Dual Motion Actuators

The Haydon Kerk line of dual motion hybrid actuators provide independent linear and rotary motion from a single compact actuator package. The actuators are based on unique, patented designs and incorporate Haydon Kerk proven linear and rotary motor technology. These units simplify product development by replacing what would otherwise be far more bulky and complex mechanisms.



Dual Motion Size 14 Linear/Rotary Actuators

Axially move components to their insertion positions and then rotate them.

Based on unique, patented designs and incorporate proven motor technology. Units simplify product development by replacing what would otherwise be far more bulky and complex mechanisms.

Another feature of this design is to provide an electric motor in which linear and rotary motions are controllable independently of one another.

For a rotary/linear motor, it is desirable that the linear and rotary motions be controllable independently of one another. These devices can be run using a standard two axis stepper motor driver. Performance can be enhanced using chopper and/or microstepping drives.

Encoders available. US Digital E5 for linear, E6 for rotary.

35000 Series: 1.8° Step Angle				35000 Series: 0.9° Step Angle						
Linear Travel / Step Load Limit		Order Cede LD		Linear Travel / Step		Load Limit		Order Cede I D		
inches	mm	lbs	N	Ulder Code I.D.		inches	mm	lbs	N	Urder Code I.D.
0.00006	0.0015*	10	44.4	U		0.00003	0.00076*	10	44.4	BP
0.000098*	0.0025	10	44.4	AA		0.00005*	0.00125	10	44.4	AY
0.00012	0.0030*	15	67	Ν		0.00006	0.0015*	15	67	U
0.00019*	0.005	15	67	AB		0.000098*	0.0025	15	67	AA
0.00024	0.0061*	15	67	К		0.00012	0.0030*	15	67	Ν
0.00039*	0.01	15	67	AC		0.00019*	0.005	15	67	AB
0.00048	0.0121*	15	67	J		0.00024	0.0061*	15	67	К
0.00078*	0.02	15	67	AD		0.00039*	0.01	15	67	AC
0.00157*	0.04	15	67	AE		0.00079*	0.02	15	67	AD

*Values truncated. Standard motors are Class B rated for maximum temperature of 130°C.

Identifying the Series 35000 Series Dual Motion Part Number Codes when Ordering									
LR	35	Н	Н	4	J			05	 910
Prefix LR = Linear/Rotary	Series Number Designation	Rotary Step Angle $H = 1.8^{\circ}$	Linear Step Angle	Coils 4 = Bipolar	1.8° Step Angle Code ID Resolution Travel/Step	0.9° Step Angle Code ID Resolution Travel/Step		Voltage 05 = 5 VDC	Suffix Stroke Evample:
	35 = 35000	$\mathbf{K} = 0.9^{\circ}$ $\mathbf{M} = 1.8^{\circ}$ Double	$H = 1.8^{\circ}$ $K = 0.9^{\circ}$	(4 wire) 6 = Unipolar (6 wire)	U = .00006-in (.0015) AA = .000098-in (.0025) N = .00012-in (.0030)	BP = .00003-in (.00076) AY = .00005-in (.00125) U = .00006-in (.0015)	N.4:	12 = 12 VDC SP =	-910 = 1-in (26 mm) $-XXX =$ Description:
		P = 0.9° Double Stack	ik (o mo) p k p	AB = .00019-in (.005) K = .00024-in (.0061) AC = .00039-in (.01) J = .00048-in (.0121) AD = .00078-in (.02)	AA = .000098-in (.0025) N = .00012-in (.0030) AB = .00019-in (.005) K = .00024-in (.0061) AC = .00039-in (.01)	IVII	Custom V available	assigned to a specific customer application. The identifier can apply to either a standard or	
	AE = .00157-in (.04) AD = .00078-in (.02) custom part. NOTE: Dashes must be included in Part Number (-) as shown above. For assistance call our Engineering Team at 203 756 7441. See 35000 Series Hybrid Linear Data Sheet for More Detailed Motor Information. Custom part.								

Dual Motion • 35000 Series Size 14 Linear/Rotary Actuators



*Values truncated. Standard motors are Class B rated for maximum temperature of 130°C.





