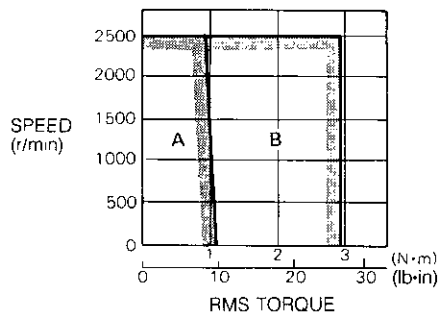
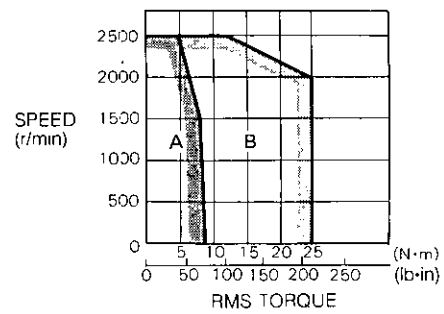


## 1.2.2 Torque-Speed Characteristics

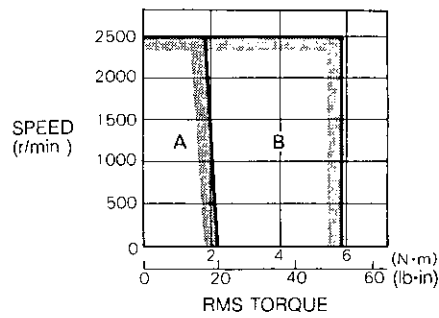
- TYPE USAFED-02C



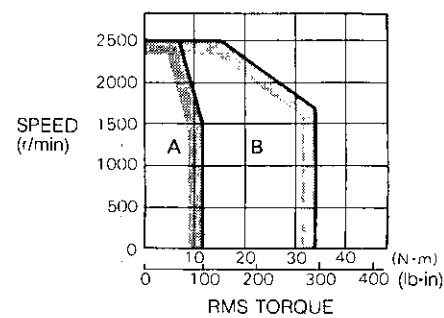
- TYPE USAFED-13C



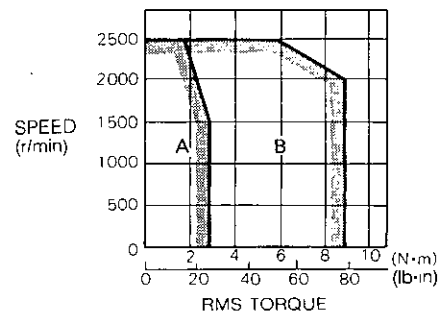
- TYPE USAFED-03C



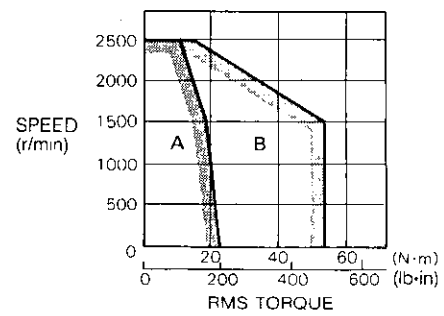
- TYPE USAFED-20C



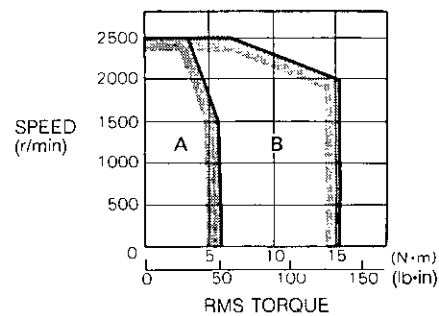
- TYPE USAFED-05C1



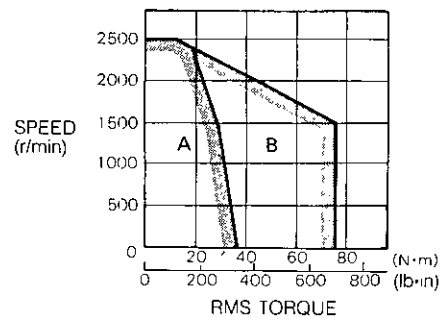
- TYPE USAFED-30C



- TYPE USAFED-09C



- TYPE USAFED-44C

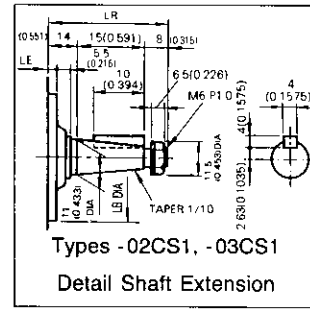
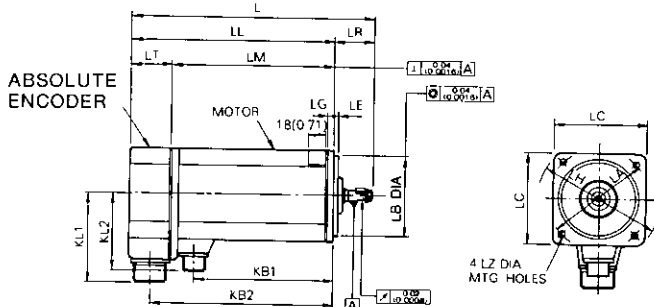


