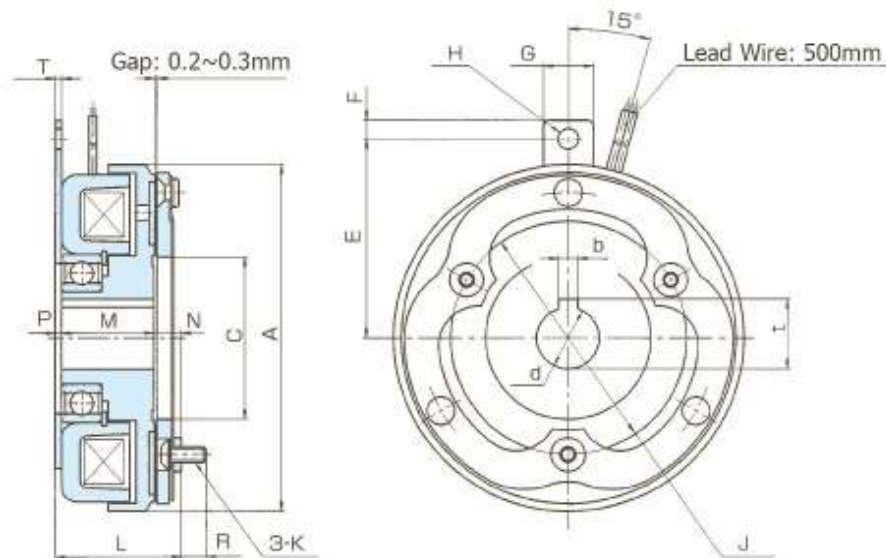


VCE / VCS

EM Clutch

Types: 0.6, 1.2, 2.5, 5, 10, 20

[EM: Electromagnet]



VCE / VCS Type		[Special] 0.6		[Special] 1.2		[Special] 2.5		[Special] 5		[Special] 10		[Special] 20	
		VCE	VCS ¹	VCE	VCS ¹	VCE	VCS ¹	VCE	VCS ¹	VCE	VCS ¹	VCE	VCS ¹
Static Torque [ft-lbs / N-m]		4.4 / 6		8.9 / 12		18 / 25		37 / 50		74 / 100		148 / 200	
Coil (20°C)	Voltage [DC-V]	24											
	Current [A]	0.5		0.65		0.92		1.41		1.6		2.2	
	Resistance [Ω]	48		37		26		17		15		10.9	
	Wattage [W]	12		15		22		33		38		53	
Armature	Pull-In Time [ms]	20		20		30		45		90		110	
	Release Time [ms]	20		30		50		70		85		95	
Torque Build-Up Time [ms]		50		50		70		85		130		155	
Max Allowable Speed [rpm]		7000		6000		5500		4500		3600		3000	
Moment of Inertia (J) [kg-cm ²]	Rotor	0.9	1	2.6	2.9	8.1	9.1	24.1	27	58	182		
	Armature	0.5	0.5	1.5	1.6	4.8	5.1	14.3	15.1	45	136		
Max Air Gap Until Adjustment [mm]		0.5		0.6		0.7		0.8		1.2		1.5	
Total Energy Until Adjustment [J]		2.9 x 10 ⁷		6.6 x 10 ⁷		13 x 10 ⁷		26 x 10 ⁷		62 x 10 ⁷		120 x 10 ⁷	
Total Energy Until Life [J]		13 x 10 ⁷		25 x 10 ⁷		49 x 10 ⁷		88 x 10 ⁷		170 x 10 ⁷		320 x 10 ⁷	
Bore [mm]	dH7	12		15		20		25		30		40	
Key Way [mm]	bJs9	4		5		6		8		8		12	
	t	13.8+0.15/-0		17.3+0.15/-0		22.8+0.15/-0		28.3+0.2/-0		33.3 +0.2/0		43.3 +0.2/0	
Dimensions [mm]	A	70		90		113		142		178		225	
	C	35		45		53		66		83		107	
	E	41		56		65		78		100		125	
	F	5		6		6		6		10		10	
	G	14		16		16		16		24		24	
	H	4.5		5.5		6.5		6.5		8.5		8.5	
	J	46		60		76		95		120		158	
	K	M3		M4		M5		M6		M8		M10	
	L	30	30.5	35.1	35.6	40.5	41.4	45.5	46.5	50.6	60.5		
	M	24		26.5		30		33.5		37.5		44	
	N	5.5	6	6.6	7.1	8.5	9.4	10	11	13.1	16.5		
	P	0.5		2		2		2		0		0	
	R	5.8	5.4	7	6.6	8.2	7.6	10.4	9.6	14	17.5		
T	1.6		2		2		2		2.9		2.9		
Weight [lbs / kg]		1.2 / 0.5		2.2 / 0.1		4.2 / 1.9		7.1 / 3.2		12.8 / 5.8		23.8 / 10.8	

