



**DIRECT DRIVE TECHNOLOGY**  
Product Catalogue  
VERSION 4.1.1

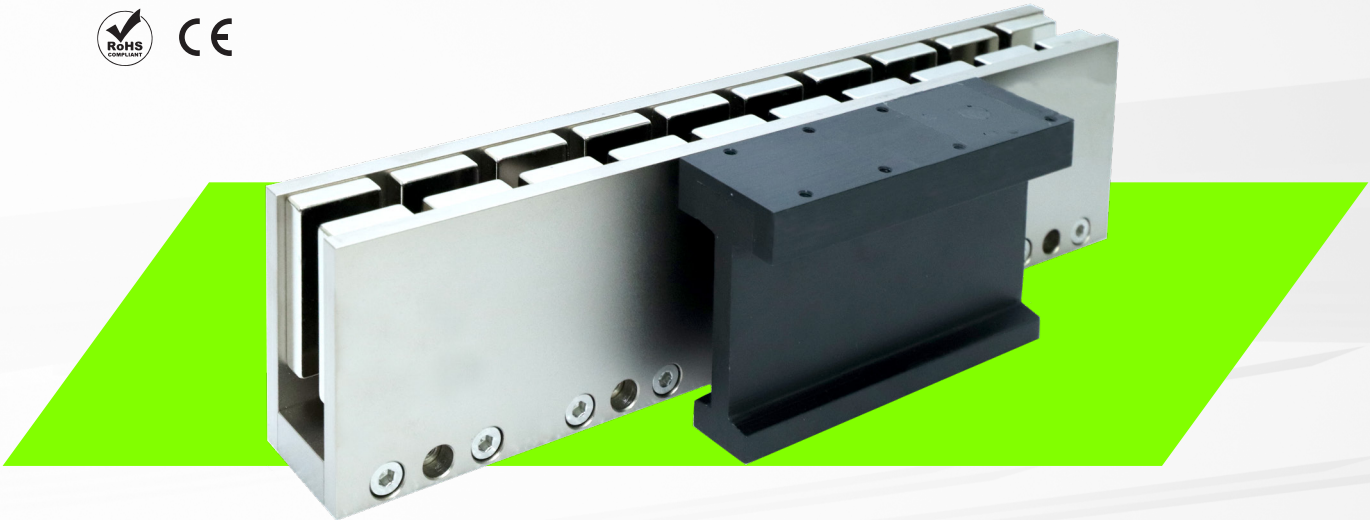


**DX F** SERIES  
LINEAR MOTOR

- PLAY VIDEO -

# DXF SERIES

## IRONLESS LINEAR MOTOR



### High-Speed “zero” cogging with minimal velocity ripple

DX series' ironless patented overlapping winding formers provides excellent force density Vs coil size ratio resulting in high force and acceleration generation. DX Coil's overlapping manufacturing technology allows for selection of smaller size motors in comparison against the competition due to its higher force density and further improved heat dissipation achieved through optional forced air-cooling methods. All DX series forces are designed with high flex cables, modular hall effect sensor and over temperature protection (thermostats or PT100) that makes it the ideal choice for the most demanding applications. The Modular U-channel Magnet tracks available in 60mm length increments allows for easy assembly of un-restricted stroke length.

1. High Power Density
2. Zero Cogging
3. Low speed/torque ripple
4. Fast dynamic response
5. High speed and acceleration
6. Zero backlash
7. Modular hall sensor
8. Optional air-cooling configurations
9. Long strokes without performance loss
10. Easy assembly over long stroke lengths

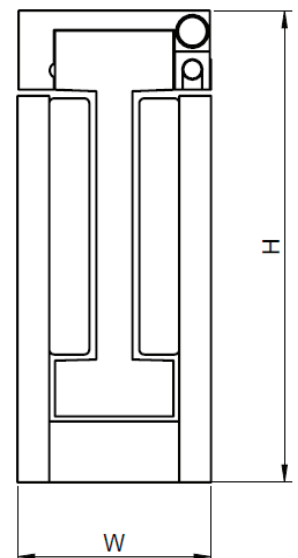
### APPLICATION

- Semiconductor Machine
- FPD/LCD transfer
- Hard disk drive
- Photonics
- Wire and Die Bonding
- Laser processing machines
- Biomedical equipment
- Microscope stages
- Diamond cutting
- Lithium battery production
- Micro Precise Fabrication
- Precision stamping
- Printing machines
- Precision positioning stages
- Packaging

*\*Technical specifications subject to change without prior notice*

<b>DX20F</b>	<b>32</b>
<b>DX30F</b>	<b>35</b>
<b>DX50F</b>	<b>39</b>
<b>DX65F</b>	<b>41</b>
<b>DX140F</b>	<b>45</b>

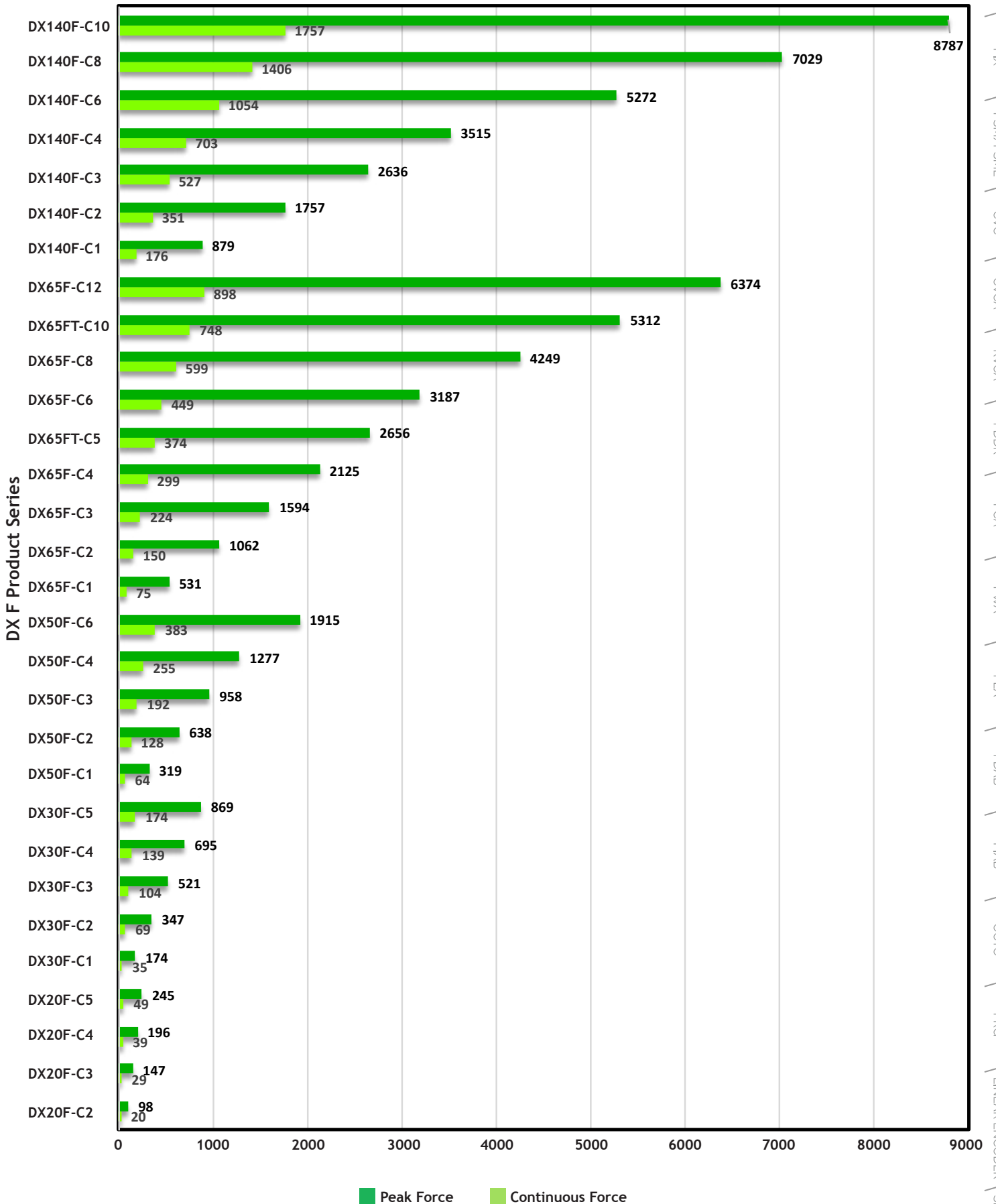
MOTOR MODEL	COIL SIZE	CONTINUOUS FORCE (N)	PEAK FORCE (N)	COIL WEIGHT	COIL LENGTH (mm)	MOTOR W X H (mm)
DX20F	C2	20	98	0.12	61	21.2 x 55.6
	C3	29	147	0.18	91	
	C4	39	196	0.27	121	
	C5	49	245	0.36	151	
DX30F	C1	35	174	0.22	61	35.7 x 68.5
	C2	69	347	0.47	121	
	C3	104	521	0.65	181	
	C4	139	695	0.89	241	
DX50F	C1	64	319	0.28	61	38.7 x 93
	C2	128	638	0.56	121	
	C3	192	958	0.84	181	
	C4	255	1277	1.12	241	
DX65F	C1	75	531	0.57	85	50 x 122
	C2	150	1062	1.14	145	
	C3	224	1594	1.71	205	
	C4	299	2125	2.28	265	
	C5	374	2656	2.85	325	
	C6	449	3187	3.42	385	
	C8	599	4249	4.56	505	
	C10	748	5312	5.70	625	
DX140F	C1	176	879	0.80	85	64.5 x 207
	C2	351	1757	1.52	145	
	C3	527	2636	2.50	205	
	C4	703	3515	3.40	265	
	C6	1054	5272	5.00	385	
	C8	1406	7029	6.70	505	
	C10	1757	8787	8.40	625	



Note: Continuous force is measured under natural convection, refer to the detail parameters table for more information

# FORCE CHART FOR DX F SERIES LINEAR MOTOR

## Force Chart For DX F Motors



# PART NUMBERING SYSTEM

## COIL ASSEMBLY



### MOTOR MODEL

DX20F	DX65F
DX30F	DX140F
DX50F	

### DESIGN VERSIONS

00	Standard
01	Customised Version
:	

### MOTOR COIL SIZE

C1  
C2  
C3  
C4  
C5  
:

### HALL SENSOR AND CONNECTOR OPTIONS

NH	No Hall Sensor
H	Flying Leads (No Connector)
HC	9 pins D Sub Male Connector
CHC	5 pins Circular Quick Lock Male Connector
HCL	9 pins D Sub Male Connector with Line Driver

### CONNECTION TYPE

S Series  
P Parallel

### POWER CABLE OPTIONS

NF	No Ferrite Core (Flying Leads)
FC	Ferrite Core (Recommended)
9NF	No Ferrite Core, D Sub 9 pins Female Connector
CNF	No Ferrite Core, Circular Quick Lock 6 pins Male Connector

### THERMAL PROTECTION

TC*	PT100 Sensor Available for all DX series
TM**	Thermostat Available for all DX30F-DX140 only

### CABLE LENGTH\*\*\*

0.5 0.5m  
1.0 1.0m  
3.0 3.0m  
5.0 5.0m

### COOLING TYPE

NC	Normal Convection
AC	Air Cooling

\* TC-Sensor output to temperature controller  
\*\* TM-On/Off switch, trigger at 100°C

## MAGNET TRACK

DX30F

TL300

### MOTOR MODEL

DX20F	DX65F
DX30F	DX140F
DX50F	

### MAGNET TRACK LENGTH\*

TL120 - 120mm	TL300 - 300mm
TL180 - 180mm	TL360 - 360mm
TL240 - 240mm	TL480 - 480mm

### DESIGN VERSIONS

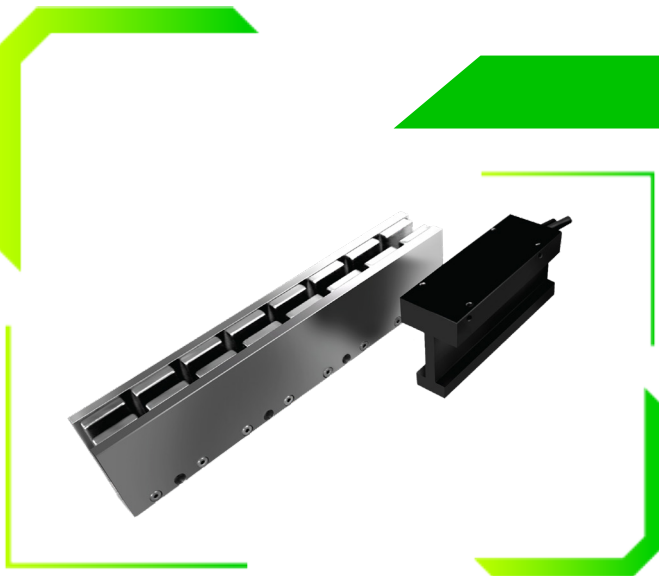
	Standard
01	Customised Version
:	

# DXF SERIES

## IRONLESS LINEAR MOTOR

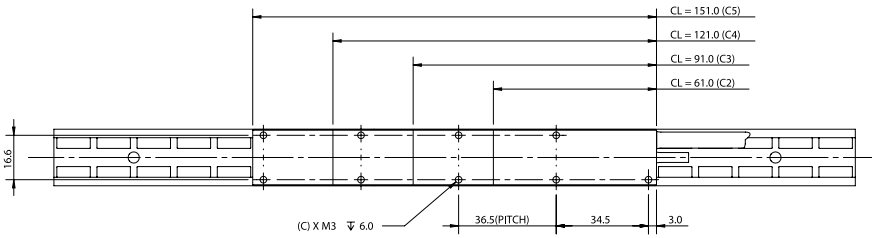
### DX20F

- Ironless Motor
- Peak force to 249N, Continuous force to 49N

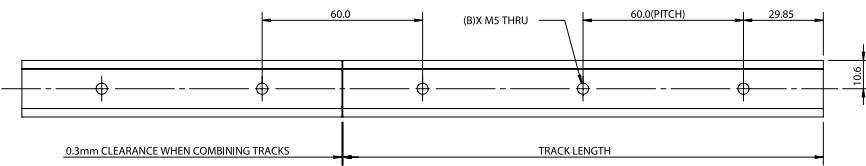
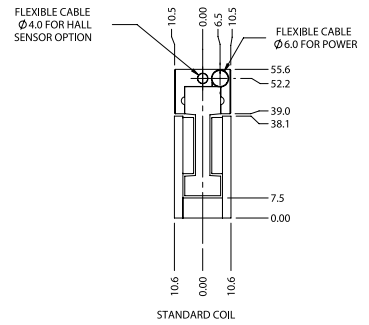
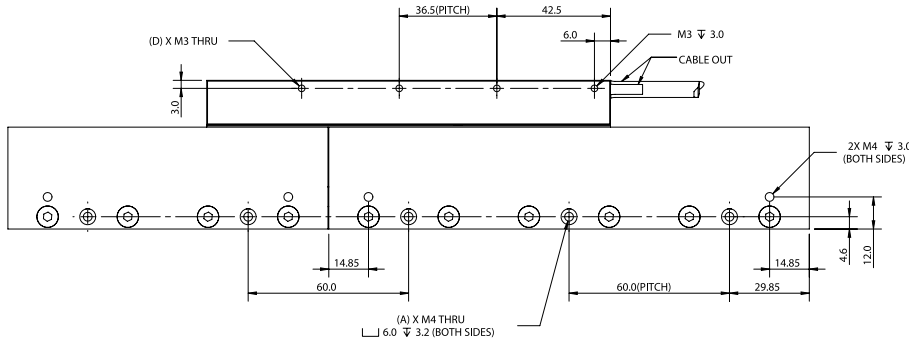


