OSPE..BHD Belt-Driven Actuators

Actuators for High-Speed, Long Travel, Heavy Duty Applications

The OSPE..BHD is the highest capacity belt-driven actuator in the OSPE family. The integrated ball bearing guide or optional roller guide are proven in thousands of industrial machines requiring robustness, dynamic precision and extraordinary performance with an aesthetically pleasing design.

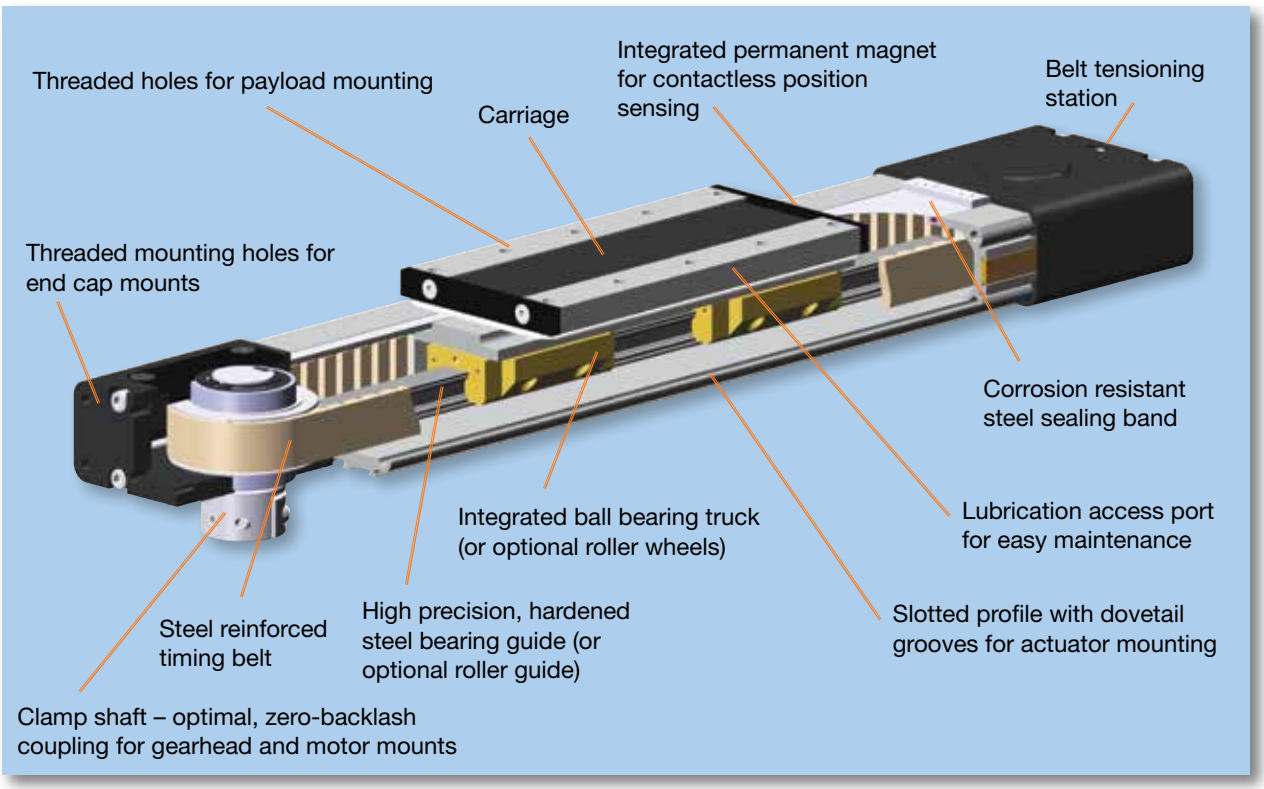
The compact design allows integration of the OSPE..BHD in any machine layout, providing very little space, without sacrificing payload or thrust capacity.

Advantages:

- **High dynamic for precision positioning**
- **High thrust capacity**
- **High payload capacity**
- **High speed operation**
- **Easy installation**
- **Ideal in multi axis applications**

Features:

- **Integrated ball bearing guide or roller guide**
- **Clamp drive shaft design for compact and backlash free gearhead and motor mounting**
- **Tandem carriage with second carriage for higher load capabilities**
- **Long available strokes**
- **Complete motor and drive packages**
- **Bi-parting carriages and special options on request**
- **Ambient temperature range -30°C to +80°C**
- **IP 54 Rating**



Choose from a Wide Range of Standard Options for Maximum Design Flexibility in a Pre-assembled Solution

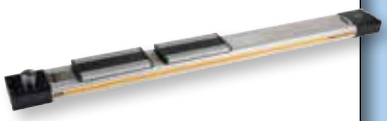
Integrated Bearing Design

Ball bearing - with a high-precision, hardened-steel rail and calibrated bearing trucks for high load capabilities

Roller bearing - with in aluminum grounded and calibrated steel track and needle bearing wheels for high-speed operation up to 10 m/s.

Carriage Options

Standard carriage



Tandem carriage — for higher load capabilities

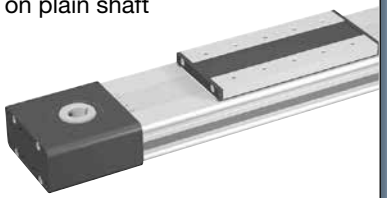
Bi-parting carriage — for opposing synchronized movements

Drive Shaft Options

Clamp shaft — for zero-backlash coupling

Plain shaft — for dual axis linking

Clamp and plain shaft — for master unit to connect link shaft on plain shaft



Hollow shaft - for compact gearhead mounting

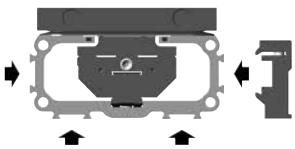
Multi-axis Systems

A wide range of adapter plates and intermediate drive shafts simplifies engineering and installation.
Please consult factory for your individual system design.

Actuator Mounting Options

End cap mounting — allows the actuator to be anchored by the end caps

Profile mounts — support long travel actuators or for direct mounting



Options and Accessories

Information on all OSPE..BHD Series options is detailed on the following pages. Simply select all the options needed to solve your application requirements, then order with the actuator using convenient order codes (see last pages of the OSPE..BHD section).
To order an option separately as an upgrade to an existing system or as a replacement part, use the individual option part numbers provided.

