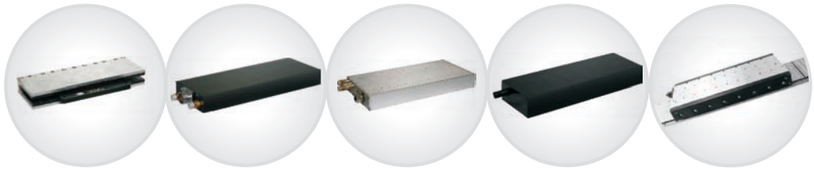
E-MOTION

CYCLONE

Professional Direct Drive System Supplier

Linear Motor



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Cyclone DDL motors

Cyclone Synchronous Linear Motor (CSLM) Technology

Being a leader in linear motor design and manufacturing, E-Motion provides industry with the widest range of linear motors. Linear motors eliminate mechanical transmission devices, such as lead screw nut institutions, gear rack agencies, belt-driven structures, etc. The adoption of direct drive technology greatly helps to optimize precision, speed, acceleration, stability and efficiency, while substantially prolonging product life.

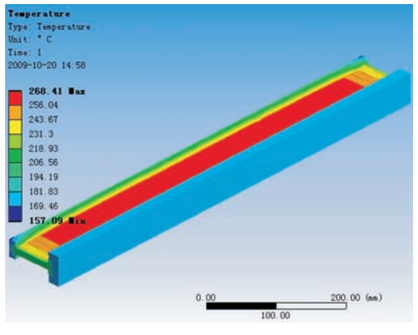
Cyclone linear motors adopt direct drive and are available in two different configurations – “U- type” and “Flat-type” versions, U-type Synchronous Linear motor (CSLU) and Flat-type Synchronous Linear motor (CSLF) , which are used in thousands of successful applications worldwide.

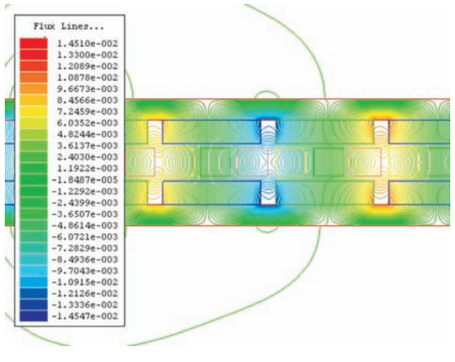
U-type Ironless Synchronous Linear Motor (CSLU Series)

CSLU series linear motors eliminate ripple force and electromagnetic attraction to allow for extremely smooth motion and very tight velocity and position control. These linear motors are ideal for any application that requires low load, high acceleration and high accuracy. They are widely applied in semiconductor, Flat-Panel Display (FPD), printing, medical treatment equipment, machine vision inspection equipment, surface mounting for electronic parts, PCB detection equipment, textile machinery, and in many other industrial automation applications.

Features

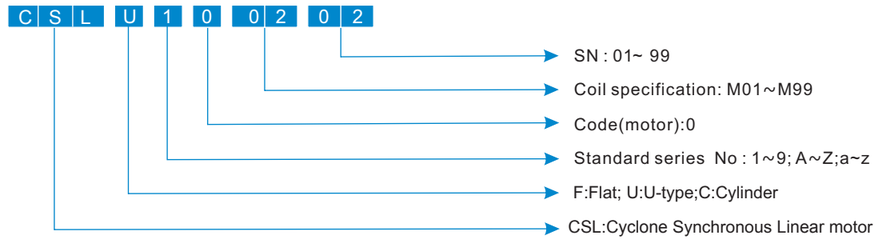
- Ironless Design
- Zero cogging
- Patented technology
- Compact structure
- High continuous force and peak force