SPECIFICATION		MODEL								
		DX20F-C2		DX20F-C3		DX20F-C4		DX20F-C5		
		S	P	S	P	S	P	S	P	
<b>Performance</b>	<b>Unit</b>									
Peak Force	N	98	98	147	147	196	196	245	245	
Continuous Force @ 100°C*	N	20	20	29	29	39	39	49	49	
Continuous Force AC @ 100°C^	N	-	-	-	-	-	-	-	-	
Peak Power @ 100°C	W	1204	1204	1805	1805	2407	2407	3009	3009	
Continuous Power @ 100°C*	W	48	48	72	72	96	96	120	120	
Continuous Power AC @ 100°C^	W	-	-	-	-	-	-	-	-	
<b>Electrical</b>										
Peak Current	A <sup>pk</sup>	11.27	22.54	11.27	22.54	11.27	22.54	11.27	22.54	
Continuous Current @ 100°C*	A <sup>pk</sup>	2.25	4.51	2.25	4.51	2.25	4.51	2.25	4.51	
Continuous Current AC @ 100°C^	A <sup>pk</sup>	-	-	-	-	-	-	-	-	
Continuous Stall Current @ 100°C*	Arms	1.38	2.76	1.38	2.76	1.38	2.76	1.38	2.76	
Force Constant	N/A <sup>pk</sup>	8.7	4.4	13.1	6.5	17.4	8.7	21.8	10.9	
Back EMF Constant	V <sup>pk</sup> /m/s	10.0	5.0	15.0	7.5	20.0	10.0	25.0	12.5	
Coil Resistance L-L @ 25°C	ohm	9.7	2.4	14.6	3.6	19.4	4.9	24.3	6.1	
Coil Resistance L-L @ 100°C*	ohm	12.6	3.2	19.0	4.7	25.3	6.3	31.6	7.9	
Inductance L-L @ 1kHz	mH	1.78	0.45	2.67	0.67	3.56	0.89	4.45	1.11	
Motor Constant @ 25°C*	N//W	3.23	3.23	3.95	3.95	4.56	4.56	5.10	5.10	
Motor Constant @ 100°C*	N//W	2.83	2.83	3.46	3.46	4.00	4.00	4.47	4.47	
Max. Terminal Voltage	Vdc	330								
<b>Thermal</b>										
Thermal Resistance @ 100°C*	°C/W	1.56	1.56	1.04	1.04	0.78	0.78	0.62	0.62	
Thermal Resistance AC @ 100°C^	°C/W	-	-	-	-	-	-	-	-	
Max. Coil Temperature	°C	100	100	100	100	100	100	100	100	
<b>Mechanical</b>										
Coil Weight	kg	0.12	0.12	0.18	0.18	0.27	0.27	0.36	0.36	
Coil Weight AC^	kg	-	-	-	-	-	-	-	-	
Coil Length	mm	61	61	91	91	121	121	151	151	
Attractive Force	N	0								
Electrical Cycle Length	mm	30								

- Notes:
1.  $A_{pk} = 1.414 \cdot I_{rms}$ ;  $V_{pk} = 1.414 \cdot V_{rms}$
  2. \* Ambient temperature 25°C, natural convection, with heat sink of size L x 2W x 12mm. (L = length of coil, W = width of coil.)
  3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar
  4. Specifications tolerance - inductance +/-30%, all others +/-10%
  5. Peak force and current - 4% duty ratio and 1 second duration
  6. Motor Insulation Class - Class B (130°C)
  7. IP Rating - IP00
  8. IEC Protection Class - Class 1
  9. Compliance Standards - CE, RoHS
  10. Ambient Operating Temperature - 0 - 40°C
  11. Ambient Operating Humidity - 10 - 90% RH
  12. Specifications are subject to change without prior notice.



**NOTE:**  
 MOTOR AND HALL CABLES TO OBSERVE:  
 FIXED INSTALLATION: STATIC BEND RADIUS  $R > 3 \times$  CABLE DIAMETER  
 FLEXING INSTALLATION: DYNAMIC BEND RADIUS  $R > 10 \times$  CABLE DIAMETER



## Standard Magnet Track

SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
TL 120	119.7	0.46	2	2
TL 180	179.7	0.69	3	3
TL 240	239.7	0.92	4	4
TL 300	299.7	1.15	5	5
TL 360	359.7	1.32	6	6
TL 480	479.7	1.84	8	8

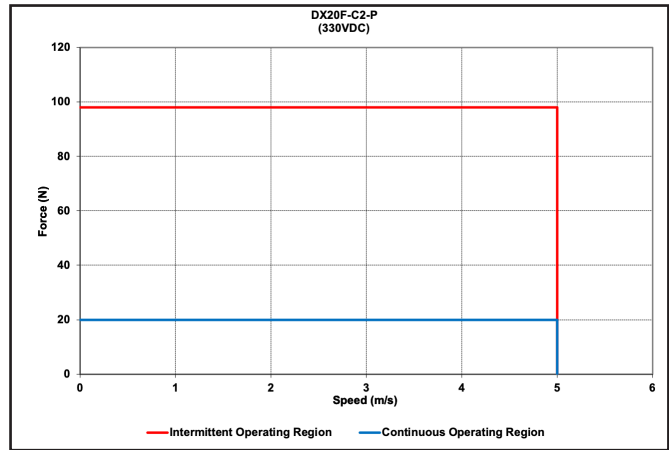
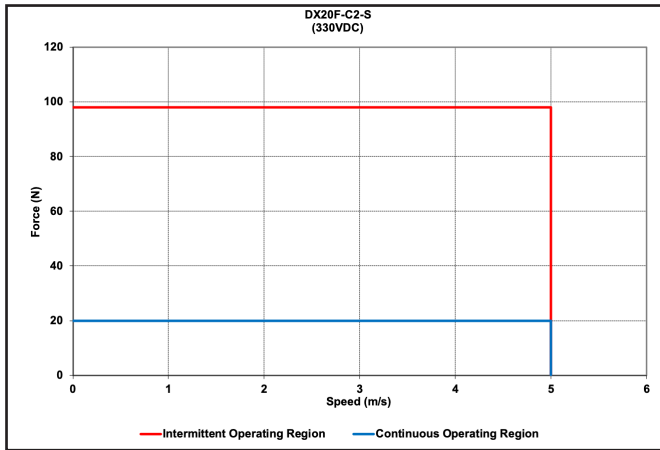
## Motor Coil

SIZE	DX20F WEIGHT (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C	NUMBER OF MOUNTING HOLE (SIDE MOUNT) D
C2	0.12	3	1
C3	0.18	5	2
C4	0.27	7	3
C5	0.36	9	3

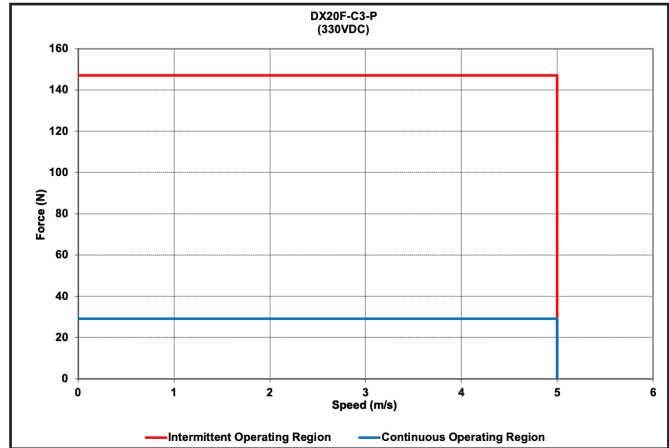
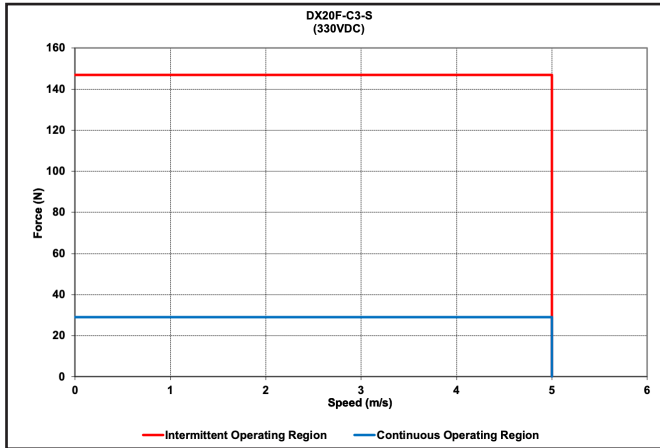


# GRAPH: FORCE VS SPEED

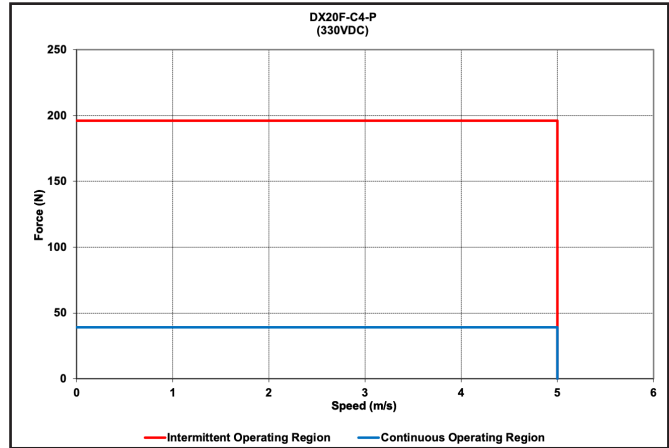
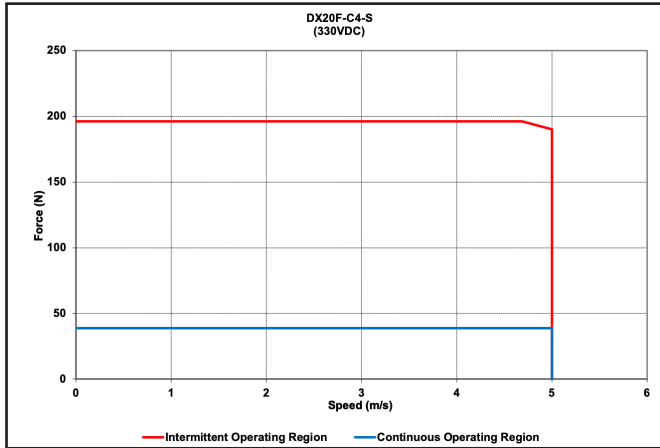
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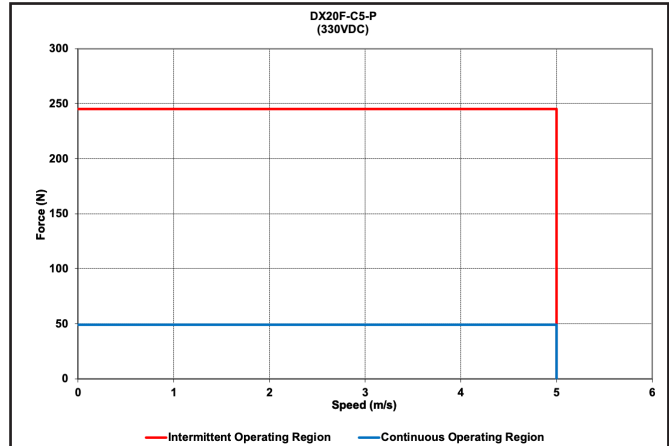
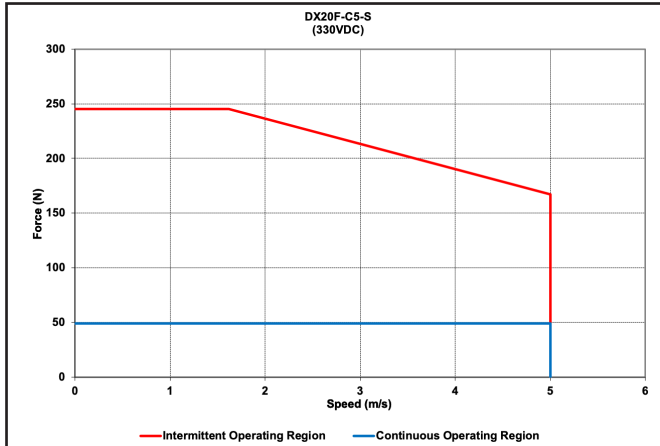
## DX20F-C3



## DX20F-C4



## DX20F-C5



DXB/BT

DXF

PIX

PSM/PSME

CVC

CVCA

RVCA

PDDR

PCA

PWA

PLA

PDAB

PIAB

OCTO

PRG

LINEAR ENCODER

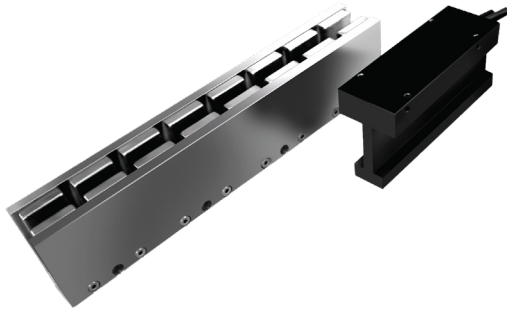
SERVO AMPLIFIER

# DXF SERIES

## IRONLESS LINEAR MOTOR

### DX30F

- Ironless Motor
- Peak force to 869N, Continuous force to 208N
- Modular Hall Sensor



#### SPECIFICATION

#### MODEL

##### DX30F-C1

##### DX30F-C2

##### DX30F-C3

##### DX30F-C4

##### DX30F-C5

S

P

S

P

S

P

S

P

S

P

#### Performance

#### Unit

Peak Force	N	174	174	347	347	521	521	695	695	869	869
Continuous Force @ 100°C*	N	35	35	69	69	104	104	139	139	174	174
Continuous Force AC @ 100°C^	N	42	42	83	83	125	125	167	167	208	208
Peak Power @ 100°C	W	1110	1110	2219	2219	3329	3329	4438	4438	5548	5548
Continuous Power @ 100°C*	W	44	44	89	89	133	133	178	178	222	222
Continuous Power AC @ 100°C^	W	64	64	128	128	192	192	256	256	320	320

#### Electrical

Peak Current	A <sup>pk</sup>	14.13	28.25	14.13	28.25	14.13	28.25	14.13	28.25	14.13	28.25
Continuous Current @ 100°C*	A <sup>pk</sup>	2.83	5.65	2.83	5.65	2.83	5.65	2.83	5.65	2.83	5.65
Continuous Current AC @ 100°C^	A <sup>pk</sup>	3.39	6.78	3.39	6.78	3.39	6.78	3.39	6.78	3.39	6.78
Continuous Stall Current @ 100°C*	Arms	1.73	3.46	1.73	3.46	1.73	3.46	1.73	3.46	1.73	3.46
Force Constant	N/A <sup>pk</sup>	12.3	6.2	24.6	12.3	36.9	18.5	49.2	24.6	61.5	30.8
Back EMF Constant	V <sup>pk</sup> /m/s	14.1	7.1	28.3	14.1	42.4	21.2	56.6	28.3	70.7	35.4
Coil Resistance L-L @ 25°C	ohm	5.7	1.4	11.4	2.8	17.1	4.3	22.8	5.7	28.5	7.1
Coil Resistance L-L @ 100°C*	ohm	7.4	1.9	14.8	3.7	22.2	5.6	29.7	7.4	37.1	9.3
Inductance L-L @ 1kHz	mH	3.14	0.79	6.28	1.57	9.42	2.36	12.56	3.14	15.70	3.93
Motor Constant @ 25°C*	N/√W	5.95	5.95	8.42	8.42	10.31	10.31	11.91	11.91	13.31	13.31
Motor Constant @ 100°C*	N/√W	5.22	5.22	7.38	7.38	9.03	9.03	10.43	10.43	11.66	11.66
Max. Terminal Voltage	Vdc	330									

