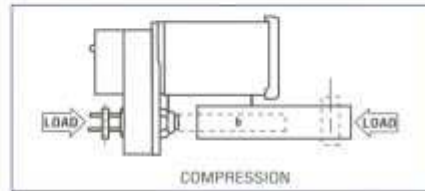


### Thrust Rating vs. Duty Cycle

All linear actuators in catalog are intermittent duty rated. The thrust ratings shown in the catalog are set up around 25% on-time per minute of operation. For infrequent bursts of power, most units can handle up to 1.5 times rated load. Consistent heavy cycling of loads in excess of the rating may cause units to fail. When in the design stage, keep in mind that although our Gearmotors linear actuators are designed to provide equal thrust in both directions, the load bearing capacity is higher in compression than in tension.



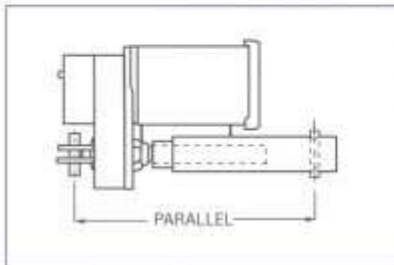
As with the gearmotors before, the performance of the

linear actuators mimic the performance of the motors that drive them. The only difference is that rotary speed and torque are replaced by linear speed and thrust. However, start thrust, breakdown thrust and pull-up thrust all exist just as would be expected.

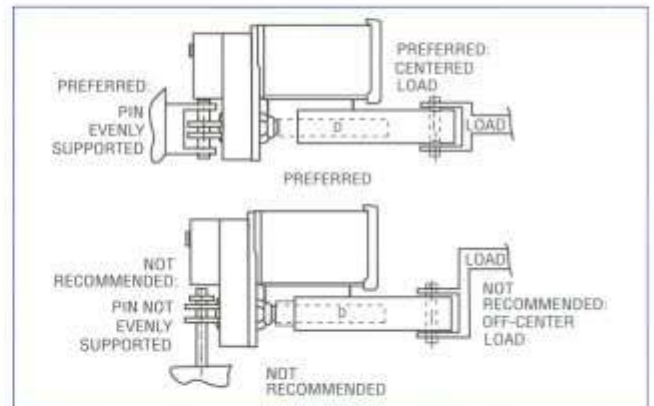
### Mounting and Alignment

In order to get proper performance and maximum life, linear actuators should be mounted to be free of side loads. The best way to ensure this is to use clevis mounting at each end and to ensure that the clevis mounting pins remain parallel at all times.

Also, be sure that the pins are evenly supported on each side and the load is centered about the actuator.



The last consideration in mounting is restraining torque. All linear actuators have rotating output shafts and the travel tube or



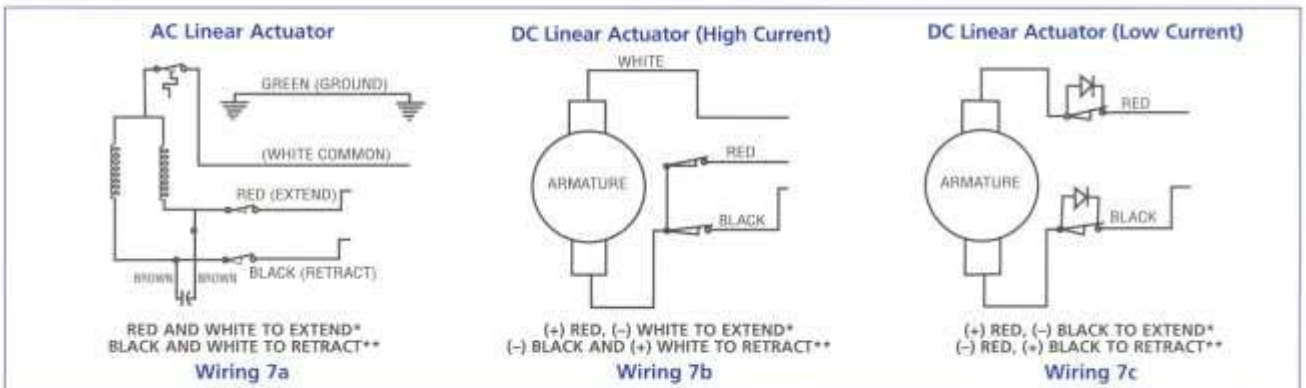
acme nut will simply rotate as well unless it is kept from rotating. The restraining torque requirement can be calculated as:

$$\text{Restraining Torque (lb-inches)} = .2 \times \text{Axial Load (lbs.)}$$

### Wiring

AC linear actuators come standard with PSC motors that have capacitors already mounted and wired in. DC linear actuators have two wiring diagrams depending on the

amp draw of the motor. All units are prewired through limit switches that shut the actuator off at either end of travel. (Wiring 7a, 7b, 7c)





