

COUPLINGS & MECHANICAL SOFT STARTS



BALDOR
A MEMBER OF THE ABB GROUP



PARA-FLEX®

D160

1000

THE DODGE COUPLING FAMILY

Uniquely engineered to dampen vibration, accommodate shaft misalignment, and eliminate unexpected downtime.

Dodge has manufactured couplings for over 100 years and has earned a reputation for developing innovative products that lower customers' total cost of ownership.

The Dodge coupling product line can offer a solution to almost any customer need. Whether the need is an elastomeric or metallic design, Dodge can provide a coupling with the potential to increase torque capacity, accommodate shaft misalignment, eliminate lubrication, extend life, improve application efficiency and put an end to unexpected downtime.

Combining Dodge coupling products with the overall ABB - Baldor Electric - Dodge product lines, customers can order complete system packages

containing a variety of designs, sizes, and options. The large product offering allows pump, conveyor, and fan users to have a drive, motor, coupling, gearbox, bearings, and conveyor pulley from the same manufacturer. The ability to provide a single source system design with the product breadth and depth of Dodge is an advantage shared with no other manufacturer in the marketplace.

ABB, Baldor Electric Co., and Dodge customers can order their electrical and mechanical power transmission products from one source as a system package. The Dodge coupling product line offers elastomeric, metallic, or mechanical soft-start coupling solutions that can be trusted to perform reliably in the toughest applications.



ELASTOMERIC, TIRE STYLE

Dodge Para-Flex Flanges

FBX – Finished Bore Flange

The ductile iron FBX flanges are factory assembled and utilize a setscrew locking mechanism to insure a quick, easy installation.



BBS – Bored-To-Size Flange

The BBS steel flange assemblies are finished bore designs that have the largest maximum bore capability of all Para-Flex flanges available. Also, by utilizing steel this flange is the perfect choice for the highest shock load and vibration applications.



TL - Taper-Lock Flange (Standard and Metric Designs)

The cast iron TL flange design uses standard Taper-Lock bushings which allow for an easy installation and removal with minimal shaft damage, reducing maintenance time and costs. Additionally, the metric Para-Flex flanges offer metric hardware for all sizes.



Pre-Assembled Spacer Flange

The factory-assembled spacer center drops in and drops out for easy installation and removal, accommodating a wide range of between-shaft-end lengths for greater versatility.



High Speed Para-Flex and Flywheel Para-Flex Couplings

These performance-proven couplings are designed for applications with speeds up to 6000 RPM. They work with almost any power source, including internal combustion engines, and can accommodate angular misalignment up to 1°, parallel misalignment up to 1/16" (1.58 mm), and end float of 3/32" (2.38 mm).

Para-Flex Coupling Standard and Metric Ratings*

Style	Size Range	Max Torque		Power per 100 RPM		Max Speed	Max Bore		Misalignment Capability (Angular)	Misalignment Capability (Parallel)		Misalignment Capability (End-Float)	
		In-lbs	N-m	HP/100	kW/100		Inch	mm		Inch	mm	Inch	mm
PXFBX	PX40 – PX120	12,605	1,424	20	14	4,500	3.75	102	4°	0.125	3.175	0.25	6.35
PXTL	PX40 – PX320	453,000	51,180	718	535	4,500	8.00	203	4°	0.125	3.175	0.25	6.35
PXBBS	PX40 – PX320	453,000	51,180	718	535	4,500	11.00	285	4°	0.125	3.175	0.25	6.35

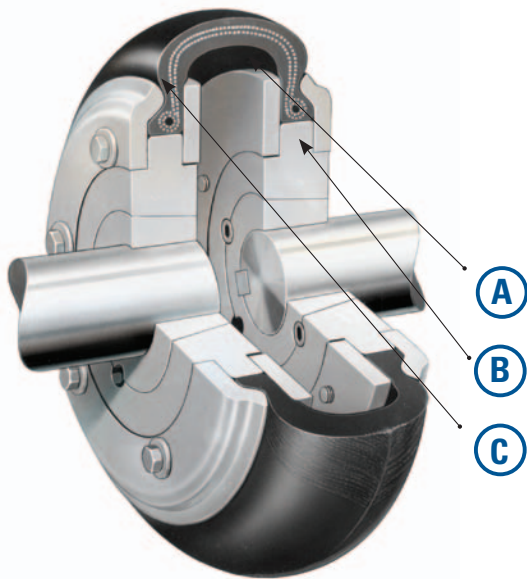
*Listed values represent the range of the entire product line. Ratings are dependent upon coupling size. See Dodge engineering catalog and appropriate selection methods during sizing or contact application engineering for assistance.

ELASTOMERIC, TIRE STYLE

Dodge Para-Flex Elements

Superior Design Provides Advantages over other Rubber or Polyurethane Elements

Dodge Para-Flex elements are manufactured with reinforcing fabric tension cords that transmit much of the torque during operation and offer a wear indicator to the user when the element should be changed out. The uniform and centered beads, in the foot of the tire element prevent it from pulling out during operation. Additionally, the tire element is reinforced at the split to reduce fatigue and extend life.



- (A)** Fabric centered throughout rubber increases tire life.
- (B)** Uniform and centered beads prevent tire element from pulling out of flange.
- (C)** Tire element is reinforced at the split to reduce fatigue and extend life.

