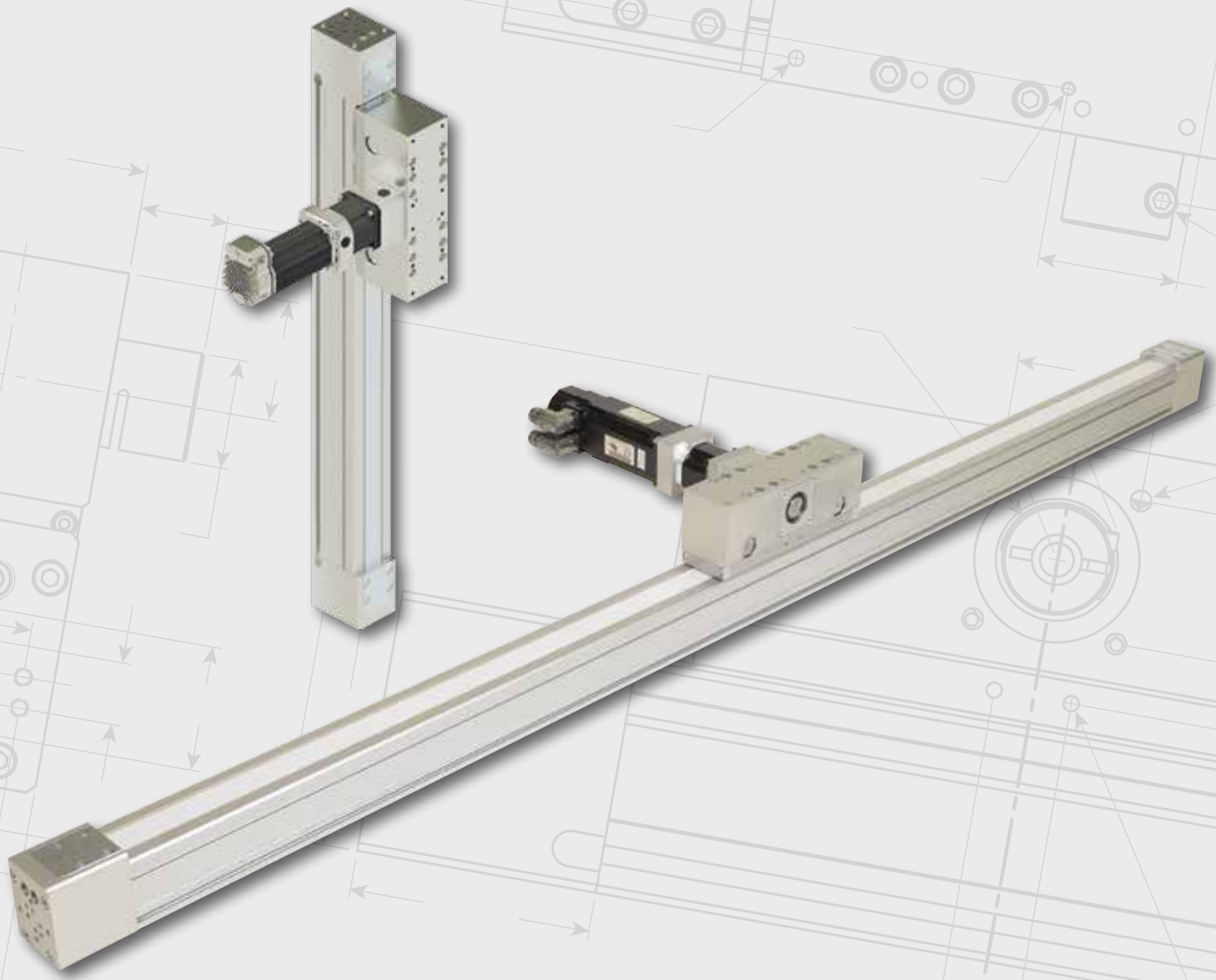


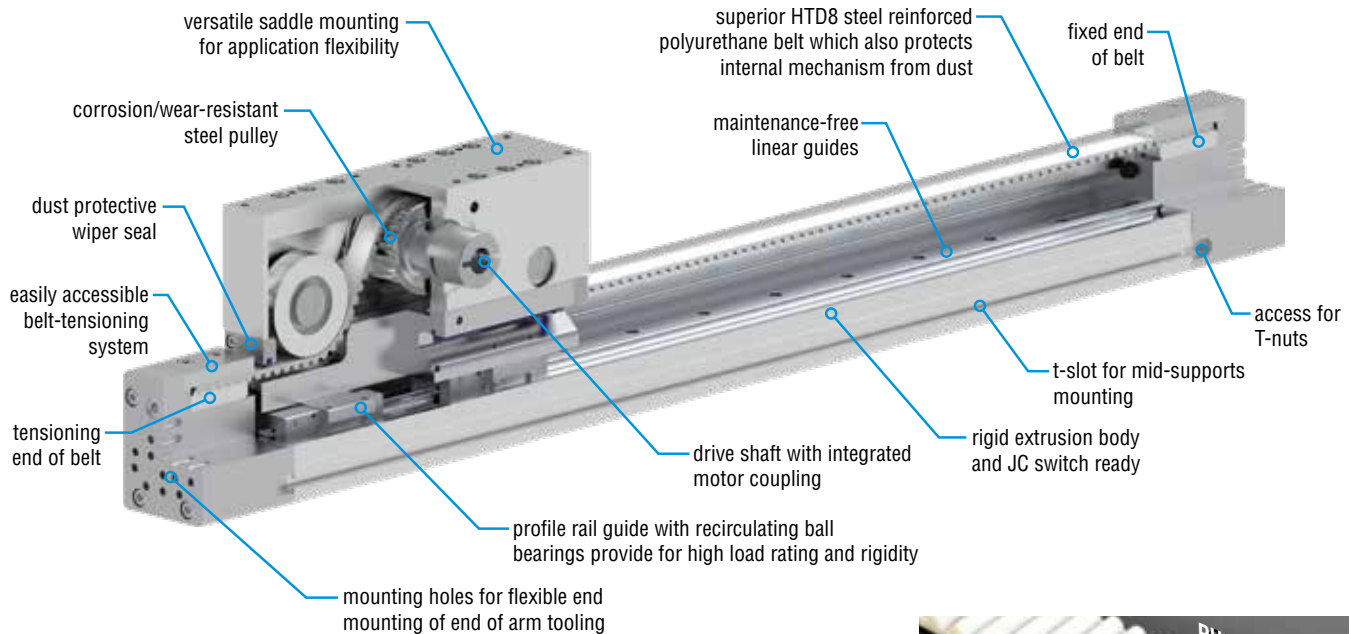
Electric Linear Actuator

- Provides a robust “Z” vertical cantilever axis solution for robotic systems
- Delivers unparalleled speed, thrust, and precision, making it ideal for a multitude of vertical and horizontal applications
- Dual saddles available for increased load and moment loading
- Independently powered dual saddles available for a wide range of uses

