

MILLER SWIVELS- TYPES, USE, SELECTION

With the largest product line of load handling swivels worldwide, and continuous leadership and innovation in the use of swivels since our founding in 1935 in Pomona, California, Miller provides users worldwide with proven solutions to everyday problems in the field, under the sea, in the air, in the factory and in space. Miller also has provided many custom swivel solutions tailored to specific operations in the construction, mining, petroleum and natural gas, foundation drilling, nuclear, communications and other industries.

The five general categories of Miller Swivels are:

- Y-Link, angular contact ball bearing swivels
- Econo-Link, tapered thrust bearing swivels
- C-link, composite bearing chain swivel for marine applications
- Special application swivels (marine, stainless, insulated, demolition, drilling, line pulling)
- Custom-designed swivels for specific operational requirements

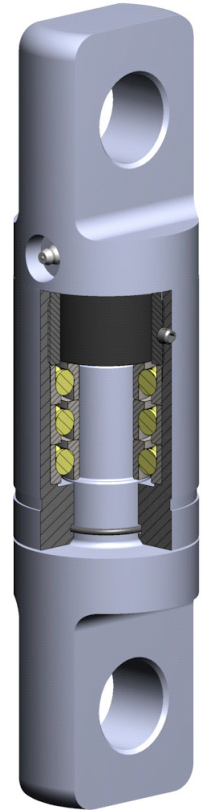
Y-Link Angular Contact Ball Bearing Swivels

Developed by Miller, angular contact ball bearing swivels provide the most efficient way to handle the heavy thrust loads encountered in crane operation and other lifting and pulling jobs. The precision-ground, precisely matched bearings assure longer service life, superior performance, and much longer wire rope life where rope twist must be reduced or eliminated. The thrust load is transferred from an overlapping shoulder on the bearing race through the balls to the diagonally opposed shoulder on the outer bearing race. This distributes the load to the outer part of the barrel.

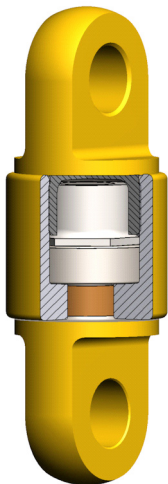
The angular contact bearings are mounted in complements of two or more, depending on the load capacity of the swivel. They permit the load to rotate freely, yet they prevent the load from spinning. By permitting the wire rope to neutralize itself, they can extend the wire rope life multiple times.

The angular contact ball bearing swivel design results in highly reduced torque levels- 50% to 70% less than the torque levels found for traditional thrust bearing swivels, especially as load increases.

External parts of Miller Y-Link Angular Contact Ball bearings are machined from high quality alloy steel and are zinc plated for long-term corrosion protection. Working loads range from ½ to 1000 tons.



Econo-Link Thrust Bearing Swivels

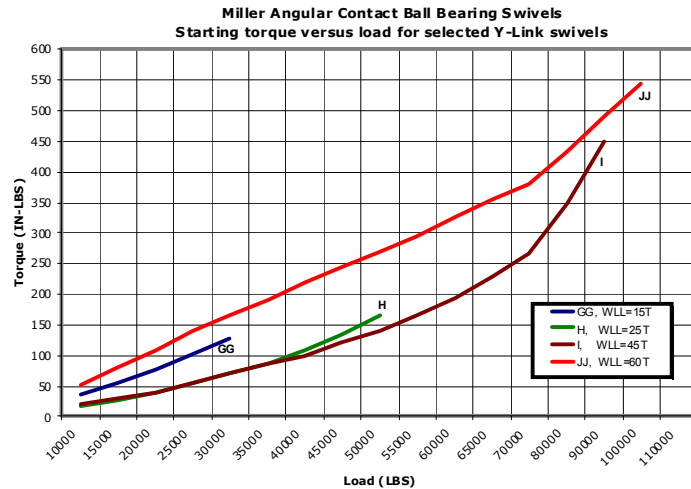
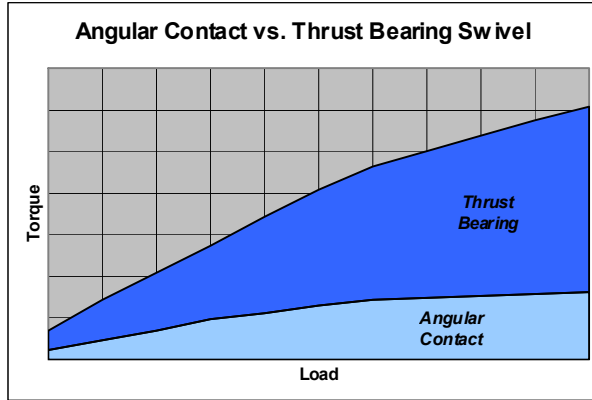