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APPLICATION	AC		DC		Linear Actuators		Specials	
Medical	Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#
Hospital Beds	U576AC - Gear Motor VW76AC Gear Motor	10 10	VW76DC - Gear Motor	31	U576AC VW76AC U576DC VW76DC	46 42 44 44		
Home Healthcare Beds	U576AC - Gear Motor VW76AC - Gear Motor	10 10	VW76DC - Gear Motor	31	U576AC VW76AC U576DC	42 44 44		
Nursing Beds	U576AC - Gear Motor VW76AC - Gear Motor	10 10	U576DC - Gear Motor VW76DC - Gear Motor	31 31	VW76DC U576DC VW02AC VW76AC U576AC	44 44 48 42 46		
Birthing Beds	U576AC - Gear Motor VW76AC - Gear Motor	10 10	VW76DC - Gear Motor	3	U576AC VW76AC VW02AC U576DC VW76DC	46 42 48 44 44		
Examination Tables					VW02AC	48		
Dental Chairs			U576DC - Gear Motor VW76DC - Gear Motor	31 31	U576AC VW76AC VW02AC U576DC VW76DC	46 42 48 44 44		
Medical Equipment	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW100AC VW110AC VW400AC	4 4 5 5 2 2 3 3 14 14 15	D1H/L D1P D3P/L D3H D10P/L D10H D10PA D10HA U576DC - Gear Motor VW130DC VW375DC VW400DC	24 24 25 25 22 22 23 23 31 34 36 36	VW02AC	48		
Peristaltic Pumps	D1H/L D1P/L D3PL D3H D10P/L D10H D10PA D10HA VW11AC VW14AC VW80AC	4 ?? 5 5 2 2 3 3 8 8 9	D1H/L D1P/L D3P/L D3H D10P/L D10H D10PA D10HA U576DC - Gear Motor VW70DC VW83D	24 24 25 25 22 22 23 23 31 29 28				
Medical Instrumentation	D9 D14 VW25AC	6 6 20	D9 D25 D100 VW06DC VW26DC	28 27 28 38 38				
X-Ray Development	D1H/L D1P D3PL D3H D10 VW53AC	4 4 5 5 ?? 11	D1H/L D1P D3PL D3H D10 VW53DC VW80DC	24 24 25 25 ?? 32 30				
Handicap Vehicles			VW62DC	37			Transaxles	51
Lift-Out Chairs					U576AC VW76AC U576DC VW76DC Rack & Pinion	46 42 44 44 48		



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APPLICATION	AC		DC		Linear Actuators		Specials		
Food Service	Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#	
Icemakers	VW11AC	8	VW53DC	32					
	VW14AC	8	VW70DC	29					
	VW34AC	19	US76DC - Gear Motor	31					
	VW53AC	11	VW130DC	34					
	VW58AC	18	VW400DC	36					
	VW62AC	18	VW62DC	37					
	VW80AC	9							
	VW84AC	16							
	VW100AC	14							
	VW110AC	14							
	VW400AC	15							
Commercial Dishwashers	VW100AC	14	VW130DC	34					
	VW110AC	14	VW400DC	36					
	VW400AC	15							
Food Service Equipment	D1H/L	4	D1H/L	24					
	D1P	4	D1P	24					
	D3PL	5	D3PL	25					
	D3H	5	D3H	25					
	D10P/L	2	D10P/L	22					
	D10H	2	D10H	22					
	D10PA	3	D10PA	23					
	D10HA	3	D10HA	23					
	VW33AC	19	VW62DC	37					
	VW62AC	18	VW185DC	39					
	VW84AC	16	VW375DC	36					
	Restaurant Equipment	D1H/L	4	D1H/L	24				
		D1P	4	D1P	24				
D3PL		5	D3PL	25					
D3H		5	D3H	25					
D10P/L		2	D10P/L	22					
D10H		2	D10H	22					
D10PA		3	D10PA	23					
D10HA		3	D10HA	23					
VW08AC		12	VW62DC	37					
VW31AC		11	VW185DC	39					
VW51AC		13	VW375DC	36					
VW62AC		18							
VW84AC		16							
Milk Stirring							VW44AC	50	
Vending Machines	W1	7							
	D1HL	4							
	D1P	4							
Popcorn Poppers	D1H/L	4	D1H/L	24					
	D1P	4	D1P	24					
	D3PL	5	D3PL	25					
	D3H	5	D3H	25					
	D10P/L	2	D10P/L	22					
	D10H	2	D10H	22					
	D10PA	3	D10PA	23					
	D10HA	3	D10HA	23					
	VW08AC	12							
Rotisseries	D1H/L	4	D1H/L	24					
	D1P	4	D1P	24					
	D3PL	5	D3PL	25					
	D3H	5	D3H	25					
	D10P/L	2	D10P/L	22					
	D10H	2	D10H	22					
	D10PA	3	D10PA	23					
	D10HA	3	D10HA	23					
	VW08AC	12							
VW62AC	18								
VW84AC	12								
Poultry Equipment	VW20AC	17							
	VW40AC	17							
	VW47AC	16							
<b>Office Equipment</b>									
Automated File Systems			VW62DC	37					
			VWB4DC	35					
Conference Room Equipment	VW100AC	14	US76DC - Gear Motor	31					
	VW110AC	14	VW130DC	34					
	VW400AC	15	VW130DC						