#### Thermal

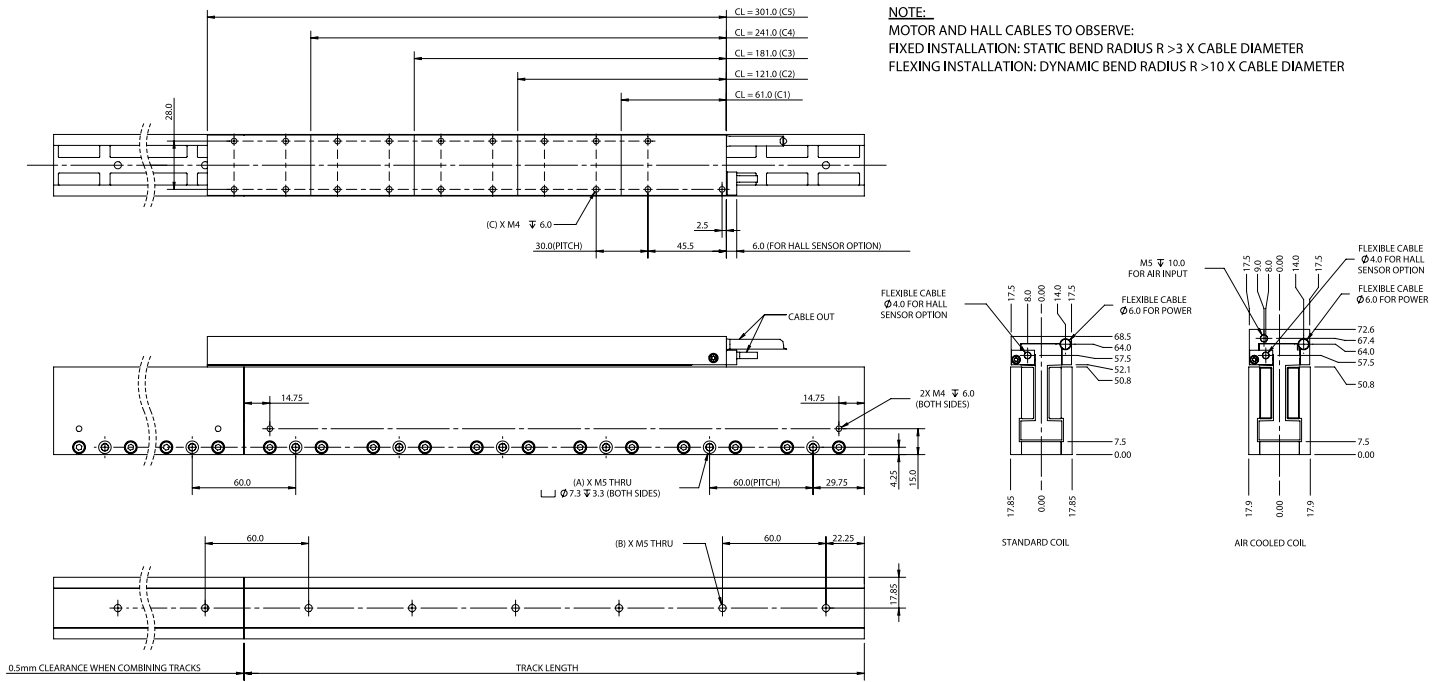
Thermal Resistance @ 100°C*	°C/W	1.69	1.69	0.84	0.84	0.56	0.56	0.42	0.42	0.34	0.34
Thermal Resistance AC @ 100°C^	°C/W	1.17	1.17	0.59	0.59	0.39	0.39	0.29	0.29	0.23	0.23
Max. Coil Temperature	°C	100									

#### Mechanical

Coil Weight	kg	0.22	0.22	0.47	0.47	0.65	0.65	0.89	0.89	1.10	1.10
Coil Weight AC^	kg	0.24	0.24	0.52	0.52	0.72	0.72	0.99	0.99	1.22	1.22
Coil Length	mm	61	61	121	121	181	181	241	241	301	301
Attractive Force	N	0									
Electrical Cycle Length	mm	60									

#### Notes:

1.  $A_{pk} = 1.414 * Arms$ ;  $V_{pk} = 1.414 * V_{rms}$
2. \* Ambient temperature 25°C, natural convection, with heat sink of size L x 2W x 12mm. (L = length of coil, W = width of coil.)
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar
4. Specifications tolerance - inductance +/-30%, all others +/-10%
5. Peak force and current - 4% duty ratio and 1 second duration
6. Motor Insulation Class - Class B (130°C)
7. IP Rating - IP00
8. IEC Protection Class - Class 1
9. Compliance Standards - CE, RoHS
10. Ambient Operating Temperature - 0 - 40°C
11. Ambient Operating Humidity - 10 - 90% RH
12. Specifications are subject to change without prior notice.



## Standard Magnet Track

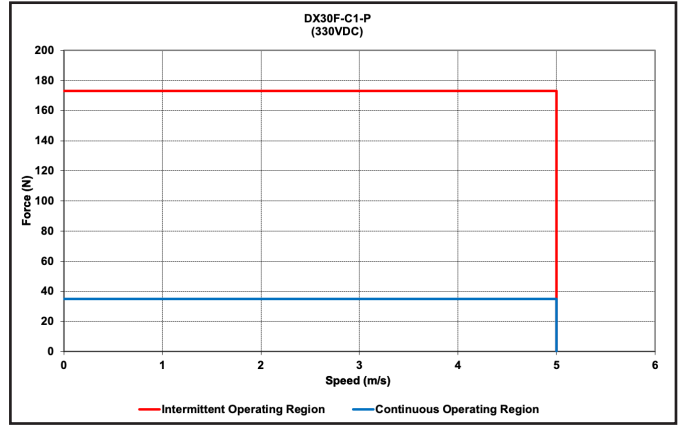
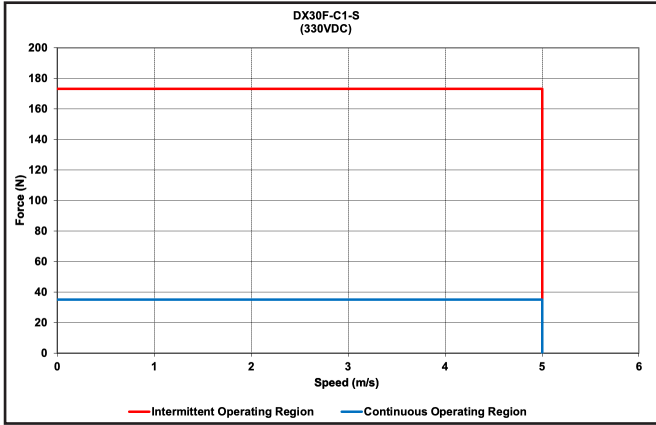
SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
TL 120	119.5	0.46	2	2
TL 180	179.5	0.69	3	3
TL 240	239.5	0.92	4	4
TL 300	299.5	1.15	5	5
TL 360	359.5	1.32	6	6
TL 480	479.5	1.84	8	8

## Motor Coil

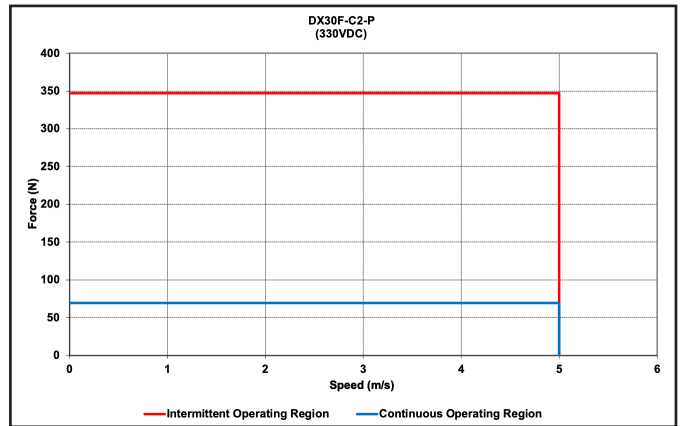
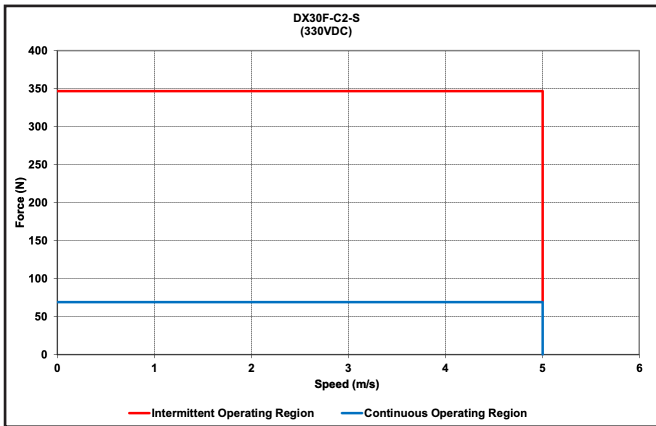
SIZE	DX30F WEIGHT (kg)	DX30F AIR COOLED WEIGHT (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C1	0.22	0.24	3
C2	0.47	0.52	7
C3	0.65	0.72	11
C4	0.89	0.99	15
C5	1.10	1.22	19

# GRAPH: FORCE VS SPEED

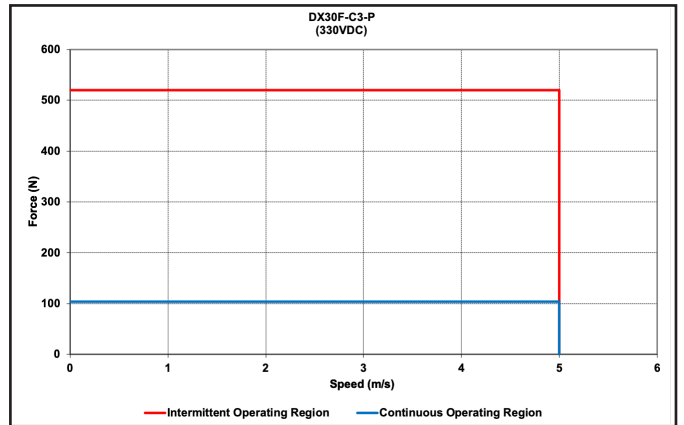
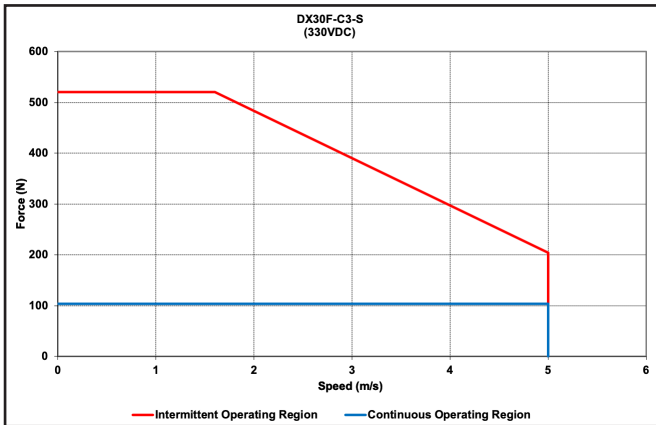
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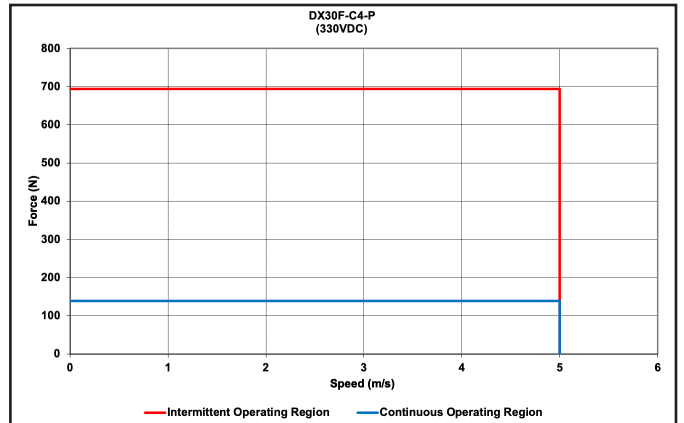
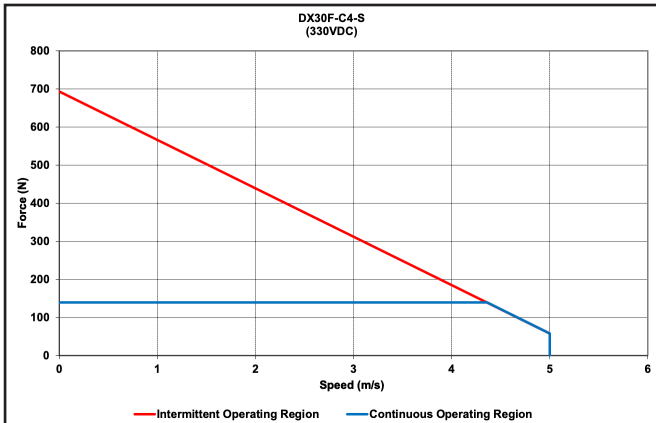
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## DX30F-C3

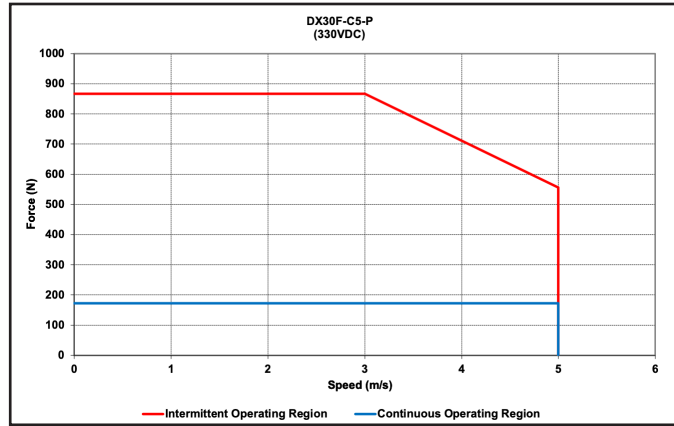
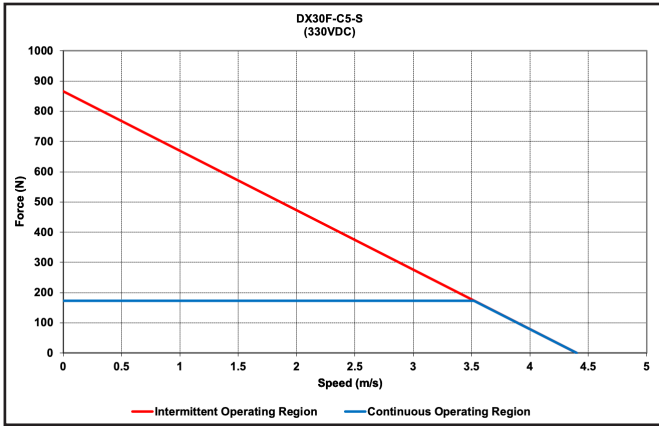


## DX30F-C4



# GRAPH: FORCE VS SPEED

## DX30F-C5



DXB/BT

DXF

PIX

PSM/PSME

CVC

CVCA

RVCA

PDDR

PCA

PWA

PLA

PDAB

PIAB

OCTO

PRG

LINEAR ENCODER

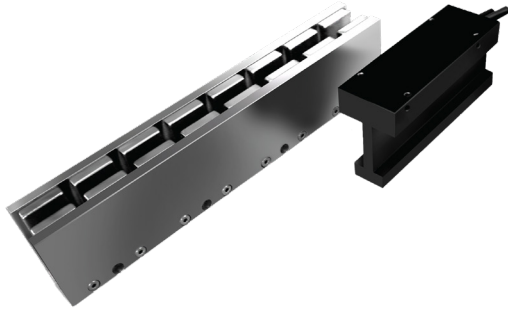
SERVO AMPLIFIER

# DXF SERIES

## IRONLESS LINEAR MOTOR

### DX50F

- Ironless Motor
- Peak force to 1915N, Continuous force to 460N
- Modular Hall Sensor