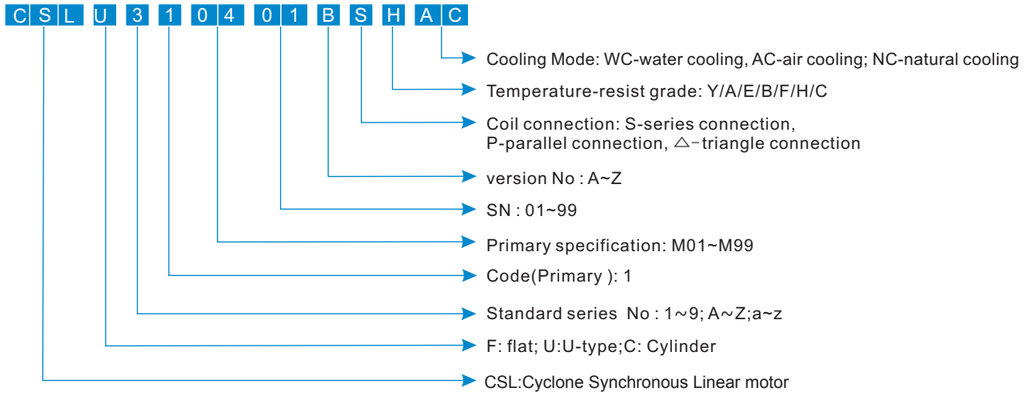
CSLU Series Part Numbers

Example Part Number: CSLU100202



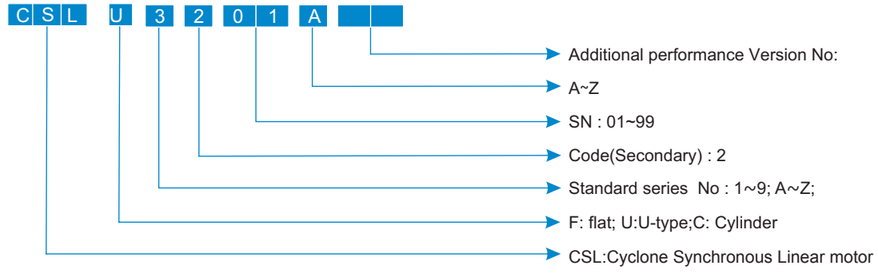
Part Number for Primary

Example Part Number: CSLU310401B-S-H-AC



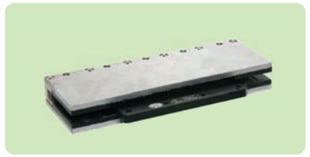
Part Number for Secondary

Example Part Number: CSLU3201A



CSLU 1 Series

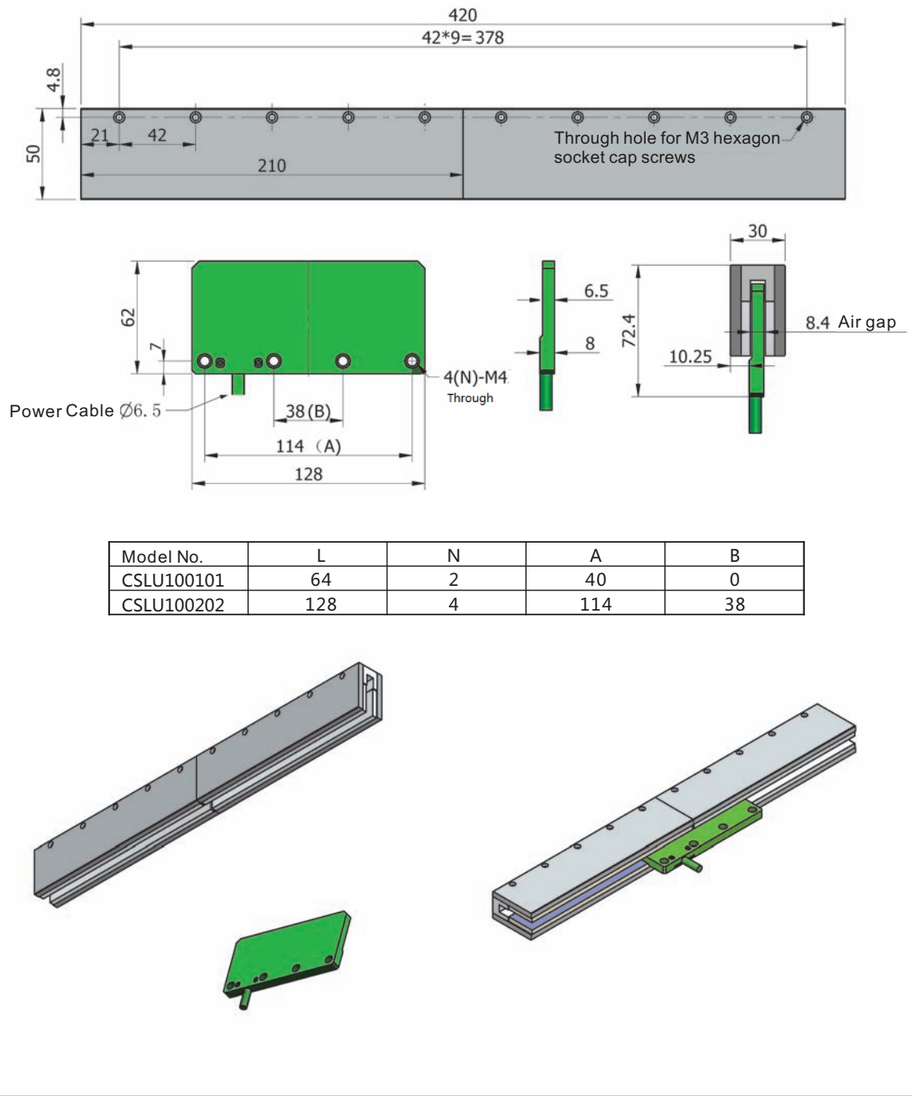
- Smooth motion
- Low inertia, high acceleration
- Strong overload capacity
- Zero cogging and no electromagnetic attraction
- Modular design



CSLU 1 Series (Coreless, Without Cooling)

RATED PERFORMANCE				
Motor Model NO	SYMBOL	UNITS	CSLU100101	CSLU100202
Continuous Force	Fc	N	20	40
Peak Force	Fp	N	120	220
Motor Constant	Km	N/√W	4.58	6.48
Max. Continuous Power Dissipation	Pc	W	19	38
ELECTRICAL SPECIFICATION				
Continuous Current	Ic	Arms	2	2
Peak Current (1s)	Ip	Arms	15	13
Force Constant（25 ℃±10% ）	Kf	N/Arms	10	20
Back EMF Constant （25 ℃±10% ）	Ke	Vrms/m/s	3.6	6.9
Electrical Resistance (25 ℃±10%)	R	Ω	2.6	5
Electrical inductance (±20%) p-p	L	mH	0.84	1.68
Max Coil Temperature	Tmax	℃	120	120
Insulation Class	-	-	C	C
MECHANICAL SPECIFICATION				
Polar Distance	τ	mm	15	15
Electromagnetic Attraction	Fa	kN	0	0
Mover Mass	Mc	kg	0.19	0.31
Primary Type	-	-	CSLU110101A-S-H-NC	CSLU110202A-S-H-NC
Secondary Type	-	-	CSLU1204B	CSLU1204B

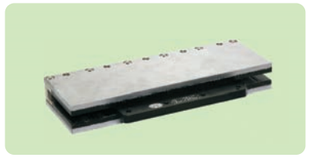
CSLU 1 series Dimension Drawing:



Model No.	L	N	A	B
CSLU100101	64	2	40	0
CSLU100202	128	4	114	38

CSLU 2 Series

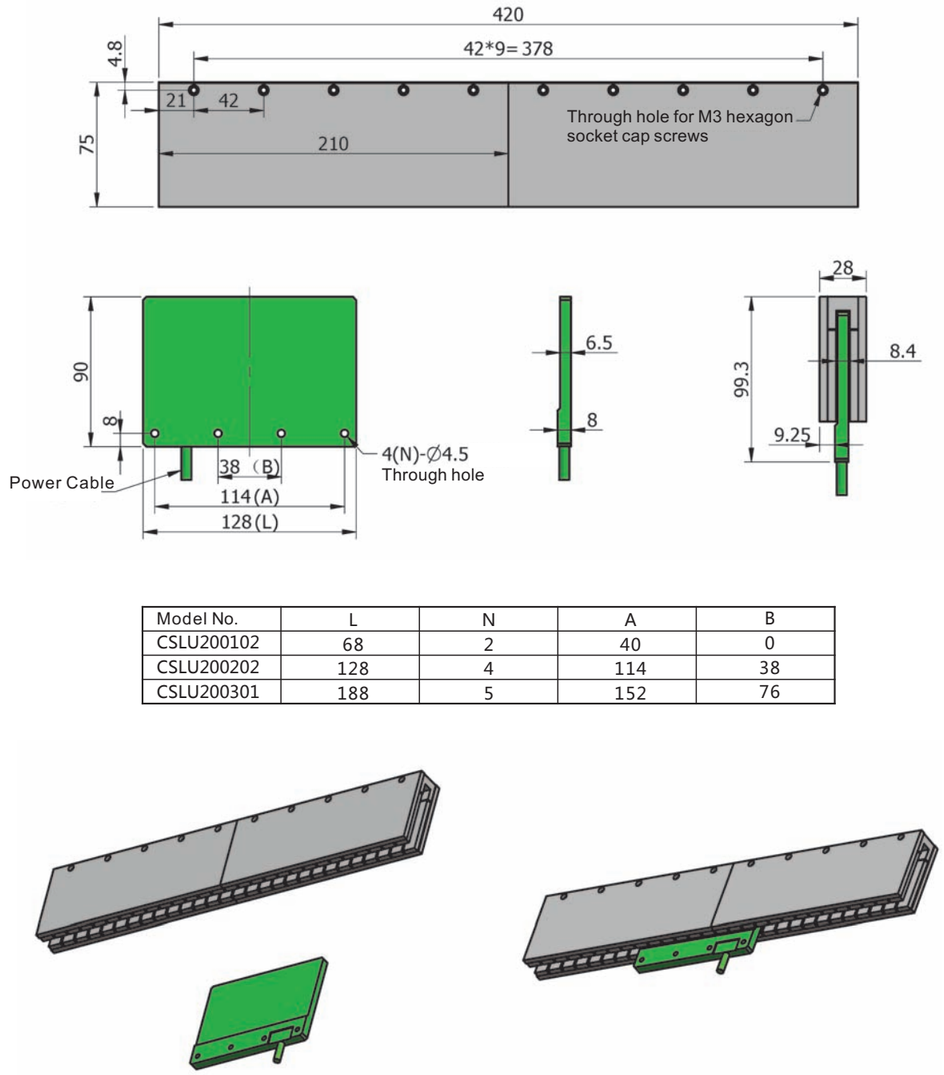
- Smooth motion
- Low inertia, high acceleration
- Strong overload capacity
- Zero cogging and no electromagnetic attraction
- Modular design



CSLU 2 Series (Coreless, Without Cooling)

RATED PERFORMANCE					
Model NO	SYMBOL	UNITS	CSLU200102	CSLU200202	CSLU200301
Continuous Force	Fc	N	36	72	120
Peak Force	Fp	N	164	308	586
Motor Constant	Km	N/√W	6.91	9.77	12.38
Max. Continuous Power Dissipation	Pc	W	27	54	94
ELECTRICAL SPECIFICATION					
Continuous Current	Ic	Arms	2.5	2.5	4
Peak Current (1s)	Ip	Arms	10	10	20
Force Constant（25 ℃±10% ）	Kf	N/Arms	14	29	30
Back EMF Constant （25 ℃±10% ）	Ke	Vrms/m/s	4.9	9.9	10.3
Electrical Resistance (25 ℃±10%) p-p	R	Ω	2.6	4.46	3.22
Electrical inductance (±20%) p-p	L	mH	1.86	1.8	3.8
Max Coil Temperature	Tmax	℃	120	120	120
Insulation Class	-	-	C	C	C
MECHANICAL SPECIFICATION					
Polar Distance	τ	mm	15	15	15
Electromagnetic Attraction	Fa	kN	0	0	0
Mover Mass	Mc	kg	0.25	0.35	0.41
Primary Type			CSLU210102 A-S-H-NC	CSLU210202 B-S-H-NC	CSLU210301 A-S-H-NC
Secondary Type			CSLU2201B	LCSLU2201B	CSLU2201B

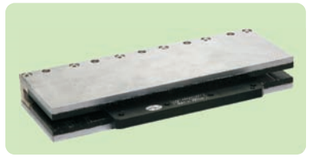
CSLU 2 series Dimension Drawing:



Model No.	L	N	A	B
CSLU200102	68	2	40	0
CSLU200202	128	4	114	38
CSLU200301	188	5	152	76

CSLU 3 Series

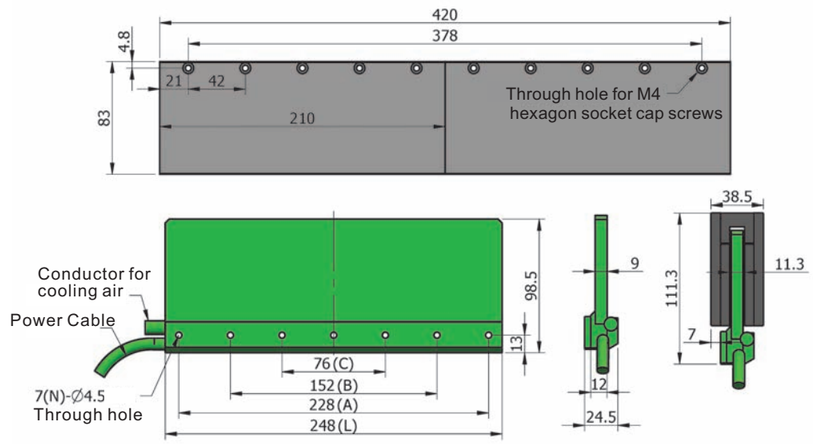
- Smooth motion
- Low inertia, high acceleration
- Strong overload capacity
- Zero cogging and no electromagnetic attraction
- Modular design



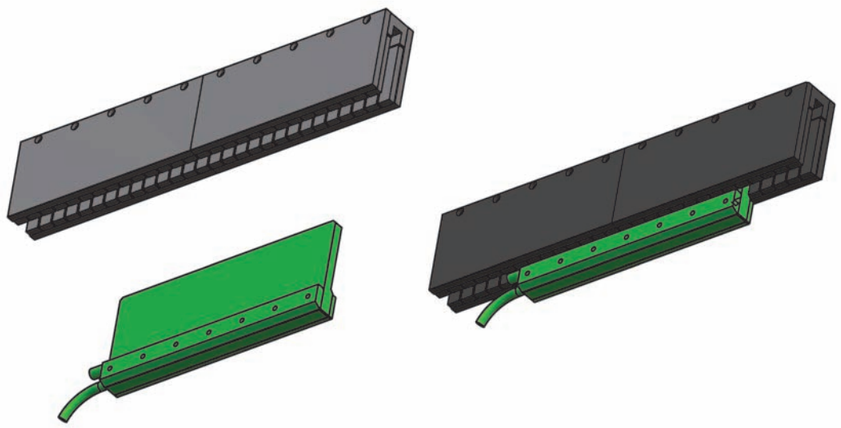
CSLU 3 Series (Coreless, Air Cooling)