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APPLICATION	AC		DC		Linear Actuators		Specials	
	Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#
Business Machines	D9 D14 VW11AC VW14AC VW26AC VW33AC VW80AC	6 6 8 8 20 11 8	D9 D25 VW06DC VW15DC VW16DC VW26DC VW53DC VW70DC VW80DC VW83DC VW185DC VW375DC	28 27 38 26 27 38 32 29 30 28 39 36				
Postal Machines	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA	4 4 5 5 2 2 3 3	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW83DC	24 24 25 25 22 22 23 23 28				
Laminating Machines	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW11AC VW14AC VW80AC	4 4 5 5 2 2 3 3 8 8 9	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW70DC VW80DC VW83DC	24 24 25 25 22 22 23 23 29 30 28				
Computer Periferels	D9 D14	6 6	D9 VW06DC	28 38				
Fax Machine			VW06DC	38				
Copy Machine	D9 D14	6 6	D9 VW06DC	28 38				
Paper Shredders	VW34AC	19	U576DC - Gear Motor	31				
Ribbon Drives	D9 D14	6 6	D9 VW06DC	28 38				
Floor Sweepers			U576DC - Gear Motor VW83DC VW88DC	31 28 33	U576DC	44		
Automated Displays	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW11AC VW14AC VW62AC VW80AC VW88AC	4 4 5 5 2 2 3 3 8 8 18 9 12	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW15DC VW16DC VW63DC VW70DC	24 24 25 25 22 22 23 23 26 27 26 29				
<b>Recreational Equipment</b>								
Exercise Equipment	VW03AC/DC VW33AC VW80AC	41 20 9	VW03AC/DC VW15DC VW16DC VW70DC VW80DC	41 26 27 29 30				
Tread Mills	VW33AC VW88AC	20 12			U576AC VW76AC VW02AC VW87AC U576DC VW76DC Rack & Pinion	46 42 48 42 44 44 48		



# APPLICATION MATRIX

APPLICATION	AC		DC		Linear Actuators		Specials	
	Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#
Recreational Equipment	U576AC - Gear Motor VW76AC - Gear Motor	16 10	VW07DC VW23DC VW31DC VW33DC VW76DC - Gear Motor	39 40 32 40 31				
Gaming	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA	4 4 5 5 2 2 3 3	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA D9	24 24 25 25 22 22 23 23 28				
<b>Financial Equipment</b>								
Security Cameras			VW06DC	38				
Banking Equipment	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW89AC	4 4 5 5 2 2 3 3 13	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW06DC	24 24 25 25 22 22 23 23 38				
Banking Machines	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA	4 4 5 5 2 2 3 3	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA	24 24 25 25 22 22 23 23				
<b>Industrial Equipment</b>								
Switch Gear	VW58AC VW77AC VW84AC	18 21 16	VW07DC	39				
Storage Retrieval Equipment	VW77AC	21						
Robotics	VW26AC VW51AC	20 13	D25 VW26DC VW51DC VW375DC	27 38 34 36				
Conveyers	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW03AC/DC VW08AC VW34AC VW47AC VW51AC VW53AC VW58AC VW62AC U576AC - Gear Motor VW76AC - Gear Motor VW80AC VW84AC VW88AC VW89AC VW100AC VW110AC VW400AC	4 4 5 5 2 2 3 3 41 12 19 16 13 11 18 18 10 10 9 16 12 13 14 14 15	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW03AC/DC VW31DC VW51DC VW53DC VW70DC VW76DC - Gear Motor VW88DC VW89DC VW130DC VW185DC VW400DC	24 24 25 25 22 22 23 23 41 32 34 32 29 31 33 33 34 39 36				