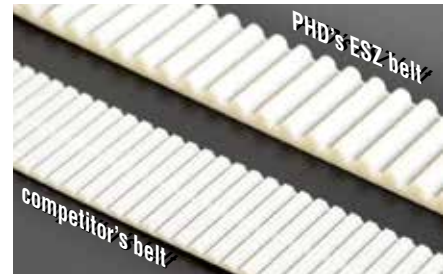
**Your Motor
Your Way**



SERIES ESZ BELT-DRIVEN LINEAR ACTUATOR



Your Motor Your Way

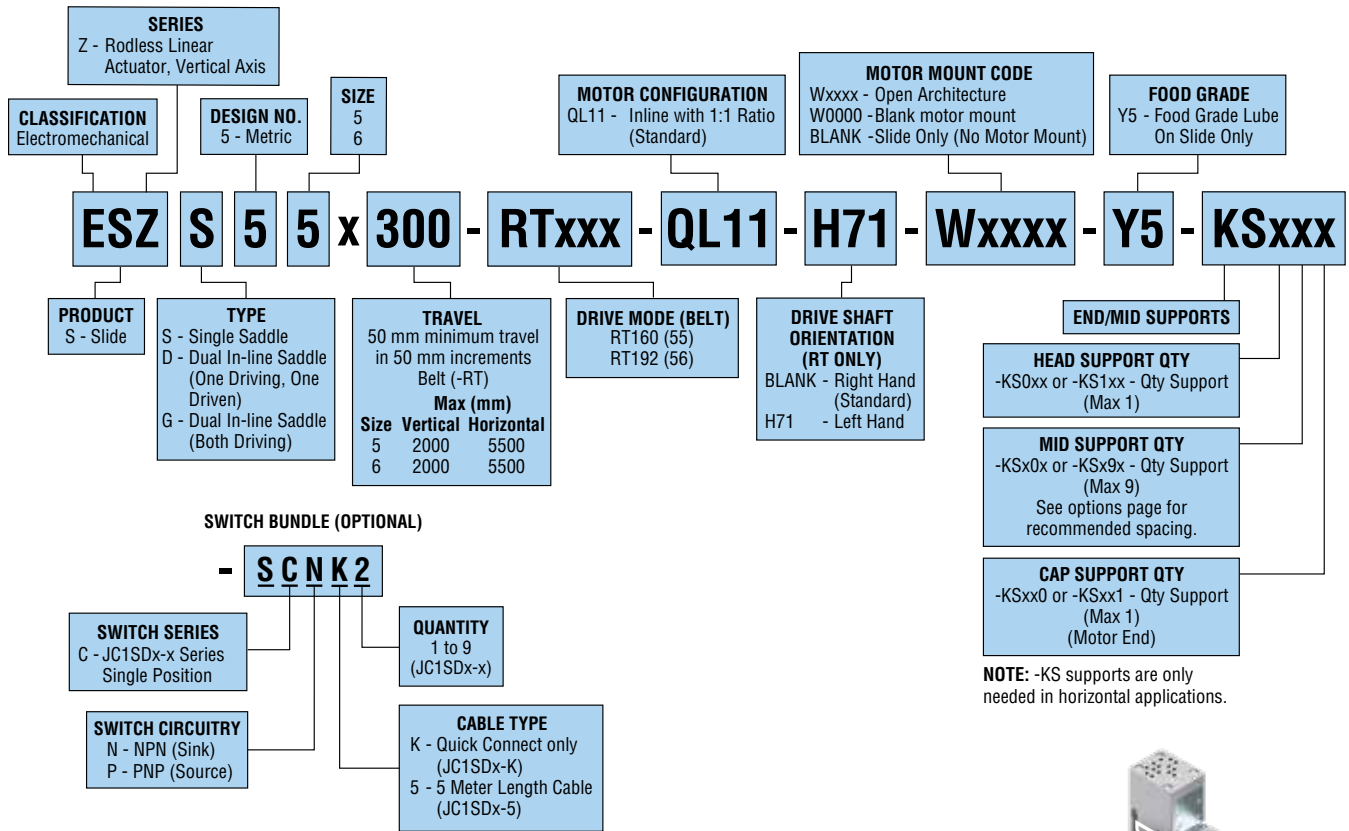


Major Benefits

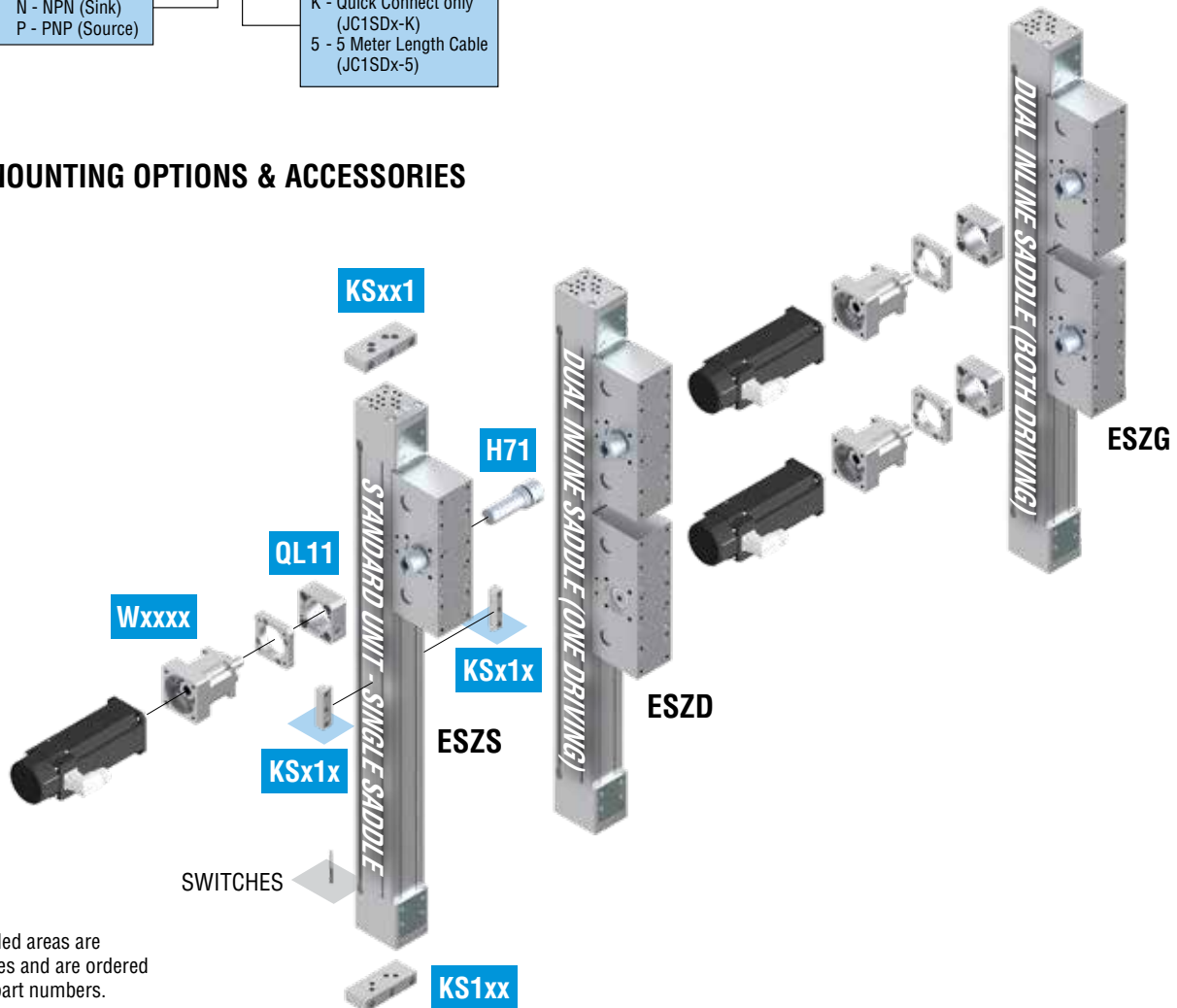
- High-capacity rail bearing provides superior moment and load capability
- Integrated shaft coupling allows for a rigid connection and zero backlash
- Self-lubricating linear guides provide maintenance-free operation
- Travel lengths up to 2000 mm in vertical fixed saddle applications, and 5,500 mm for horizontal fixed base applications.
- Maximum speed 5000 mm/s, acceleration 50 m/s²
- Superior HTD8 steel reinforced polyurethane belt for uniform load distribution, precise tooth engagement, and improved performance
- Easy access belt tensioning system
- Rigid construction with low backlash
- High degree of repeatability
- Switch ready as standard
- Mid-support(s) mounting for long travels and high payloads in traditional fixed base applications
- Dual saddle option for higher load/moment loading capabilities
- A model with two independently driven saddles is available for gripping/pick and place applications.