RATED PERFORMANCE										
MODEL NO	SYMBOL	UNITS	CSLU300101		CSLU300201		CSLU300301		CSLU300401	
Continuous Force(0.4MPa)	Fca	N	73		148		221		294	
Continuous Force(Without cooling)	Fc	N	49		98		147		196	
Peak Force	Fp	N	316		610		888		1226	
Winding Codes	-	-	A	B	A	B	A	B	A	B
Motor Constant	Km	N/√W	6.52	6.26	9.47	8.77	11.50	10.71	13.30	12.35
Max Continuous Power Dissipation	Pc	W	125	136	244	285	370	426	489	567
ELECTRICAL SPECIFICATION										
Continuous Force(0.4MPa)	Ica	Arms	12	3.5	12	3.5	12	3.5	12	3.5
Continuous Force(Without cooling)	Ic	Arms	8	2.3	8	2.3	8	2.3	8	2.3
Peak Current	Ip	Arms	48	14.0	48	14.0	48	14.0	48	14.0
Force Constant	Kf	N/Arms	6.1	21.0	12.3	42.0	18.4	63.1	24.5	84.1
Back EMF Constant	Ke	Vrms/m/s	2.4	7.3	4.1	14	6.1	21.0	8.2	28.0
Electrical Resistance (25 ℃)p-p	R	Ω	0.42	5.4	0.82	11.2	1.24	16.8	1.64	11.2
Electrical inductance (±20%) p-p	L	mH	0.26	3.0	0.50	6.0	0.76	8.8	1.0	11.8
Max Coil Temperature	Tmax	℃	120		120		120		120	
Insulation Class	-	-	C		C		C		C	
MECHANICAL SPECIFICATION										
Polar Distance	τ	mm	15		15		15		15	
Electromagnetic Attractions Force	Fa	kN	0		0		0		0	
Mover Mass	Mc	kg	0.23		0.45		0.68		0.9	
Primary Specification(CSLU310-XXX-X-S-H-AC)			101A	101B	201A	201B	301A	301B	401A	401B
Secondary Specification			CSLU3201A		CSLU3201A		CSLU3201A		CSLU3201A	

CSLU 3 Series Dimension Drawing:

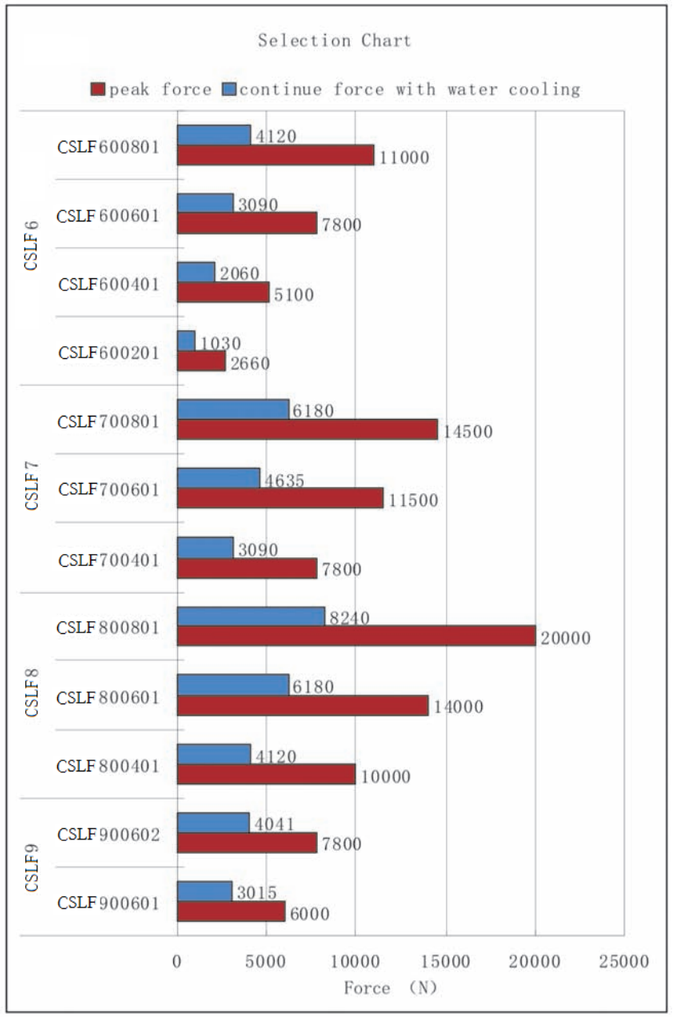


Model No.	L	N	A	B	C
CSLU300101	68	2	40	0	0
CSLU300201	128	4	114	38	0
CSLU300301	188	5	152	76	38
CSLU300401	248	7	228	152	76



Flat-Type Linear Synchronous Motor (CSLF Series)

CSLF Series consist of a low profile, low-cost forcer and rare-earth magnet track. They are designed for unlimited travel stroke positioning applications with high thrust , high speed and acceleration, with optimal static and dynamic performance. The motors are designed to integrate easily with equipment, providing closed–loop servo with a high degree of positioning accuracy and repeatability.



Features :

- Modular design
- Compact structure
- Low cogging
- Low thermal effect
- Iron core technology
- High thrust force
- Optional Hall sensor

CSLF Series Part Numbers

Example Part Number: CSLF500401

C S L F 5 0 0 4 0 1

- SN : 01~ 99
- Coil specification: M01~M99
- Code(motor):0
- Standard series No : 1~9; A~Z;a~z
- F:Flat; U:U-type;C:Cylinder
- CSL: Cyclone Synchronous Linear motor

Part Number for Primary

Example Part Number: CSLF710603F-P-H-NC

C S L F 7 1 0 6 0 3 F P H N C

- Cooling Mode: WC-water cooling, AC-air cooling; NC-natura Coolingl
- Temperature-resist grade: Y/A/E/B/F/H/C
- Coil connection: S-series connection, P-parallel connection, △-triangle connection
- version No : A~Z
- SN : 01~99
- Primary specification: M01~M99
- Code(Primary): 1
- Standard series No : 1~9; A~Z;a~z
- F: Flat; U:U-type;C: Cylinder
- CSL: Cyclone Synchronous Linear motor

Part Number for Secondary

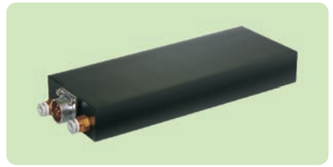
Example Part Number: CSLF5201A

C S L F 5 2 0 1 A

- Additional performance
- Version No: A~Z
- SN : 01~99
- Code(Secondary) : 2
- Standard series No : 1~9; A~Z;
- F: Flat; U:U-type;C: Cylinder
- CSL: Cyclone Synchronous Linear motor