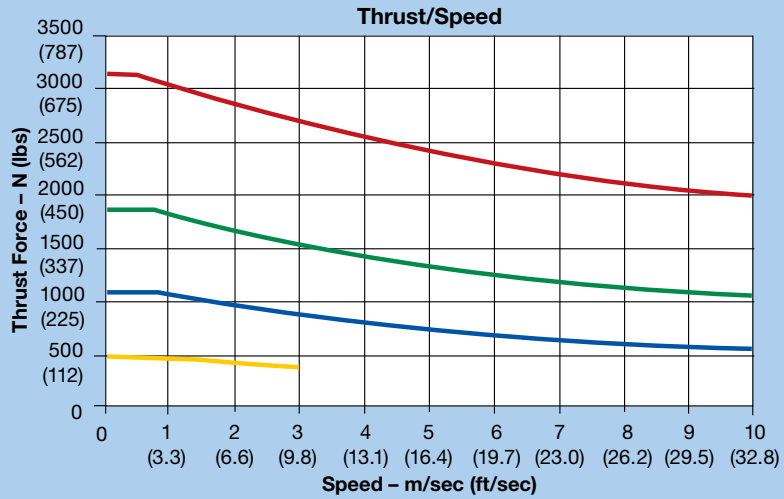
OSPE..BHD Belt-Driven Actuators

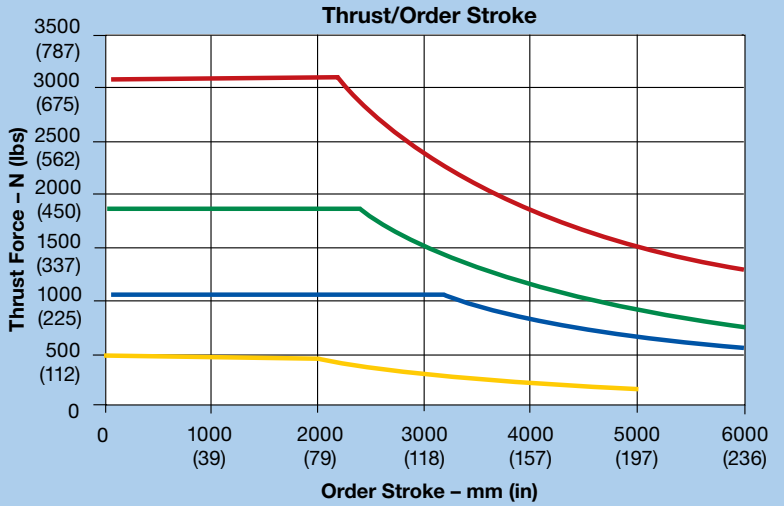
General Specifications

Actuator Size			OSPE20BHD	OSPE25BHD		OSPE32BHD		OSPE50BHD	
Integrated Guide Rail [1]			**B**	**B**	**R**	**B**	**R**	**B**	**R**
Travel Distance per Revolution	s_{lin}	mm	125	180	180	240	240	350	350
Pulley Diameter		mm	39.79	57.30	57.30	76.39	76.39	111.41	111.41
Linear Speed (Max)	v_{max}	m/s	3	5	10	5	10	5	10
Acceleration (Max)	a_{max}	m/s²	50	50	40	50	40	50	40
Repeatability (unidirectional)		µm	± 50	± 50	± 50	± 50	± 50	± 50	± 50
Order Stroke (Max) [2]		mm	5,760	5,700	5,700	5,600	5,600	5,500	5,500
Thrust Force (Max)	F_{Amax}	N	550	1,070	1,070	1,870	1,870	3,120	3,120
		lbs	124	241	241	420	420	701	701
Torque on Drive Shaft (Max)	M_{Amax}	Nm	12	32	32	74	74	177	177
		in-lb	102	282	282	652	652	1,567	1,567
Torque [3] **— RMS No Load**	M_0	Nm	0.9	1.4	1.4	2.5	2.5	4.2	4.2
		in-lb	8	12	12	22	22	37	37
Torque [3] **— Peak No Load**	M_0	Nm	1.1	1.9	1.9	3.2	3.2	6.0	6.0
		in-lb	10	17	17	28	28	53	53
Load [4] **(Max)**	F_Y	N	1,600	2,000	986	5,000	1,348	12,000	3,704
		lbs	360	450	222	1,124	303	2,698	833
	F_Z	N	1,600	3,000	986	10,000	1,348	15,000	3,704
		lbs	360	674	222	2,248	303	3,372	833
Bending Moment Load [4] **(Max)**	M_X	Nm	21	50	11	120	19	180	87
		in-lb	186	443	97	1,062	168	1,593	770
	M_Y	Nm	150	500	64	1,000	115	1,800	365
		in-lb	1,328	4,425	566	8,851	1,018	15,931	3,231
	M_Z	Nm	150	500	64	1,400	115	2,500	365
		in-lb	1,328	4,425	566	12,391	1,018	22,127	3,231
Inertia									
@ Zero Stroke	J_0	kgmm²	280	1,229	984	3,945	3,498	25,678	19,690
Per Meter of Stroke	J_{OS}	kgmm²/m	41	227	227	496	496	1,738	1,738
Per 1 kg Moved Mass	J_m	kgmm²/kg	413	821	821	1,459	1,459	3,103	3,103
Weight									
@ Zero Stroke	m_0	kg	2.0	2.8	2.8	6.2	5.8	18.2	17.9
Per Meter of Stroke	m_{OS}	kg/m	4.0	4.5	4.3	7.8	6.7	17.0	15.2
Carriage	m_C	kg	0.8	1.5	1.0	2.6	1.9	7.8	4.7
Ambient Temperature Range		°C	-30 to +80						
IP Rating)			IP 54						

[1] B = Ball Bearing Guide Rail; R = Roller Guide
[2] Longer, extended order strokes on request OSPE20BHD = 6000 mm; OSPE25BHD = 9400 mm; OSPE32BHD = 9200 mm
[3] For tandem and bi-parting options double the values listed.
[4] Load and bending moment based on 8000 km performance

Available Thrust Force by Speed and Stroke



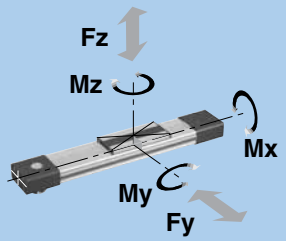


OSPE20BHD OSPE25BHD OSPE32BHD OSPE50BHD

Calculating Load Factors - Combined Normal and Moment Load

The sum of combined loads (static and dynamic) must not exceed "1" at any time as shown in the formula below:

$$\frac{F_z}{F_{z\,(max)}} + \frac{M_x}{M_{x\,(max)}} + \frac{M_y}{M_{y\,(max)}} + \frac{M_z}{M_{z\,(max)}} \leq 1$$



$M = F \times l$ (Nm)