Outstanding economy and good service are the hallmarks of Miller's traditional swivel model. Miller thrust bearing swivels are economically priced, yet are surpassed only by Miller's angular contact bearing swivels. Miller Econo-Link Thrust Bearing Swivels incorporate a single heavy duty tapered roller bearing housed in a steel retainer. External parts are steel castings with forged steel hooks when hooks are used. A close-fitting bronze bushing seals lubricant in and keeps dirt out of the bearing. For many applications Miller Econo-Link Thrust Bearing Swivels offer the most economical, yet dependable, service available. Working loads range from 3 to 15 tons.

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Torque Considerations

Angular contact bearings allow much lower torque resistance. Starting torque under load for angular contact bearings is based on Miller testing and empirical data.



SPECIAL APPLICATION SWIVELS with Angular Contact Ball Bearings

Over the years Miller has developed a number of angular contact ball bearing swivels for given applications or environments. The following are the most common and those for which we have developed standard products available to order from Miller. All of these swivels are presented in the tables following in this section of the catalog.

Heavy Duty Swivels (HD-Link) – These swivels which feature heavy duty barrels are available to protect bearings and maximize swivel life under the heavy impact and abrasive environment of demolition work. Many other Miller swivels can be fitted with heavy duty barrels upon request.

Overhaul Swivels (g-Link) – Weighing from 2.5 to nearly 4 times as much as standard swivels of the same type, these special Miller Overhaul Swivels provide an excellent means of adding additional weight without increasing overall dimensions. Ideal for small truck cranes and hoists in applications where minimal additional overhaul weight is required.

Line Pulling Swivels (Miller-Pengo) – Designed specifically by Miller for the electrical distribution industry for stringing high tension wires and for pulling wires through conduit. They help to accommodate the inevitable twisting developed as lines are installed using sheaves over long distances. These swivels are not designed for general lifting applications. Please see Miller Y-Link and Econo-Link for lifting swivels.

Stainless Steel Swivels – These swivels are designed for cable and chain applications above the surface of the water where long term environmental considerations require the corrosion resistant qualities of stainless steel. In addition to above surface marine, other typical applications include chemical processing plants, nuclear plants, and applications with magnetic permeability restrictions.

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Stainless Steel, Underwater High Pressure Swivels – A unique pressure compensating, high pressure seal allows this series of swivels to operate reliably up to depths of 10,000 feet. These swivels find applications in oceanographic work, offshore mooring, cable laying, offshore oil and gas exploration, installation, operating activities, commercial fishing, defense and other marine applications. High pressure swivels are also available in non-stainless steel.

Insulated Swivels – Miller also produces a series of insulated swivels for working loads up to 120 tons. These swivel assemblies incorporate the Miller ISO/Link-AC or ISO/Link-DC for the personnel safety purposes of isolating the load from high voltage electrical current in case of boom contact with power lines or to prevent stray building grid currents in industrial applications where welding or induction melting occurs. Please refer to the Load Insulating section of the catalog for information on these high value swivels.