[Included parts & accessories : bolts, washers, spacers, shims, surge protector]

[1 inch = 25.4 mm]

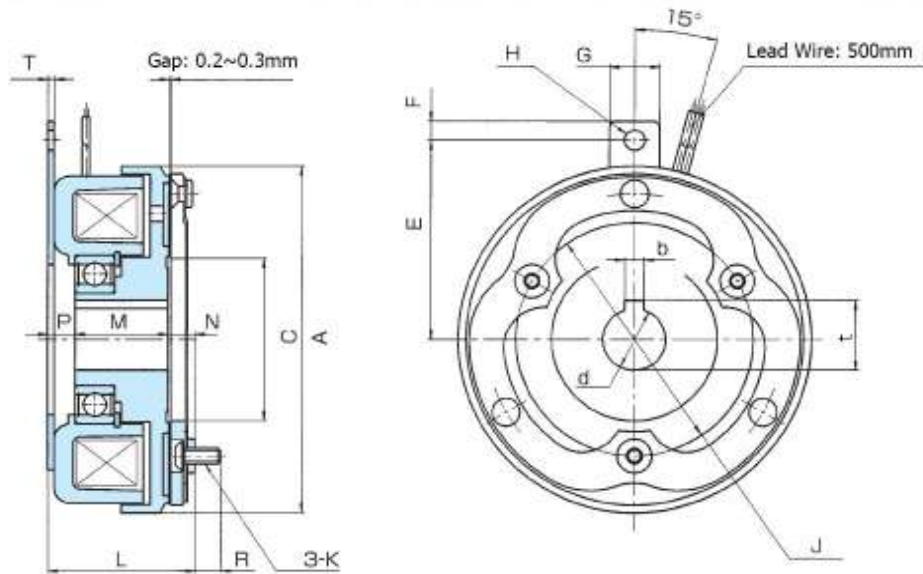
[Note 1 : Silent type]

VCEH / VCSH

EM Clutch (high torque design)

Types: 0.6, 1.2, 2.5, 5

[EM: Electromagnet]



[Special Order]

VCEH / VCSH		0.6		1.2		2.5		5	
Type		VCEH	VCSH ¹	VCEH	VCSH ¹	VCEH	VCSH ¹	VCEH	VCSH ¹
Static Torque [ft-lbs / N-m]		5.2 / 7		11 / 15		22 / 30		44 / 60	
Coil (20°C)	Voltage [DC-V]	24							
	Current [A]	0.59		0.69		1.04		1.41	
	Resistance [Ω]	41		35		23		17	
	Wattage [W]	14		17		25		33	
Armature	Pull-In Time [ms]	15		15		25		40	
	Release Time [ms]	25		35		55		75	
Torque Build-Up Time [ms]		45		45		65		80	
Max Allowable Speed [rpm]		7000		6000		5500		4500	
Moment of Inertia (J) [kg-cm ²]	Rotor	0.9	1	2.6	2.9	8.1	9.1	24.1	27
	Armature	0.5	0.5	1.5	1.6	4.8	5.1	14.3	15.1
Max Air Gap Until Adjustment [mm]		0.5		0.6		0.7		0.8	
Total Energy Until Adjustment [J]		2.9 × 10 ⁷		6.6 × 10 ⁷		13 × 10 ⁷		26 × 10 ⁷	
Total Energy Until Life [J]		13 × 10 ⁷		25 × 10 ⁷		49 × 10 ⁷		88 × 10 ⁷	
Bore [mm]	dH7	12		15		20		25	
Key Way [mm]	bJs9	4		5		6		8	
	t	13.8+0.15/-0		17.3+0.15/-0		22.8+0.15/-0		28.3+0.2/-0	
Dimensions [mm]	A	70		90		113		142	
	C	35		45		53		66	
	E	41		56		65		78	
	F	5		6		6		6	
	G	14		16		16		16	
	H	4.5		5.5		6.5		6.5	
	J	46		60		76		95	
	K	M3		M4		M5		M6	
	L	37	37.5	41.1	41.6	47	47.9	50	51
	M	24		26.5		30		33.5	
	N	5.5	6	6.6	7.1	8.5	9.4	10	11
	P	7.5		8		8.5		6.5	
	R	5.8	5.4	7	6.6	8.2	7.6	10.4	9.6
T	1.6		2		2		2		
Weight [lbs / kg]		1.3 / 0.6		2.4 / 1.1		4.9 / 2.2		7.9 / 3.6	