$M_x = M_{x\,static} + M_{x\,dynamic}$

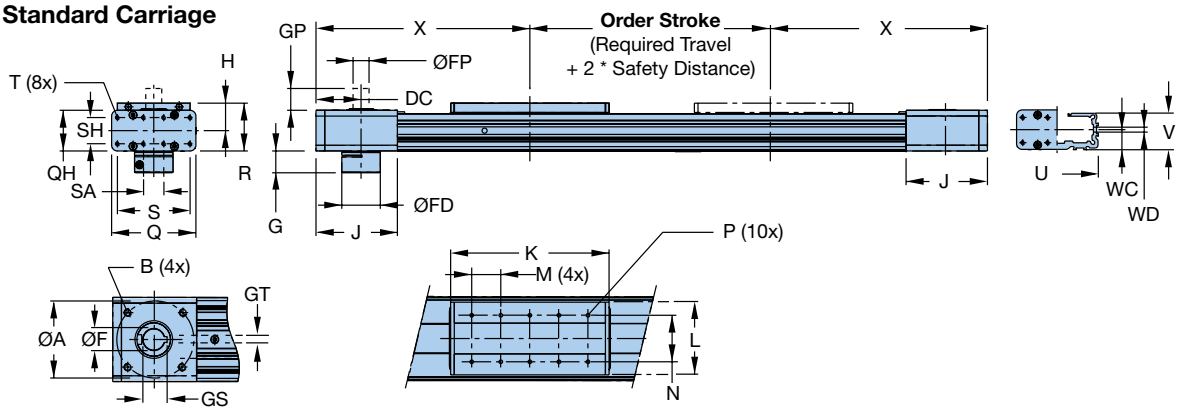
$M_y = M_{y\,static} + M_{y\,dynamic}$

$M_z = M_{z\,static} + M_{z\,dynamic}$

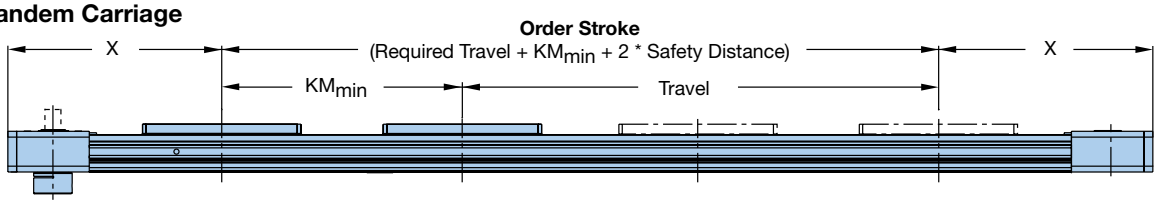
OSPE..BHD Belt-Driven Actuators

Dimensions — mm

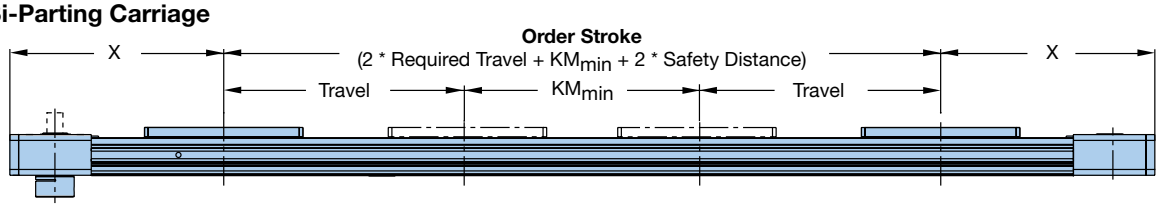
Standard Carriage



Tandem Carriage



Bi-Parting Carriage



Dimensions — mm

Actuator Size	A	B	DC	F	FD	FP	G	GP	GS	GT
OSPE20BHD	65.7	M6x8	42.5	12 ^{H7}	27	12 $_{h7}$	18.0	25	13.8	4
OSPE25BHD	82.0	M8x8	49.0	16 ^{H7}	34	16 $_{h7}$	21.7	30	18.3	5
OSPE32BHD	106.0	M10x12	62.0	22 ^{H7}	53	22 $_{h7}$	30.0	30	24.8	6
OSPE50BHD	144.0	M12x19	79.5	32 ^{H7}	75	32 $_{h7}$	41.0	35	35.3	10

* For OSPE50BHD with roller guide: Dimension K = 263

Actuator Size	H	J	K	L	M	N	P	Q	QH
OSPE20BHD	27.6	76.5	155	67	30	51	M5x8	73	38
OSPE25BHD	31.0	88.0	178	85	40	64	M6x8	93	42
OSPE32BHD	38.0	112.0	218	100	40	64	M6x10	116	56
OSPE50BHD	49.0	147.0	288*	124	60	90	M6x10	175	87

Actuator Size	R	S	SA	SH	T	U	V	WC	WD	X
OSPE20BHD	49.0	60	18	27	M5x8.5	73	36.0	21.1	10.4	185
OSPE25BHD	52.5	79	25	27	M5x10	92	39.5	21.5	10.4	218
OSPE32BHD	66.5	100	28	36	M6x12	116	51.7	28.5	10.4	262
OSPE50BHD	92.5	158	18	70	M6x12	164	77.0	43.0	10.4	347

Order Stroke Dimensional Requirements

Actuator Size	KM_{min}	KM_{rec}
OSPE20BHD	180	220
OSPE25BHD	210	250
OSPE32BHD	250	300
OSPE50BHD	354	400

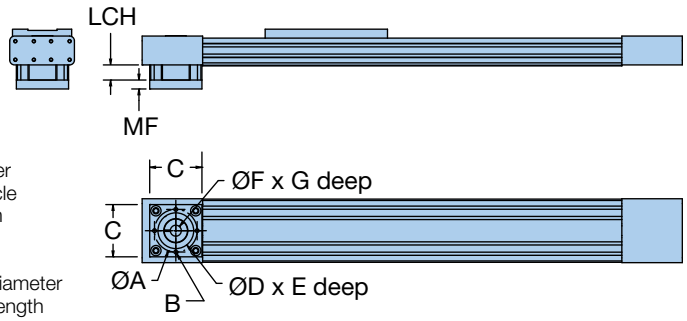
KM_{min} is the minimum distance between two carriages possible.
KM_{rec} is the recommended distance between two carriages for optimal performance.

Order Stroke Safety Distance:
The mechanical end position should not be used as a mechanical end stop, thus an additional ***Safety Distance*** at both ends of travel must be incorporated into the Order Stroke. The safety distance for servo-driven systems is equivalent to the travel distance per one revolution of the drive shaft. AC motor-driven systems with VFDs require a larger safety distance than servo systems. For further information and design assistance, please consult factory.

OSPE..BHD Belt-Driven Actuators

Gearhead Mounting Kit Options

Gearhead Mounting Kits include a coupling housing and flange



A = Bolt circle diameter
B = Screw for bolt circle
C = Square dimension
D = Pilot diameter
E = Pilot depth
F = Input drive shaft diameter
G = Input drive shaft length
LCH = Length coupling housing
MF = Mounting flange

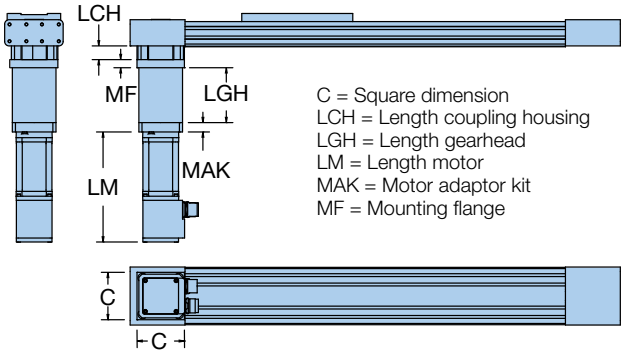
OSPE..BHD with Gearhead Mounting Kit

Actuator Size	Order Code ⑥[1]	Order Code ⑨[1]	Dimensions — mm A	B	C	D	E	F	G	LCH	MF
OSPE20BHD	02, 03, 04 or 05	C0	44	S4	75	35	4.0	12	25	19	9.0
	0A, 0B	C1	62	S5	75	52	6.0	16	36	79	18.5
OSPE25BHD	02, 03, 04 or 05	C1	62	S5	76	52	6.0	16	36	22	13.0
OSPE32BHD	02, 03, 04 or 05	C2	80	S6	98	68	6.0	22	46	30	14.0
OSPE50BHD	02, 03, 04 or 05	C3	108	S8	130	90	6.5	32	70	41	18.0

[1] When ordering with actuator, use order code ⑥ to specify drive shaft orientation and order code ⑨ to specify appropriately sized gearhead mounting kit. See ordering information, page 26.

Mounted Gearhead and Motor Options

Mounted Gearhead and Motor options include a coupling housing, flange, gearhead with coupler, flange and motor



C = Square dimension
LCH = Length coupling housing
LGH = Length gearhead
LM = Length motor
MAK = Motor adaptor kit
MF = Mounting flange