ORDERING DATA: Series ESZ Linear Actuator



MOUNTING OPTIONS & ACCESSORIES



Gray shaded areas are accessories and are ordered by kit or part numbers.

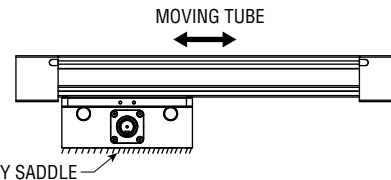
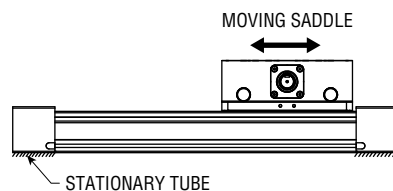
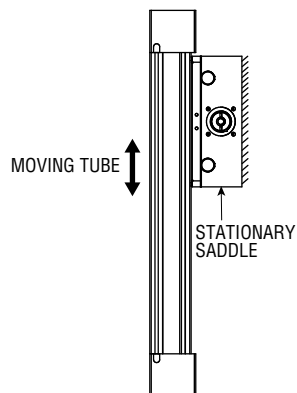
ENGINEERING DATA: Series Series ESZ Linear Actuator

SPECIFICATIONS	55	56
REPEATABILITY	±0.05 mm [±0.002 in]	
TRAVEL TOLERANCE	+2.5 mm/ -0.0 mm [+0.100 in/ -0.000 in]	
DUTY CYCLE	100%	
OPERATING TEMPERATURE	4 - 65°C [40 - 150°F]	
LUBRICATION INTERVAL	Factory lubricated for life	
ENCAPSULATION CLASS	IP40	

SPECIFICATIONS		SIZE		
		55	56	
MECHANICS	DRIVE MECHANISM	Timing Belt		
	GUIDE	Recirculating Ball- Linear Motion Guide & Rail system		
	MAX TRAVEL	mm [in]		
	BELT	HTD8		
	PITCH (LINEAR TRAVEL PER REVOLUTION)	mm [in]	160 [6.3]	192 [7.56]
THRUST SPEED	PULLEY DIAMETER	mm [in]	50.93 [2.005]	61.12 [2.406]
	MAXIMUM SPEED	mm/sec [in/sec]	5000 [197]	
TORQUE	MAXIMUM ACCELERATION	m/sec ² [in/sec ²]	50 [1970]	
	MAXIMUM THRUST	N [lbf]	1600 [360]	3330 [748]
	PERMISSIBLE DRIVE TORQUE	Nm [in-lb]	41 [360]	102 [901]
	NO-LOAD TORQUE	Nm [in-lb]	2.5 [23]	3.2 [29]

SPECIFICATIONS			55			56				
			Single Saddle - S	Dual - D	Dual - G	Single Saddle - S	Dual - D	Dual - G		
WEIGHT	TOTAL ACTUATOR WEIGHT	@ ZERO TRAVEL (W _{OT})	lb	22.713	36.787	37.145	47.603	77.195	77.758	
			kg	10.289	16.664	16.827	21.564	34.969	35.224	
		LENGTH ADDER (W _{LT})	lb/in	0.351			0.566			
			kg/mm	6.26E-03			1.01E-02			
	MOVING WEIGHT	@ ZERO TRAVEL (W _{OM})	STATIONARY SADDLE	lb	11.147	14.619	14.619	22.808	29.457	29.457
				Kg	5.050	6.622	6.622	10.332	13.344	13.344
		LENGTH ADDER (W _{LM})	STATIONARY TUBE	lb	11.566	21.280	22.526	24.795	45.656	48.300
				Kg	5.239	9.640	10.204	11.232	20.682	21.880
			STATIONARY SADDLE	lb/in	0.351			0.566		
				kg/mm	0.006			0.010		
INERTIA	STANDARD- ACTUATOR @ ZERO TRAVEL (J ₀)		lb-in ²	11.204	—	—	33.016	—	—	
			[kg-m ²]	3.27E-03	—	—	9.65E-03	—	—	
	DUAL SADDLE- ACTUATOR @ ZERO TRAVEL (J ₀)	STATIONARY SADDLE		lb-in ²	—	14.694	14.694	—	42.642	42.642
				[kg-m ²]	—	4.29E-03	4.29E-03	—	1.25E-02	1.25E-02
		STATIONARY TUBE		lb-in ²	—	21.389	22.642	—	66.090	69.918
		[kg-m ²]	—	6.25E-03	6.62E-03	—	1.93E-02	2.04E-02		
	LENGTH ADDER (J _L)		lb-in ² /in	0.353			0.820			
			kg-m ² /mm	4.06E-06			9.43E-06			
	MOVING WEIGHT ADDER		lb-in ² /in	1.005			1.448			
			kg-m ² /kg	6.48E-04			9.34E-04			

