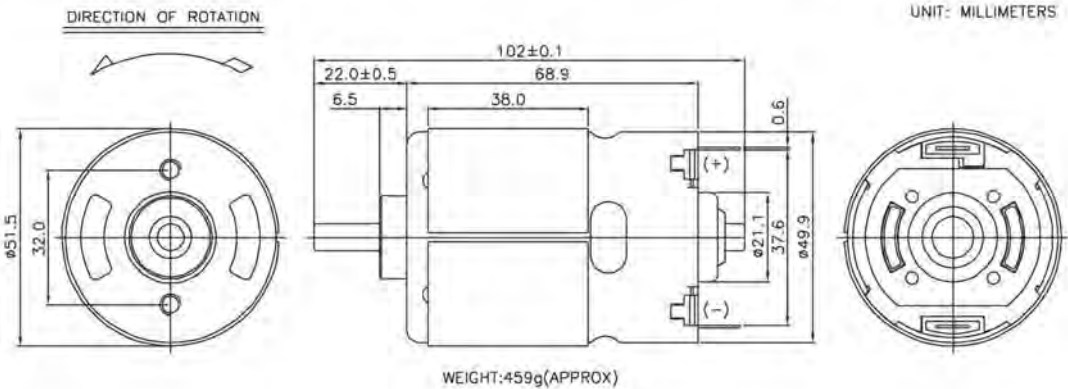
Carbon-Brush Motors

JRS-9712PM SERIES

Typical Applications/In Automobile

- ABS/Air Pump/
Pollution Control B.Device

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-9712PM-18110	100~230	230V CONSTANT	16350	0.15	13028	0.59	650	87.0	64.2	3200
JRS-9712PM-2375	100~230	120V CONSTANT	12000	0.22	10134	1.20	1213	125.0	88.0	7800
JRS-9712PM-7505	12.0~230	12.0V CONSTANT	13700	3.00	11200	13.5	892	104.7	64.0	4954
JRS-9712PM-8004	12.0~230	13.0V CONSTANT	19000	5.91	15400	24.0	1266	203.8	65.0	6565



DC BRUSH MOTOR

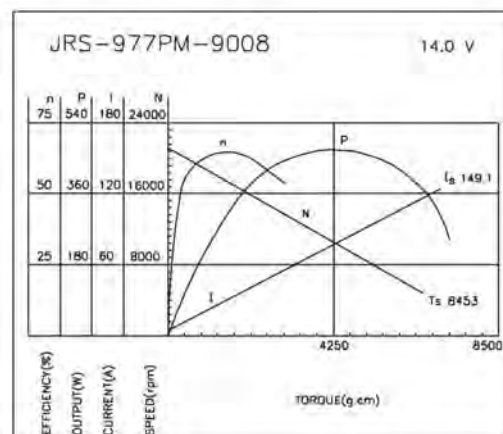
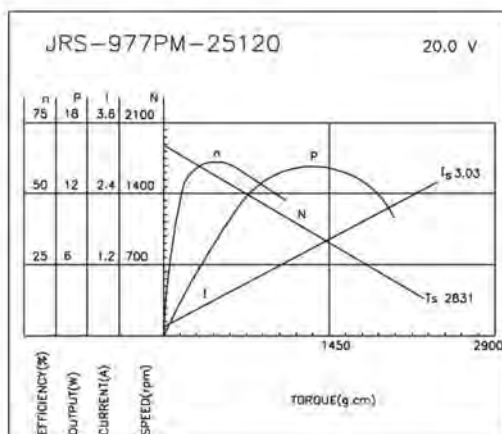
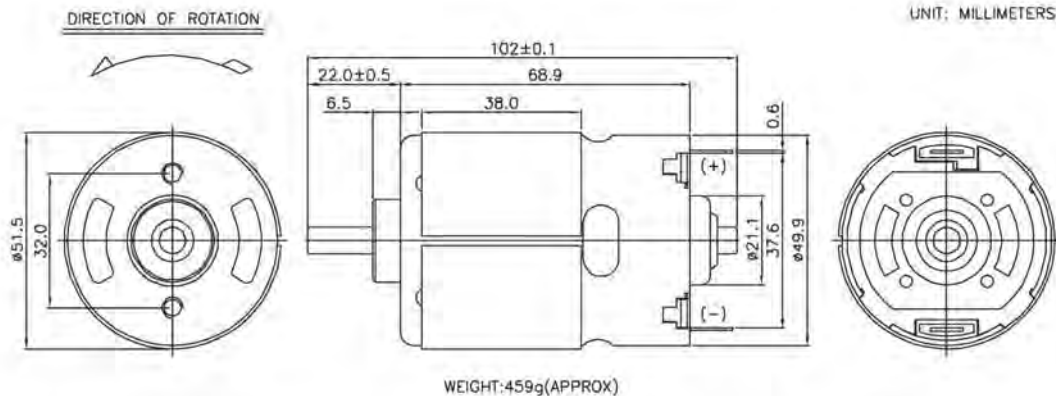
JRS-977PM SERIES