Mounted Gearhead and Mounted Motor

Actuator Size	Order Code ⑥ [1]	Order Code ⑨ [2]	Mounted Motor	Dimensions — mm C	LCH	LGH	LM	MAK	MF
OSPE20BHD	Kx	K0	BE233FJ-KPSN	58	79	67.0	143	22.5	18.5
	Kx	K1	BE233FJ-KPSN with brake (CM233FJ-115027)	58	79	67.0	178	22.5	18.5
	Kx	K2	BE344LJ-KPSN	86	79	67.0	188	22.5	18.5
	Kx	K3	BE344LJ-KPSB	86	79	67.0	220	22.5	18.5
OSPE25BHD	Kx	K0	BE233FJ-KPSN	58	22	67.0	143	22.5	13.0
	Kx	K1	BE233FJ-KPSN with brake (CM233FJ-115027)	58	22	67.0	178	22.5	13.0
	Kx	K2	BE344LJ-KPSN	86	22	67.0	188	22.5	13.0
	Kx	K3	BE344LJ-KPSB	86	22	67.0	220	22.5	13.0
OSPE32BHD	Lx	K2	BE344LJ-KPSN	86	30	85.5	188	20.0	14.0
	Lx	K3	BE344LJ-KPSB	86	30	85.5	220	20.0	14.0
	Lx	M0	MPP0923D1E-KPSN	89	30	85.5	178	28.5	14.0
	Lx	M1	MPP0923D1E-KPSB	89	30	85.5	213	28.5	14.0
	Lx	M2	MPP1003D1E-KPSN	98	30	85.5	175	28.5	14.0
	Lx	M3	MPP1003D1E-KPSB	98	30	85.5	223	28.5	14.0
	Lx	M4	MPP1003R1E-KPSN	98	30	85.5	175	28.5	14.0
	Lx	M5	MPP1003R1E-KPSB	98	30	85.5	223	28.5	14.0
OSPE50BHD	Mx	K2	BE344LJ-KPSN	86	41	110.0	188	24.0	18.0
	Mx	K3	BE344LJ-KPSB	86	41	110.0	220	24.0	18.0
	Mx	M0	MPP0923D1E-KPSN	89	41	110.0	178	24.0	18.0
	Mx	M1	MPP0923D1E-KPSB	89	41	110.0	213	24.0	18.0
	Mx	M2	MPP1003D1E-KPSN	98	41	110.0	175	24.0	18.0
	Mx	M3	MPP1003D1E-KPSB	98	41	110.0	223	24.0	18.0
	Mx	M4	MPP1003R1E-KPSN	98	41	110.0	175	24.0	18.0
	Mx	M5	MPP1003R1E-KPSB	98	41	110.0	223	24.0	18.0
	Mx	M6	MPP1154B1E-KPSN	113	41	110.0	203	35.0	18.0
	Mx	M7	MPP1154B1E-KPSB	113	41	110.0	252	35.0	18.0
	Mx	M8	MPP1154P1E-KPSN	113	41	110.0	203	35.0	18.0
	Mx	M9	MPP1154P1E-KPSB	113	41	110.0	252	35.0	18.0

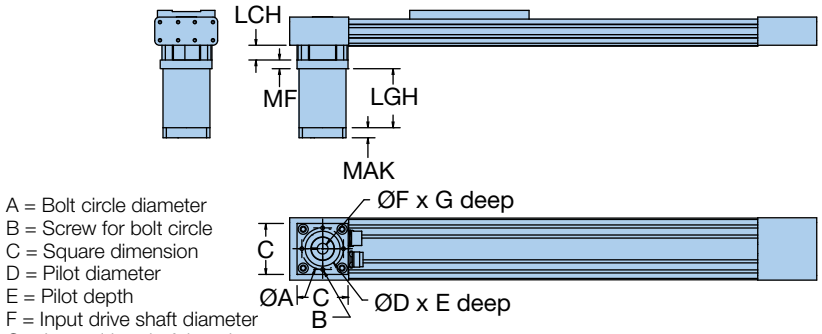
[1] When ordering with actuator, use order code ⑥ (see page 26), to specify mounted gearhead size, ratio and orientation:
Gearhead size: **K** = PV60TA **L** = PV90TA **M** = PV115TA
Gearhead ratio and mounting orientation: (Replace "x" to specify)
With mounting position opposite carriage: **1** = ratio 3:1 **2** = ratio 5:1 **3** = ratio 10:1
With mounting position same side as carriage: **4** = ratio 3:1 **5** = ratio 5:1 **6** = ratio 10:1

[2] Use order code ⑨ (see page 27), to specify choice of mounted motor.

OSPE..BHD Belt-Driven Actuators

Mounted Gearhead with Motor Mounting Kit Options

Mounted Gearhead with Motor Mounting Kits include a coupling housing, flange and gearhead with coupler and flange



A = Bolt circle diameter
B = Screw for bolt circle
C = Square dimension
D = Pilot diameter
E = Pilot depth
F = Input drive shaft diameter
G = Input drive shaft length
LCH = Length coupling housing
LGH = Length gearhead
MAK = Motor adaptor
MF = Mounting flange

Mounted Gearhead with Motor Mounting Kit

Actuator Size	Order Code ⑥ [1]	Order Code ⑨ [2]	Dimensions — mm										
			A	B	C	D	E	F	G	LCH	LGH	MAK	MF
OSPE20BHD	Jx	AA	46.66	M3	43	20.00	1.6	6.35	24.8	19	48.5	19.0	9.0
	Jx	AB	66.67	M5	55	38.10	1.6	6.35	20.5	19	48.5	15.7	9.0
	Jx	B5	46.00	M4	43	30.00	2.5	6.00	25.0	19	48.5	19.0	9.0
	Jx	AM	46.00	M4	43	30.00	2.5	8.00	25.0	19	48.5	19.0	9.0
	Jx	B6	63.00	M4	55	40.00	2.5	9.00	20.0	19	48.5	13.7	9.0
	Jx	AH	63.00	M5	55	40.00	2.5	9.00	20.0	19	48.5	19.0	9.0
	Kx	AB	66.67	M5	62	38.10	1.6	6.35	20.5	79	67.0	16.5	18.5
	Kx	AC	66.67	M5	62	38.00	1.6	9.53	20.8	79	67.0	16.5	18.5
	Kx	AF	98.43	M6	85	73.00	3.0	12.70	37.0	79	67.0	30.0	18.5
	Kx	AD	66.67	M5	62	38.10	1.6	9.525	31.8	79	67.0	22.5	18.5
	Kx	AE	98.43	M5	80	73.03	3.0	12.70	30.0	79	67.0	22.5	18.5
	Kx	B6	63.00	M4	62	40.00	2.5	9.00	20.0	79	67.0	16.5	18.5
	Kx	AH	63.00	M5	62	40.00	2.5	9.00	20.0	79	67.0	16.5	18.5
	Kx	B8	70.00	M5	62	50.00	3.0	12.00	30.0	79	67.0	22.5	18.5
	Kx	AN	70.00	M5	62	50.00	3.0	14.00	30.0	79	67.0	22.5	18.5
	Kx	AG	75.00	M5	62	60.00	2.5	11.00	23.0	79	67.0	16.5	18.5
	Kx	B9	75.00	M5	62	60.00	2.5	14.00	30.0	79	67.0	22.5	18.5
	Kx	BB	90.00	M6	80	70.00	3.0	14.00	30.0	79	67.0	22.5	18.5
	Kx	A3	100.00	M6	89	80.00	3.5	14.00	30.0	79	67.0	22.5	18.5

[1] When ordering with actuator, use order code ⑥ (see page 26), to specify mounted gearhead size, ratio and orientation:
Gearhead size: **J** = PV040TA **K** = PV60TA
Gearhead ratio and mounting orientation: (Replace "x" to specify)
With mounting position opposite carriage: **1** = ratio 3:1 * **2** = ratio 5:1 **3** = ratio 10:1
With mounting position same side as carriage: **4** = ratio 3:1 * **5** = ratio 5:1 **6** = ratio 10:1
* 3:1 ratio not available on size OSPE20BHD (with "J" PV040TA gearhead)

[2] Use order code ⑨ (see page 27), to specify appropriately sized motor mounting kit. See ordering information.