NOTE: STRONGLY RECOMMENDED: ORDERED TRAVEL = WORKING TRAVEL + SAFETY TRAVEL ON BOTH ENDS



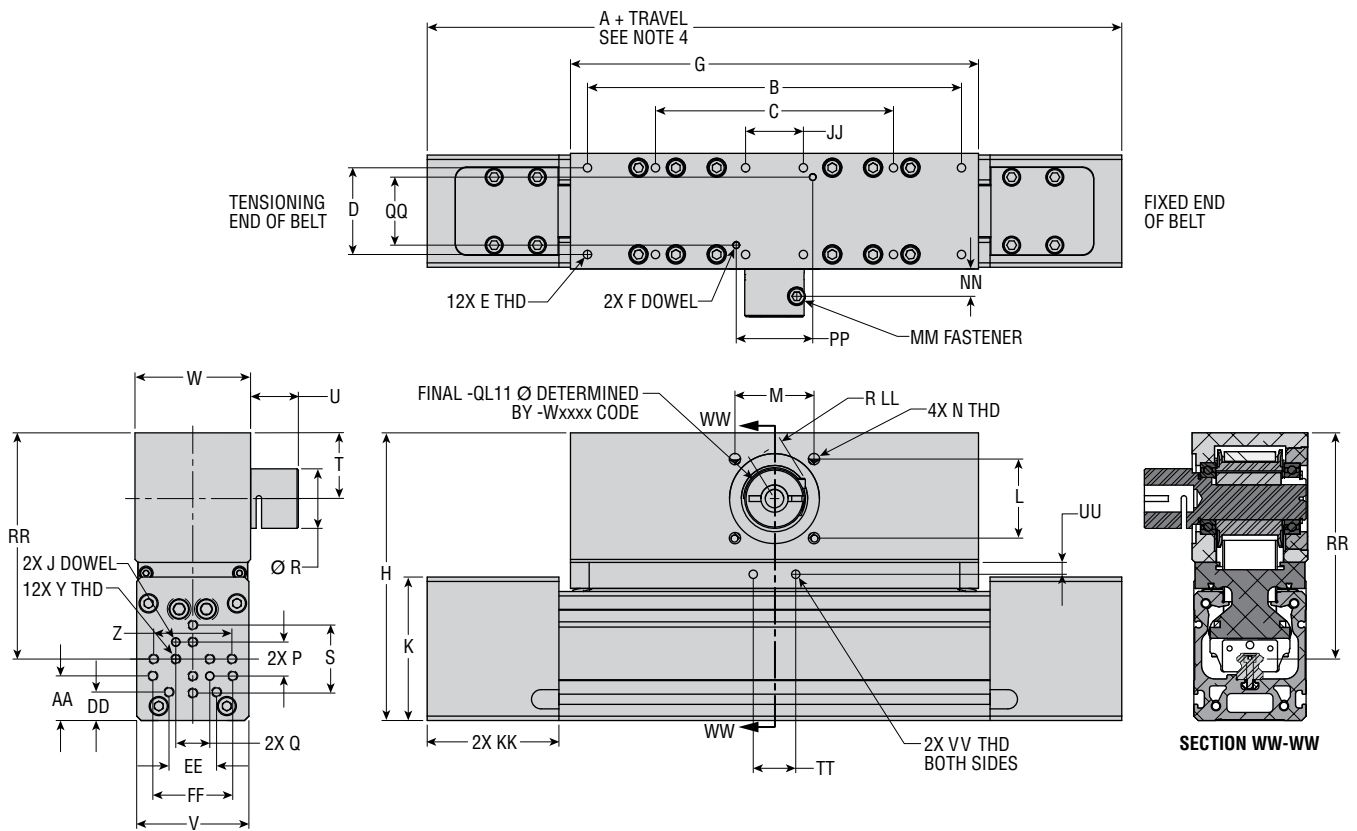
WEIGHT AND INERTIAL CALCULATIONS:

TOTAL WEIGHT = W_{OT} + (W_{LT} X TRAVEL) + MOTOR MOUNT WEIGHT

TOTAL MOVING WEIGHT = W_{OM} + (W_{LM} X TRAVEL) + EXTERNAL PAYLOAD

INERTIA_{Reflected} = J₀ + (J_L X TRAVEL) + (J_M X TOTAL MOVING WEIGHT)

DIMENSIONS: Series ESZS Linear Actuator - Standard Unit



SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
55	408.5	220.0	140.0	51.0	M6 x 1 x 10	4 x 4	240.0	169.2	5 x 10	84.4	46.5	46.5	M8 x 1.25 x 12	20.0	20.0	35.0	40.0	38.7	28.1	66.0	68.0
56	514.0	220.0	135.0	72.0	M6 x 1 x 10	5 x 5	287.0	225.5	5 x 10	107.9	46.5	46.5	M8 x 1.25 x 12	30.0	30.0	42.0	60.0	47.7	31.4	86.0	98.5