Carbon-Brush Motors

Typical Applications/In Home Appliance

- Brush Vacuum/Vacuum Cleaner
- In Power Tools
- Compressor/Bilge Blower/ String Trimmer/Drill
- In Personal Care and Use • Toy
- In Business Equipment and Multimedia
- Paper Lifter(Copier)/Joystick

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-977PM-25120	12.0~30.0	20.0V CONSTANT	1880	0.15	1540	0.67	510	8.21	61.0	2831
JRS-977PM-5625	12.0~30.0	12.0V CONSTANT	5110	1.03	4190	4.48	710	31.1	58.0	3944
JRS-977PM-9008	10.0~15.0	14.0V CONSTANT	21200	4.18	18300	24.5	1183	226.2	66.0	8453
JRS-977PM-8509	10.0~15.0	12.0V CONSTANT	14200	2.93	12200	18.6	1180	150.4	68.0	8426



DC BRUSH MOTOR

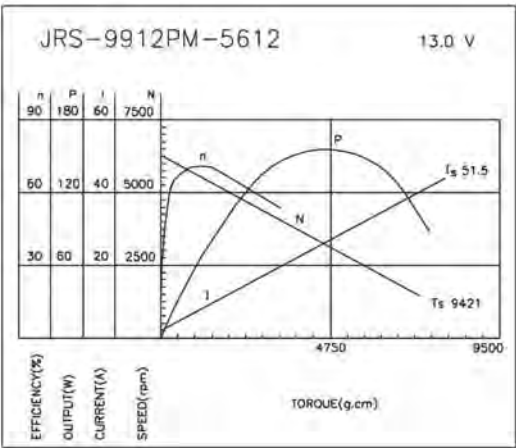
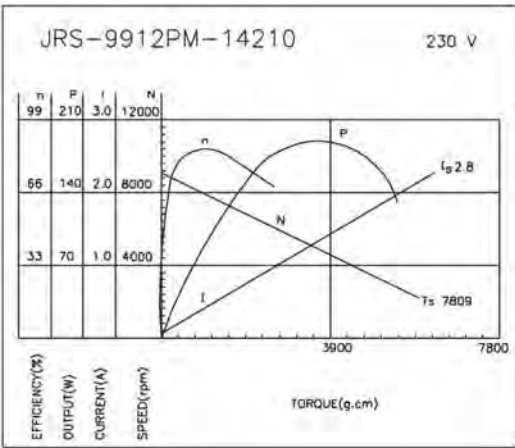
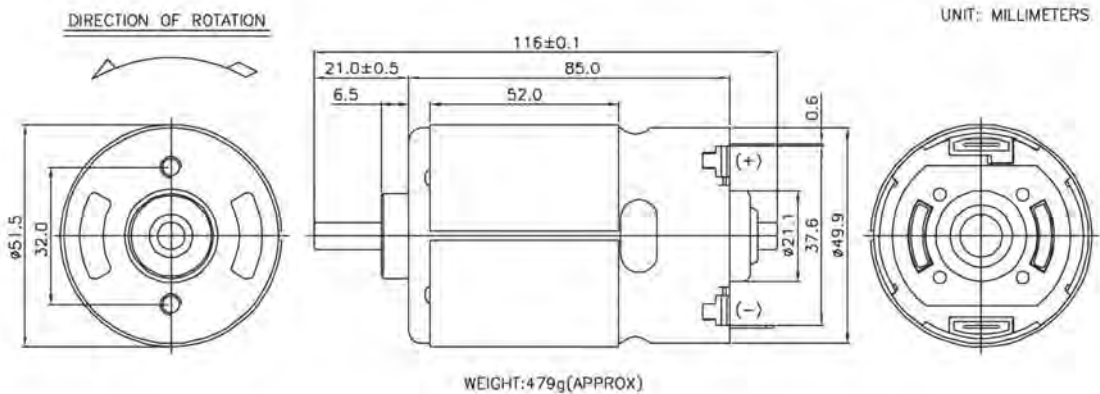
Carbon-Brush Motors