[Included parts & accessories : bolts, washers, spacers, shims, surge protector]

[1 inch = 25.4 mm]

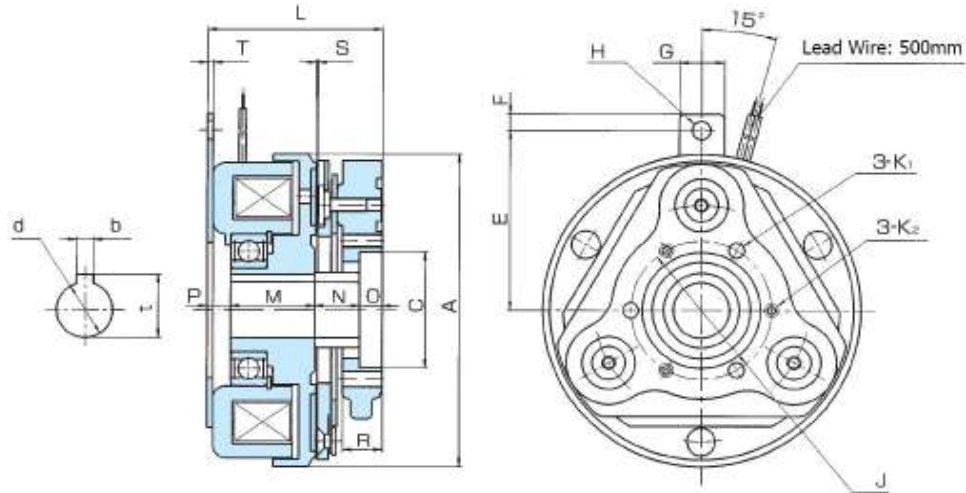
[Note 1 : Silent type]

VCEHA / VCSHA

Self-Adjusting EM Clutch

Types: 1.2, 2.5, 5

[EM: Electromagnet]



VCEHA / VCSHA		[Special] 1.2		[Special] 2.5		[Special] 5	
		VCEHA	VCSHA ¹	VCEHA	VCSHA ¹	VCEHA	VCSHA ¹
Type							
Static Torque [ft-lbs / N-m]		8.9 / 12		18 / 25		37 / 50	
Coil (20°C)	Voltage [DC-V]			24			
	Current [A]	0.69		1.04		1.41	
	Resistance [Ω]	35		23		17	
	Wattage [W]	17		25		33	
Armature	Pull-In Time [ms]	30		40		70	
	Release Time [ms]	40		60		70	
Torque Build-Up Time [ms]		60		80		120	
Max Allowable Speed [rpm]		5500		5000		4000	
Moment of Inertia (J) [kg-cm ²]	Rotor	2.6	2.9	8.1	9.1	24.1	27
	Armature	4.5	4.5	11.5	11.5	34.7	34.7
Total Energy Until Life [J]		13 x 10 ⁷		25 x 10 ⁷		49 x 10 ⁷	
Bore [mm]	dH7	15		20		25	
Key Way [mm]	bJ9	5		6		8	
	t	17.3+0.15/-0		22.8+0.15/-0		28.3+0.2/-0	
	A	90		113		142	
Dimensions [mm]	CH7	32		42		52	
	E	56		65		78	
	F	6		6		6	
	G	16		16		16	
	H	5.5		6.5		6.5	
	J	40		50		62	
	K1	4.5		5.5		6.6	
	K2	M4		M5		M6	
	L	57	58	62.5	63.5	72	73
	M	26.5		30		33.5	
	N	16.5	17.5	16	17	22	23
	O	6		8		10	
	P	8		8.5		6.5	
	R	13.5		14		20	
	S	0.4		0.4		0.5	
	T	2		2		2	
Recommended Hub Bearing		6002ZZ		6004ZZ		6205ZZ	
Weight [lbs / kg]		3.1 / 1.4		5.7 / 2.6		10 / 4.5	