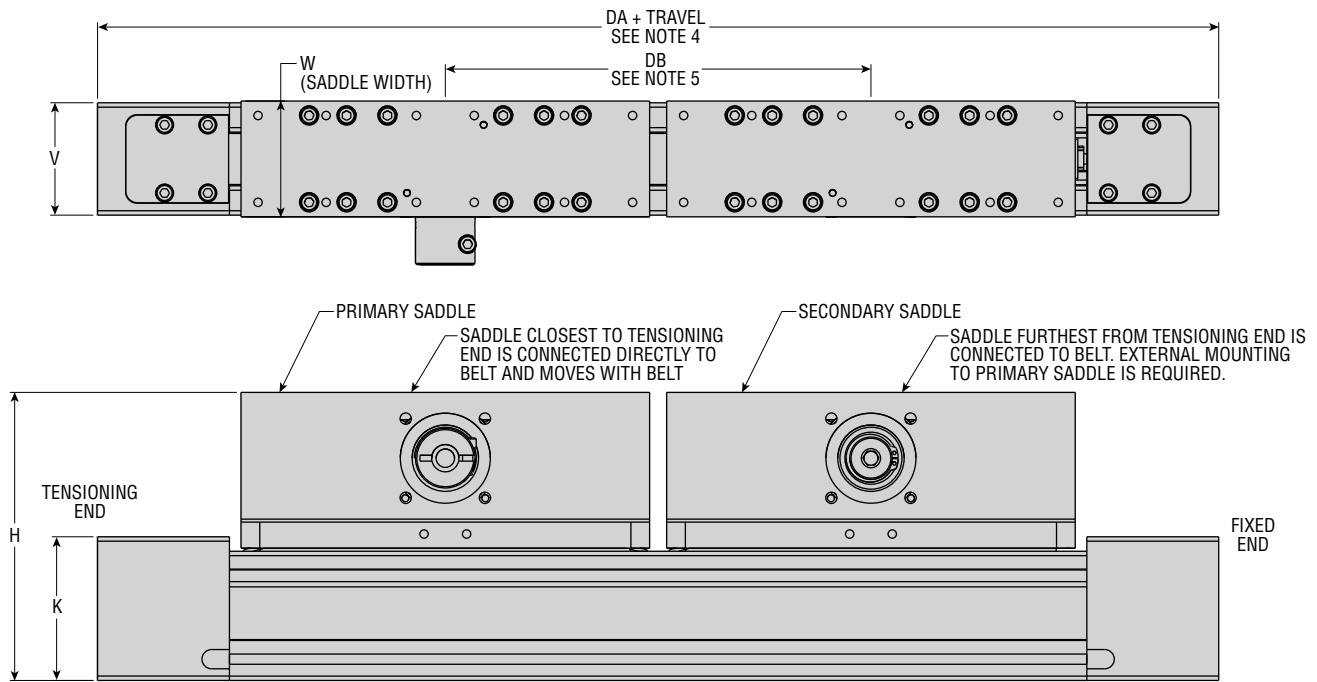
SIZE	Y	Z	AA	DD	EE	FF	JJ	KK	LL	MM	NN	PP	QQ	RR	TT	UU	VV
55	M6 x 1 x 12	46.0	26.3	16.8	28.0	47.0	34.0	77.5	21.4	M6 x 1	16.1	45.0	40.0	133.0	25.0	7.0	M6 x 1 x 8
56	M8 x 1.25 x 16	60.0	30.1	18.1	40.0	64.0	50.0	105.0	24.3	M6 x 1	15.9	50.0	50.0	182.7	25.0	7.0	M6 x 1 x 8

NOTES:

- 1) DIMENSIONS: mm
- 2) SADDLE SHOWN IN MID POSITION
- 3) UNIT SHOWN IS REPRESENTATIVE OF AN ESZS55 WITH 0 mm TRAVEL
- 4) PHD RECOMMENDS TO ADD 50 mm TO THE TOTAL WORKING TRAVEL FOR SAFETY (25 mm PER END)

All dimensions are reference only unless specifically toleranced.

DIMENSIONS: Series ESZD Linear Actuator - Dual Saddle (One Driving)