JRS-9912PM SERIES

Typical Applications/In Automobile

- Air Pump

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	TORQUE
			rpm	A	rpm	A	g.cm	W	%	g.cm
JRS-9912PM-14210	12.0~230	230V CONSTANT	9070	0.06	7894	0.42	1012	82.0	85.7	7809
JRS-9912PM-5612	12.0~250	13.0V CONSTANT	6280	0.99	5530	7.06	1131	65.4	71.0	9421
JRS-9912PM-6010	12.0~230	13.0V CONSTANT	7150	1.13	6290	8.12	1125	74.0	70.0	9371



DC BRUSH MOTOR

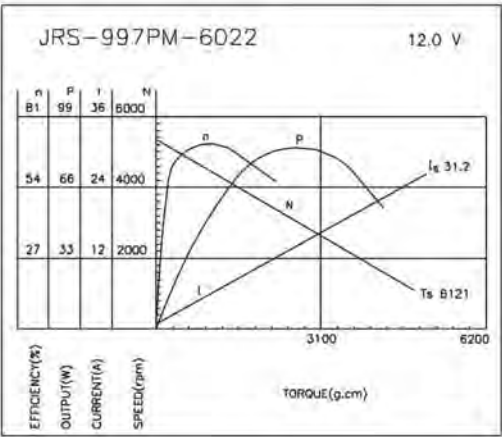
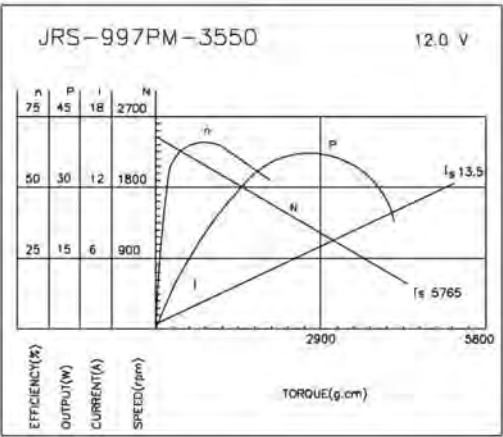
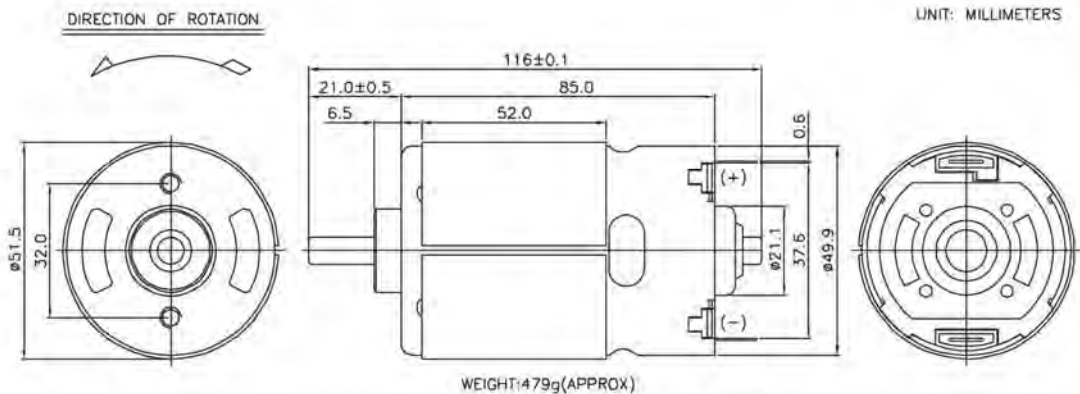
JRS-997PM SERIES