MINIMUM STROKE

[0.250]

6.35

Dimensions = (mm) inches



Stroke	Dim. "A"	Suffix #	M4x0.7 Thread
0.500 (12.7)	3.9 (99.3)	-905	-805
1.00 (25.4)	4.409 (112.0)	-910	-810
2.00 (50.8)	5.409 (137.4)	-920	-820
4.00 (101.6)	7.409 (188.2)	-925	-825

Standard strokes available: 1-in. (26 mm), 2-in. (51 mm) and 4-in. (102 mm). Customized strokes available to 6-in. (152 mm)

[0.080±0.010]

2.03±0.25

DIMENSION "A" MAX -

- [1,378 MAX]

0 35.0 MAX

[0.189±0.060]

4,79±1.52 RETRACTED

ROTARY

[0.19]

4.9

TORQUE vs. PULSE RATE: ROTARY FUNCTION – Bipolar – 100% Duty Cycle



NOTE: All chopper drive curves were created with a 5 volt motor and a 40 volt power supply.

Ramping can increase the performance of a motor either by increasing the top speed or getting a heavier load accelerated up to speed faster. Also, deceleration can be used to stop the motor without overshoot.

With L/R drives peak force and speeds are reduced, using a unipolar drive will yield a further 30% force reduction.



Dual Motion Size 17 Linear/Rotary Actuators

Provide linear and rotary motions, controllable independently of one another.

For a rotary/linear motor, it is desirable that the linear and rotary motions be controllable independently of one another. These devices can be run using a standard two axis stepper motor driver. Performance can be enhanced using chopper and/or microstepping drives.

The actuators are based on unique, patented designs and incorporate proven motor technology. These units simplify product development by replacing what would otherwise be far more bulky and complex mechanisms.

Encoders available. US Digital E5 for linear, E6 for rotary.

Identifying the Series 43000 Series Dual Motion Part Number Codes when Ordering 4 LR 43 Н Н Prefix **Rotary Step** Linear Coils Series Step LR = Number Angle 4 = Angle Linear/Rotary Designation **H** = 1.8° Bipolar **H** = 1.8° (4 wire) N = **43** = 43000 $K = 0.9^{\circ}$ $K = 0.9^{\circ}$ 6 = 7 = $M = 1.8^{\circ}$ Unipolar P = Double (6 wire) Stack AB = $P = 0.9^{\circ}$ K = Double 9 = Stack A = AC = J = 3 = В AQ = Q = С BH R **Y** = AG = Z =

NOTE: Dashes must be included in Part Number (-) as shown above. For assistance call our Engineering Team at 203 756 7441. See 43000 Series Hybrid Linear Data Sheet for More Detailed Motor Information.

Dual Motion • 43000 Series Size 17 Linear/Rotary Actuators



	J	_	05	—	910
1.8° Step Angle	0.9° Step Angle		Voltage		Suffix
Code ID Resolution	Code ID Resolution		05 =		Stroke
Iravei/Step	Iravel/Step		5 VDC		Example:
= .00012-in (.003)	U = .00006-in (.0015)		12 =		-910 = 1 - in
.000125-in (.0031)	BB = .0000625-in (.0016)		12 VDC		(26 mm)
= .00015625-in (.0039)	V = .00007825-in (.00198)		SP =		-XXX =
= .00019-in (.005)	AA = .000098-in (.0025)		Mixed Voltages		Proprietary suffix
= .00024-in (.006)	N = .00012-in (.003)		Overlage V		specific customer
= .00025-in (.0063)	7 = .000125-in (.0031)		available		application.
= .0003125-in (.0079)	P = .00015625-in (.0039)		availabio		The identifier can
= .00039-in (.01)	AB = .00019-in (.005)				apply to either a
.00048-in (.0121)	K = .00024-in (.006)				custom part.
= .0005-in (.0127)	9 = .00025-in (.0063)				
= .000625-in (.0158)	A = .0003125-in (.0079)				
= .00098-in (.025)	BG = .00049-in (.0125)				
= .00096-in (.0243)	J = .00048-in (.0121)				
= 0.00125-in (.0317)	B = .000625-in (.0158)				
= .00196-in (.05)	AQ = .00098-in (.025)				
= 0.00192-in (.0487)	Q = .00096-in (.0243)				
0025-in (.0635)	C = .00125-in (.0317)				
= .00375-in (.0953)	AF = .001875-in (.0476)				
005-in (.127)	Y = .0025-in (.0635)				