(continued on next page)

(continued from previous page)

Mounted Gearhead with Motor Mounting Kit

Actuator Size	Order Code ⑥	Order Code ⑨	Dimensions — mm A	B	C	D	E	F	G	LCH	LGH	MAK	MF
OSPE25BHD	Kx	AB	66.67	M5	62	38.10	1.6	6.35	20.5	22	67.0	16.5	13
	Kx	AC	66.67	M5	62	38.00	1.6	9.53	20.8	22	67.0	16.5	13
	Kx	AF	98.43	M6	85	73.00	3.0	12.70	37.0	22	67.0	30.0	13
	Kx	AD	66.67	M5	62	38.10	1.6	9.525	31.8	22	67.0	22.5	13
	Kx	AE	98.43	M5	80	73.03	3.0	12.70	30.0	22	67.0	22.5	13
	Kx	B6	63.00	M4	62	40.00	2.5	9.00	20.0	22	67.0	16.5	13
	Kx	AH	63.00	M5	62	40.00	2.5	9.00	20.0	22	67.0	16.5	13
	Kx	B8	70.00	M5	62	50.00	3.0	12.00	30.0	22	67.0	22.5	13
	Kx	AN	70.00	M5	62	50.00	3.0	14.00	30.0	22	67.0	22.5	13
	Kx	AG	75.00	M5	62	60.00	2.5	11.00	23.0	22	67.0	16.5	13
	Kx	B9	75.00	M5	62	60.00	2.5	14.00	30.0	22	67.0	22.5	13
	Kx	BB	90.00	M6	80	70.00	3.0	14.00	30.0	22	67.0	22.5	13
	Kx	A3	100.00	M6	89	80.00	3.5	14.00	30.0	22	67.0	22.5	13
OSPE32BHD	Lx[1]	AE	98.43	M5	90	73.03	3.0	12.70	30.0	30	85.5	20.0	14
	Lx[1]	AL	100.00	M6	90	80.00	3.0	16.00	40.0	30	85.5	28.5	14
	Lx[1]	A4	115.00	M8	100	95.00	3.5	19.00	40.0	30	85.5	28.5	14
	Lx[1]	B6	63.00	M4	90	40.00	2.5	9.00	20.0	30	85.5	20.0	14
	Lx[1]	AH	63.00	M5	90	40.00	2.5	9.00	20.0	30	85.5	20.0	14
	Lx[1]	AN	70.00	M5	90	50.00	3.0	14.00	30.0	30	85.5	20.0	14
	Lx[1]	AG	75.00	M5	90	60.00	2.5	11.00	23.0	30	85.5	20.0	14
	Lx[1]	B9	75.00	M5	90	60.00	2.5	14.00	30.0	30	85.5	20.0	14
	Lx[1]	B0	75.00	M6	90	60.00	3.0	14.00	30.0	30	85.5	20.0	14
	Lx[1]	BB	90.00	M6	90	70.00	3.0	14.00	30.0	30	85.5	20.0	14
	Lx[1]	B4	90.00	M6	90	70.00	3.0	16.00	40.0	30	85.5	28.5	14
	Lx[1]	AP	90.00	M6	90	70.00	3.0	19.00	40.0	30	85.5	28.5	14
	Lx[1]	B3	95.00	M6	90	50.00	2.5	14.00	30.0	30	85.5	20.0	14
	Lx[1]	A3	100.00	M6	90	80.00	3.5	14.00	30.0	30	85.5	20.0	14
	Lx[1]	AJ	100.00	M6	90	80.00	3.0	19.00	40.0	30	85.5	30.0	14
OSPE50BHD	Mx	AE	98.43	M5	115	73.03	3.0	12.70	30.0	41	110.0	24.0	18
	Mx	AL	100.00	M6	115	80.00	3.0	16.00	40.0	41	110.0	24.0	18
	Mx	A4	115.00	M8	115	95.00	3.5	19.00	40.0	41	110.0	24.0	18
	Mx	AK	130.00	M8	115	110.00	3.5	24.00	50.0	41	110.0	35.0	18
	Mx	AG	75.00	M5	115	60.00	2.5	11.00	23.0	41	110.0	24.0	18
	Mx	B4	90.00	M6	115	70.00	3.0	16.00	40.0	41	110.0	35.0	18
	Mx	AP	90.00	M6	115	70.00	3.0	19.00	40.0	41	110.0	35.0	18
	Mx	A3	100.00	M6	115	80.00	3.5	14.00	30.0	41	110.0	24.0	18
	Mx	AJ	100.00	M6	115	80.00	3.0	19.00	40.0	41	110.0	24.0	18
	Mx	BD	130.00	M8	115	95.00	3.0	19.00	40.0	41	110.0	24.0	18

[1] When ordering with actuator, use order code ⑥ (see page 26), to specify mounted gearhead size, ratio and orientation:
Gearhead size: **L** = PV90TA **M** = PV115TA
Gearhead ratio and mounting orientation: (Replace "x" to specify)
With mounting position opposite carriage: **1** = ratio 3:1 **2** = ratio 5:1 **3** = ratio 10:1
With mounting position same side as carriage: **4** = ratio 3:1 **5** = ratio 5:1 **6** = ratio 10:1

[2] Use order code ⑨ (see page 27), to specify choice of appropriately sized mounted motor. See ordering information.

OSPE..BHD Belt-Driven Actuators

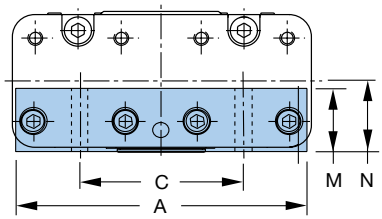
End Cap Mounting Options

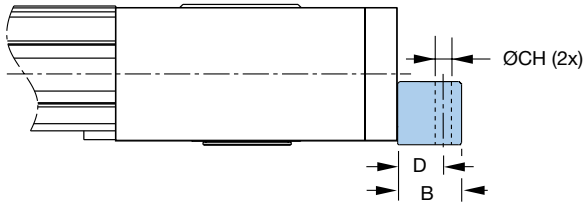
See “Maximum Permissible Unsupported Length” (page 24), for end cap and profile mounting placement requirements.

Order Code

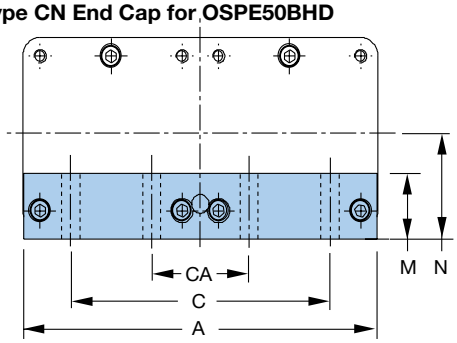
A
(1 pair)

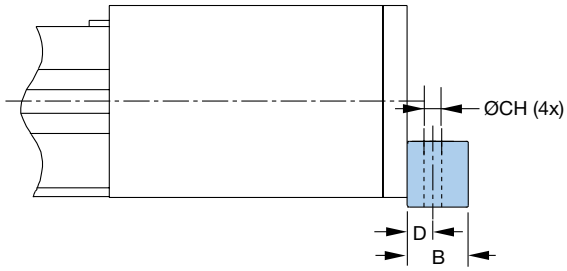
Type CN End Cap for OSPE20BHD, OSPE25BHD and OSPE32BHD





Type CN End Cap for OSPE50BHD





Type CN Top Mounting Block

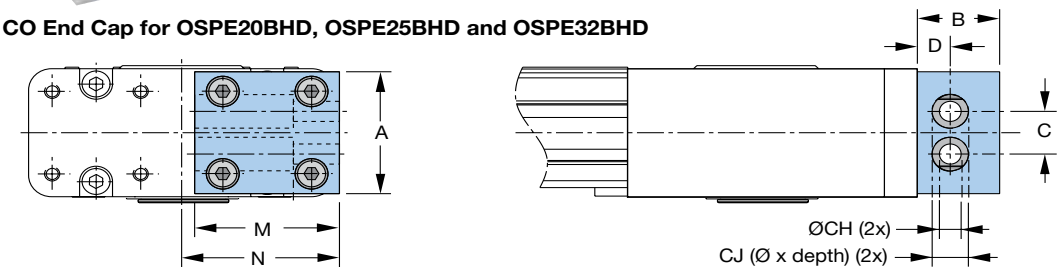
Actuator Size	Part Number*	Weight* (kg)	Dimensions — mm							
			A	B	C	CA	ØCH	D	M	N
OSPE20BHD	16213FIL	0.165	74	20	40	—	6.6	10.0	20	22
OSPE25BHD	12266FIL	0.311	91	25	52	—	6.6	16.0	25	22
OSPE32BHD	12267FIL	0.500	114	25	64	—	9.0	18.0	25	30
OSPE50BHD	12268FIL	0.847	174	30	128	48	9.0	12.5	30	48

*When ordering with actuator, use order code ⑩. See ordering information, page 27. To order as replacement parts (per pair), use part numbers listed). Weights listed are for a single piece.