Carbon-Brush Motors

Typical Applications/In Automobile

- Air Pump/Windshield Wiper
- In Power Tools
- Drill
- In Home Appliance
- Door Opener

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY					STALL
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF	
			rpm	A	rpm	A	g.cm	W	%	
JRS-997PM-3550	10.0~30.0	12.0V CONSTANT	2450	0.40	2090	2.37	865	18.9	66.0	5765
JRS-997PM-3746	10.0~30.0	24.0V CONSTANT	5450	0.42	4740	2.91	1011	50.2	72.0	7776
JRS-997PM-6022	10.0~30.0	12.0V CONSTANT	5350	0.93	4550	5.48	918	43.7	67.0	6121
JRS-997PM-9008	10.0~30.0	12.0V CONSTANT	18300	4.27	15900	27.5	1330	221.7	67.0	10230



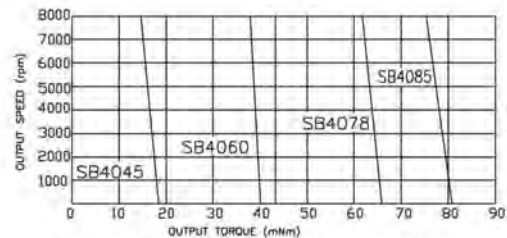
PMDC Brush Motor

SB40 Series

◆ GENERAL SPECIFICATIONS

Shaft run out	0.025mm
Max. axial static force for press-fit	150N
Operating range	Max. 1000m. above sea level Ambient temperature -20°C to +50°C
Insulation class	Class B
Dielectric strength	500VDC for one minute
Insulation resistance	100M Ω Min., 500VDC

SAFE OPERATION TORQUE CURVES



Please refer to these curves to select the motor frame size for your load.

A motor can operate continuously at any load point (torque & speed) on the left of the respective motor curve. The motors offer higher torque capabilities when mounted on a metal surface.