MILLER SWIVEL SELECTION GUIDE

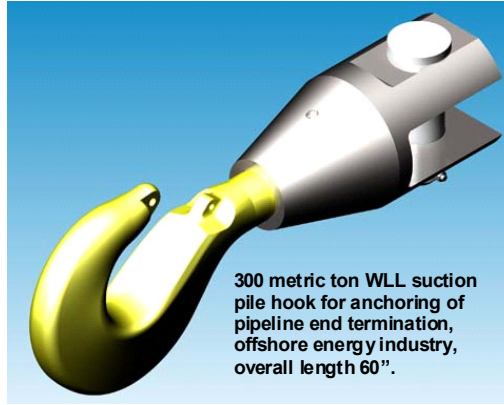
SWIVEL MODEL	Y-Link	Y-Link/HP	Hydro-Link	Hydro-Link/HP	Econo-Link
DESIGN FACTOR	5 for WLL ≤ 35T • 4 for WLL > 35T				4
WLL RANGE*	.45 to 300T	.45 to 300T	.45 to 300T	.45 to 300T	3 to 15T
MBL RANGE	N/A	N/A	N/A	N/A	N/A
BEARING TYPE	Angular Contact	Angular Contact	Angular Contact	Angular Contact	Tapered Thrust
SEAL TYPE	O-ring	Pressure Compensating Spring-Energized Polymer	O-ring	Pressure Compensating Spring-Energized Polymer	Bronze Bushing
FEATURES	Machined Alloy Steel, Best All Around, 54 Configurations	Y-Link, Sealed for High Pressure Applications	Machined Stainless Steel Construction	Hydro-Link, Sealed for High Pressure	Cast Alloy Steel, Low Price, 6 Popular Configurations
LUBRICATION	Grease filled, E-Size and Up Include Zerk	Hot Poured Miller Lube, Oil Plug	Grease filled, E-Size and Up Include Zerk	Hot Poured Miller Lube, Oil Plug	Grease filled, No Zerk
REBUILDABLE	Yes	Yes	Yes	Yes	No
APPLICATIONS	Full Range Lifting, Custom End Configurations, Low Friction	Short Term Sub Sea to Depths of 10,000 ft, Offshore Oil and Gas	Above Surface Marine, Chemical and Nuclear Plants	Long Term Sub Sea to Depths of 10,000 ft, Offshore Oil and Gas	General lifting, Economical
SWIVEL MODEL	Econo Swiveler	g-Link	HD-Link	Pengo/Miller	
DESIGN FACTOR	4	5	5	3	
WLL RANGE*	3 to 15T	1.5 to 8.5T	5 to 35T	.9 to 50T	
MBL RANGE	N/A	N/A	N/A	N/A	
BEARING TYPE	Tapered Thrust	Angular Contact	Angular Contact	Angular Contact	
SEAL TYPE	Bronze Bushing	O-ring	O-ring	O-ring	
FEATURES	2 Configurations, 35 - 575 lbs Overhaul Weight	2.5 to 4 Times Overhaul weight Compared to Y-Links	Heavy Duty Barrel for Increased Bearing Protection and Service Life	For Tension Line Pulling, 90 Degree Connectors Available.	
LUBRICATION	Grease filled, No Zerk	Grease Filled, E-Size and Up have Zerk	Grease Filled, E-Size and Up have Zerk	Grease filled, No Zerk	
REBUILDABLE	No	Yes	Yes	No	
APPLICATIONS	Small Cranes, Low Head Room, Overhaul Weight	Small Truck Cranes, Low Head Room, Minimal Overhaul Weight	Demolition and High Impact	Electrical Distribution, Line Stringing / Pulling	
* For standard swivels. Custom swivel working loads available to 1000 tons					

MILLER CUSTOM SWIVELS

Miller has designed and manufactured swivels for specific high value lifting or handling projects in various industries including construction, offshore energy, aerospace and defense, nuclear and others. Following are just a few examples. Please contact us directly for information on custom swivel products.



375 ton WLL narrow body with side load capability, for riser pull-in, offshore energy industry. 65"L x Ø13"



300 metric ton WLL suction pile hook for anchoring of pipeline end termination, offshore energy industry, overall length 60".



125T swivel, military transport



Insulated, 60T, NASA shuttle maintenance operations



375T offshore special for SCR pull-in