SPECIFICATION		MODEL		
		DX50F-C1	DX50F-C2	DX50F-C3
		S	P	P
<b>Performance</b>				
	<b>Unit</b>			
Peak Force	N	319	638	958
Continuous Force @ 100°C*	N	64	128	192
Continuous Force AC @ 100°C^	N	77	153	230
Peak Power @ 100°C	W	1605	3210	4815
Continuous Power @ 100°C*	W	64	128	193
Continuous Power AC @ 100°C^	W	92	185	277
<b>Electrical</b>				
Peak Current	A <sup>pk</sup>	14.13	28.25	28.25
Continuous Current @ 100°C*	A <sup>pk</sup>	2.83	5.65	5.65
Continuous Current AC @ 100°C^	A <sup>pk</sup>	3.39	6.78	6.78
Continuous Stall Current @ 100°C*	Arms	1.73	3.46	3.46
Force Constant	N/A <sup>pk</sup>	22.6	22.6	33.9
Back EMF Constant	V <sup>pk</sup> /m/s	26.0	26.0	39.0
Coil Resistance L-L @ 25°C	ohm	8.2	4.1	6.2
Coil Resistance L-L @ 100°C*	ohm	10.7	5.4	8.0
Inductance L-L @ 1kHz	mH	5.66	2.83	4.25
Motor Constant @ 25°C*	N//W	9.10	12.86	15.76
Motor Constant @ 100°C*	N//W	7.97	11.27	13.80
Max. Terminal Voltage	Vdc	330		
<b>Thermal</b>				
Thermal Resistance @ 100°C*	°C/W	1.17	0.58	0.39
Thermal Resistance AC @ 100°C^	°C/W	0.81	0.41	0.27
Max. Coil Temperature	°C	100		
<b>Mechanical</b>				
Coil Weight	kg	0.28	0.56	0.84
Coil Weight AC^	kg	0.30	0.61	0.95
Coil Length	mm	61	121	181
Attractive Force	N	0		
Electrical Cycle Length	mm	60		

**Notes:**

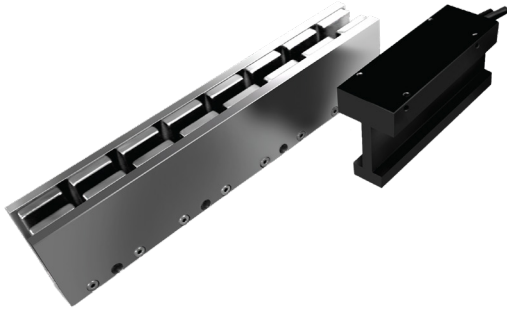
1.  $A_{pk} = 1.414 * Arms$ ;  $V_{pk} = 1.414 * V_{rms}$
2. \* Ambient temperature 25°C, natural convection, with heat sink of size L x 2W x 12mm. (L = length of coil, W = width of coil.)
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar
4. Specifications tolerance - inductance +/-30%, all others +/-10%
5. Peak force and current - 4% duty ratio and 1 second duration
6. Motor Insulation Class - Class B (130°C)
7. IP Rating - IP00
8. IEC Protection Class - Class 1
9. Compliance Standards - CE, RoHS
10. Ambient Operating Temperature - 0 - 40°C
11. Ambient Operating Humidity - 10 - 90% RH
12. Specifications are subject to change without prior notice.

# DXF SERIES

## IRONLESS LINEAR MOTOR

### DX50F

- Ironless Motor
- Peak force to 1915N, Continuous force to 460N
- Modular Hall Sensor

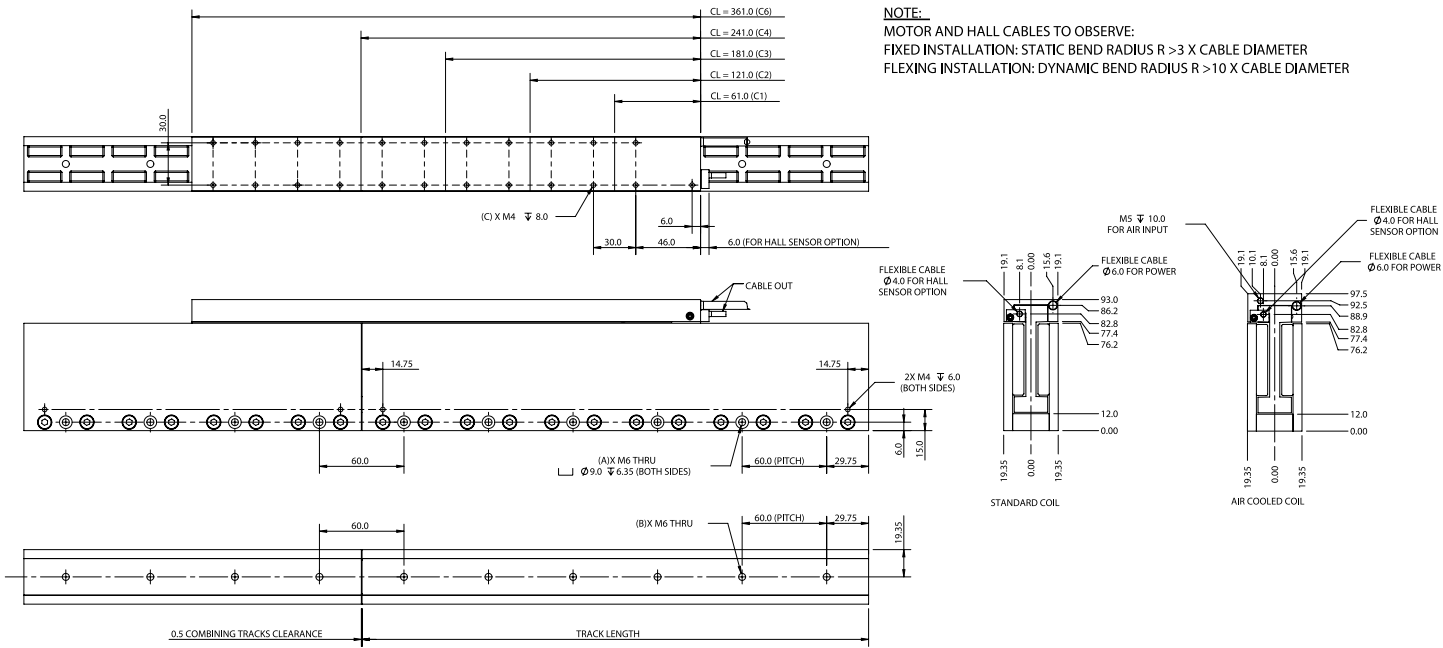


SPECIFICATION		MODEL		
		DX50F-C4	DX50FT-C4	DX50FT-C6
		P	P	P
<b>Performance</b>	<b>Unit</b>			
Peak Force	N	1277	1277	1915
Continuous Force @ 100°C*	N	255	255	383
Continuous Force AC @ 100°C^	N	306	306	460
Peak Power @ 100°C	W	6420	6420	9630
Continuous Power @ 100°C*	W	257	257	385
Continuous Power AC @ 100°C^	W	370	370	555
<b>Electrical</b>				
Peak Current	A <sup>pk</sup>	28.25	56.50	56.50
Continuous Current @ 100°C*	A <sup>pk</sup>	5.65	11.30	11.30
Continuous Current AC @ 100°C^	A <sup>pk</sup>	6.78	13.56	13.56
Continuous Stall Current @ 100°C*	Arms	3.46	6.92	6.92
Force Constant	N/A <sup>pk</sup>	45.2	22.6	33.9
Back EMF Constant	V <sup>pk</sup> /m/s	52.0	26.0	39.0
Coil Resistance L-L @ 25°C	ohm	8.2	2.1	3.1
Coil Resistance L-L @ 100°C*	ohm	10.7	2.7	4.0
Inductance L-L @ 1kHz	mH	5.66	1.42	2.12
Motor Constant @ 25°C*	N//W	18.19	18.19	22.28
Motor Constant @ 100°C*	N//W	15.94	15.94	19.52
Max. Terminal Voltage	Vdc		330	
<b>Thermal</b>				
Thermal Resistance @ 100°C*	°C/W	0.29	0.29	0.19
Thermal Resistance AC @ 100°C^	°C/W	0.20	0.20	0.14
Max. Coil Temperature	°C		100	
<b>Mechanical</b>				
Coil Weight	kg	1.12	1.12	1.68
Coil Weight AC^	kg	1.22	1.22	1.83
Coil Length	mm	241	241	361
Attractive Force	N		0	
Electrical Cycle Length	mm		60	

- Notes:
1.  $A_{pk} = 1.414 * Arms$ ;  $V_{pk} = 1.414 * V_{rms}$
  2. \* Ambient temperature 25°C, natural convection, with heat sink of size L x 2W x 12mm. (L = length of coil, W = width of coil.)
  3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar
  4. Specifications tolerance - inductance +/-30%, all others +/-10%
  5. Peak force and current - 4% duty ratio and 1 second duration
  6. Motor Insulation Class - Class B (130°C)
  7. IP Rating - IP00
  8. IEC Protection Class - Class 1
  9. Compliance Standards - CE, RoHS
  10. Ambient Operating Temperature - 0 - 40°C
  11. Ambient Operating Humidity - 10 - 90% RH
  12. Specifications are subject to change without prior notice.

# DX50F

DXB/BT  
DXF  
PIX  
PSM/PSME  
CVC  
CVCA  
RVCA  
PDDR  
PCA  
PWA  
PLA  
PDAB  
PIAB  
OCTO  
PRG  
LINEAR ENCODER  
SERVO AMPLIFIER



## Standard Magnet Track

SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
TL 120	119.5	1.8	3	3
TL 180	179.5	2.7	3	3
TL 240	239.5	3.6	4	4
TL 300	299.5	4.5	5	5
TL 360	359.5	5.4	6	6
TL 480	479.5	7.2	8	8

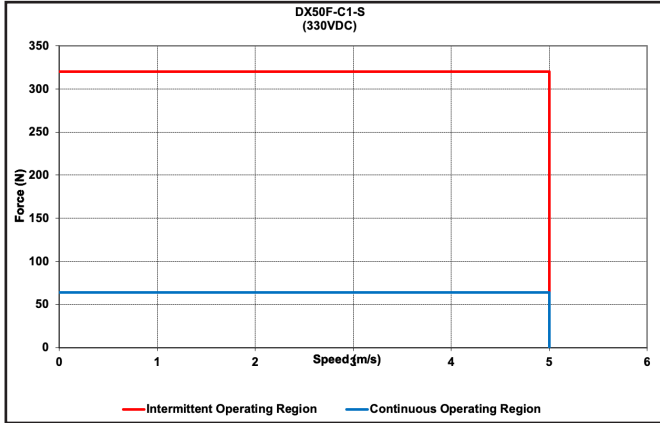
## Motor Coil

SIZE	DX50F WEIGHT (kg)	DX50F AIR COOLED WEIGHT (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C1	0.28	0.30	3
C2	0.56	0.61	7
C3	0.84	0.95	11
C4	1.12	1.22	15
C6	1.68	1.83	19

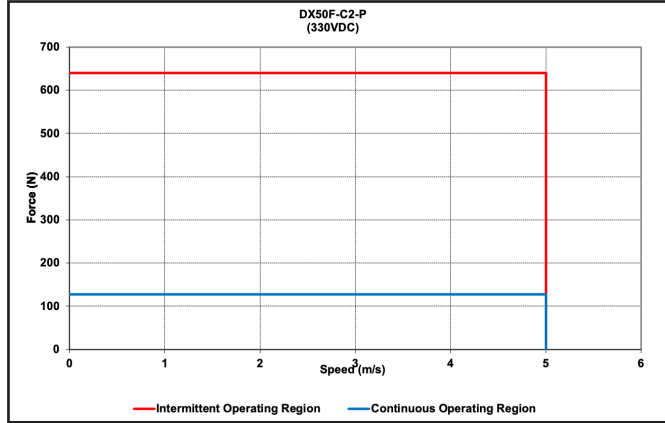


# GRAPH: FORCE VS SPEED

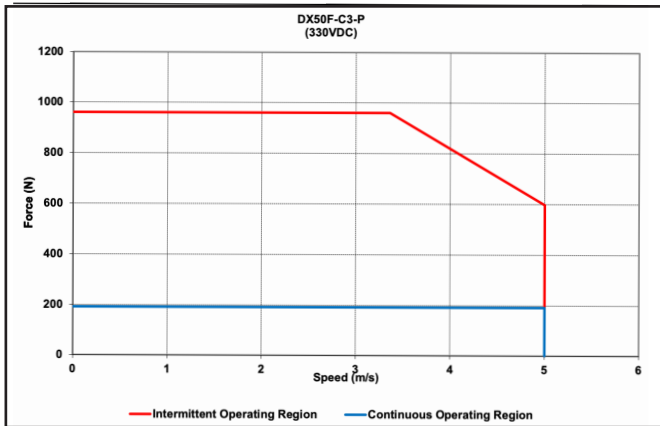
**DX50F-C1**



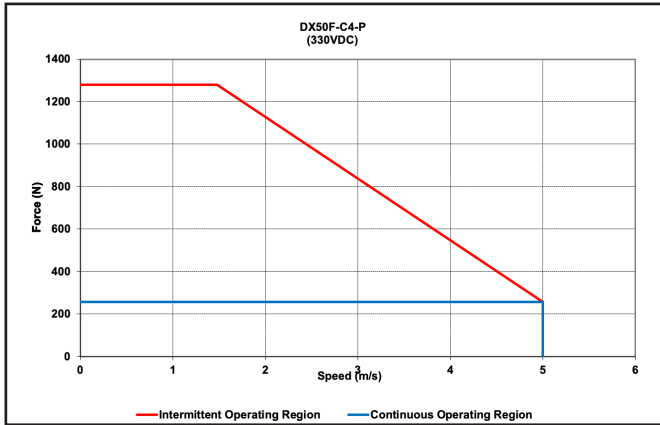
**DX50F-C2**



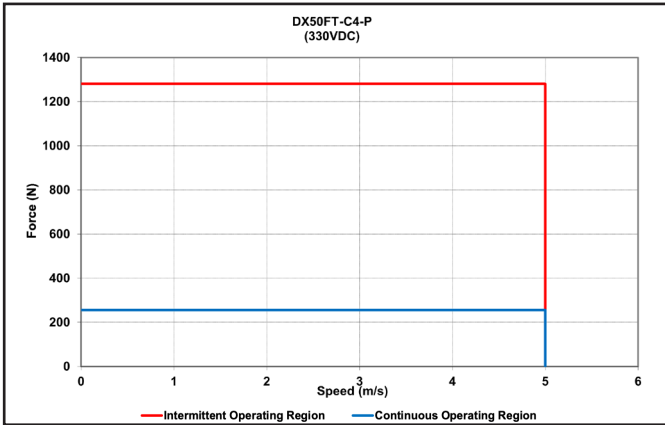
**DX50F-C3**



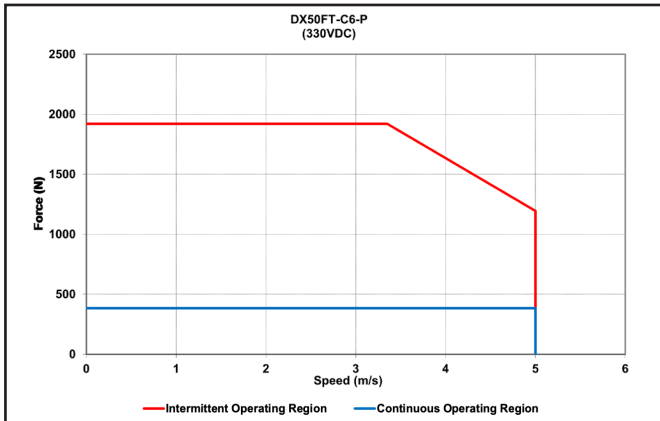
**DX50F-C4**



**DX50FT-C4**



**DX50FT-C6**



DXB/BT

DXF

PIX

PSM/PSME

CVC

CVCA

RVCA

PDDR

PCA

PWA

PLA

PDAB

PIAB

OCTO

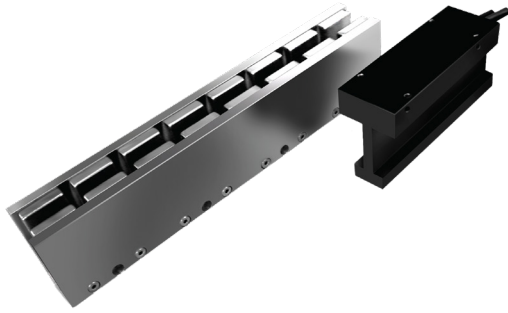
PRG

LINEAR ENCODER

SERVO AMPLIFIER

## DXF SERIES

## IRONLESS LINEAR MOTOR



## DX65F

- Ironless Motor
- Peak force to 6374N, Continuous force to 898N
- Modular Hall Sensor