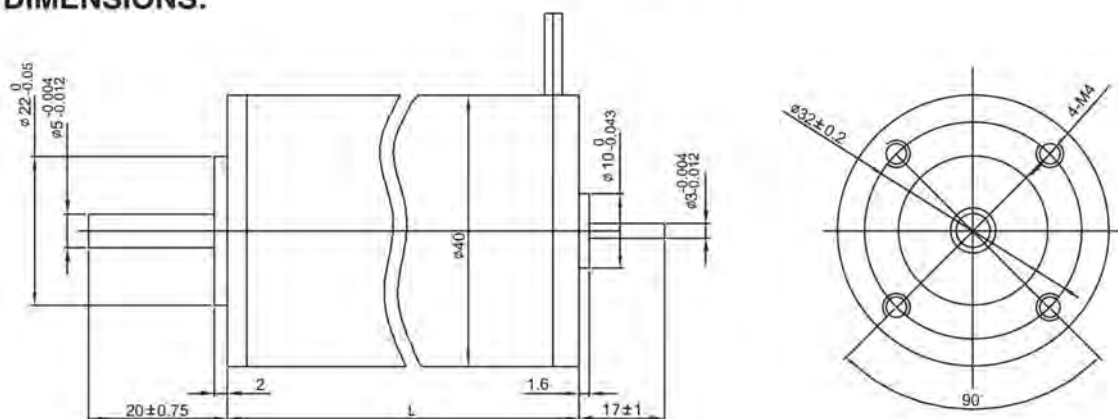
◆ ELECTRICAL SPECIFICATIONS

Model		SB4045			SB4060			SB4078			SB4085		
Rated torque ¹⁾	mNm		17			43			67			81	
Stall torque	mNm		100			300			440			560	
No-load speed	RPM		7000			6200			4900			5300	
Speed regulation constant	rpm/mNm		70			21			11			9	
Rotor inertia	Kgm ² × 10 ⁻⁷		18.8			41.7			72			84.7	
Mechanical time constant	ms		14			9			9			9	
Static friction torque	mNm		3.5			4.2			5.6			5.6	
Motor length L	mm		46.4			61			77.5			85.2	
Measuring voltage ²⁾	V	12	24	48	12	24	48	12	24	48	12	24	48
Torque constant	mNm/A	15.5	31.1	62.1	18.3	36.5	73	22.9	45.8	92.5	21.2	42.4	83.7
Back-EMF constant	V/krpm	1.6	3.3	6.5	1.9	3.8	7.6	2.4	4.8	9.7	2.2	4.4	8.8
Terminal resistance	ohms	1.9	7.4	29.2	0.8	3	11.5	0.7	2.5	9.7	0.6	1.9	7
Inductance	mH	1.2	4.6	18.6	0.6	2.5	10	0.7	2.6	10.7	0.5	2	7.7
Stall current	A	6.2	3.3	1.6	14.5	8.1	4.2	16.9	9.6	4.9	21.7	13.0	6.9
No-load current	A	0.32	0.16	0.08	0.33	0.16	0.08	0.33	0.16	0.08	0.36	0.18	0.09

1) Continuous torque rating at 3000rpm.

2) Other voltage rating available.

◆ DIMENSIONS:



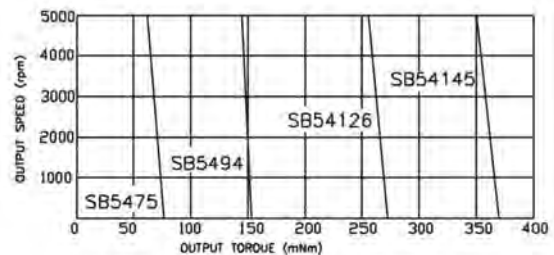
PMDC Brush Motor

SB54 Series

◆ GENERAL SPECIFICATIONS

Shaft run out	0.025mm
Max. axial static force for press-fit	150N
Operating range	Max. 1000m .above sea level Ambient temperature -20°C to +50°C
Insulation class	Class B
Dielectric strength	500VDC for one minute
Insulation resistance	100M Ω Min., 500VDC

SAFE OPERATION TORQUE CURVES



Please refer to these curves to select the motor frame size for your load

A motor can operate continuously at any load point (torque & speed) on the left of the respective motor curve. The motors offer higher torque capabilities when mounted on a metal surface.

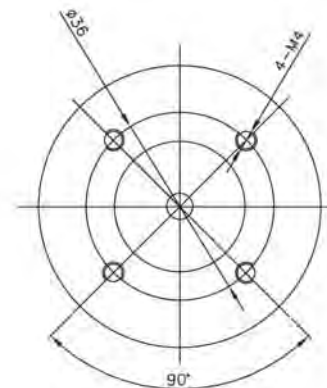
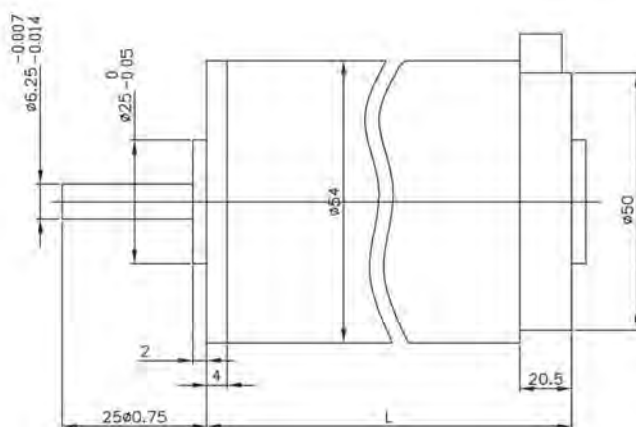
◆ ELECTRICAL SPECIFICATIONS