[Included parts & accessories : surge protector]

[1 inch = 25.4 mm]

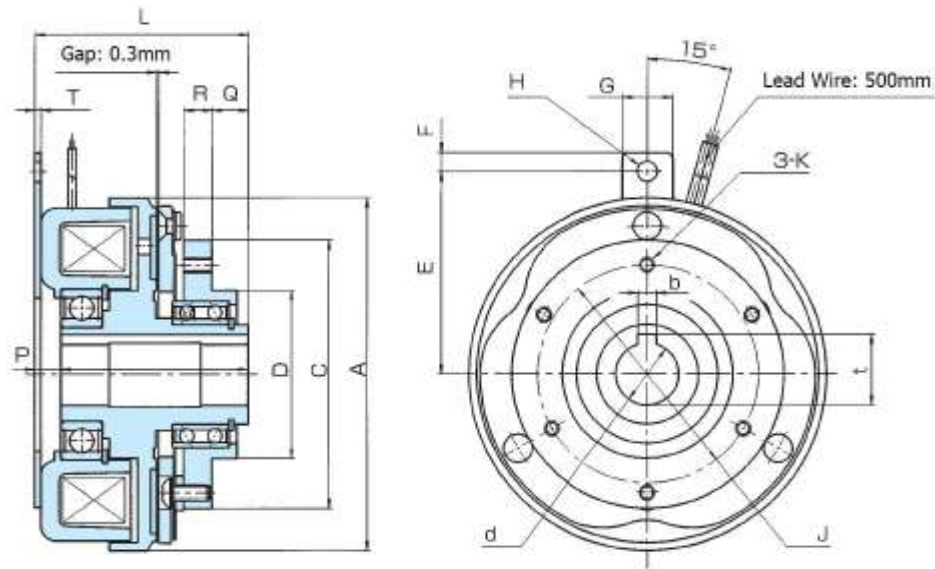
[Note 1 : Silent type]

VCEH-P / VCSH-P

EM Clutch (one piece high torque design)

Types: 1.2, 2.5, 5

[EM: Electromagnet]



[Special Order]

VCEH-P / VCSH-P		1.2P		2.5P		5P	
Type		VCEH	VCSH ¹	VCEH	VCSH ¹	VCEH	VCSH ¹
Static Torque [ft-lbs / N-m]		11 / 15		22 / 30		44 / 60	
Coil (20°C)	Voltage [DC-V]	24					
	Current [A]	0.69		1.04		1.41	
	Resistance [Ω]	35		23		17	
	Wattage [W]	17		25		33	
Armature	Pull-In Time [ms]	15		25		40	
	Release Time [ms]	35		55		75	
Torque Build-Up Time [ms]		45		65		80	
Max Allowable Speed [rpm]		6000		5500		4500	
Moment of Inertia (J) [kg-cm ²]	Rotor	3	3.3	8.4	9.4	25.4	28.2
	Armature	3.8	3.9	8.6	9	26	26.8
Total Energy Until Life [J]		13 x 10 ⁷		25 x 10 ⁷		49 x 10 ⁷	
Bore [mm]	dH7	15		20		25	
Key Way [mm]	bJs9	5		6		8	
	t	17.3+0.15/-0		22.8+0.15/-0		28.3+0.2/-0	
Dimensions [mm]	A	90		113		142	
	Ch8	76		86		106	
	Dh8	54		54		72	
	E	56		65		78	
	F	6		6		6	
	G	16		16		16	
	H	5.5		6.5		6.5	
	J	66		70		90	
	K	M4		M5		M6	
	L	64		67.5		76.5	
	M	56		59		70	
	P	8		8.5		6.5	
	Q	15	14.5	11.5	10.6	15.5	14.5
R	7.9		9		11		
T	2		2		2		
Weight [lbs / kg]		3.7 / 1.7		6.2 / 2.8		11 / 5	

