

Motor Couplings

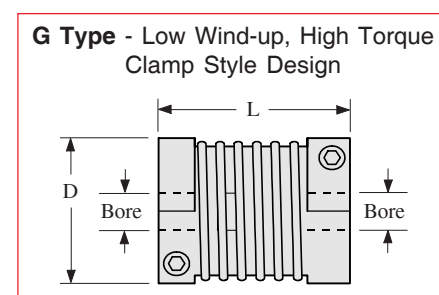
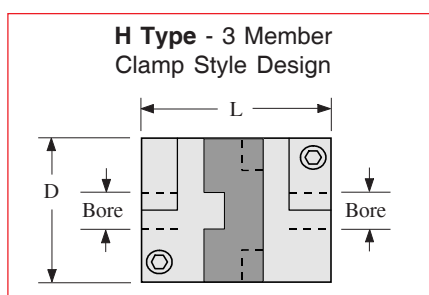
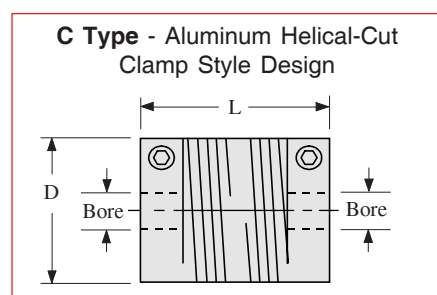
The main function of a coupling is to transmit the power generated by the attached motor to the screw, belt, or worm gear drive assembly. *LINTECH* provides three different types of couplings that can be used to attach a motor shaft to a positioning table. These couplings will compensate for some misalignment between the motor & table shafts. This provides for trouble-free operation as long as certain precautions are taken. First, the connected motor output torque should never exceed the coupling maximum torque capacity and a proper safety factor should be used. Second, select the proper coupling for a given application (see the charts below).

These couplings are typically not limited by speed, but they can be damaged (or weakened) over time in certain situations. Some of the more common situations are hitting a hard stop (or the positioning table end plates), servo systems that are tuned incorrectly, high acceleration rates, large back-driving vertical loads, use of gearheads, and moving large inertia loads. All of these situations should consider the use of a coupling with an adequate safety

margin between the coupling torque rating and the maximum motor (or gearhead) output torque. The main differences between the three couplings are wind-up (twist or torsional compliance), torque capacity, and cost. The chart below lists how the three types of couplings compare to each other.

When a coupling is subjected to torque it will twist. The amount of twist (deflection) for a given torque is wind-up. The higher the wind-up value of a coupling, the greater the "spring action" the coupling will exert between the motor & table shafts. This "spring action" can cause a high performing servo system to become unstable. Therefore, for servo motor applications a "G" or "H" style coupling with a low wind-up value should be considered.

LINTECH provides various diameter & length sizes for the "C", "H", and "G" style couplings. Each of these couplings are provided with an assortment of bore diameters to accommodate various NEMA & metric motor shafts. The individual sections will list all the coupling data available for a given table series.



Coupling	Cost	Torque Capacity	Wind-up	Suggested Motor	Comments
C Type	least expensive	light	the most	stepper	ideal for most step motor applications
H Type	medium priced	medium	medium	stepper or servo	use for high accels & for starting & stopping large inertia loads
G Type	most expensive	high	the least	servo	use for very high torque requirements & very high servo accelerations

Recommended Coupling Maximum Torque Safety Factors

Impacts or Vibration	Speed (revs/sec)	Acceleration (G's)	Min. Safety Factor
None	< 2	< 0.10	1.8 - 2.0
Small	2 - 10	0.10 - 0.50	2.0 - 2.2
Medium	10 - 20	0.50 - 0.75	2.2 - 2.4
Large	20 - 50	0.75 - 1.00	2.4 - 2.6
Very Large	> 50	> 1.00	2.6 - 3.0