REFER TO SERIES ESZS DIMENSIONS PAGE FOR DATA NOT SHOWN

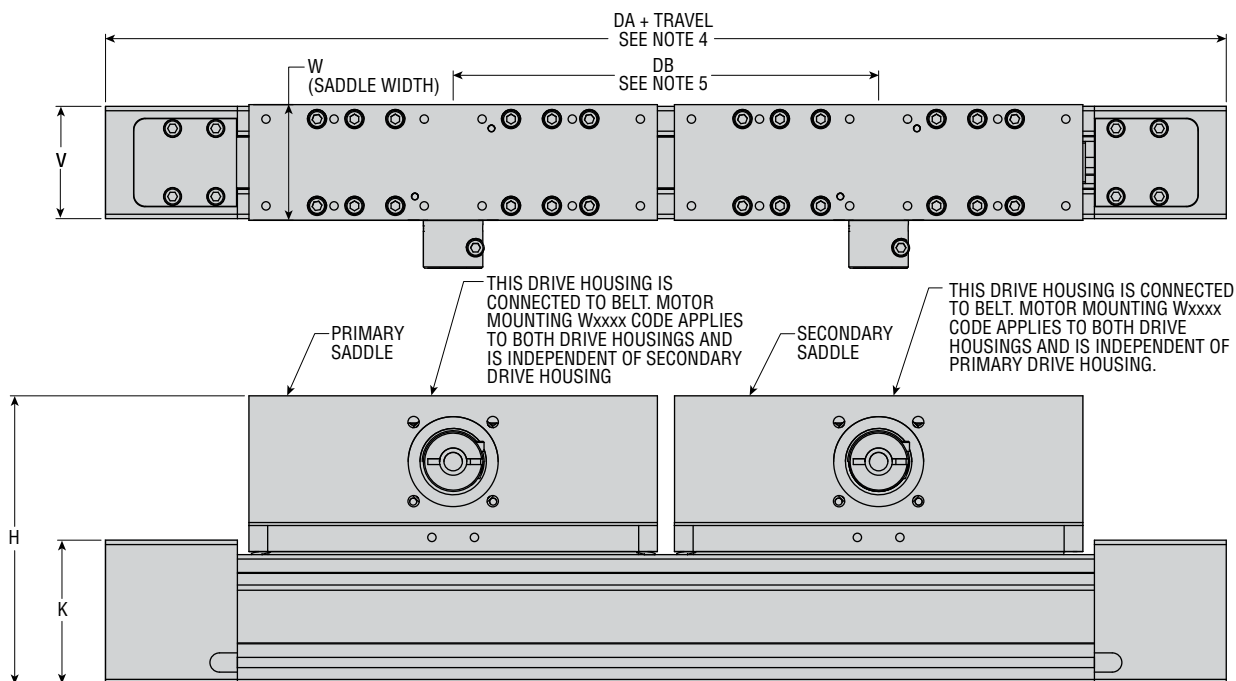
NOTES:

- 1) DIMENSIONS: mm
 - 2) SADDLES SHOWN IN MID POSITION
 - 3) UNIT SHOWN IS REPRESENTATIVE OF AN ESZD55 WITH 0 mm TRAVEL
 - 4) PHD RECOMMENDS TO ADD 50 mm TO THE TOTAL WORKING TRAVEL FOR SAFETY (25 mm PER END)
 - 5) SADDLE TO SADDLE DISTANCE SHOWN IS THE MINIMUM ALLOWED BETWEEN SADDLES. IF ADDITIONAL DISTANCE BETWEEN SADDLES IS REQUIRED, ADD APPROPRIATE LENGTH TO TOTAL TRAVEL IN 50 mm INCREMENTS
- EXAMPLES:
- SIZE 55 WITH 500 mm TRAVEL WITH STANDARD "DB" DISTANCE OF 250 mm
ESZD55 x 500 -RTxxx (NO ADDITIONAL STROKE ADDER NEEDED)
- SIZE 55 WITH 500 mm TRAVEL WITH "DB" DISTANCE OF 350 mm
ESZD55 x 600 -RTxxx (WILL NEED ADDITIONAL 100 mm STROKE ADDER) FOR AN END RESULT OF 500 mm TRAVEL

SIZE	DA	DB	H	K	V	W
55	658.5	250.0	169.2	84.4	66.0	68.0
56	814.0	300.0	225.5	107.9	86.0	98.5

All dimensions are reference only unless specifically toleranced.

DIMENSIONS: Series ESZG Linear Actuator - Dual Saddle (Both Driving)



REFER TO SERIES ESZS DIMENSIONS PAGE FOR DATA NOT SHOWN

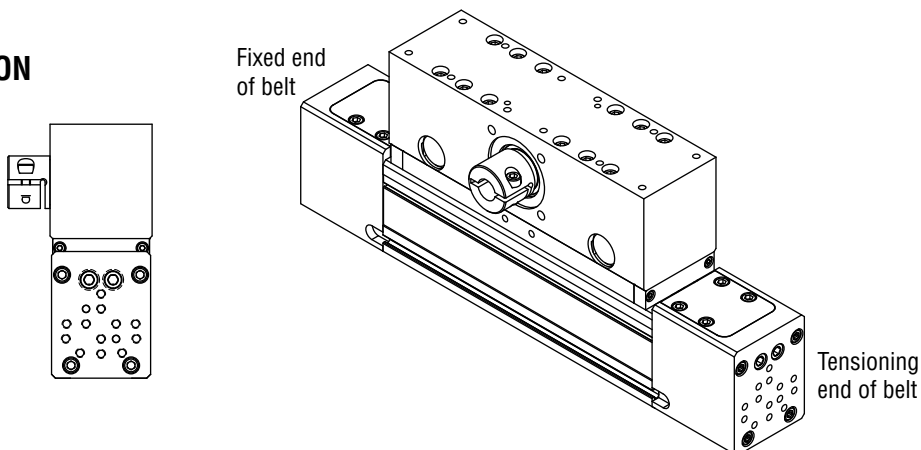
NOTES:

- 1) DIMENSIONS: mm
 - 2) SADDLES SHOWN IN MID POSITION
 - 3) UNIT SHOWN IS REPRESENTATIVE OF AN0 ESZG55 WITH 0 mm TRAVEL
 - 4) PHD RECOMMENDS TO ADD 50 mm TO THE TOTAL WORKING TRAVEL FOR SAFETY (25 mm PER END)
 - 5) SADDLE TO SADDLE DISTANCE SHOWN IS THE MINIMUM ALLOWED BETWEEN SADDLES. IF ADDITIONAL DISTANCE BETWEEN SADDLES IS REQUIRED, ADD APPROPRIATE LENGTH TO TOTAL TRAVEL IN 50 mm INCREMENTS
- EXAMPLES:
 SIZE 55 WITH 500 mm TRAVEL WITH STANDARD "DB" DISTANCE OF 250 mm
 ESZG55 x 500 -RTxxx (NO ADDITIONAL STROKE ADDER NEEDED)
 SIZE 55 WITH 500 mm TRAVEL WITH "DB" DISTANCE OF 350 mm
 ESZG55 x 600 -RTxxx (WILL NEED ADDITIONAL 100 mm STROKE ADDER) FOR AN END
 RESULT OF 500 mm TRAVEL