SPECIFICATION		MODEL				
		DX65F-C1	DX65F-C2	DX65F-C3	DX65F-C4	DX65FT-C5
		S	S	S	P	P
<b>Performance</b>						
	<b>Unit</b>					
Peak Force	N	531	1062	1594	2125	2656
Continuous Force @ 100°C*	N	75	150	224	299	374
Continuous Force AC @ 100°C^	N	90	180	269	359	449
Peak Power @ 100°C	W	2666	5332	7997	10663	13328
Continuous Power @ 100°C*	W	53	106	159	212	264
Continuous Power AC @ 100°C^	W	76	152	228	305	381
<b>Electrical</b>						
Peak Current	A <sup>pk</sup>	33.6	33.6	33.6	67.2	97.0
Continuous Current @ 100°C*	A <sup>pk</sup>	4.7	4.7	4.7	9.5	13.7
Continuous Current AC @ 100°C^	A <sup>pk</sup>	5.7	5.7	5.7	11.4	16.4
Continuous Stall Current @ 100°C*	Arms	2.90	2.90	2.90	5.80	9.67
Force Constant	N/A <sup>pk</sup>	15.8	31.6	47.4	31.6	27.4
Back EMF Constant	V <sup>pk</sup> /m/s	18.2	36.5	54.7	36.5	31.6
Coil Resistance L-L @ 25°C	ohm	2.4	4.8	7.2	2.4	1.4
Coil Resistance L-L @ 100°C*	ohm	3.1	6.3	9.4	3.1	1.9
Inductance L-L @ 1kHz	mH	2.4	4.8	7.1	2.4	1.4
Motor Constant @ 25°C*	N/√W	11.7	16.6	20.3	23.5	26.3
Motor Constant @ 100°C*	N/√W	10.3	14.5	17.8	20.6	23.0
Max. Terminal Voltage	Vdc	330				
<b>Thermal</b>						
Thermal Resistance @ 100°C*	°C/W	1.42	0.71	0.47	0.35	0.28
Thermal Resistance AC @ 100°C^	°C/W	0.98	0.49	0.33	0.25	0.20
Max. Coil Temperature	°C	100				
<b>Mechanical</b>						
Coil Weight	kg	0.57	1.14	1.71	2.28	2.85
Coil Weight AC^	kg	0.61	1.23	1.84	2.45	3.07
Coil Length	mm	85.0	145.0	205.0	265.0	325.0
Attractive Force	N	0				
Electrical Cycle Length	mm	60				

## Notes:

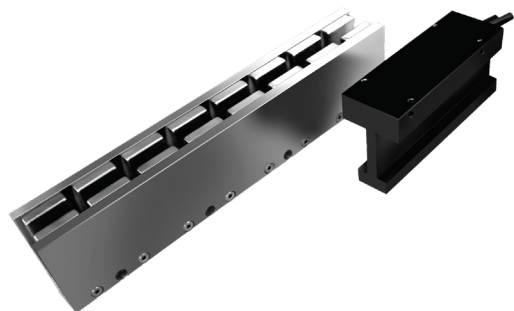
1. Apk = 1.414 \* Arms; Vpk = 1.414 \* Vrms
2. \* Ambient temperature 25°C, natural convection, with heat sink of size L x 2W x 12mm. (L = length of coil, W = width of coil.)
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar
4. Specifications tolerance - inductance +/-30%, all others +/-10%
5. Peak force and current - 4% duty ratio and 1 second duration
6. Motor Insulation Class - Class B (130°C)
7. IP Rating - IP00
8. IEC Protection Class - Class 1
9. Compliance Standards - CE, RoHS
10. Ambient Operating Temperature - 0 - 40°C
11. Ambient Operating Humidity - 10 - 90% RH
12. Specifications are subject to change without prior notice.

# DXF SERIES

## IRONLESS LINEAR MOTOR

### DX65F

- Ironless Motor
- Peak force to 6374N, Continuous force to 898N
- Modular Hall Sensor

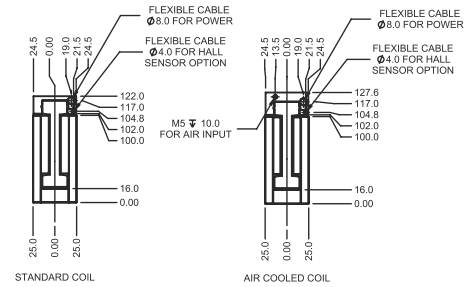
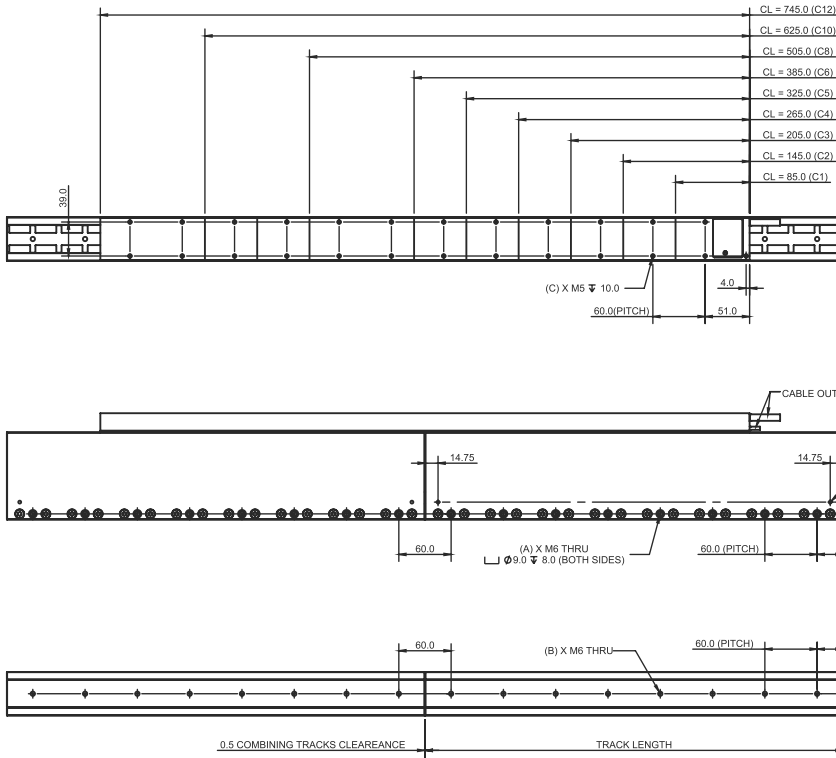


SPECIFICATION		MODEL			
		DX65F-C6	DX65F-C8	DX65FT-C10	DX65F-C12
		P	P	P	P
<b>Performance</b>	<b>Unit</b>				
Peak Force	N	3187	4249	5312	6374
Continuous Force @ 100°C*	N	449	599	748	898
Continuous Force AC @ 100°C^	N	539	718	-	-
Peak Power @ 100°C	W	15995	21326	26656	31989
Continuous Power @ 100°C*	W	317	423	529	635
Continuous Power AC @ 100°C^	W	457	609	-	-
<b>Electrical</b>					
Peak Current	A <sup>pk</sup>	67.2	67.2	97.0	100.9
Continuous Current @ 100°C*	A <sup>pk</sup>	9.5	9.5	13.7	14.2
Continuous Current AC @ 100°C^	A <sup>pk</sup>	11.4	11.4	-	-
Continuous Stall Current @ 100°C*	Arms	5.80	5.80	9.67	8.70
Force Constant	N/A <sup>pk</sup>	47.4	63.2	54.7	63.2
Back EMF Constant	V <sup>pk</sup> /m/s	54.7	73.0	63.2	73.0
Coil Resistance L-L @ 25°C	ohm	3.6	4.8	2.9	3.2
Coil Resistance L-L @ 100°C*	ohm	4.7	6.3	3.8	4.2
Inductance L-L @ 1kHz	mH	3.6	4.8	2.9	3.2
Motor Constant @ 25°C*	N/√W	28.8	33.2	37.1	40.7
Motor Constant @ 100°C*	N/√W	25.2	29.1	32.5	35.6
Max. Terminal Voltage	Vdc	330			
<b>Thermal</b>					
Thermal Resistance @ 100°C*	°C/W	0.24	0.18	0.14	0.12
Thermal Resistance AC @ 100°C^	°C/W	0.16	0.12	-	-
Max. Coil Temperature	°C	100			
<b>Mechanical</b>					
Coil Weight	kg	3.42	4.56	5.70	6.84
Coil Weight AC^	kg	3.68	4.91	-	-
Coil Length	mm	385.0	505.0	625.0	745.0
Attractive Force	N	0			
Electrical Cycle Length	mm	60			

- Notes:
1.  $A_{pk} = 1.414 * Arms$ ;  $V_{pk} = 1.414 * V_{rms}$
  2. \* Ambient temperature 25°C, natural convection, with heat sink of size L x 2W x 12mm. (L = length of coil, W = width of coil.)
  3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar
  4. Specifications tolerance - inductance +/-30%, all others +/-10%
  5. Peak force and current - 4% duty ratio and 1 second duration
  6. Motor Insulation Class - Class B (130°C)
  7. IP Rating - IP00
  8. IEC Protection Class - Class 1
  9. Compliance Standards - CE, RoHS
  10. Ambient Operating Temperature - 0 - 40°C
  11. Ambient Operating Humidity - 10 - 90% RH
  12. Specifications are subject to change without prior notice.

DXB/BT  
 DXF  
 PIX  
 PSM/PSME  
 CVC  
 CVCA  
 RVCA  
 PDDR  
 PCA  
 PWA  
 PLA  
 PDAB  
 PIAB  
 OCTO  
 PRG  
 LINEAR ENCODER  
 SERVO AMPLIFIER

# DX65F



**NOTE:**  
 MOTOR AND HALL CABLES TO OBSERVE:  
 FIXED INSTALLATION: STATIC BEND RADIUS  $R > 3 \times$  CABLE DIAMETER  
 FLEXING INSTALLATION: DYNAMIC BEND RADIUS  $R > 10 \times$  CABLE DIAMETER

## Standard Magnet Track

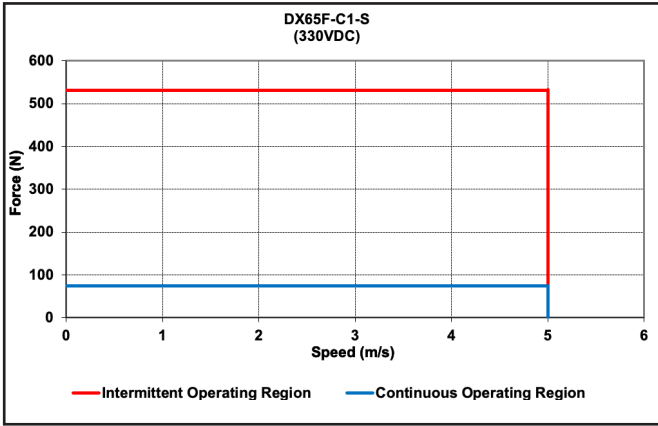
SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
TL 180	179.5	4.5	3	3
TL 240	239.5	6.0	4	4
TL 300	299.5	7.5	5	5
TL 360	359.5	9.0	6	6
TL 480	479.5	12.0	8	8

## Motor Coil

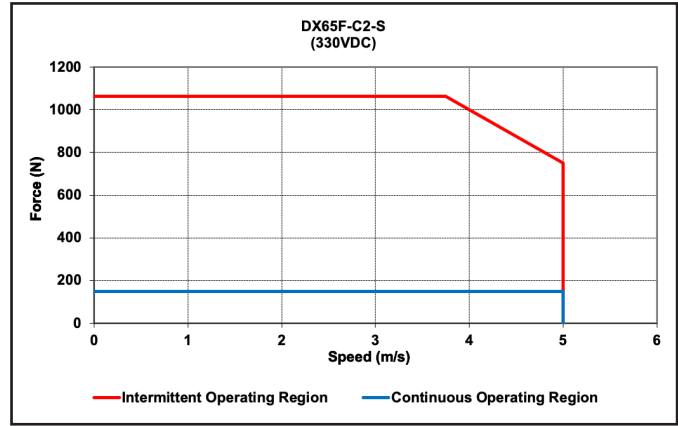
SIZE	DX65F WEIGHT (kg)	DX65F AIR COOLED WEIGHT (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C1	0.6	0.65	3
C2	1.2	1.29	5
C3	1.8	1.94	7
C4	2.4	2.58	9
C5	3.0	3.23	11
C6	3.6	3.87	13
C8	4.8	5.16	17
C9	5.4	5.81	19
C10	6.0	6.46	21
C12	7.2	7.75	25