A: CONTINUOUS DUTY ZONE  
 B: INTERMITTENT DUTY ZONE  
 POWER SUPPLY: 200 V

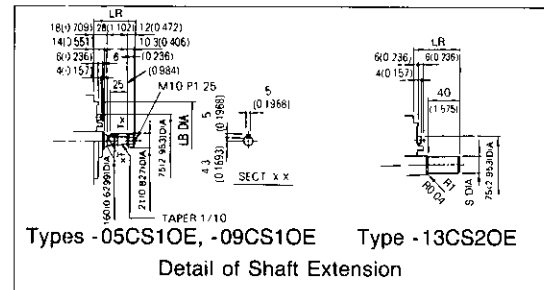
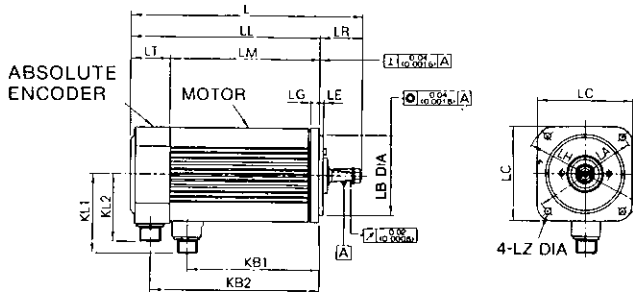
# 10.1.2 F Series

## (1) Standard Type

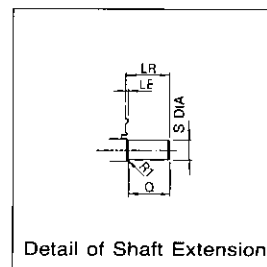
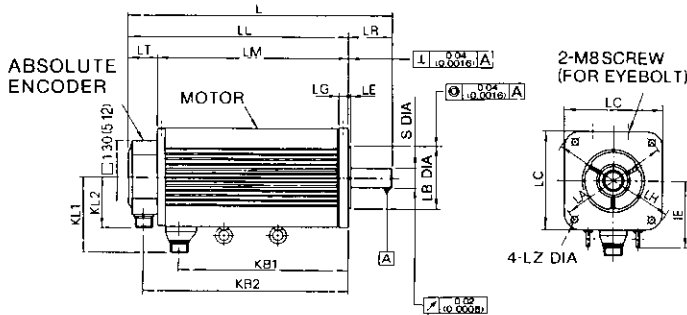
- Types USAFED-02CS10E, -03CS10E (Taper Shaft)



- Types USAFED-05CS10E, -09CS10E (Taper Shaft), -13C22 (Straight Shaft)



- Types USAFED-20CS20E, -30CS20E, -44CS20E (Straight Shaft)



AC SERVOMOTOR Type USAFED-	L	LL	LM	LR	LT	KB1	KB2	IE	KL1	KL2	Flange Surface						Shaft Extension		Approx Mass kg (lb)	
											LA	LB	LC	LE	LG	LH	LZ	S		Q
02CS1*	234 (9.21)	197 (7.75)	137 (5.39)	37 (1.46)	60 (2.36)	90 (3.54)	172 (6.77)	-	76 (2.99)	87 (3.43)	100 (3.94)	80 (3.1496)	90 (3.54)	4 (0.157)	7 (0.276)	120 (4.72)	6.6 (0.26)	-	-	5 (11.1)
03CS1*	280 (11.02)	243 (9.56)	183 (7.2)	37 (1.46)	60 (2.36)	136 (5.35)	218 (8.58)	-	76 (2.99)	87 (3.43)	100 (3.94)	80 (3.1496)	90 (3.54)	4 (0.157)	7 (0.276)	120 (4.72)	6.6 (0.26)	-	-	7 (15.5)
05CS1*	277 (10.90)	219 (8.62)	150 (5.91)	58 (2.28)	69 (2.72)	127 (5.0)	177 (6.97)	-	109 (4.29)	92 (3.62)	145 (5.71)	110 (4.3307)	130 (5.12)	6 (0.24)	12 (0.47)	165 (6.5)	9 (0.35)	-	-	9 (19.9)
09CS1*	334 (13.14)	276 (10.86)	207 (8.16)	58 (2.28)	69 (2.72)	184 (7.24)	234 (9.21)	-	109 (4.29)	92 (3.62)	145 (5.71)	110 (4.3307)	130 (5.12)	6 (0.24)	12 (0.47)	165 (6.5)	9 (0.35)	-	-	14 (30.9)
13CS2*	403 (15.87)	345 (13.59)	276 (10.87)	58 (2.28)	69 (2.72)	253 (9.96)	303 (11.93)	-	109 (4.29)	92 (3.62)	145 (5.71)	110 (4.3307)	130 (5.12)	6 (0.24)	12 (0.47)	165 (6.5)	9 (0.35)	22 (0.8661)	40 (1.3779)	20 (44.1)
20CS2*	344 (13.55)	265 (10.44)	211 (8.3)	79 (3.11)	54 (2.13)	172 (6.78)	237 (9.33)	-	139 (5.47)	92 (3.62)	200 (7.88)	114.3 (4.5)	180 (7.09)	3.2 (0.13)	18 (0.71)	230 (9.06)	13.5 (0.53)	35 (1.3779)	76 (2.99)	22 (48.6)
30CS2	401 (15.79)	322 (12.68)	269 (10.59)	79 (3.11)	54 (2.13)	229 (9.02)	295 (11.61)	123 (4.85)	139 (5.47)	92 (3.62)	200 (7.88)	114.3 (4.5)	180 (7.09)	3.2 (0.13)	18 (0.71)	230 (9.06)	13.5 (0.53)	35 (1.3779)	76 (2.99)	29 (64.0)
44CS2	486 (19.14)	407 (16.02)	354 (13.93)	79 (3.11)	54 (2.13)	314 (12.36)	380 (14.96)	123 (4.85)	139 (5.47)	92 (3.62)	200 (7.88)	114.3 (4.5)	180 (7.09)	3.2 (0.13)	18 (0.71)	230 (9.06)	13.5 (0.53)	35 (1.3779)	76 (2.99)	41 (90.4)