Model		SB5475				SB5494				SB54126				SB54145			
Rated torque ¹⁾	mNm		70			150				260				360			
Stall torque	mNm		450			1100				2000				2750			
No-load speed	RPM		4200			3500				4000				4000			
Speed regulation constant	rpm/mNm		9.3			3.2				2.0				1.5			
Rotor inertia	Kgm ² × 10 ⁻⁷		113			212				367				473			
Mechanical time constant	ms		11			7				6				5			
Static friction torque	mNm		9			11				15				16			
Motor length L	mm		75			94				126				145			
Measuring voltage ²⁾	V	12	24	48	12	24	48	12	24	48	12	24	48	12	24	48	
Torque constant	mNm/A	26.3	52.5	132.9	32.7	65.4	132.9	44.6	55.7	111.5	42.4	55.7	117.4				
Back-EMF constant	V/krpm	2.8	5.5	13.9	3.4	6.8	13.9	4.67	5.84	11.67	4.4	5.8	12.3				
Terminal resistance	ohms	0.7	2.8	5.5	0.4	1.4	5.5	0.35	0.39	2.06	0.2	0.4	2.7				
Inductance	mH	0.6	2.5	9.3	0.6	2.3	6.3	0.54	0.56	3.4	0.3	0.6	4.5				
Stall current	A	16.7	8.6	8.7	32.7	17.4	8.7	43.1	49.3	18.5	74.1	61.9	17.5				
No-load current	A	0.52	0.26	0.12	0.48	0.24	0.12	0.41	0.38	0.17	0.51	0.38	0.16				

1) Continuous torque rating at 3000rpm.

2) Other voltage rating available.

◆ DIMENSIONS:



Also Available

Please contact Motion Technologies for full catalogue.
Or download from www.motiontech.com.au

BLDC Motors

2-Quadrant Variable Speed Drives For BLDC Motors

• Specifications

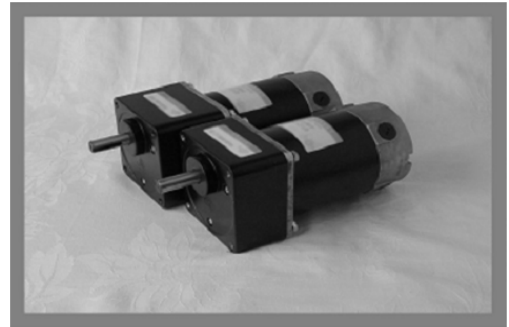
Specifications		Model													
		24ZWSK15	36ZWSK15	48ZWSK15	24ZWSK		36ZWSK		48ZWSK		48ZWSK50-B	24ZWSK		36ZWSK	
					20-B	30-B	20-B	30-B	20-B	30-B		05-S	10-S	05-S	10-S
Voltage	VDC	24 (30V max)	36 (45V max)	48 (56V max)	24 (30V max)		36 (45V max)		48 (56V max)		48 (56V max)	24 (30V max)		36 (45V max)	
Phase	A	3-Phase													
Peak Current	A	15	15	15	20	30	20	30	20	30	50	5	10	5	10
Continuous Current	A	7.5	7.5	7.5	10	15	10	15	10	15	25	2.5	5	2.5	5
Hall Sensor		3 hall sensors, 120deg(electrical) angle, 6.25V operation.													
Inner DC Line Fuse	A	15	15	15	N/A						5	10	5	10	
Speed raising time	S	0.5-10													
Input signals		5V TTL or 5V CMOS (6.25V max)													
Max Speed (SV=4V,SVgain=1)		1500rpm/3000rpm/6000rpm/12000rpm(optional)													
Speed Voltage (SV) gain		0-1.0 (Gain-1 @SV ADJ on the Right)													
Control mode		PI speed close-loop control													
Low Voltage Protection	V	16V	26V	36V	16V		26V		36V		16V	16V min		26V min	
Dimensions		161.5mmX81.2mmX24mmX31mm			161.5mmX82mmX24mmX45mm					221mmX82mmX45mm		105.5mmX64mmX24mm			
Chopping frequency	KHz	15													
Weight	Kg	0.3			0.4					0.5		0.2			



For information on any other MT products please contact us.



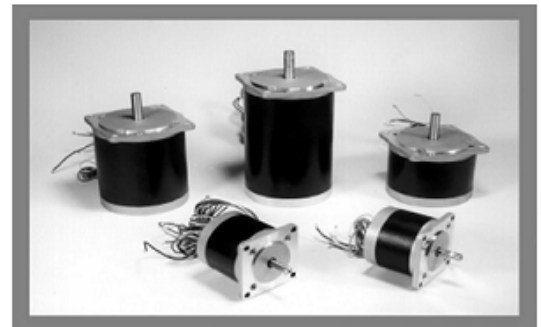
PMDC Brush Motors



Brush DC Gearmotors



AC Motors & Gearmotors



Stepper Motors



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