# GRAPH: FORCE VS SPEED

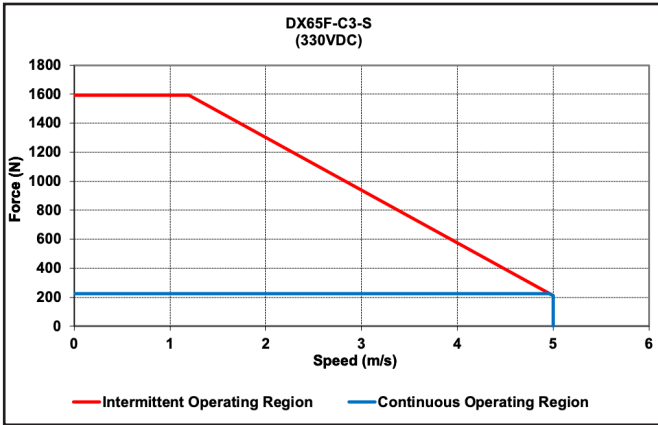
**DX65F-C1**



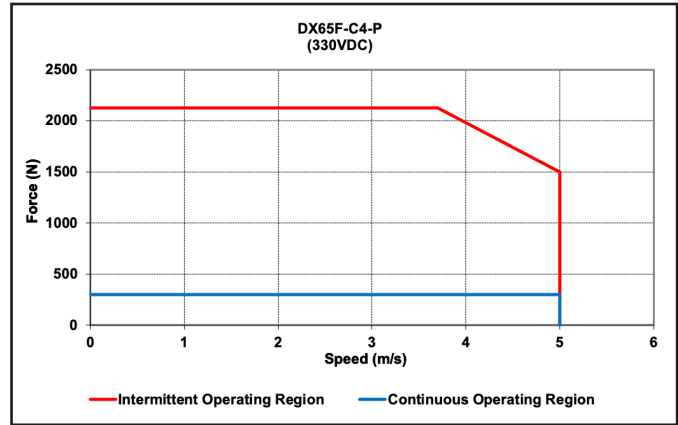
**DX65F-C2**



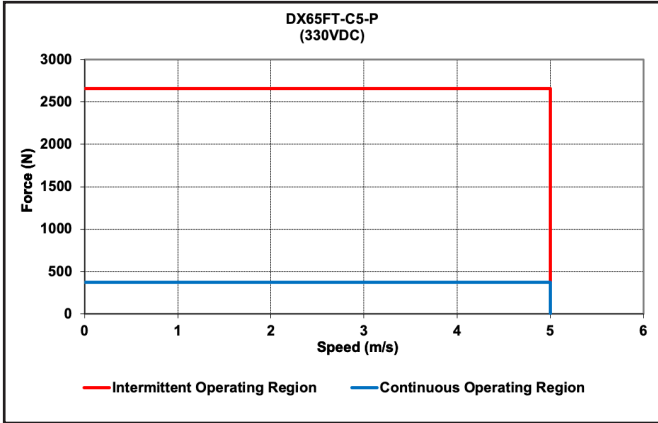
**DX65F-C3**



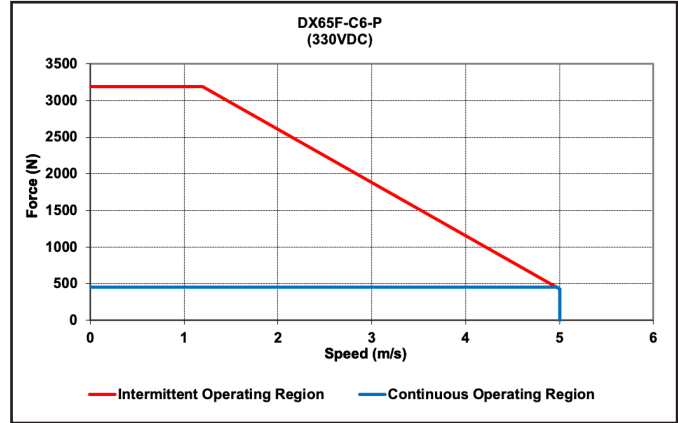
**DX65F-C4**



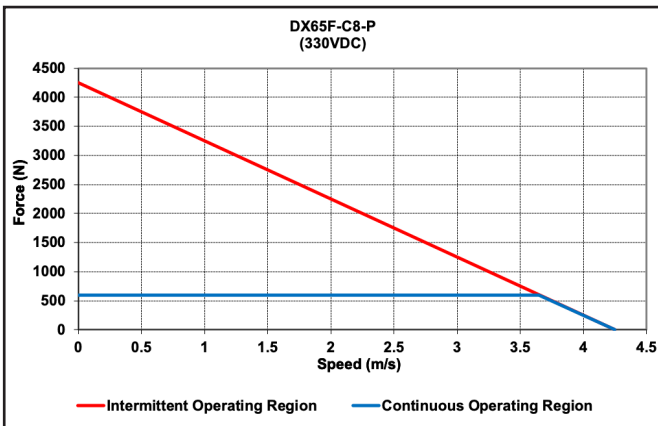
**DX65FT-C5**



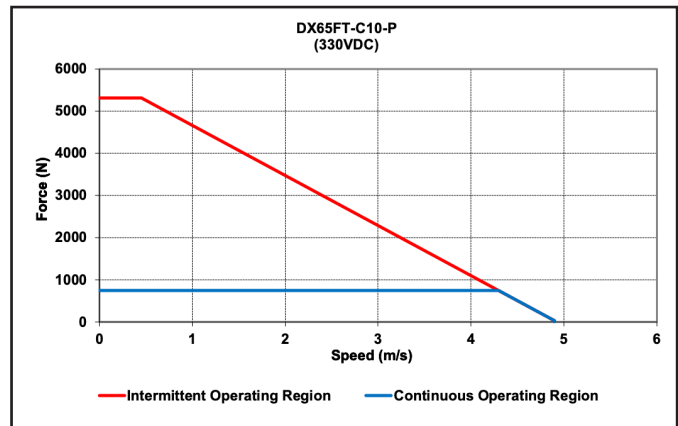
**DX65F-C6**



**DX65F-C8**



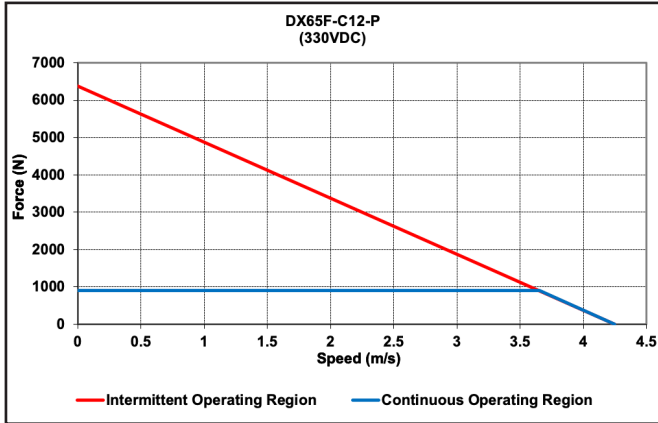
**DX65FT-C10**



DXB/BT  
DXF  
PIX  
PSM/PSME  
CVC  
CVCA  
RVCA  
PDDR  
PCA  
PWA  
PLA  
PDAB  
PIAB  
OCTO  
PRG  
LINEAR ENCODER  
SERVO AMPLIFIER

# GRAPH: FORCE VS SPEED

## DX65F-C12

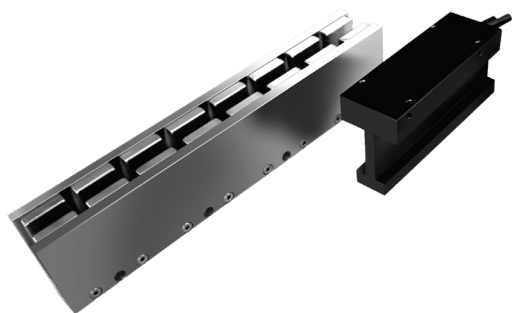


# DXF SERIES

## IRONLESS LINEAR MOTOR

### DX140F

- Ironless Motor
- Peak force to 8787N, Continuous force to 1757N
- Modular Hall Sensor



SPECIFICATION		MODEL			
		DX140F-C1	DX140F-C2	DX140F-C3	DX140F-C4
		S	P	P	P
<b>Performance</b>		<b>Unit</b>			
Peak Force	N	879	1757	2636	3515
Continuous Force @ 100°C*	N	176	351	527	703
Continuous Force AC @ 100°C^	N	-	-	-	-
Peak Power @ 100°C	W	2388	4776	7163	9551
Continuous Power @ 100°C*	W	96	191	287	382
Continuous Power AC @ 100°C^	W	-	-	-	-
<b>Electrical</b>					
Peak Current	A <sup>pk</sup>	16.12	32.24	48.37	64.49
Continuous Current @ 100°C*	A <sup>pk</sup>	3.22	6.45	9.67	12.90
Continuous Current AC @ 100°C^	A <sup>pk</sup>	-	-	-	-
Continuous Stall Current @ 100°C*	Arms	2.28	4.56	6.84	9.12
Force Constant	N/A <sup>pk</sup>	54.5	54.5	54.5	54.5
Back EMF Constant	V <sup>pk</sup> /m/s	62.9	62.9	62.9	62.9
Coil Resistance L-L @ 25°C	ohm	9.4	4.7	3.1	2.4
Coil Resistance L-L @ 100°C*	ohm	12.2	6.1	4.1	3.1
Inductance L-L @ 1kHz	mH	9.80	4.90	3.27	2.45
Motor Constant @ 25°C*	N//W	20.53	29.03	35.55	41.05
Motor Constant @ 100°C*	N//W	17.98	25.43	31.14	35.96
Max. Terminal Voltage	Vdc	330			
<b>Thermal</b>					
Thermal Resistance @ 100°C*	°C/W	0.79	0.39	0.26	0.20
Thermal Resistance AC @ 100°C^	°C/W	-	-	-	-
Max. Coil Temperature	°C	100			
<b>Mechanical</b>					
Coil Weight	kg	0.80	1.52	2.50	3.40
Coil Weight AC^	kg	-	-	-	-
Coil Length	mm	85	145	205	265
Attractive Force	N	0			
Electrical Cycle Length	mm	60			

**Notes:**

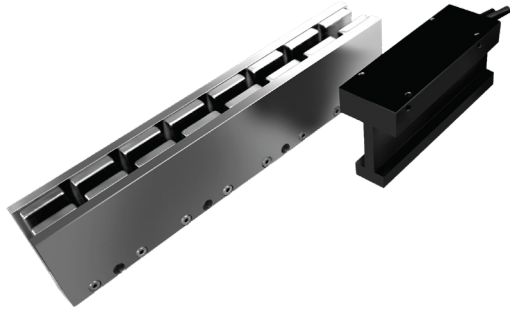
1.  $A_{pk} = 1.414 * Arms$ ;  $V_{pk} = 1.414 * V_{rms}$
2. \* Ambient temperature 25°C, natural convection, with heat sink of size L x 2W x 12mm. (L = length of coil, W = width of coil.)
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar
4. Specifications tolerance - inductance +/-30%, all others +/-10%
5. Peak force and current - 4% duty ratio and 1 second duration
6. Motor Insulation Class - Class B (130°C)
7. IP Rating - IP00
8. IEC Protection Class - Class 1
9. Compliance Standards - CE, RoHS
10. Ambient Operating Temperature - 0 - 40°C
11. Ambient Operating Humidity - 10 - 90% RH
12. Specifications are subject to change without prior notice.

# DXF SERIES

## IRONLESS LINEAR MOTOR

### DX140F

- Ironless Motor
- Peak force to 8787N, Continuous force to 1757N
- Modular Hall Sensor



#### SPECIFICATION

#### MODEL

DX140F-C6

DX140F-C8

DX140F-C10

P

P

P

#### Performance

#### Unit

Peak Force	N	5272	7029	8787
Continuous Force @ 100°C*	N	1054	1406	1757
Continuous Force AC @ 100°C^	N	-	-	-
Peak Power @ 100°C	W	14327	19102	23878
Continuous Power @ 100°C*	W	573	764	955
Continuous Power AC @ 100°C^	W	-	-	-

#### Electrical

Peak Current	A <sup>pk</sup>	96.73	64.49	80.61
Continuous Current @ 100°C*	A <sup>pk</sup>	19.35	12.90	16.12
Continuous Current AC @ 100°C^	A <sup>pk</sup>	-	-	-
Continuous Stall Current @ 100°C*	Arms	13.68	9.12	11.40
Force Constant	N/A <sup>pk</sup>	54.5	109.0	109.0
Back EMF Constant	V <sup>pk</sup> /m/s	62.9	125.9	125.9
Coil Resistance L-L @ 25°C	ohm	1.6	4.7	3.8
Coil Resistance L-L @ 100°C*	ohm	2.0	6.1	4.9
Inductance L-L @ 1kHz	mH	1.63	4.90	3.92
Motor Constant @ 25°C*	N/√W	50.28	58.06	64.91
Motor Constant @ 100°C*	N/√W	44.04	50.86	56.86
Max. Terminal Voltage	Vdc		330	

#### Thermal

Thermal Resistance @ 100°C*	°C/W	0.13	0.10	0.08
Thermal Resistance AC @ 100°C^	°C/W	-	-	-
Max. Coil Temperature	°C		100	

#### Mechanical

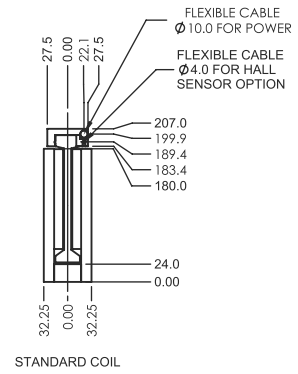
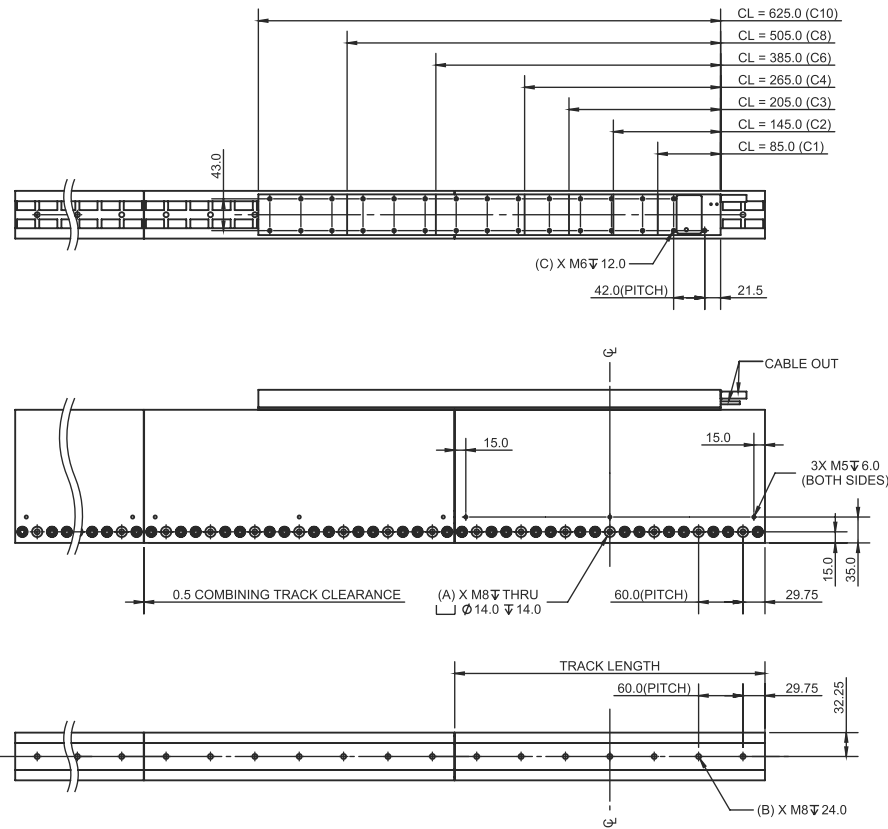
Coil Weight	kg	5.00	6.70	8.40
Coil Weight AC^	kg	-	-	-
Coil Length	mm	385	505	625
Attractive Force	N		0	
Electrical Cycle Length	mm		60	

#### Notes:

1.  $A_{pk} = 1.414 * Arms$ ;  $V_{pk} = 1.414 * V_{rms}$
2. \* Ambient temperature 25°C, natural convection, with heat sink of size L x 2W x 12mm. (L = length of coil, W = width of coil.)
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar
4. Specifications tolerance - inductance +/-30%, all others +/-10%
5. Peak force and current - 4% duty ratio and 1 second duration
6. Motor Insulation Class - Class B (130°C)
7. IP Rating - IP00
8. IEC Protection Class - Class 1
9. Compliance Standards - CE, RoHS
10. Ambient Operating Temperature - 0 - 40°C
11. Ambient Operating Humidity - 10 - 90% RH
12. Specifications are subject to change without prior notice.



