OVERHUNG & AXIAL LOADS (lbf) ON SHAFTS

0107

Maximum permissible overhung loads

When a sprocket, gear etc. is mounted on the shaft a calculation, as below, must be made to determine the overhung load on the shaft, and the results compared to the maximum permissible overhung loads tabulated. Overhung loads can be reduced by increasing the diameter of the sprocket, gear, etc. If the maximum permissible overhung load is exceeded, the sprocket, gear, etc. should be mounted on a separate shaft, flexibly coupled and supported in its own bearings, or the gear unit shaft should be extended to run in an outboard bearing. Alternatively, a larger gear is often a less expensive solution.

Permissible overhung loads vary according to the direction of rotation. The values tabulated are for the most unfavourable direction with the unit transmitting full rated power and the load P applied midway along the shaft extension. Hence they can sometimes be increased for a more favourable direction of rotation, or if the power transmitted is less than the rated capacity of the gear unit, or if the load is applied nearer to the gear unit case. Refer to Textron Power Transmission for further details. In any event, the sprocket, gear etc. should be positioned as close as possible to the gear unit case in order to reduce bearing loads and shaft stresses, and to prolong life.

All units will accept 100% momentary overload on stated capacities.

Overhung load (lbf)

$$P = \frac{HP \times 126{,}000 \times K}{N \times D}$$

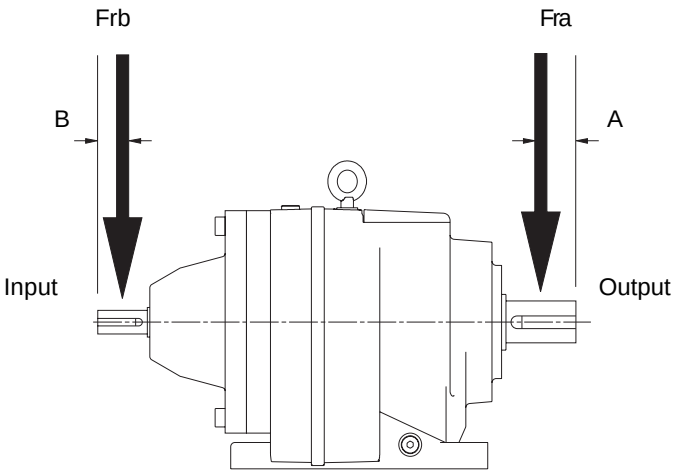
where

P	=	equivalent overhung load (lbf)
HP	=	power transmitted by the shaft (HP)
N	=	speed of shaft (rpm)
D	=	pitch diameter of sprocket, etc. (in)
K	=	factor

Overhung member	K (factor)
Chain sprocket*	1.00
Spur or helical pinion	1.25
Vee belt sheave	1.50
Flat belt pulley	2.00

* If multistrand chain drives are equally loaded and the outer strand is further than dimension Fra output or Frb input, refer to Textron Power Transmission.

Note: 1 lbf = 4.4484 Newtons.



Distance midway along the shaft extension

Size of unit	No. of Reductions	Dimension A (mm)	Dimension B (mm)
M01	2 - 3	0.7875	0.785
M02	2 - 3	0.9845	0.785
M03	2 - 5	0.9845	0.785
M04	2 - 5	1.181	0.785
M05	1	0.7875	0.785
	2 - 5	1.378	0.785
M06	1	0.9845	0.785
	2 - 5	1.378	0.785
M07	1	1.181	0.985
	2	1.575	0.985
	3	1.575	0.785
	4 - 5	1.575	0.785
M08	1	1.575	1.18
	2	1.9685	1.18
	3	1.9685	0.985
	4 - 5	1.9685	0.785
M09	2	2.36	1.575
	3	2.36	1.18
	4 - 5	2.36	0.785
M10	2	2.755	2.165
	3	2.755	2.165
	4 - 5	2.755	0.985
M13	2 - 3	3.345	2.165
	4	3.345	0.985
	5	3.345	0.785
M14	2 - 3	4.135	2.165
	4	4.135	0.985
	5	4.135	0.785

OVERHUNG & AXIAL LOADS (lbf) ON SHAFTS

Inputshaft Overhung Loads, Frb (lbf) 1750 rpm

Single Stage Units

Ratios	M05	M06	M07	M08
1.25 - 2.5	105	150	210	315
2.8 - 8.0	180	210	315	380

Two, Three, Four and Five Stage Units

	M01	M02	M03	M04	M05	M06	M07	M08	M09	M10	M13	M14
2 Stage	315	345	325	250	230	190	345	315	315	535	1365	1490
3 Stage	345	365	365	315	315	315	380	470	785	880	2500	2500
4 Stage	-	-	315	315	315	315	315	365	365	470	470	470
5 Stage	-	-	315	315	315	315	315	365	365	470	470	470

For output overhung load Fra consult ratings tables pages 34 to 70

Axial Thrust Capacities (lbs)

No check or calculation is required for axial loads (F_A) towards or away from the unit up to 50% of the permissible overhung load. If the axial thrust considerably exceeds these values or if there is a combination of axial thrust loads and overhung loads please contact Textron Power Transmission.