# APPLICATION MATRIX

APPLICATION	AC		DC		Linear Actuators		Specials	
	Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#
Machine Tools	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA	4 4 5 5 2 2 3 3	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW07DC VW23DC VW33DC VW88DC VW89DC	24 24 25 25 22 22 23 23 39 40 40 33 33				
Woodworking Equipment	VW58AC	18	VW84DC VW88DC VW89DC	35 33 33				
Pump Drive Lubricator	VW53AC	11	VW53DC	32				
Valve Actuators	D1H/L D1P D3PL D3H D9 D10P/L D10H D10PA D10HA D14	4 4 5 5 6 2 2 3 3 3 6	D1H/L D1P D3PL D3H D9 D10P/L D10H D10PA D10HA D100 VW53DC VW16DC VW63DC U576DC - Gear Motor VW63DC	24 24 25 25 28 22 22 23 23 28 32 27 26 31 28				
Welding Equipment	U576AC - Gear Motor VW76AC - Gear Motor	10 10	VW07DC VW15DC VW16DC VW23DC VW31DC VW33DC VW76DC - Gear Motor VW80DC VW88DC VW89DC VW185DC	39 26 27 40 32 40 31 30 33 33 39		Transaxles	51	
Packaging Equipment	VW51AC VW53AC	13 11	VW51DC VW53DC	34 32				
Chemical Equipment	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA U576AC - Gear Motor VW76AC - Gear Motor	4 4 5 5 2 2 3 3 10 10	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW31DC VW76DC - Gear Motor	24 24 25 25 22 22 23 23 32 31				
Compactors	VW20AC VW40AC	17 17						
Can Crushers	VW20AC VW40AC	17 17						
Laboratory Mixers/Grinders	VW53AC	11	VW53DC	32				
Firefighting Equipment	VW47DC	16						
Pellet Stove	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW11AC VW14AC	4 4 5 5 2 2 3 3 8 8	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW70DC VW76DC - Gear Motor	24 24 25 25 22 22 23 23 29 31				



# APPLICATION MATRIX

APPLICATION	AC		DC		Linear Actuators		Specials	
	Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#
Pellet Stove (con't)	VW31AC U576AC - Gear Motor VW76AC - Gear Motor VW80AC	11 10 10 9						
Mechanical Pool Covers	VW20AC	17						
Gate Openers	VW53AC	11	VW53DC	32	U576DC - SATELLITE VW76DC - SATELLITE	45 45		
Binding Equipment	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA	4 4 5 5 2 2 3 3	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW83DC	24 24 25 25 22 22 23 23 28				
Printing Equipment			VW86DC VW63DC	38 26				
<b>Agricultural Equipment</b>								
Agricultural Equipment			VW23DC VW33DC VW62DC VW84DC VW375DC	40 40 37 35 36				
Agricultural Ventilation	VW47AC	16	VW80DC U576AC U576DC VW76AC VW76DC	30 46 44 42 44	U576DC - SATELLITE VW76DC - SATELLITE VW76AC VW76DC U576AC U576DC	45 45 42 44 46 44		
Wire Feeds	VW51AC	13	VW51DC	34				
<b>Electronic Equipment</b>								
Ticket Dispensers	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW11AC VW14AC VW80AC	4 4 5 5 2 2 3 3 8 8 9	D1H/L D1P D3PL D3H D10P/L D10H D10PA D10HA VW83DC VW70DC VW83DC	24 24 25 25 22 22 23 23 26 29 28				
Positioning Devices	VW26AC	20	D25 VW26DC	27 38				
Satellite Dish Positioning			VW23DC VW33DC VW47DC	40 40 35	U576DC - SATELLITE VW76DC - SATELLITE	45 45		
Solar Panels					U576DC - SATELLITE	45		
Signal Flashers					VW76DC - SATELLITE	45	VW96DC	50
Louver Control	VW100AC VW110AC VW400AC	14 14 14	VW130DC VW400DC	34 36	U576DC - SATELLITE VW76DC - SATELLITE	45 45		
Ribbon Drives	D9 D14	6 6	D9 VW06DC	28 38				