

# General Information

- 1) Shafts with existing keyways:  
Transmissible torque and thrust capacities of the POWER-LOCK® must be decreased by 10% when used with a shaft with a keyway such as a motor shaft.  
Transmissible torque:  $M_t \bullet 0.9$   
Transmissible thrust:  $P_{ax} \bullet 0.9$
- 2) Surface pressure (P) and (P'):  
Contact pressure values of shaft (P) and hub bore (P') listed on pages D-21, D-24 and D-25 indicate mean values only. These rated surface pressures will fluctuate from -20% to +40% due to the variable friction component forces resulting from the locking bolts. Transmissible torque (Mt) and thrust (Pax) are calculated as minimum values, provided that POWER-LOCK is to be used under the listed surface pressures, (P) and (P'). Transmissible torque (Mt) and thrust (Pax) may increase by approximately 70% above the listed ratings in actual applications.

- 3) Radial load applications:  
Should POWER-LOCK be subjected to heavy radial loads (Pr) in such applications as wheel drives, calculate surface pressure (Prad) on the shaft and (P'rad) on the hub as follows:  
POWER-LOCK may be used if the surface pressure on the shaft (Prad) and the surface pressure on the hub (P'rad) are equal to or less than one half of (P) and (P').

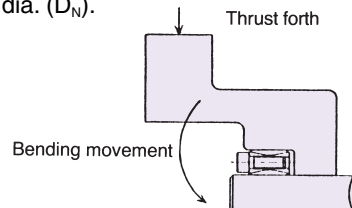
$$Prad = \frac{1.3 \bullet Pr}{d \bullet \ell} \leq \frac{1}{2}P \quad P'rad = \frac{1.3 \bullet Pr}{D \bullet \ell} \leq \frac{1}{2}P'$$

- Pr: Radial load (N) (lbs.)
- ℓ: POWER-LOCK inside width (in.)
- d: Shaft dia. (in.)
- D: Hub bore inside dia. (in.)
- P: Surface pressure on shaft (psi)
- P': Surface pressure on hub (psi)

When radial load is applied to POWER-LOCK, the above values of (Prad) and (P'rad) should be added to (P) and (P') respectively in order to calculate the hub outside dia. (D<sub>N</sub>) or hollow shaft inside dia. (d<sub>B</sub>).

Model Number	Allowable Bending Moment Mo (ft./lbs.)	Max. Surface Pressure on Hub Pt <sub>m</sub> (psi)	Model Number	Allowable Bending Moment Mo (ft./lbs.)	Max. Surface Pressure on Hub Pt <sub>m</sub> (psi)
PL 3/4	152	16,640	PL2 15/16	1,120	25,030
PL 7/8	195	17,630	PL3	1,310	25,170
PL1	174	19,050	PL3 3/8	1,330	25,880
PL1 1/8	212	18,210	PL3 7/16	1,530	25,880
PL1 3/16	253	19,340	PL3 1/2	1,530	25,880
PL1 1/4	282	21,330	PL3 3/4	1,410	25,740
PL1 5/8	297	21,610	PL3 15/16	2,050	25,600
PL1 7/16	333	22,180	PL4	2,130	25,310
PL1 1/2	434	24,030	PL4 7/16	2,800	26,310
PL1 5/8	434	23,040	PL4 1/2	2,780	26,160
PL1 11/16	434	23,040	PL4 15/16	4,310	26,020
PL1 3/4	434	23,040	PL5	4,300	26,020
PL1 7/8	564	23,040	PL5 1/2	4,910	27,020
PL1 15/16	564	23,040	PL6	5,060	27,590
PL2	506	24,600	PL6 1/2	8,460	27,160
PL2 1/8	506	24,600	PL7	8,900	27,440
PL2 3/16	644	24,600	PL7 1/2	14,000	26,450
PL2 1/4	644	24,600	PL7 7/8	15,600	27,300
PL2 3/8	542	23,640	PL8	16,100	26,880
PL2 7/16	694	25,310	PL8 1/2	18,800	27,300
PL2 1/2	694	25,310	PL9	22,300	28,160
PL2 9/16	665	25,030	PL9 1/2	20,300	27,870
PL2 5/8	866	25,450	PL10	20,800	29,150
PL2 11/16	866	25,450	PL10 1/2	21,800	28,580
PL2 3/4	991	25,450	PL11	37,500	28,440
PL2 7/8	1,120	25,030	PL11 13/16	37,600	28,440

- 4) Bending moments:  
POWER-LOCK is not designed to transmit bending moments. However, POWER-LOCK will tolerate limited bending moments as shown in table listed below.  
 $M \leq Mo \bullet n^2$   
M: Bending moment working on POWER-LOCK (in./lbs.)  
Mo: Allowable bending moment (in./lbs.)  
n: Number of POWER-LOCK ( $N \leq 4$ )  
Should bending moment values be close to the allowable bending moments values listed in the table, use (Pt<sub>m</sub>) instead of hub surface pressure (P) when calculating hub outside dia. (D<sub>N</sub>).



- 5) Allowable value of tightening torque (M<sub>A</sub>):  
Transmissible torque (Mt) and thrust (Pax) values are based on the correct tightening torque of the locking bolts. Acceptable range of the tightening torque is ±5% of the listed value. Use an accurate torque wrench to tighten it.
- 6) Loosening of locking bolts:  
Manufactured of special high-tensile steel, the locking bolts will not loosen due to vibration.
- 7) Influence of temperature:  
The use of POWER-LOCK at temperatures above 400°F (200°C) is not suggested, since the tensile strength of the locking bolts may decrease substantially.
- 8) Outdoor use:  
When a standard POWER-LOCK is to be used outdoors, it should be lubricated with grease and a cover should be installed to protect against corrosion. If this is not practical, stainless steel POWER-LOCK (see page D-24) and special coating POWER-LOCK are available.

Model Number	Allowable Bending Moment Mo (ft./lbs.)	Max. Surface Pressure on Hub Pt <sub>m</sub> (psi)	Model Number	Allowable Bending Moment Mo (ft./lbs.)	Max. Surface Pressure on Hub Pt <sub>m</sub> (psi)
PL019X047	151.3	16,690	PL095X135	1,542	26,410
PL020X047	151.3	16,690	PL100X145	2,037	25,540
PL022X047	187.5	17,700	PL110X155	2,553	25,540
PL024X050	144.6	18,430	PL120X165	2,782	26,260
PL025X050	166.1	19,010	PL130X180	4,303	26,120
PL028X055	231.0	18,720	PL140X190	4,658	26,410
PL030X055	274.5	19,880	PL150X200	4,686	29,280
PL032X060	281.9	21,470	PL160X210	5,041	27,570
PL035X060	281.9	21,470	PL170X225	8,044	25,970
PL038X065	332.1	22,200	PL180X235	8,856	29,420
PL040X065	332.1	22,200	PL190X250	14,760	27,130
PL042X075	426.6	22,930	PL200X260	15,570	27,280
PL045X075	426.6	22,930	PL220X285	18,670	27,280
PL048X080	563.8	23,220	PL240X305	20,070	28,000
PL050X080	563.8	23,220	PL260X325	20,520	29,020
PL055X085	506.3	24,670	PL280X355	29,000	28,000
PL060X090	643.5	24,810	PL300X375	37,860	28,580
PL065X095	687.1	25,250			
PL070X110	915.1	24,960			
PL075X115	1,107.0	25,100			
PL080X120	1,306.0	25,100			
PL085X125	1,328.0	25,830			
PL090X130	1,520.0	25,830			