# DX140F



**NOTE:**  
 MOTOR AND HALL CABLES TO OBSERVE:  
 FIXED INSTALLATION: STATIC BEND RADIUS  $R > 3 \times$  CABLE DIAMETER  
 FLEXING INSTALLATION: DYNAMIC BEND RADIUS  $R > 10 \times$  CABLE DIAMETER

## Standard Magnet Track

SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
TL 240	239.5	16.0	4	4
TL 300	299.5	20.0	5	5
TL 480	479.5	28.0	7	7

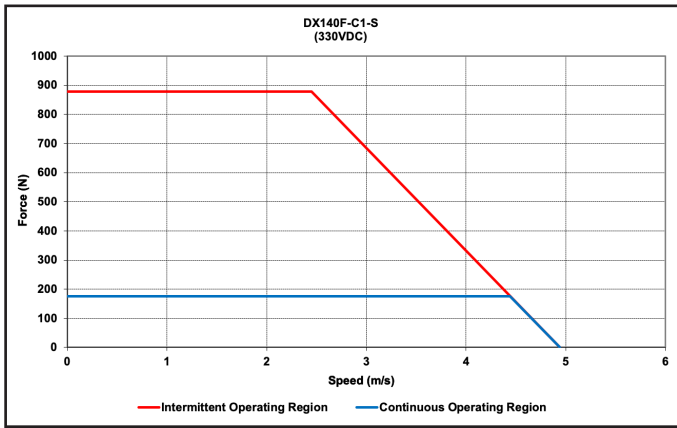
## Motor Coil

SIZE	DX140F WEIGHT (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C1	0.8	3
C2	1.52	5
C3	2.5	9
C4	3.4	11
C6	5.0	17
C8	6.7	23
C10	8.4	29

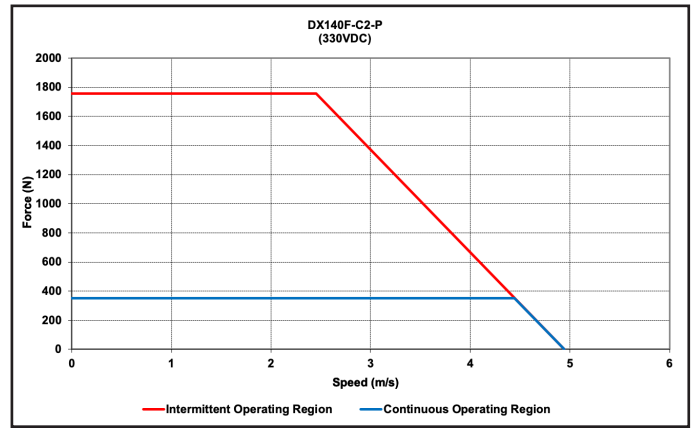
DXB/BT  
**DXF**  
 PIX  
 PSM/PSME  
 CVC  
 CVCA  
 RVCA  
 PDDR  
 PCA  
 PWA  
 PLA  
 PDAB  
 PIAB  
 OCTO  
 PRG  
 LINEAR ENCODER  
 SERVO AMPLIFIER

# GRAPH: FORCE VS SPEED

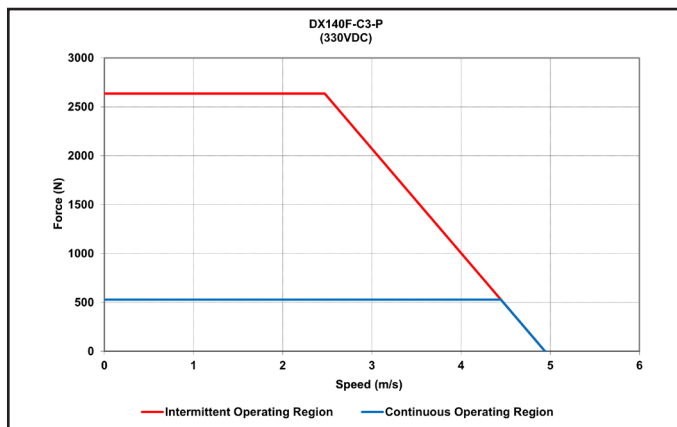
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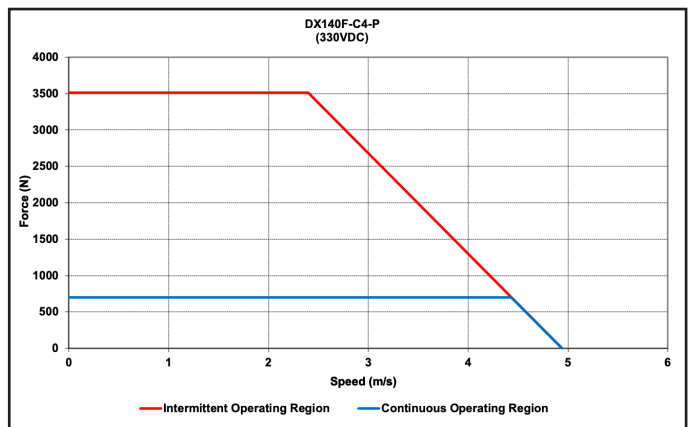
**DX140F-C2**



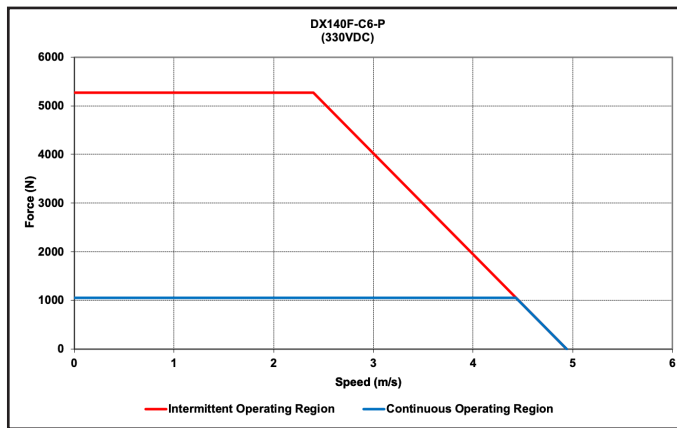
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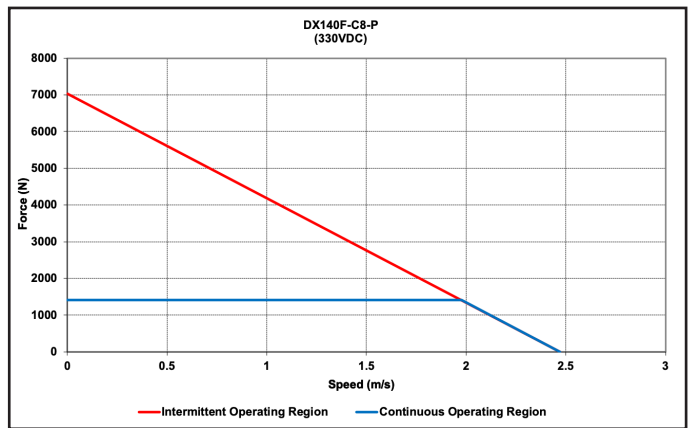
**DX140F-C4**



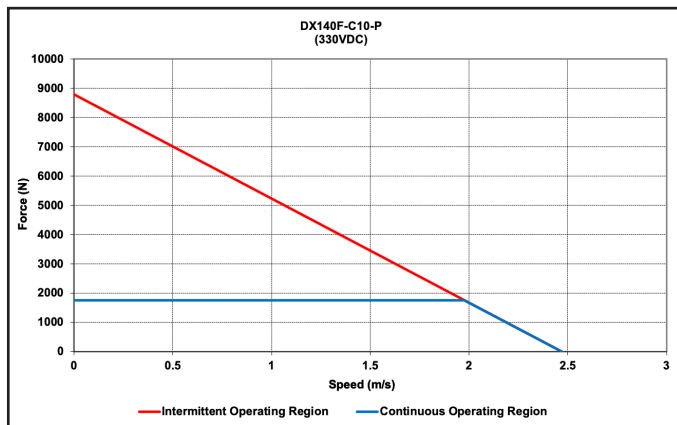
**DX140F-C6**



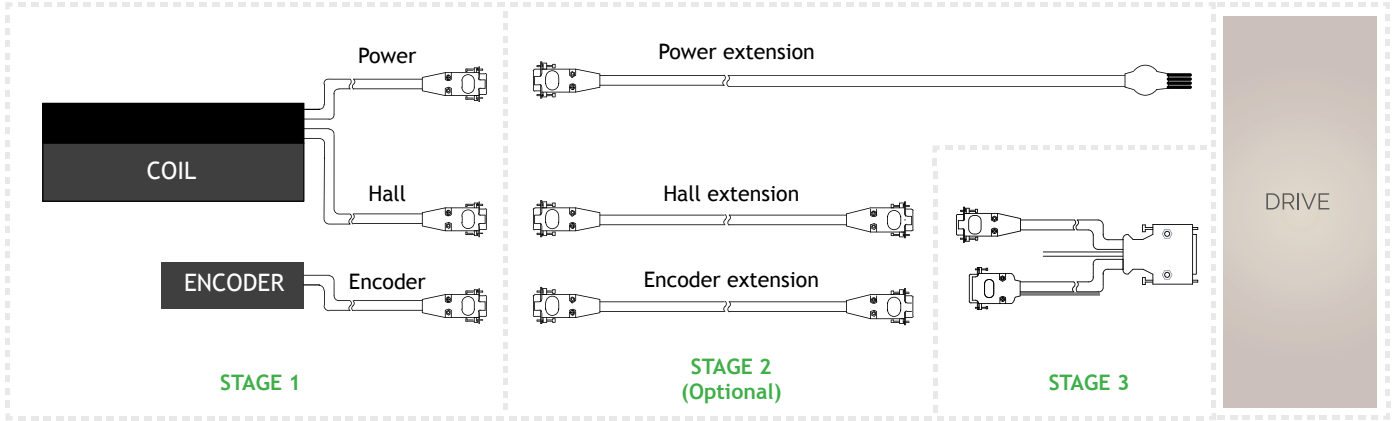
**DX140F-C8**



**DX140F-C10**



# CABLE OPTION



## STAGE 1 | POWER AND HALL CABLE OPTION

DX30F-C4-P-TM-2.0-NC-FC-HC-00

POWER CABLE OPTIONS	
NF	
FC	<p>All the DX F except DX65F, DX140F</p>
	<p>DX65F, DX140F</p>
9NF	<p>9 Pin D-sub Female</p>
	<p>All the DX F except DX65F, DX140F</p>
	<p>9W4 D-sub Female</p>
CNF	<p>All the DX F except DX65F, DX140F</p>

All DX F except DX65F, DX140F		
M1	Grey	Red
M2	Brown	Blue
M3	Black	Brown
PE	Yellow	Yellow
TS1	Black	Red
TS2	Orange	Black

All DX F except DX65F, DX140F		
P1	M1	Grey
P2	M1	Black(Jumper)
P3	M3	Black
P4	M3	Black(Jumper)
P5	M2	Brown
P6	M2	Black(Jumper)
P7	TS1	Black
P8	TS2	Orange
P9	PE	Yellow

DX65F, DX140F		
A1	M1	Red
A2	M2	Blue
A3	M3	Brown
P1	TS1	Red
P3	TS2	Black
A4	PE	Yellow

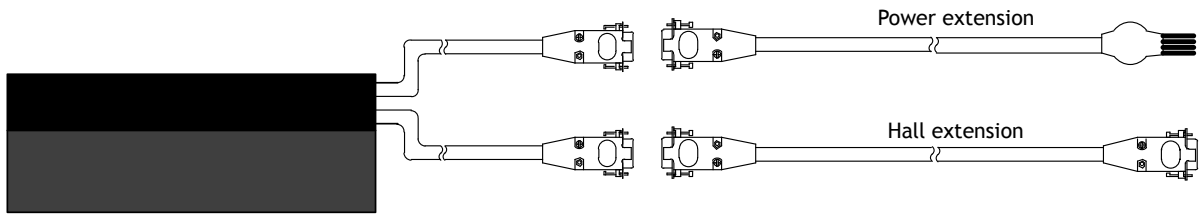
All DX F except DX65F, DX140F		
P1	M1	Grey
P2	M2	Brown
P3	M3	Black
P4	TS1	Black
P5	TS2	Orange
P6	PE	Yellow

HALL SENSOR OPTIONS																	
H	<table border="1"> <tr><td>Hall A</td><td>White</td></tr> <tr><td>Hall B</td><td>Green</td></tr> <tr><td>Hall C</td><td>Blue</td></tr> <tr><td>5V</td><td>Red</td></tr> <tr><td>0V</td><td>Black</td></tr> </table>	Hall A	White	Hall B	Green	Hall C	Blue	5V	Red	0V	Black						
Hall A	White																
Hall B	Green																
Hall C	Blue																
5V	Red																
0V	Black																
HC	<p>9 Pin D-sub Male</p> <table border="1"> <tr><td>P1</td><td>Hall A</td><td>White</td></tr> <tr><td>P2</td><td>Hall B</td><td>Green</td></tr> <tr><td>P3</td><td>Hall C</td><td>Blue</td></tr> <tr><td>P4</td><td>5V</td><td>Red</td></tr> <tr><td>P5</td><td>0V</td><td>Black</td></tr> </table>	P1	Hall A	White	P2	Hall B	Green	P3	Hall C	Blue	P4	5V	Red	P5	0V	Black	
P1	Hall A	White															
P2	Hall B	Green															
P3	Hall C	Blue															
P4	5V	Red															
P5	0V	Black															
CHC	<p>Push Pull 5 Pin Male</p> <table border="1"> <tr><td>P1</td><td>Hall A</td><td>White</td></tr> <tr><td>P2</td><td>Hall B</td><td>Green</td></tr> <tr><td>P3</td><td>Hall C</td><td>Blue</td></tr> <tr><td>P4</td><td>5V</td><td>Red</td></tr> <tr><td>P5</td><td>0V</td><td>Black</td></tr> </table>	P1	Hall A	White	P2	Hall B	Green	P3	Hall C	Blue	P4	5V	Red	P5	0V	Black	
P1	Hall A	White															
P2	Hall B	Green															
P3	Hall C	Blue															
P4	5V	Red															
P5	0V	Black															
HCL	<p>9 Pin D-sub Male</p> <table border="1"> <tr><td>P1</td><td>Hall A+</td></tr> <tr><td>P2</td><td>Hall A-</td></tr> <tr><td>P3</td><td>Hall B+</td></tr> <tr><td>P4</td><td>Hall B-</td></tr> <tr><td>P5</td><td>Hall C+</td></tr> <tr><td>P6</td><td>Hall C-</td></tr> <tr><td>P7</td><td>5V</td></tr> <tr><td>P8</td><td>0V</td></tr> </table>	P1	Hall A+	P2	Hall A-	P3	Hall B+	P4	Hall B-	P5	Hall C+	P6	Hall C-	P7	5V	P8	0V
P1	Hall A+																
P2	Hall A-																
P3	Hall B+																
P4	Hall B-																
P5	Hall C+																
P6	Hall C-																
P7	5V																
P8	0V																

Notes: All connectors shown are front view

# STAGE 2 | DX F SERIES EXTENSION CABLE

Connection example: DX□F-□-□-□-□-□-□-9NF-HC-00



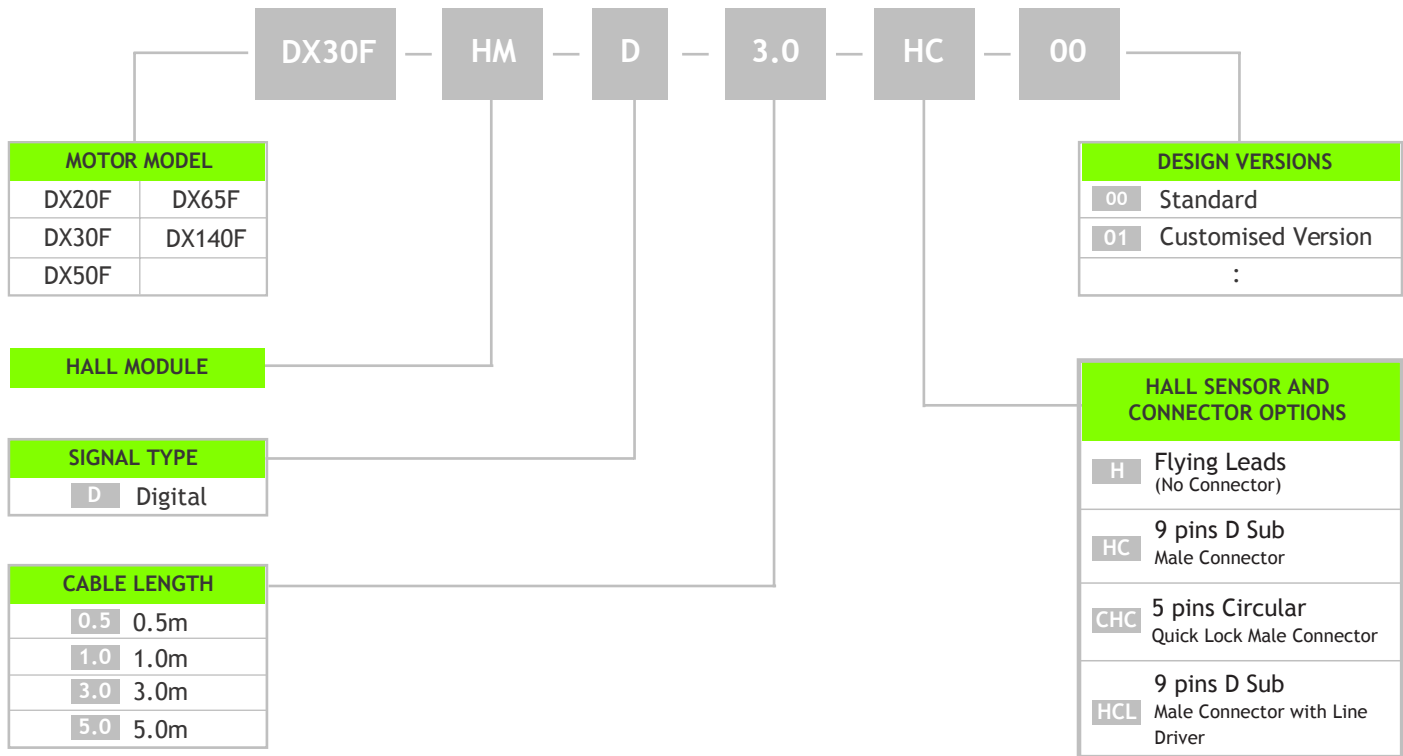
	Extension Cable	Part Number
Power Extension Cable		CBL_EXT_PWR1_X.X (DX20F, DX30F, DX50F)
		CBL_EXT_PWR1_CC_X.X (DX20F, DX30F, DX50F)
		CBL_EXT_PWR4_X.X (DX65F)
		CBL_EXT_PWR5_X.X (DX140F)
Hall Sensor Extension Cable		CBL_EXT_HALL0_X.X
		CBL_EXT_HALL0_CC_X.X
		CBL_EXT_HALL0_DIF_X.X
Encoder Extension Cable		CBL_EXT_REN00_X.X
		CBL_EXT_REN00A_X.X
		CBL_EXT_REN01_X.X
		CBL_EXT_REN01B_X.X
		CBL_EXT_REN05_X.X
		CBL_EXT_REN05A_X.X