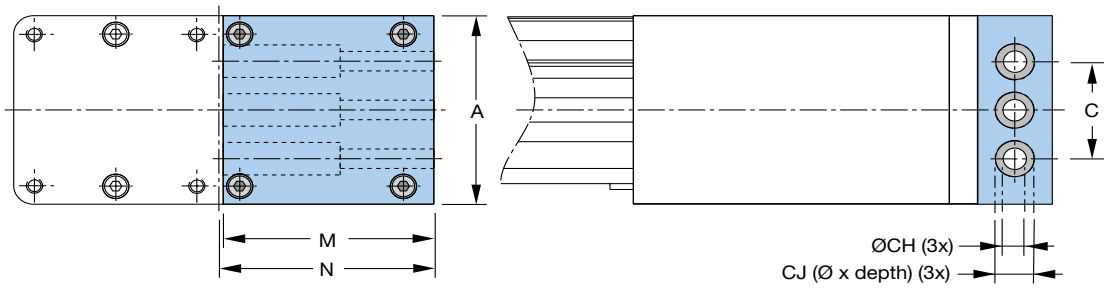
Order
Code

B
(1 pair)

Type CO End Cap for OSPE20BHD, OSPE25BHD and OSPE32BHD



Type CO End Cap for OSPE50BHD



Type CO Side Mounting Block

Actuator Size	Part Number*	Weight* (kg)	Dimensions — mm							
			A	B	C	ØCH	CJ	D	M	N
OSPE20BHD	16241FIL	0.166	40	22	18	6.6	11 x 39	15.0	42	45
OSPE25BHD	16245FIL	0.221	40	25	14	6.6	11 x 30	10.0	44	48
OSPE32BHD	16246FIL	0.450	56	28	19	9.0	15 x 42	12.0	60	62
OSPE50BHD	16247FIL	1.159	87	32	45	9.0	15 x 50	16.0	90	92

*When ordering with actuator, use order code ⑩. See ordering information, page 27. To order as replacement parts (per pair), use part numbers listed). Weights listed are for a single piece.

OSPE..BHD Belt-Driven Actuators

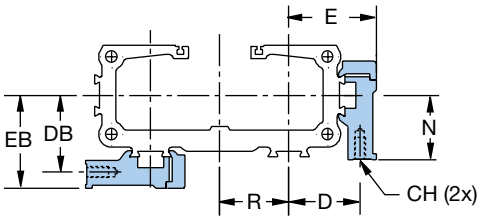
Profile Mounting Options

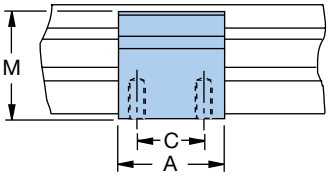
See “Maximum Permissible Unsupported Length” (page 24), for end cap and profile mounting placement requirements.

Order Code

2, 5, 8 or B

(1, 2, 3 or 4 pair)





Type D1 (with internal threads)

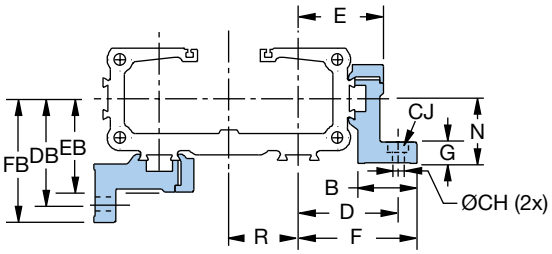
Actuator Size	Part Number*	Weight* (kg)	Dimensions — mm									
			A	C	CH	D	DB	E	EB	M	N	R
OSPE20BHD	20008FIL	0.061	50	36	M5 x 10	20.5	28.1	28.0	35.6	38	22	23
OSPE25BHD	20008FIL	0.061	50	36	M5 x 10	27.0	28.5	34.5	36.0	38	22	26
OSPE32BHD	20157FIL	0.177	50	36	M5 x 10	33.0	35.5	40.5	43.0	46	30	32
OSPE50BHD	15534FIL	0.167	60	45	M6 x 11	40.0	45.0	52.0	57.0	71	48	44

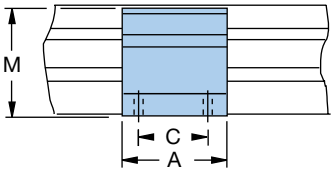
*When ordering with actuator, use order code ⑩. See ordering information, page 27. To order replacement parts (per individual unit), use part numbers listed. Part numbers and weights are for a single piece.

Order Code

1, 4, 7 or A

(1, 2, 3 or 4 pair)





Type E1 (with 2 thru holes)

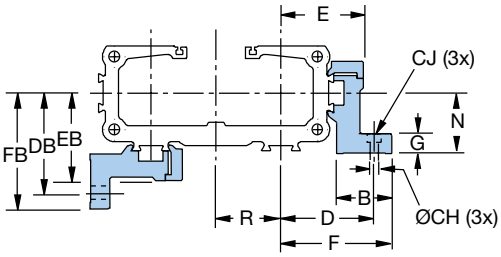
Actuator Size	Part Number*	Weight* (kg)	Dimensions — mm															
			A	B	C	ØCH	CJ	D	DB	E	EB	F	FB	G	M	N	R
OSPE20BHD	20009FIL	0.074	50	26	36	5.5	10 x 5.7	33.5	41.1	28.0	35.6	41.0	48.6	8	38	22	23
OSPE25BHD	20009FIL	0.074	50	26	36	5.5	10 x 5.7	40.0	41.5	34.5	36.0	47.5	49.0	8	38	22	26
OSPE32BHD	20158FIL	0.092	50	27	36	5.5	10 x 5.7	46.0	48.5	40.5	43.0	54.5	57.0	10	46	30	32
OSPE50BHD	15536FIL	0.189	60	34	45	7.0	—	59.0	64.0	52.0	57.0	67.0	72.0	10	71	48	44

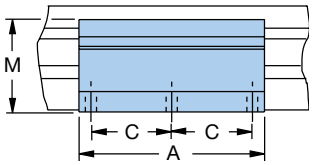
*When ordering with actuator, use order code ⑩. See ordering information, page 27. To order replacement parts (per individual unit), use part numbers listed. Part numbers and weights are for a single piece.