CSLF 1 Series

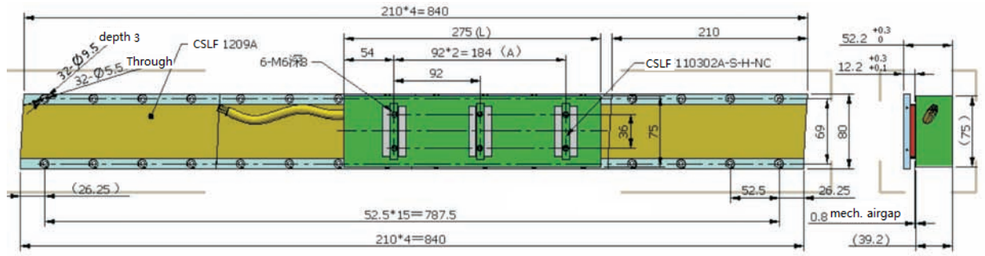
- High thrust
- High acceleration
- Reduced cogging
- Efficient liquid cooling
- Built-in overheat protection
- Modular design



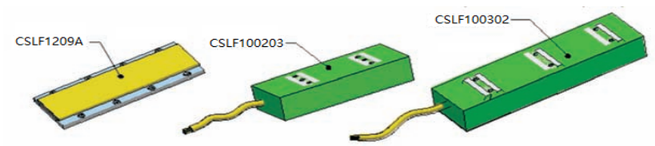
LSMF 1 Series (Iron Core, Natural Cooling (NC)

RATED PERFORMANCE				
Model NO	SYMBOL	UNITS	CSLF100203	CSLF100302
Continuous Force	Fc	N	230	340
Peak Force	Fp	N	460	680
Motor Constant	Km	N/√W	27	32.8
Max. Continuous Power Dissipation	Pc	W	65	100
ELECTRICAL SPECIFICATION				
Continuous Current	Ic	Arms	3.2	3.2
Peak Current (1s)	Ip	Arms	6.4	6.4
Force Constant（25℃±10%)	Kf	N/A	71	107
Back EMF Constant (25 ℃±10%)	Ke	V/m/s	24	36
Electrical Resistance (25 ℃±10%) p-p	R	Ω	4.7	7
Electrical inductance (±20%) p-p	L	mH	20	30
Max Coil Temperature	Tmax	℃	120	120
MECHANICAL SPECIFICATION				
Polar Distance	τ	mm	21	21
Electromagnetic Attraction	Fa	kN	1.4	2
Mover Mass	Mc	kg	3.1	4.4
Primary Type			CSLF110203A-S-H-NC	CSLF110302A-S-H-NC
Secondary Type			CSLF1209A	CSLF1209A

CSLF 1 Series Dimension Drawing:

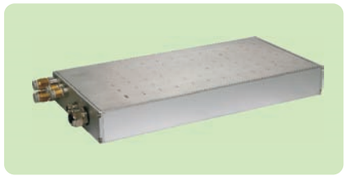


Model No.	CSLF100203	CSLF100302
L	191	275
A	92	184



CSLF 5 Series

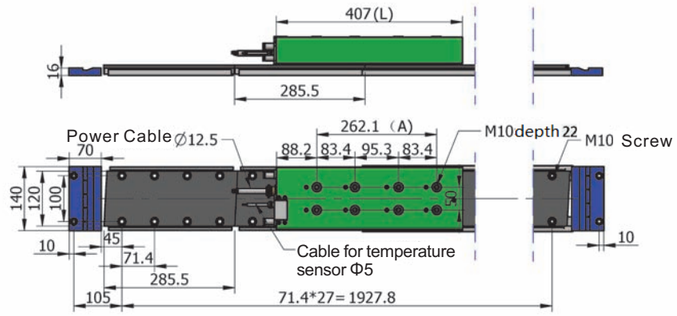
- High thrust
- High acceleration
- Reduced cogging
- Efficient liquid cooling
- Built-in overheat protection
- Modular design



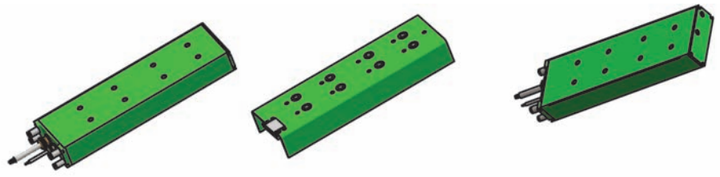
CSLF 5 Series (Iron Core, Water Cooling (WC)

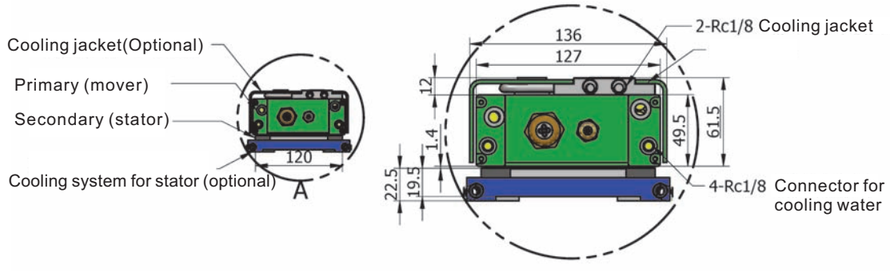
RATED PERFORMANCE				
Model NO	SYMBOL	UNITS	CSLF 500201	CSLF 500401
Continuous Force	Fc	N	520	1040
Peak Force	Fp	N	1200	2500
Motor Constant	Km	N/√W	30.8	43.5
Max. Continuous Power Dissipation	Pc	W	286	571
ELECTRICAL SPECIFICATION				
Continuous Current	Ic	Arms	10	10
Peak Current (1s)	Ip	Arms	25	25
Force Constant（25℃±10%)	Kf	N/Arms	52	104
Back EMF Constant (25 ℃±10%)	Ke	Vrms/m/s	17.3	34.7
Electrical Resistance (25 ℃±10%)	R	Ω	1.4	2.8
Electrical inductance (±20%) p-p	L	mH	16	32
Max Coil Temperature	Tmax	℃	120	120
MECHANICAL SPECIFICATION				
Polar Distance	τ	mm	23.8	23.8
Min. water flow	Wmin	L/min	4	4.5
Temperature rise of the cooling water	ΔT	℃	2.1	3.6
Pressure Drop(Primary in series)	ΔP	Bar	0.2	0.7
Electromagnetic Attraction Force	Fa	kN	2.5	5
Mover Mass	Mc	kg	8	14.5
Stator Mass	Ms	Kg/m	23.5	23.5
Primary Type			CSLF510201A-S-H-WC	CSLF510401A-S-H-WC
Secondary Type			CSLF5201A	CSLF5201A