SIZE	DA	DB	H	K	V	W
55	658.5	250.0	169.2	84.4	66.0	68.0
56	814.0	300.0	225.5	107.9	86.0	98.5

OPTIONS: Series ESZ Linear Actuator

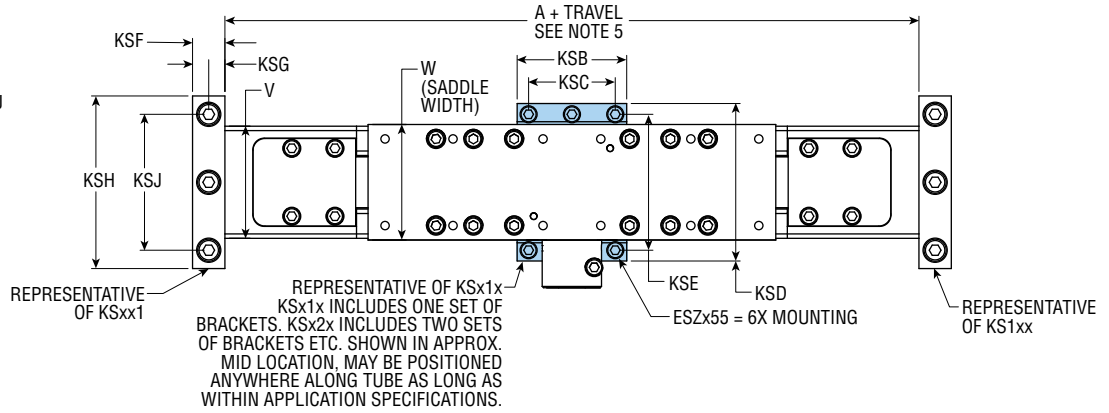
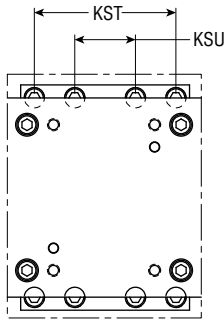
H71 LEFT HAND DRIVE SHAFT ORIENTATION



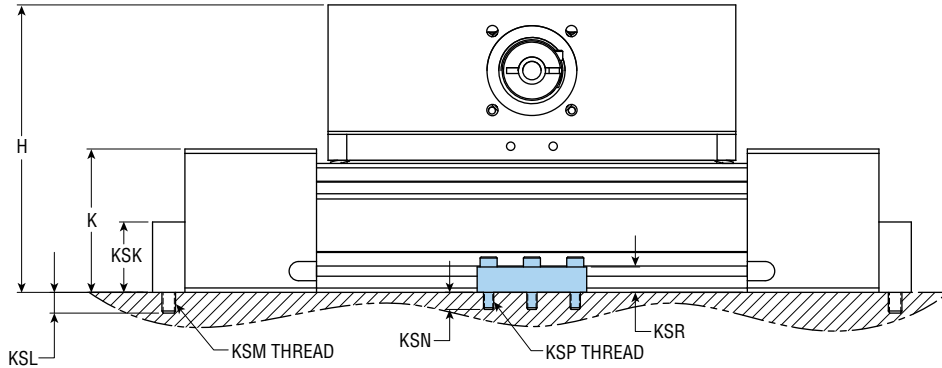
All dimensions are reference only unless specifically toleranced.

OPTIONS: Series ESZ Linear Actuator

KSxxxx END AND MID MOUNTING



ESZx56 = 8X MOUNTING



SIZE	A	H	K	V	W	KSB	KSC	KSD	KSE	KSF	KSG	KSH	KSJ	KSK	KSL	KSM	KSN	KSP	KSR	KST	KSU
55	408.5	169.2	84.4	66.0	68.0	64.5	51.0	92.7	80.0	19.1	9.5	101.6	80.0	41.4	12.2	M8 x 1.25	10.0	M6 x 1.0	15.0	—	—
56	514.0	225.5	107.9	86.0	98.5	83.5	—	112.7	100.0	25.4	12.7	152.4	100.0	42.8	17.8	M10 x 1.5	12.5	M6 x 1.0	27.5	70.0	30.0

QL11 INLINE MOTOR MOUNTING WITH 1:1 DRIVE RATIO (STANDARD)

SIZE	-QL11						-QL11-W0000	
	MMA	MMB MAX	MMB MIN	MMC STANDARD	MMC OVERSIZE	WEIGHT kg	MMC	MMD
55	27.0	31.0	12.5	68.5	88.0	0.36	88.0	19.0
56	32.2	33.0	14.0	88.0	115.0	0.54	115.0	24.0