Dual Motion • 43000 Series Size 17 Linear/Rotary Actuators

43000 Series: 1.8° Step Angle						
Linear Tra	wel / Step	Load	Limit	Order Code LD		
inches	mm	lbs	Ν	Under Code I.D.		
0.00012	0.003*	30	133	Ν		
0.000125	0.0031*	30	133	7		
0.00015625	0.0039*	30	133	Р		
0.00019*	0.005	30	133	AB		
0.00024	0.0060*	30	133	К		
0.00025	0.0063*	30	133	9		
0.0003125	0.0079*	50	222	А		
0.00039*	0.01	50	222	AC		
0.00048	0.0121*	50	222	J		
0.0005	0.0127*	50	222	3		
0.000625	0.0158*	50	222	В		
0.00098*	0.025	50	222	AQ		
0.00096	0.0243*	50	222	Q		
0.00125	0.0317*	50	222	С		
0.00196*	0.05	50	222	BH		
0.00192	0.0487*	50	222	R		
0.0025	0.0635	50	222	Y		
0.00375	0.0953*	50	222	AG		
0.005	0.127	50	222	Z		

43000 Series: 0.9° Step Angle							
Linear Tra	vel / Step	Load	Limit	Order Code LD			
inches	mm	lbs	Ν	Urder Gode I.D.			
0.00006	0.0015*	30	133	U			
0.0000625	0.0016*	30	133	BB			
0.00007825	0.00198*	30	133	V			
0.000098*	0.0025	30	133	AA			
0.00012	0.003*	30	133	Ν			
0.000125	0.0031*	30	133	7			
0.00015625	0.0039*	50	222	Р			
0.00019*	0.005	50	222	AB			
0.00024	0.0060*	50	222	К			
0.00025	0.0063*	50	222	9			
0.0003125	0.0079*	50	222	А			
0.00049*	0.0125	50	222	BG			
0.00048	0.0121*	50	222	J			
0.000625	0.0158*	50	222	В			
0.00098*	0.025	50	222	AQ			
0.00096	0.0243*	50	222	Q			
0.00125	0.0317*	50	222	С			
0.001875	0.0476*	50	222	AF			
0.0025	0.0635	50	222	Y			
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Dimensions = (mm) inches



Stroke	Dim. "A"	Suffix #	M4x0.7 Thread
0.500 (12.7)	3.9 (99.3)	-905	-805
1.00 (25.4)	4.409 (112.0)	-910	-810
2.00 (50.8)	5.409 (137.4)	-920	-820
4.00 (101.6)	7.409 (188.2)	-925	-825

-0.05

R	1	0.00096	0.0243*	50	222	Q
Y		0.00125	0.0317*	50	222	С
AG	1 [0.001875	0.0476*	50	222	AF
Z		0.0025	0.0635	50	222	Y
30°C.		*Values truncated. S	Standard motors are C	lass B rated for m	aximum tempera	ture of 130°C.
		F	20.00	- DIMEN	SION "A" M	AX
			[0.187±0.0 4.75±1.0	39] 0		A 10 10 10
			RETRACTE	D	1	
MINIMUM SIRC	DKE -			-	t	
[0.250]	1			-	_	
6.35						
	F		ROTARY			LINEAR
40.	NI CP.	L	112.000			and share the
(STAN	DARD	INCH)				<u> </u>
OR I	M4 X 0 RD MB	TRICI				
THREAD TO V	VITHIN	0.76	[0.075+0.01	กไ		· · · · · · · · · · · · · · · · · · ·
(.030) OF	SHOU		1.91±0.25		L [1.701 N	AX
			In 101		Q 43.20 N	AX

[0.19]

TORQUE vs. PULSE RATE: ROTARY FUNCTION

- Bipolar
- 100% Duty Cycle



FORCE vs. PULSE RATE: LINEAR FUNCTION

- Chopper
- Bipolar
- 100% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage



*Values truncated. Standard motors are Class B rated for maximum temperature of 130°C.



Standard strokes available:	
1-in. (26 mm), 2-in. (51 mm) and 4-ir	n. (102 mm).
Customized strokes available to 6-in.	(152 mm) ´

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FORCE vs. LINEAR VELOCITY

- Chopper
- Bipolar
- 100% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage



Ramping can increase the performance of a motor either by increasing the top speed or getting a heavier load accelerated up to speed faster. Also, deceleration can be used to stop the motor without overshoot.

With L/R drives peak force and speeds are reduced, using a unipolar drive will yield a further 30% force reduction.

NOTE: All chopper drive curves were created with a 5 volt motor and a 40 volt power supply.