CSLF 5 Series Dimension Drawing:



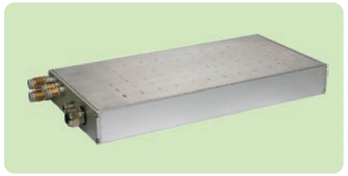
Model No.	CSLF500201	CSLF500401
L	229	407
A	83.4	262.1





CSLF 6 Series

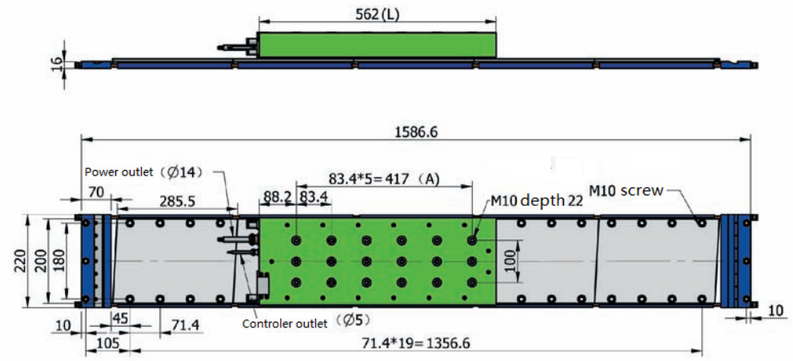
- High thrust
- High acceleration
- Reduced cogging
- Efficient liquid cooling
- Built-in overheat protection
- Modular design



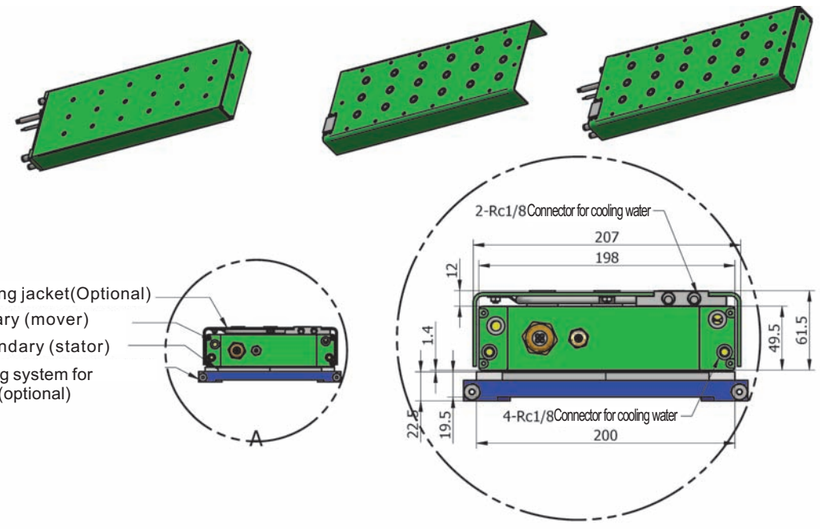
CSLF 6 Series (Iron Core, Water Cooling (WC))

RATED PERFORMANCE						
Model NO	SYMBOL	UNITS	CSLF 600201	CSLF 600401	CSLF 600601	CSLF 600801
Continuous Force	Fc	N	1030	2060	3090	4120
Peak Force	Fp	N	2660	5100	7800	11000
Motor Constant	Km	N/√W	47.1	66.6	81.5	95.0
Max. Continuous Power Dissipation	Pc	W	479	958	1436	1882
ELECTRICAL SPECIFICATION						
Continuous Current(at Tmax)	Ic	Arms	10	20	30	40
Peak Current (1s)	Ip	Arms	26	53	80	110
Force Constant（25℃±10%）	Kf	N/Arms	103	103	103	103
Back EMF Constant (25 ℃±10%)	Ke	Vrms/m/s	34.3	34.3	34.3	34.3
Electrical Resistance (25 ℃±10%)	R	Ω	2.21	1.4	0.76	0.56
Electrical inductance (±20%) p-p	L	mH	28.5	14.2	9.5	7.1
Max Coil Temperature	Tmax	℃	120	120	120	120
MECHANICAL SPECIFICATION						
Polar Distance	τ	mm	23.8	23.8	23.8	23.8
Min. water flow	Wmin	L/min	4.5	4.5	5.5	6
Temperature rise of the cooling water	ΔT	℃	5.1	5.1	7.7	9
Pressure Drop(Primary in series)	ΔP	Bar	0.7	0.7	1.2	2
Electromagnetic Attraction Force	Fa	kN	4.7	9.4	14	18.7
Mover Mass	Mc	kg	9.5	18	25.7	35
Primary Type			LSMF600201 A-S-H-WC	LSMF610401 A-P-H-WC	LSMF610601 A-P-H-WC	LSMF610801 A-P-H-WC
Secondary Type			LSMF6201A	LSMF6201A	LSMF6201A	LSMF6201A

CSLF 6 Series Dimension Drawing:

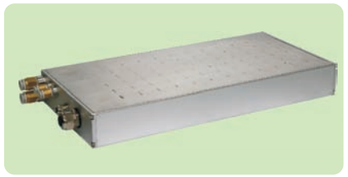


Model No.	CSLF600201	CSLF600401	CSLF600601	CSLF600801
L	229	395	562	729
A	83.4	250.2	417	583.8



CSLF 7 Series

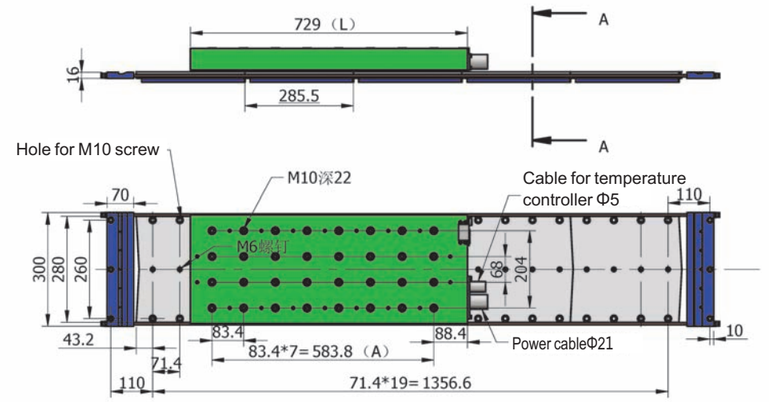
- High thrust
- High acceleration
- Reduced cogging
- Efficient liquid cooling
- Built-in overheat protection
- Modular design



