B-SERIES TECHNICAL SPECIFICATIONS (Table 7)

MODEL TYPE AND SIZE		B1	B2.5	B5	B10	B20	B30	B50	B75	B100
CAPACITY IN POUNDS (P)		2,000	5,000	10,000	20,000	40,000	60,000	100,000	150,000	200,000
DIA. OF LOAD SCREW		0.75	1.0	1.5	1.5	2.25	3.0	4.0	4.0	4.0
LEAD OF SCREW		0.500	0.250	0.474	0.474	0.500	0.666	1.0	1.0	1.0
GEAR CENTERS		1.504	1.750	2.188	2.598	2.875	3.750	5.313	6.000	7.500
GEAR RATIO	LOW	5:1	6:1	6:1	8:1	8:1	10 2/3:1	10 2/3:1	10 2/3:1	12:1
	HIGH	10:1	24:1	24:1	24:1	24:1	32:1	32:1	32:1	36:1
(TPI) TURNS OF INPUT SHAFT FOR 1" OF RISE	LOW	10	24	12.66	16.88	16	16	10.66	10.66	12
	HIGH	20	96	50.66	50.66	48	48	32	32	36
TORQUE REQUIRED TO LIFT ONE POUND (lb-in) (Tp)	LOW	0.024	0.008	0.019	0.015	0.016	0.017	0.025	0.024	0.023
	HIGH	0.014	0.003	0.007	0.008	0.008	0.009	0.014	0.012	0.013
HOLDING TORQUE (lb-ft) (Thb)	LOW	1.4	4	14	13	27	21	40	107	128
	HIGH	2	1.5	5	4	7	5	10	24	50
NO LOAD TORQUE (lb-in) (To)		4	5	12	18	36	48	96	156	204
MAXIMUM INPUT RPM		1800	1800	1800	1800	1800	1200	1200	1200	1200
APPROXIMATE WEIGHT IN POUNDS	0" TRAVEL	2.3	17	35	50	85	220	340	590	960
	PER INCH	0.07	0.6	0.6	0.8	1.5	2.4	2.8	4.6	4.6
RADIUS OF GYRATION (r)		0.154	0.205	0.285	0.285	0.463	0.620	0.835	0.835	0.835

1. Complete the Uni-Lift Selection Guide located in the inside front cover.

2. Determine the maximum load on one actuator: P_1

$$P_1 = \frac{P_2}{N}$$

P_2 = Total system load (lbs.)
N = Number of actuators in the system
On multi-unit systems where load is not equally distributed, change P_1 to the greatest load supported by one unit.

3. Check Load Screw Column Capacity:
- If the load screw is in tension, select a Uni-Lift with a rated capacity equal to or greater than the maximum load (P_1) on one actuator. Go to step 4.
- If the load screw is in compression, use the calculation steps on page 50 to determine the maximum permissible Extended Screw Length, (ESL). Select a Uni-Lift that has a load screw column length capacity equal to or greater than the length required for the load.

4. Determine the desired load screw velocity (in./min.): (V_d)

$$V_d = \frac{Rise}{t_2}$$

Rise = One way travel under load (in.)
t_2 = Required one way travel time (min.)

5. Determine Desired Input Speed: (RPM_d)

$$RPM_d = TPI \times V_d$$

TPI = Turns of the input shaft for 1 inch of rise. (See technical specification table 7.)

6. Determine Load Screw Velocity: (V)
From the catalog data, select the drive equipment with an output speed close to the desired input speed (RPM_d). Use the output speed to recalculate the actual load screw velocity (V).

$$V = \frac{RPM}{TPI}$$

7. Check the Duty Limit of the actuator:

$$D_1 = \frac{(2 \times Rise \times C_h)}{V}$$

D_1= Duty time per hour
C_h= Cycles per hour
Determine if D_1 is equal to or greater than D_2. If D_2 is less than D_1 reduce the input speed to the actuator, or reduce the load per actuator by adding more actuators to the system.
D_2 = Duty Limit (see page 49 for calculations)

Motor Sizing:

Once you have determined the motor horsepower, you need to calculate the Motor Brake Torque. All ball screw jacks and systems must be supplied with a brake. This is necessary to stop the jack and also to hold the position. Stop Nuts are to be used only for emergencies. They are available as an option.

The following is a QUICK ESTIMATE FOR MOTOR SIZING FOR A ONE ACTUATOR SYSTEM. For detailed motor sizing and torque requirements on single or multi-unit systems, skip steps 8 and 9, and go to step 10.

8. Estimate the Input Torque T_e (lbs/in):

$$T_e = T_p \times P_3$$

T_p = Torque required to lift one pound (see table 4 for T_p values.)
P_3 = Maximum system running load.

9. Estimate Uni-Lift Horsepower: HP_e

$$HP_e = \frac{(T_e \times RPM)}{63025}$$