[Included parts & accessories : surge protector]

[1 inch = 25.4 mm]

[Note 1 : Silent type]

VC: TYPICAL INSTALLATION

Standard Type

Armature mounting
Use included bolts and spacers
Prevent loosening of bolts

Mounting surface perpendicularity
MAX 0.1mm TIR

Pulley
Customer Supplied

Shaft
Eliminate axial play

Use 2 ball bearings
Avoid impact/shock
Customer Supplied

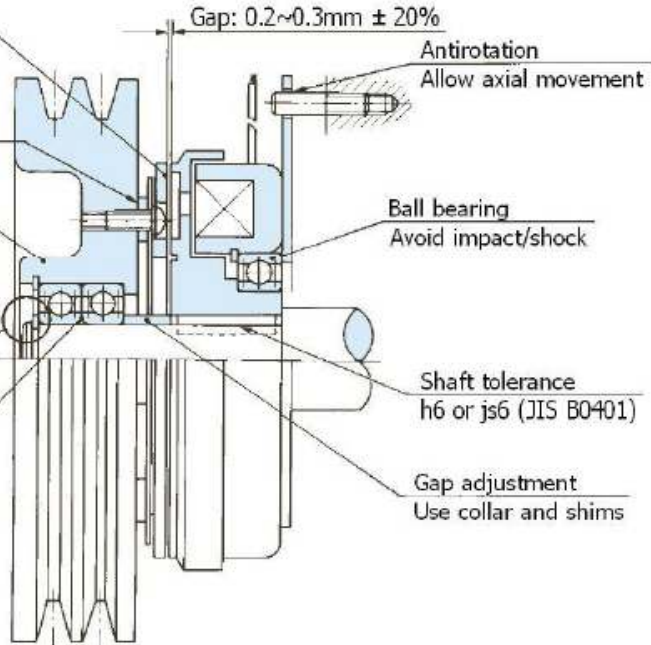
Gap: $0.2 \sim 0.3 \text{mm} \pm 20\%$

Antirotation
Allow axial movement

Ball bearing
Avoid impact/shock

Shaft tolerance
h6 or js6 (JIS B0401)

Gap adjustment
Use collar and shims



Auto Adjust Type (output bearings and pulley or sprocket supplied by customer)