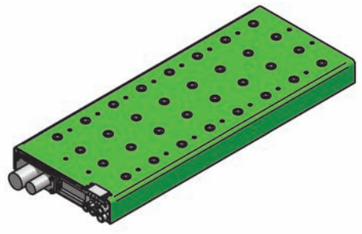
CSLF 7 Series (Iron Core, Water Cooling (WC))

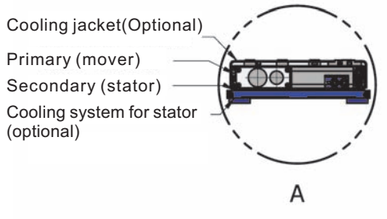
RATED PERFORMANCE					
Model NO	SYMBOL	UNITS	CSLF700401	CSLF700601	CSLF700801
Continuous Force	Fc	N	3090	4635	6180
Peak Force	Fp	N	7800	11500	14500
Motor Constant	Km	N/√W	81.8	99.9	116.3
Max. Continuous Power Dissipation	Pc	W	1428	2155	2822
ELECTRICAL SPECIFICATION					
Continuous Current(at Tmax)	Ic	Arms	20	30	40
Peak Current (1s)	Ip	Arms	53	80	100
Force Constant（25℃±10%）	Kf	N/Arms	154.5	154.5	154.5
Back EMF Constant (25 ℃±10%)	Ke	Vrms/m/s	51.5	51.5	51.5
Electrical Resistance (25 ℃±10%)	R	Ω	1.7	1.1	0.85
Electrical inductance (±20%) p-p	L	mH	21.3	13.6	11
Max Coil Temperature	Tmax	℃	120	120	120
MECHANICAL SPECIFICATION					
Polar Distance	τ	mm	23.8	23.8	23.8
Min. water flow	Wmin	L/min	5.5	6.5	7
Temperature rise of the cooling water	ΔT	℃	7	7	9
Pressure Drop(Primary in series)	ΔP	Bar	1.5	3	5
Electromagnetic Attraction Force	Fa	kN	14	21	28
Mover Mass	Mc	kg	26	45.5	50
Stator Mass	Ms	Kg/m	32	32	32
Primary Type			CSLF710401 A-P-H-WC	CSLF710601 A-P-H-WC	CSLF710801 A-P-H-WC
Secondary Type			CSLF7201A	CSLF7201A	CSLF7201A

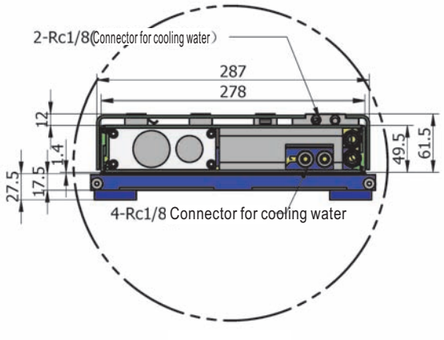
CSLF 7 Series Dimension Drawing:



Model No.	CSLF700401	CSLF700601	CSLF700801
L	395	562	729
A	250.2	417	538.8

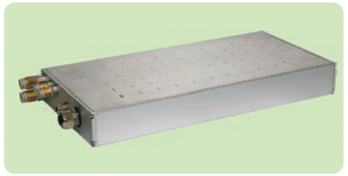






CSLF 8 Series

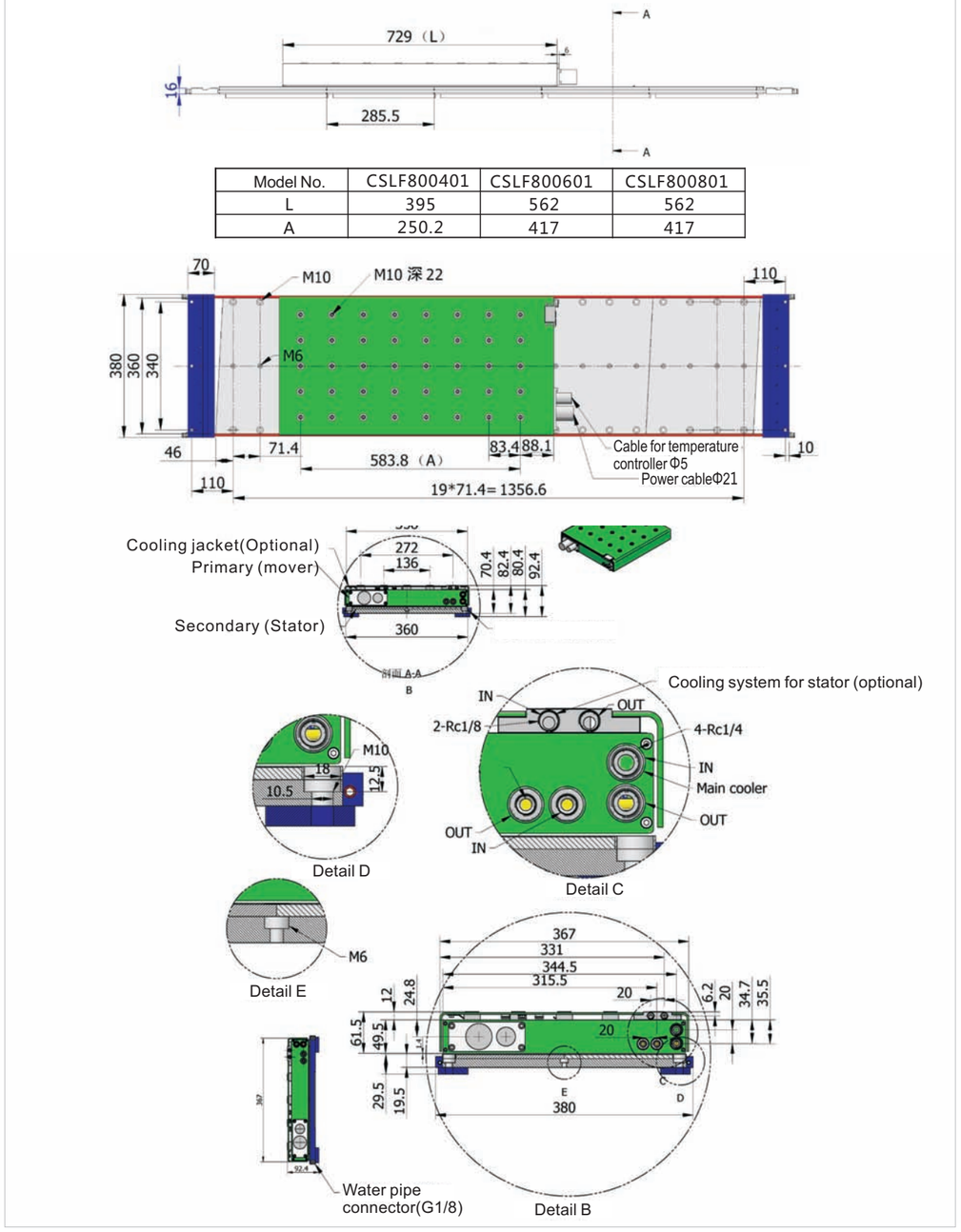
- High thrust
- High acceleration
- Reduced cogging
- Efficient liquid cooling
- Built-in overheat protection
- Modular design