Order
Code

3, 6, 9 or C

(1, 2, 3 or 4 pair)





Type MAE (with 3 thru holes)

Actuator Size	Part Number*	Weight* (kg)	Dimensions — mm															
			A	B	C	ØCH	CJ	D	DB	E	EB	F	FB	G	M	N	R
OSPE20BHD	12278FIL	0.271	92	26	40	5.5	10 x 5.7	33.5	41.1	28.0	35.6	41.0	48.6	8	38	22	23
OSPE25BHD	12278FIL	0.271	92	26	40	5.5	10 x 5.7	40.0	41.5	34.5	36.0	47.5	49.0	8	38	22	26
OSPE32BHD	12279FIL	0.334	92	27	40	5.5	10 x 5.7	46.0	48.5	40.5	43.0	54.5	57.0	10	46	30	32
OSPE50BHD	12280FIL	0.668	112	34	45	7.0	—	59.0	64.0	52.0	57.0	67.0	72.0	10	71	48	44

*When ordering with actuator, use order code ⑩. See ordering information, page 27. To order replacement parts (per individual unit), use part numbers listed. Part numbers and weights are for a single piece.

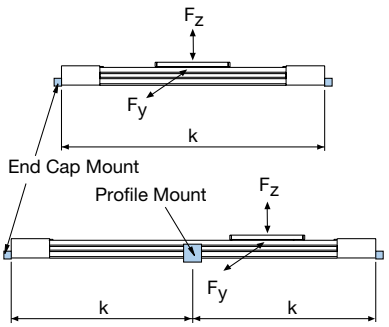
OSPE..BHD Belt-Driven Actuators

Maximum Permissible Unsupported Length — *Determining end cap and profile mounting placement*

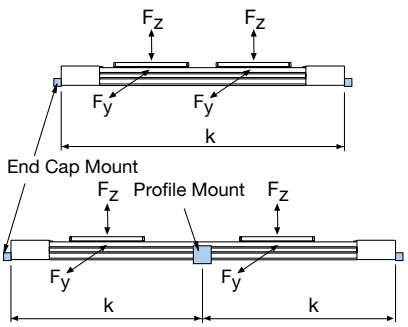
OSPE..BHD Series actuators need to be mounted onto a solid machine base or frame structure using appropriately positioned end cap and profile mounts. This ensures that the actuator will not undergo excessive deflection based on the application's load and length requirements.

The greater the load and/or the longer the unsupported length between mounts, the more the actuator is susceptible to deflection. Deflection is also dependent on the carriage orientation (F_Z for top oriented carriage or F_Y for a side mounted carriage).

Standard or Tandem Carriage



Bi-Parting Carriage



To determine correct end cap and profile mount placement, please follow the steps shown in the example below.

Use the deflection graphs on page 25 to insure that the load will not exceed the maximum allowed deflection.

Example:

A horizontal application uses an OSPE32BHD with a top oriented ball bearing carriage. The maximum load on the carriage is 30 kg and the order stroke is 2,400 mm (see page 15 to calculate order stroke).

Therefore, the overall length of the actuator will be approximately 3,000 mm:

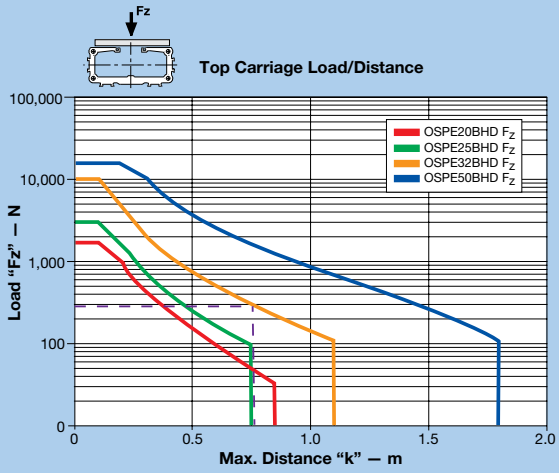
2,400 mm + 2 x Dim "X" (262 mm) = 2,924 mm

1) Use the Fz graph for a top loaded ball bearing carriage (shown at right)
2) Calculate the Load "F" in Newtons based on the 30 kg application load requirement:

   30 kg x 9.81 kg/ms^2 = 294.3 N
3) Draw a line from 294.3 N on the Y-axis to the OSPE32BHD curve, then down to the X-axis.
4) The value of "k" is approximately 750 mm.
5) Since the overall length (3000 mm) is greater than this value "k", the actuator will require additional fixture points— two end cap mounts and three sets of profile mounts — equally spaced to create a distance "k" of 750 mm in between.
6) Maximum deflection of the actuator with this mounting configuration will be less than 0.075 mm:

   0.01% of 750 mm = 0.075 mm

Ball Bearing Carriage Load-Distance



To further reduce deflection:

If the application requires less deflection, then simply reduce the distance "k" appropriately. In this example, for instance, the application must not exceed 0.05 mm. Therefore, "k" must also be 500 mm.

To achieve this reduced maximum deflection, the actuator will require seven fixture points — two end cap mounts and five pairs of profile mounts — equally spaced with a distance "k" of 500 mm in between.

Maximum Permissible Unsupported Length

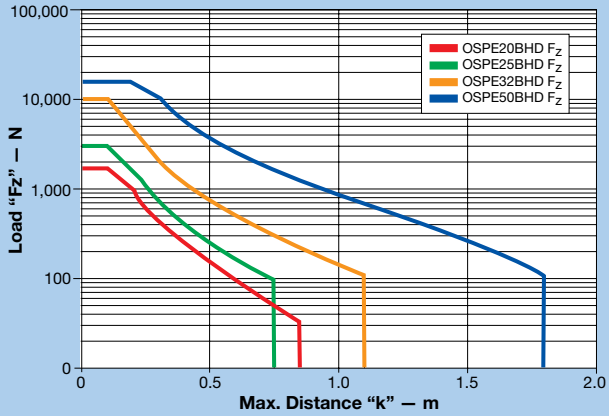
Determining end cap and profile mounting placement

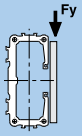
Use the appropriate deflection graph to ensure that the application load does not exceed the deflection curve. Supporting the actuator within the recommended maximum distance "k" will ensure that the installation will have a maximum deflection equal to 0.01% of distance "k."

To further reduce deflection, simply reduce the distance between end cap and profile mounts as described in the example on the previous page.

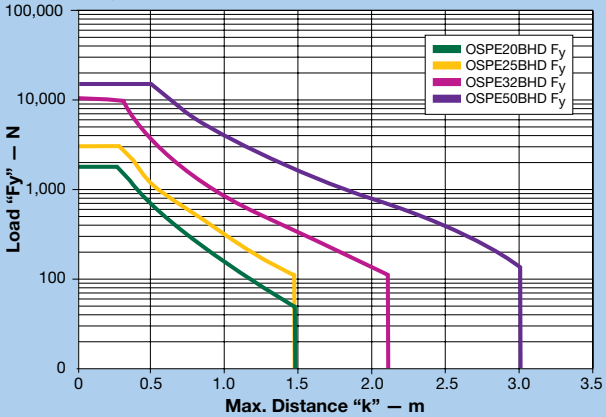
Ball Bearing Carriage Load-Distance

Top Carriage Load/Distance



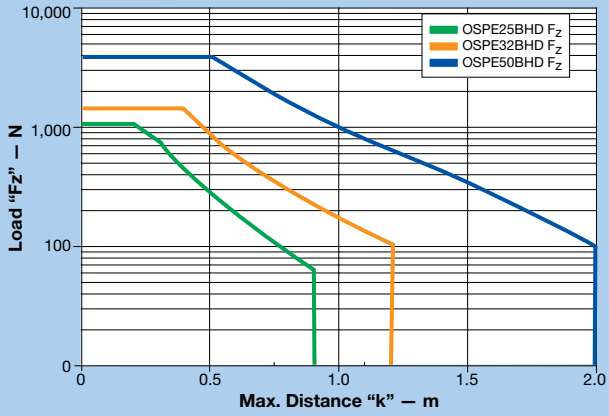


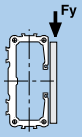
Side Carriage Load/Distance



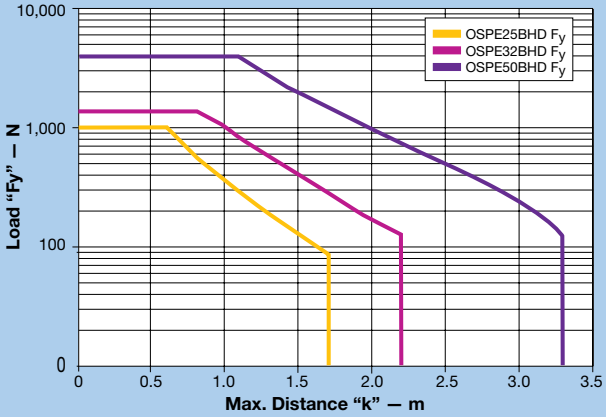
Roller Bearing Carriage Load-Distance

Top Carriage Load/Distance





Side Carriage Load/Distance



OSPE..BHD Belt-Driven Actuators

Ordering Information

Select an order code from each of the numbered fields to create a complete OSPE..BHD model order number. Include hyphens and non-selective characters as shown in example below.