CABLE		CABLE LENGTH (X.X)	
00	RGH41, VIONIC, QUANTIC Digital	0.5	0.5 meter
		1.0	1.0meter
00A	RGH41 Analog	2.0	2.0 meter
01	RH200 Digital	3.0	3.0 meter
01B	PH200 Analog		(standard)
05	ATOM Ri Interface Digital		
05A	ATOM Ri Interface Analog		

Notes: 1. X.X is the length of the cable in meters 2. For customized cable length, contact PBA

# HALL SENSOR MODULE PART NUMBERING SYSTEMS



DXB/BT  
**DXF**  
 PIX  
 PSM/PSME  
 CVC  
 CVC/A  
 RVCA  
 PDDR  
 PCA  
 PWA  
 PLA  
 PDAB  
 PIAB  
 OCTO  
 PRG  
 LINEAR ENCODER  
 SERVO AMPLIFIER

# THERMAL PROTECTION

The temperature in which the thermostat is active is shown as below:

MODEL	THERMAL DEVICE TYPE	THERMOSTAT (NC) OPENS AT
DX20F, DX30F, DX50F, DX65F, DX140F	PT100	TC: Refer to note 1
DX30F, DX50F, DX65F, DX140F	Thermostat	TM: (NC) 100°C

- Note 1:
- Programmable on temperature controller or analog inputs on motion controller.
  - Recommended to set cut-off temperature to 100°C (max) to prevent coil damage.
  - User has to ensure that the thermal protection devices are wired to appropriate electronics to ensure that the motor power cutoff is active when temperature reaches its allowable limit.

# Application Form - Linear Motor Selection

Customer Name:	Date (DD/MM/YY):
Contact Email:	

## PBA LINEAR MOTOR SELECTION QUESTIONNAIRE

### 1. Application Description

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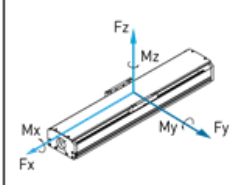
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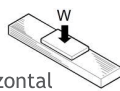

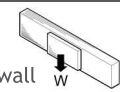
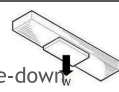
### 1a. Application Sketch With Approx Dimensions

### 2. Load Parameter

Moving mass (without motor coil)	kg	
Frictional force	N	
Opposing force	N	
Mx	N.m	My
		N.m
		MZ
		N.m

### Stage Requirements



<input type="checkbox"/> Horizontal		<input type="checkbox"/> Vertical	
<input type="checkbox"/> Sidewall		<input type="checkbox"/> Upside-down	

### 3. Motion Parameter

		Profile 1	Profile 2	Profile 3
Moving distance	mm			
Moving time	s			
Moving velocity	m/s			
Acceleration	m/s <sup>2</sup>			
Dwell time	s			

### 4. Command/Bus (Please Circle Accordingly)

Pulse and direction / Analog / EtherCAT / IO trigger / Other : \_\_\_\_\_

### 5. Encoder (Please Circle Accordingly)

Resolution	um	
Incremental / Absolute / Analog		

### 6. Motion Precision

Accuracy	um/mm	
Repeatability	um	

### 7. Mechanical Specification

Effective stroke	mm	
Flatness	um/mm	
Straightness	um/mm	
Space constraints ( L x W x H )	mm	

### 8. Working Environment

Room temperature	°C	
Clean room class		

### 9. Additional Requirements (Please Tick ( ) Accordingly)

Motor cable length	Controller	Amplifier	Encoder	Other: _____
m				

### 10. Actuator

Open Frame	Enclosed			
	PARTIAL		BELLOW	
			STRIP SEAL	

### 11. Remarks: If you have any special motion request for sizing procedure, please specify your requirement in below remarks.

# PBA SYSTEMS LINEAR MOTOR SIZER SOFTWARE



PBA Systems is a one-stop robotics provider with a focus on the development of core technology to offer a robust range of products and solutions in precision robotics and general robotics - enabling companies to thrive by making Industry 4.0 technology accessible to the market.

Our core strength is in design, development, and manufacturing of direct drive motor design and manufacturing, motion control, and precision modular assemblies.

Address:  
**505 Yishun Industrial Park, A,  
 Singapore 768733**

Contact Us:  
**Tel: +(65) 6576 6766  
 Fax: +(65) 6576 6768**



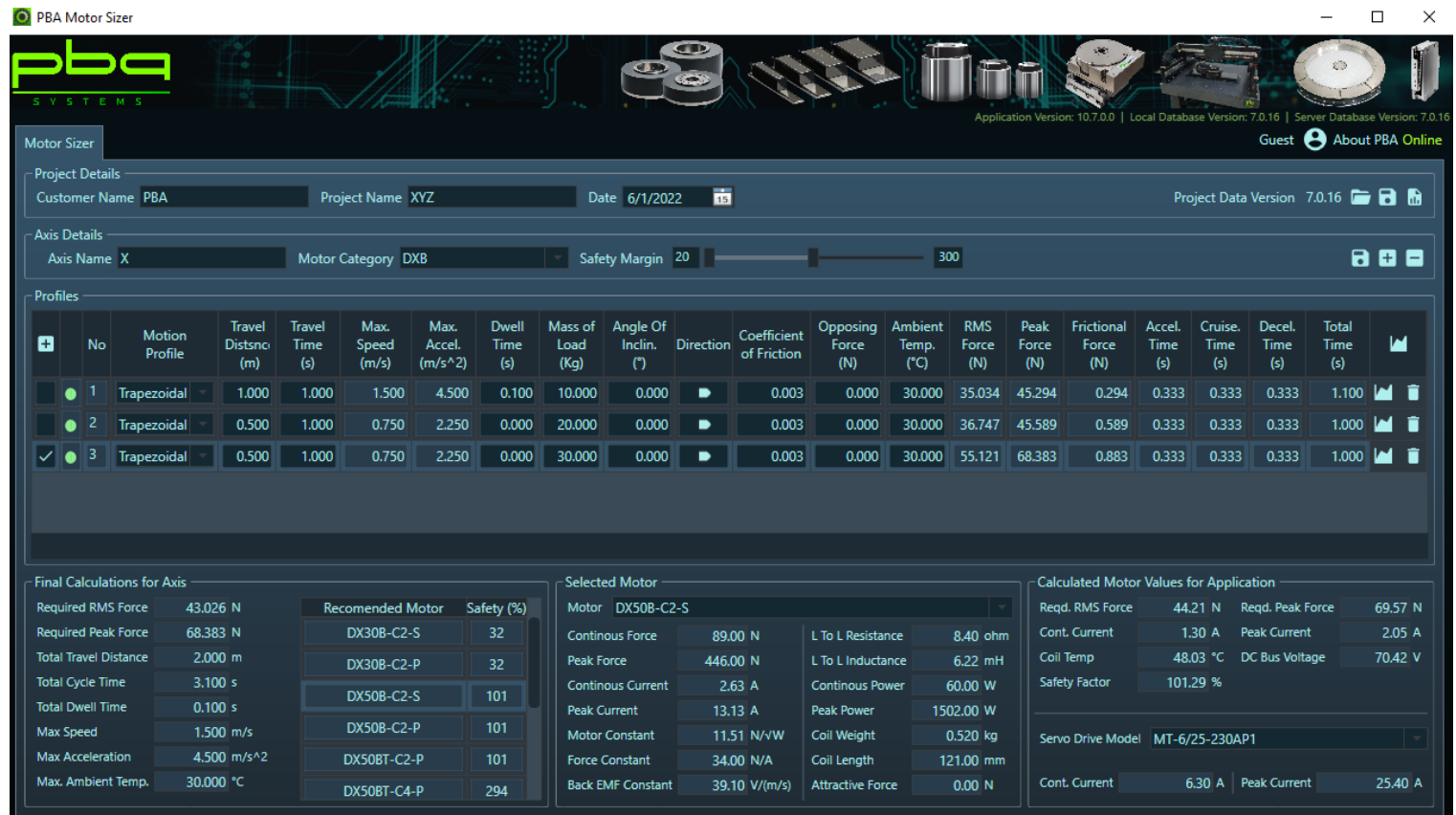
## PBA SYSTEMS LINEAR MOTOR SIZER SOFTWARE

PBA Systems Motor Sizer Software is available to download from our website to assist in the calculation and selection.

Kindly visit us at [www.pbasystems.com.sg](http://www.pbasystems.com.sg) or simply scan the QR CODE

## SIMULATED PERFORMANCE CHARTS

PBA Motor Sizer



Application Version: 10.7.0.0 | Local Database Version: 7.0.16 | Server Database Version: 7.0.16

Guest About PBA Online

**Motor Sizer**

**Project Details**  
 Customer Name: PBA | Project Name: XYZ | Date: 6/1/2022 | Project Data Version: 7.0.16

**Axis Details**  
 Axis Name: X | Motor Category: DXB | Safety Margin: 20 (slider) | 300

**Profiles**

No	Motion Profile	Travel Distnco (m)	Travel Time (s)	Max. Speed (m/s)	Max. Accel. (m/s^2)	Dwell Time (s)	Mass of Load (Kg)	Angle Of Incln. (°)	Direction	Coefficient of Friction	Opposing Force (N)	Ambient Temp. (°C)	RMS Force (N)	Peak Force (N)	Frictional Force (N)	Accel. Time (s)	Cruise Time (s)	Decel. Time (s)	Total Time (s)
1	Trapezoidal	1.000	1.000	1.500	4.500	0.100	10.000	0.000	▶	0.003	0.000	30.000	35.034	45.294	0.294	0.333	0.333	0.333	1.100
2	Trapezoidal	0.500	1.000	0.750	2.250	0.000	20.000	0.000	▶	0.003	0.000	30.000	36.747	45.589	0.589	0.333	0.333	0.333	1.000
3	Trapezoidal	0.500	1.000	0.750	2.250	0.000	30.000	0.000	▶	0.003	0.000	30.000	55.121	68.383	0.883	0.333	0.333	0.333	1.000

**Final Calculations for Axis**

Required RMS Force	43.026 N	Recommended Motor	Safety (%)
Required Peak Force	68.383 N	DX30B-C2-S	32
Total Travel Distance	2.000 m	DX30B-C2-P	32
Total Cycle Time	3.100 s	DX50B-C2-S	101
Total Dwell Time	0.100 s	DX50B-C2-P	101
Max Speed	1.500 m/s	DX50BT-C2-P	101
Max Acceleration	4.500 m/s^2	DX50BT-C4-P	294
Max. Ambient Temp.	30.000 °C		

**Selected Motor**  
 Motor: DX50B-C2-S

Continuous Force	89.00 N	L To L Resistance	8.40 ohm
Peak Force	446.00 N	L To L Inductance	6.22 mH
Continuous Current	2.63 A	Continuous Power	60.00 W
Peak Current	13.13 A	Peak Power	1502.00 W
Motor Constant	11.51 N/VW	Coil Weight	0.520 kg
Force Constant	34.00 N/A	Coil Length	121.00 mm
Back EMF Constant	39.10 V/(m/s)	Attractive Force	0.00 N

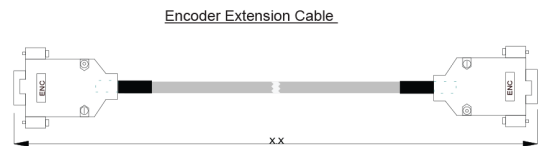
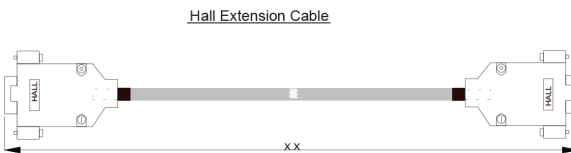
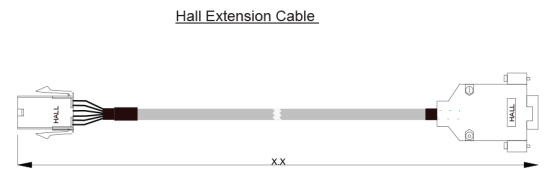
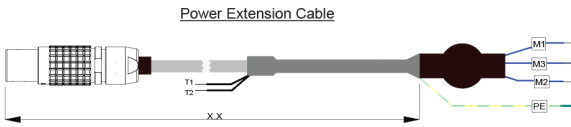
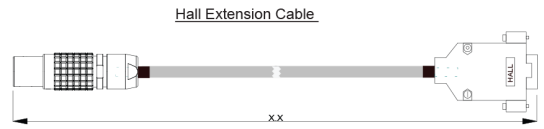
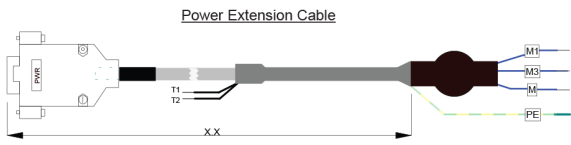
**Calculated Motor Values for Application**

Reqd. RMS Force	44.21 N	Reqd. Peak Force	69.57 N
Cont. Current	1.30 A	Peak Current	2.05 A
Coil Temp	48.03 °C	DC Bus Voltage	70.42 V
Safety Factor	101.29 %		

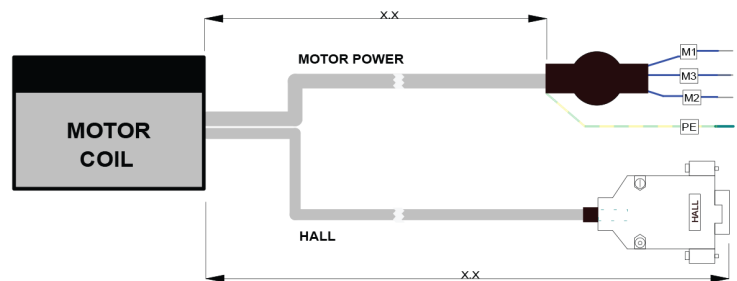
Servo Drive Model: MT-6/25-230AP1

Cont. Current	6.30 A	Peak Current	25.40 A
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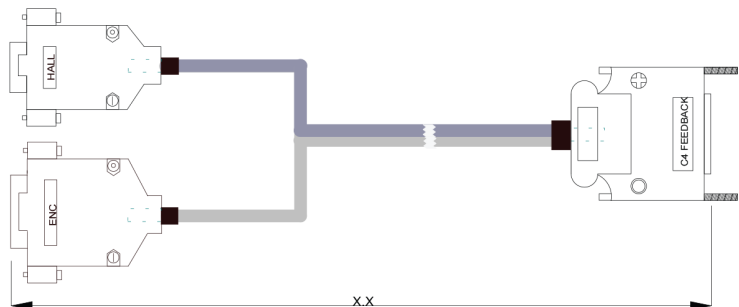
# APPENDIX



**MOTOR POWER HALL CABLE**



**MAXTUNE FEEDBACK CABLE**



**Notes:**

1. X.X is the length of the cable in meter with a tolerance of  $+ 0.10$  /  $- 0$
2. All measurements are in meters (m) unless stated