CSLF 8 Series (Iron Core, Water Cooling (WC))

RATED PERFORMANCE					
Model NO	SYMBOL	UNITS	CSLF800401	CSLF800601	CSLF800801
Continuous Force	Fc	N	4120	6180	8240
Peak Force	Fp	N	10000	14000	20000
Motor Constant	Km	N/√W	94.1	115.3	133.1
Max. Continuous Power Dissipation	Pc	W	1915	2873	3830
ELECTRICAL SPECIFICATION					
Continuous Current(at Tmax)	Ic	Arms	20	30	40
Peak Current (1s)	Ip	Arms	53	80	105
Force Constant（25℃±10%)	Kf	N/Arms	206	206	206
Back EMF Constant (25℃±10%)	Ke	Vrms/m/s	68.7	68.7	68.7
Electrical Resistance (25℃±10%)	R	Ω	2.3	1.6	1.2
Electrical inductance (±20%) p-p	L	mH	28	18.7	14.2
Max Coil Temperature	Tmax	℃	120	120	120
MECHANICAL SPECIFICATION					
Polar Distance	τ	mm	23.8	23.8	23.8
Min. water flow	Wmin	L/min	6.5	7	7.5
Temperature rise of the cooling water	ΔT	℃	7.5	11	13
Pressure Drop(Primary in series)	ΔP	Bar	2.5	4	5.5
Electromagnetic Attraction Force	Fa	kN	19	28	37
Mover Mass	Mc	kg	34	50	66
Stator Mass	Ms	Kg/m	52	52	52
Primary Type			CSLF810401 A-P-H-WC	CSLF81060 1A-P-H-WC	CSLF81080 1A-P-H-WC
Secondary Type			CSLF8201A	CSLF8201A	CSLF8201A

CSLF 8 Series Dimension Drawing:



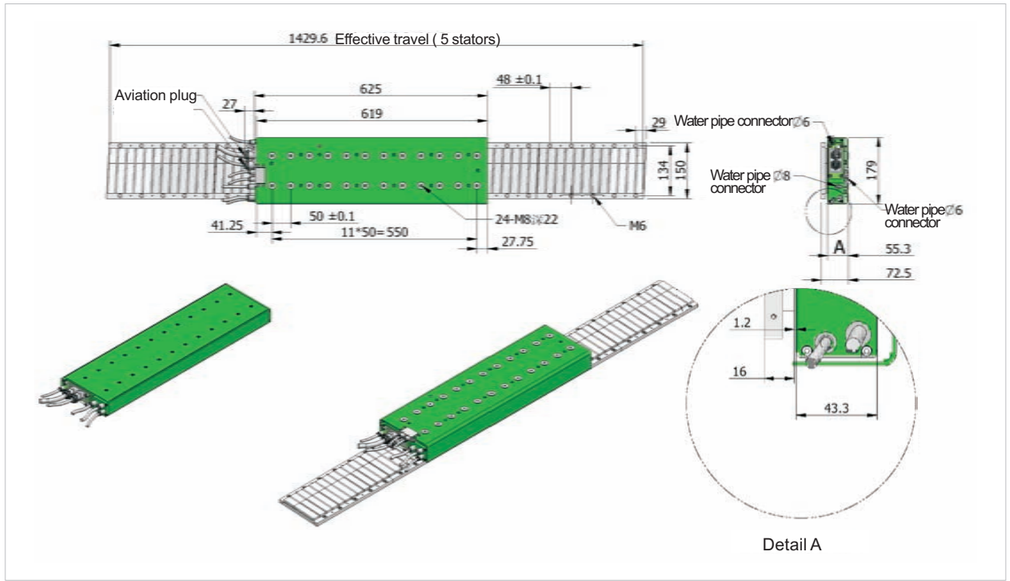
CSLF 9 Series

- High thrust
- High acceleration
- Reduced cogging
- Efficient liquid cooling
- Built-in overheat protection
- Modular design

CSLF 9 Series (Iron Core, Water Cooling (WC))

RATED PERFORMANCE				
Model NO	SYMBOL	UNITS	CSLF900601	CSLF900602
Continuous Force	Fc	N	3015	4041
Peak Force	Fp	N	6000	7800
Motor Constant	Km	N/√W	79.7	92.0
Max. Continuous Power Dissipation	Pc	W	1431	1931
ELECTRICAL SPECIFICATION				
Continuous Current(at Tmax)	Ic	Arms	15.6	22
Peak Current (1s)	Ip	Arms	33	45
Force Constant（25℃±10%)	Kf	N/Arms	193.3	183.7
Back EMF Constant (25 ℃±10%)	Ke	Vrms/m/s	64.4	61.2
Electrical Resistance (25 ℃±10%)	R	Ω	2.8	1.9
Electrical inductance (±20%) p-p	L	mH	13.3	9
Max Coil Temperature	Tmax	℃	120	120
MECHANICAL SPECIFICATION				
Polar Distance	τ	mm	24	24
Min. water flow	Wmin	L/min	5.5	6.5
Temperature rise of the cooling water	ΔT	℃	7.7	7
Pressure Drop(Primary in series)	ΔP	Bar	1.2	3
Electromagnetic Attraction Force	Fa	kN	14	18
Mover Mass	Mc	kg	26	31
Primary Type			CSLF910601A-P-H-WC	CSLF910602A-P-H-WC
Secondary Type			CSLF9201A	CSLF9202A

CSLF 900601 Dimension Drawing:



CSLF900602 Dimension drawing :