Bolts
Prevent loosening

Mounting surface perpendicularity
MAX 0.1mm TIR

Bearing fit
Depth tolerance: $+0.05 \text{mm}$
0

Use 2 ball bearings
Avoid impact/shock
Customer supplied

Gap adjustment
Use collar and shims

Gap: S

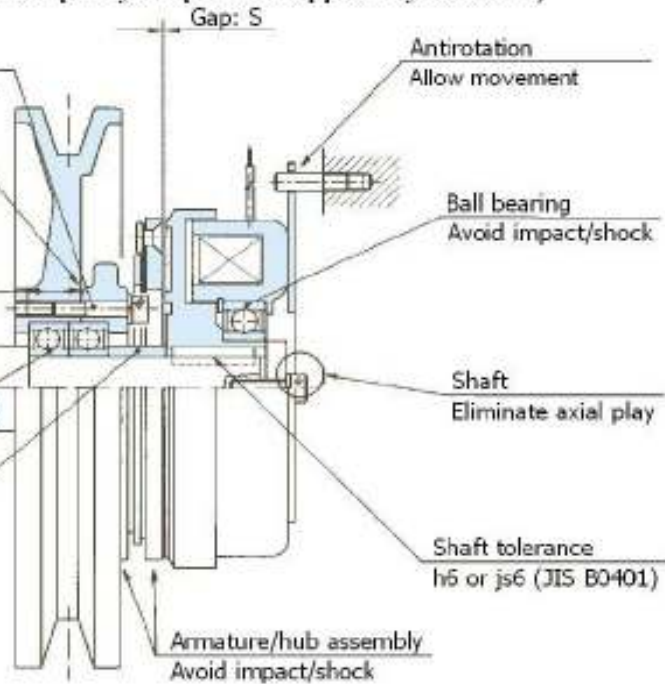
Antirotation
Allow movement

Ball bearing
Avoid impact/shock

Shaft
Eliminate axial play

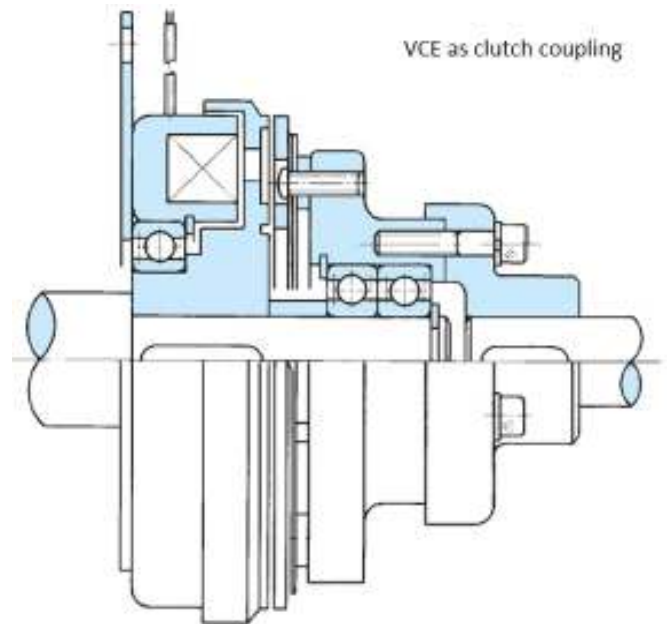
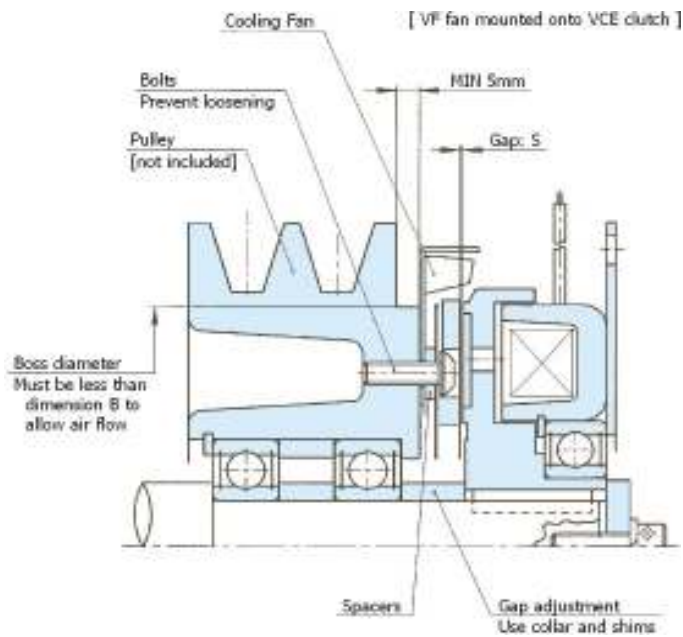
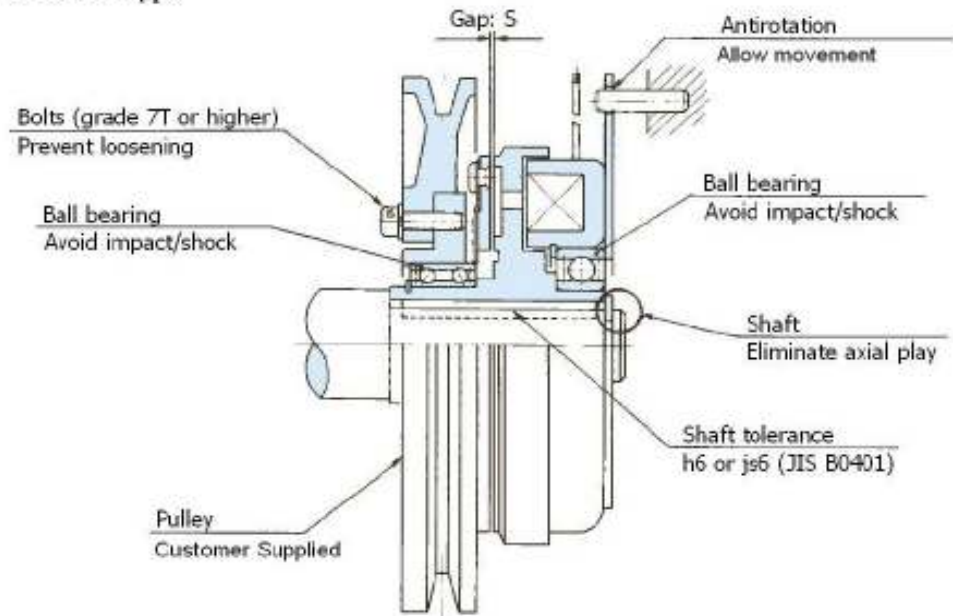
Shaft tolerance
h5 or js6 (JIS B0401)