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
Order Number Example:	OSPE	25	– 6	0	0	02	– 00000	– P	00	0	0	0

① Series

OSPE	Origa System Plus Electromechanical

② Actuator Bore Size

20	73 mm W x 49 mm H
25	93 mm W x 53 mm H
32	116 mm W x 67 mm H
50	175 mm W x 93 mm H

③ Drive Train

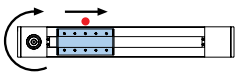
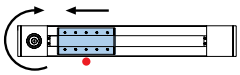
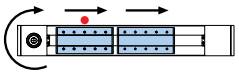
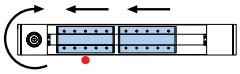
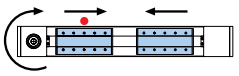
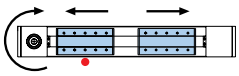
5	Belt actuator with integrated roller guide (Available upon request — consult factory)
6	Belt actuator with integrated ball bearing guide

④ Carriage

0	Standard
1	Tandem (two carriages for higher load capabilities)
2	Bi-Parting (two driven carriages with opposing movements)

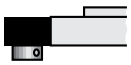
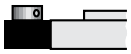
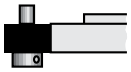
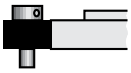
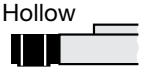
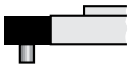
⑤ Operating Direction and Magnet Position*

(See blue inset box (page 27) for parallel actuators operating direction)

0		Standard (Carriage moves away from drive end)
1		Standard (Carriage moves toward drive end)
0		Tandem (Carriage moves away from drive end)
1		Tandem (Carriage moves toward drive end)
2		Bi-Parting (Carriages move toward mid-actuator)
3		Bi-Parting (Carriages move away from mid-actuator)

* Sensors must be mounted in the side or bottom dovetail groove on the same side of the actuator with mounted magnet (•)

⑥ Drive Shaft and Gearhead/Motor Options Configuration and Orientation

02	 Clamp	Clamp shaft[1] (opposite carriage side)
04	Clamp 	Clamp shaft[1] (same side as carriage)
03	Plain  Clamp	Clamp shaft[1] (opposite carriage side) with plain shaft to connect this master actuator in parallel with idler actuator using a link shaft
05	Clamp  Plain	Clamp shaft[1] (same side as carriage) with plain shaft to connect this master actuator in parallel with idler actuator using a link shaft
06	Hollow 	Hollow shaft with keyway (opposite carriage side)
07	Hollow	Hollow shaft with keyway (same side as carriage)
0A	 Plain	Plain shaft[2] (opposite carriage side) to connect this idler actuator in parallel with a master actuator using a link shaft
0B	Plain	Plain shaft[2] (same side as carriage) to connect this idler actuator in parallel with a master actuator using a link shaft
Jx PV040TA **Kx** PV060TA **Lx** PV090TA **Mx** PV115TA		Mounted Gearhead Options[3] (replace "x" with appropriate ratio and orientation)

[1] See page 16 for available Gearhead Mounting Kit Options.
[2] Only available with order code 00 "No gearhead mounting kit or motor option" (item ⑨)
[3] Requires motor or motor mounting kit selection for item ⑨ below. See "Mounted Gearhead and Motor" page 17 or "Mounted Gearhead with Motor Mounting Kit" page 18 for details and dimensions

⑦ Order Stroke* (see page 15)

00000	5-digit input (in mm)

* Maximum standard stroke:
OSPE20BHD = 05760 mm
OSPE25HD = 05700 mm
OSPE32BHD = 05600 mm
OSPE50BHD = 05500 mm
Longer strokes available upon request. Consult factory.

⑧ Hardware and Cover Strip

P	Standard hardware with Parker gold cover strip

⑨ Gearhead/Motor Mounting Options

0 –	No gearhead or motor mounting option
Gearhead Mounting Kits (see page 16 for available options and dimensions)	
Mounted Gearhead and Motor (see page 17 for available options and dimensions)	
Mounted Gearhead with Motor Mounting Kit (see page 18 for available options and dimensions)	

⑩ End Cap Mounting (see page 20)

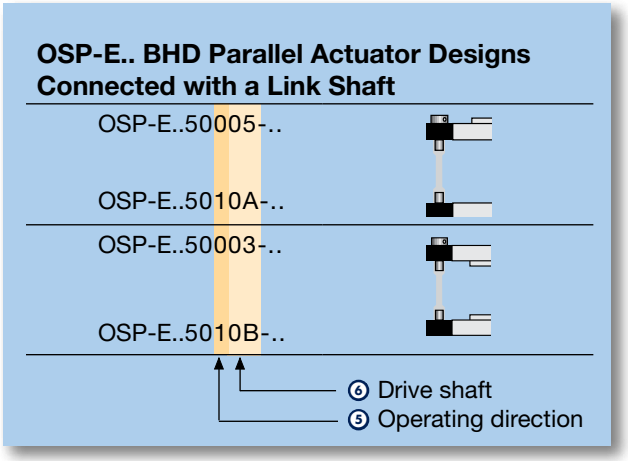
0	No end cap mounting
A	1 pair CN (for top carriage mounting)
B	1 pair CO (for side carriage mounting)

⑪ Profile Mounting (see page 22)

0	No profile mounting
1	1 pair D1 (with 2 internal threads)
5	2 pair D1 (with 2 internal threads)
8	3 pair D1 (with 2 internal threads)
B	4 pair D1 (with 2 internal threads)
1	1 pair E1 (with 2 thru holes)
4	2 pair E1 (with 2 thru holes)
7	3 pair E1 (with 2 thru holes)
A	4 pair E1 (with 2 thru holes)
3	1 pair MAE (with 3 thru holes)
6	2 pair MAE (with 3 thru holes)
9	3 pair MAE (with 3 thru holes)
C	4 pair MAE (with 3 thru holes)

⑫ Magnetic Sensor Mounting*

0	No sensor mounting
A	1 pc. N.O., NPN, with M8 connector
B	2 pc. N.C., NPN, with M8 connector
C	1 pc. N.O., NPN, with M8 connector 2 pc. N.C., NPN, with M8 connector
D	1 pc. N.O., PNP, with M8 connector
E	2 pc. N.C., PNP, with M8 connector
F	1 pc. N.O., PNP, with M8 connector 2 pc. N.C., PNP, with M8 connector

* Extension cable with M8 plug and 5 m cable flying lead cable for Sensor with M8 connector can be ordered separately; use part number 003-2918-01

OSP-E.. BHD Parallel Actuator Designs Connected with a Link Shaft