\* Not Provided with an eyebolt.

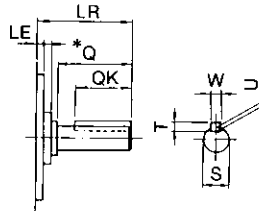
1. Absolute encoder 8192 pulses/rev is used as a detector.
2. Vibration: 15 μm or below.
3. Plug and clamp are not attached for receptacle connection.

4. Connector specifications: Refer to Table 3.7.

5. It is recommended that the motor be mounted with its connector placed down.
6. Power supply for brake is 90VDC.

### (3) Shaft Extension of Straight Shaft with Keyway

Both SERVOMOTORS with brake and without brake have the same dimensions except for shaft extension. Shaft extensions are shown below:



Motor Type		LR	LE	Dimensions of Shaft Extension					
Without Brake	With Brake			S	Q	QK	T	U	W
*USAFED-02CS2K	*USAFED-02CS2KE	37 (1.46)	4 (0.157)	14 (0.5512 $\begin{smallmatrix} -0.011 \\ -0.0004 \end{smallmatrix}$ )	25 (0.98)	15 (0.59)	5 (0.1968)	3 (0.1181)	5 (0.1968)
*USAFED-03CS2K	*USAFED-03CS2KE	37 (1.46)	4 (0.157)	14 (0.5512 $\begin{smallmatrix} -0.011 \\ -0.0004 \end{smallmatrix}$ )	25 (0.98)	15 (0.59)	5 (0.1968)	3 (0.1181)	5 (0.1968)
*USAFED-05CS2K	*USAFED-05CS2KE	58 (2.28)	6 (0.24)	19 (0.7480 $\begin{smallmatrix} -0.011 \\ -0.0005 \end{smallmatrix}$ )	40 (1.57)	25 (0.98)	5 (0.1968)	3 (0.1181)	5 (0.1968)
*USAFED-09CS2K	*USAFED-09CS2KE	58 (2.28)	6 (0.24)	19 (0.7480 $\begin{smallmatrix} -0.011 \\ -0.0005 \end{smallmatrix}$ )	40 (1.57)	25 (0.98)	5 (0.1968)	3 (0.1181)	5 (0.1968)
*USAFED-13CS2K	*USAFED-13CS2KE	58 (2.28)	6 (0.24)	22 (0.8661 $\begin{smallmatrix} -0.011 \\ -0.0005 \end{smallmatrix}$ )	40 (1.57)	25 (0.98)	6 (0.2362)	3.5 (0.1378)	6 (0.2362)
USAFED-20CS2K	USAFED-20CS2KE	79 (3.11)	3.2 (0.13)	35 (1.3379 $\begin{smallmatrix} -0.011 \\ -0.0004 \end{smallmatrix}$ )	76 (2.99)	60 (2.36)	8 (0.3149)	5 (0.1968)	10 (0.3937)
USAFED-30CS2K	USAFED-30CS2KE	79 (3.11)	3.2 (0.13)	35 (1.3379 $\begin{smallmatrix} -0.011 \\ -0.0004 \end{smallmatrix}$ )	76 (2.99)	60 (2.36)	8 (0.3149)	5 (0.1968)	10 (0.3937)
USAFED-44CS2K	USAFED-44CS2KB	79 (3.11)	3.2 (0.13)	35 (1.3379 $\begin{smallmatrix} -0.011 \\ -0.0004 \end{smallmatrix}$ )	76 (2.99)	60 (2.36)	8 (0.3149)	5 (0.1968)	10 (0.3937)

\*: 4 mm ( in.) for USAFED-02CS2[ ] and 03CS2[ ]  
6 mm ( in.) for USAFED-05CS2[ ] to 13CS2[ ]