Armature/hub assembly
Avoid impact/shock

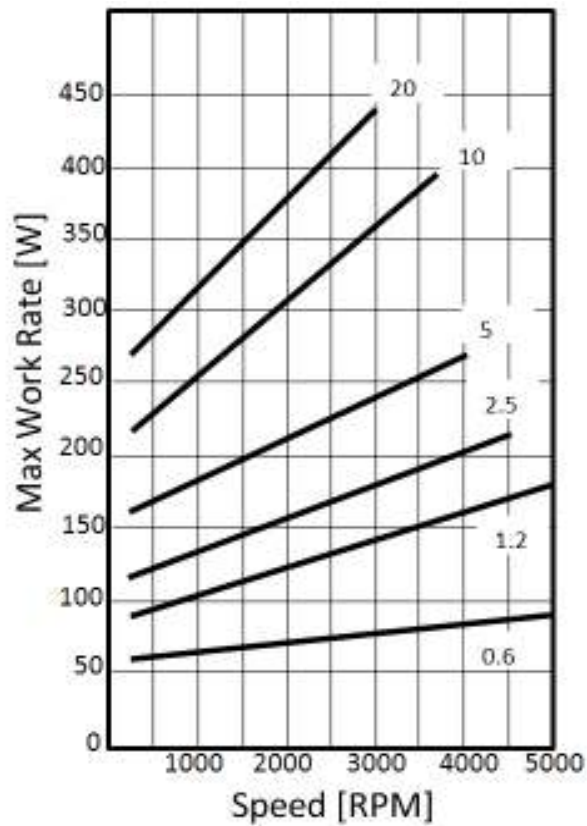
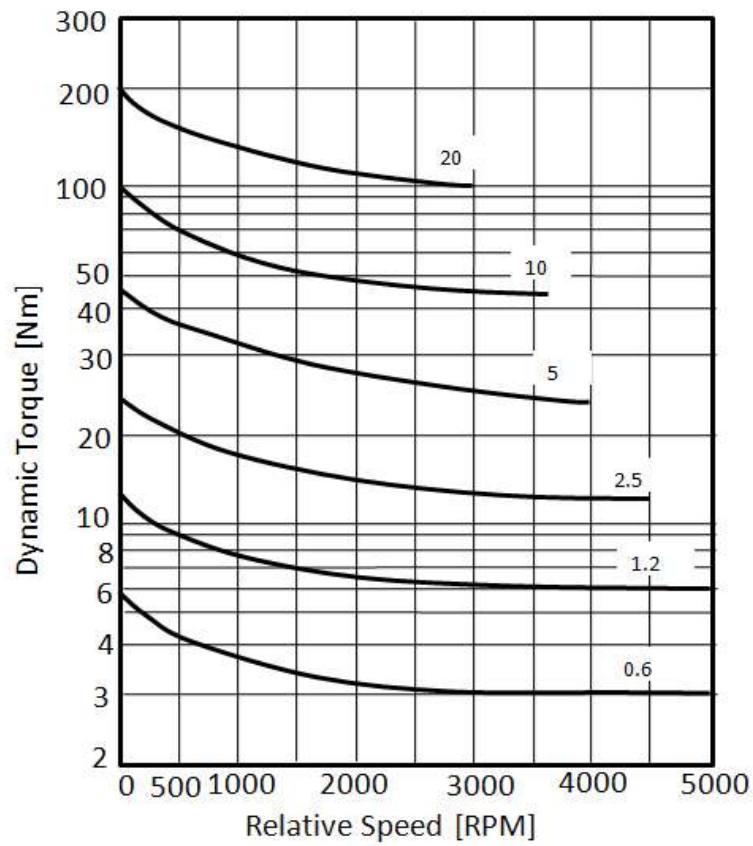


VC: TYPICAL INSTALLATION

One Piece Type



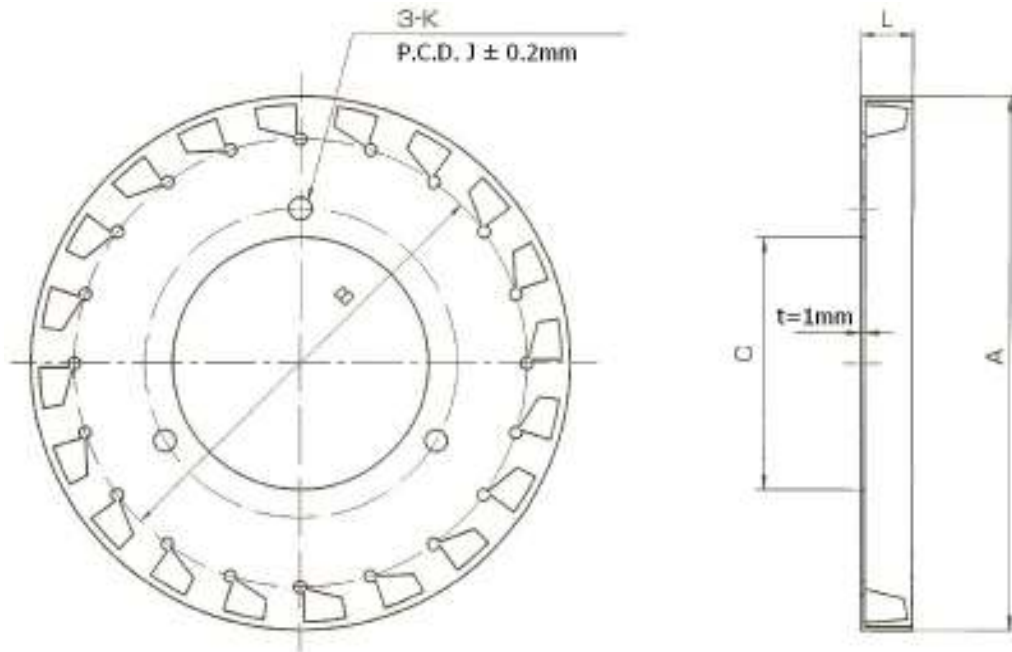
VC: TORQUE CHARACTERISTIC & MAX WORK RATE



VF

Cooling Fan for V-Series Units

Types: 1.2, 2.5, 5



VF		1.2	2.5	5	
Max Allowable Speed [rpm]		2000	2000	2000	
Dimensions [mm]	A	108	131	164	
	B	88	110	138	
	C	50	62	76	
	K	4.5	5.5	6.5	
	J	60	76	95	
	L	11	13	16	
Applicable Units		VCE(H)	VCS(H)	VBE(H)	VBS(H)
Optional Units ¹		VCE(H)-P	VCS(H)-P	VCEHA	VCSHA
		VBE(H)-P	VBS(H)-P	VBEHA	VBSHA

[Note 1 : Available as factory-mounted only]

[1 inch = 25.4 mm]