Torsionally Soft Rubber Protects Connected Equipment

The flexible design of the Dodge Para-Flex element is crucial in preventing damage to connected equipment in harsh-running environments. The torsional softness is instrumental in dampening vibrations and absorbing shock loads to the system.

Static Conductive

The Dodge Para-Flex natural rubber element is static conductive which provides an insurance policy for customers' equipment. The static conductivity allows current to safely pass from an ungrounded system component to a grounded system component. Allowing current to safely pass through the natural rubber element prevents the possibility of arcing during operation.

Industry Leading Misalignment Capabilities

Dodge Para-Flex elements provide accommodation of shaft misalignment during installation, running-time, and replacement better than other elastomeric elements. With an industry-leading combined 4° angular, 1/8" (3.17 mm) parallel, and 5/16" (7.93 mm) end-float capability, Para-Flex couplings will perform in difficult applications and reduce valuable time needed for installation and maintenance.

Large Installed Base

With over 50 years of history and development, Dodge Para-Flex elements have the experience of providing reliable solutions in a wide range of industries and applications. Dodge Para-Flex couplings carry an industry-leading 5-Year Limited Warranty.

ELASTOMERIC, SLEEVE STYLE

Dodge D-Flex® Couplings

Three-way Flexing Action Handles Shock, Vibration, and Misalignment

The Dodge D-Flex coupling features molded, non-lubricated, interchangeable elastomeric sleeves of EPDM, Neoprene, or Hytrel. Its three-way flexing action accommodates torsional, angular, and parallel misalignment, as well as axial end float.

Type J Coupling

Offered in four sizes, the cost-effective Type J coupling features die-cast flanges that are bored to size with two setscrews for optimum attachment to the shaft and is available with EPDM or Neoprene sleeves.

Type S Coupling

The Type S coupling features high strength, cast-iron flanges that are bored to size for a clearance fit and balanced to AGMA 9 Standards resulting in smooth operation for pumping applications. With one setscrew over the keyway and the other at 65°, D-Flex S flanges provide optimum shaft attachment. Type S couplings are offered with EPDM, Neoprene, or Hytrel sleeves.

Type B Coupling

Constructed of high-strength cast iron and utilizing QD bushings for shaft attachments, Type B couplings are available for use with EPDM or Neoprene sleeves.

Type SC Coupling

Dynamically balanced to AGMA Class 9 Standards, the Type SC spacer coupling accommodates a wide range of shaft spacing. It features a drop-out center for easy equipment maintenance. Additionally, shaft hubs include hub flats for ease of alignment during installation, and are available in either rough stock bore or clearance fit finished bore.

Pump Drive Package

The Dodge D-Flex coupling is very popular in pumping applications due to the five piece spacer design's ease of installation and change out. ABB, Baldor Electric, and Dodge can package together the controls, drives, motors, and couplings needed for common pumping applications.



Dodge D-Flex Type S Coupling



Dodge D-Flex Type SC Spacer Coupling

D-Flex Coupling Standard and Metric Ratings*

Style	Size Range	Max Torque		Power per 100 RPM		Max Speed	Max Bore		Misalignment Capability (Angular)	Misalignment Capability (Parallel)		Misalignment Capability (End-Float)	
		In-lbs	N-m	HP/100	kW/100		Inch	mm		Inch	mm	Inch	mm
D-Flex J Flange	3J – 6J	450	51	0.71	0.53	9,200	1.375	34	1°	0.010 – 0.062	0.254 – 1.574	0.03 – 0.125	0.762 – 3.175
D-Flex S Flange with EPDM or Neoprene Sleeve	5S – 16S	47,250	5,338	74	55	7,600	6.00	140	1°	0.010 – 0.062	0.254 – 1.574	0.03 – 0.125	0.762 – 3.175
D-Flex S Flange with Hytrel Sleeve	6S – 16S	72,480	8,189	115	85	6,000	5.00	127	0.25°	0.010 – 0.035	0.254 – 0.889	0.06 – 0.125	1.524 – 3.175

*Listed values represent the range of the entire product line. Ratings are dependent upon coupling size. See Dodge engineering catalog and appropriate selection methods during sizing or contact application engineering for assistance.

METALLIC, GEAR STYLE

Dodge Gear Couplings

The most Power-Dense Coupling Dodge Offers

Engineered for improved operation, the Dodge gear coupling is manufactured with high-quality forged steel for longer service life, and features a high torque rating for efficient downsizing.

Versatile Design

The Dodge Gear coupling's versatile, modular system design is half-for-half interchangeable with competitive AGMA gear couplings.

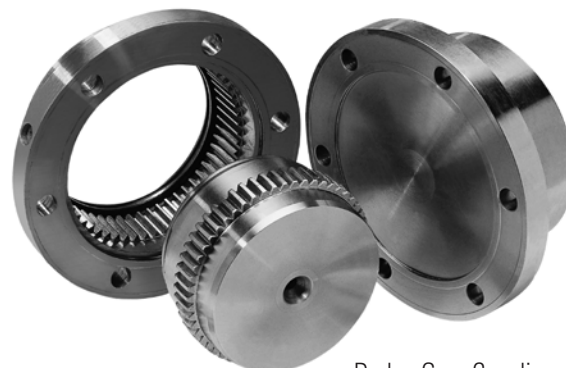
Largest Bore Capacity in Industry

In most sizes, the Dodge Gear coupling also offers the largest bore capacity in the industry. It's well suited for reversing applications and can be combined with any Dodge speed reducer to achieve a tailored package for maximum results.

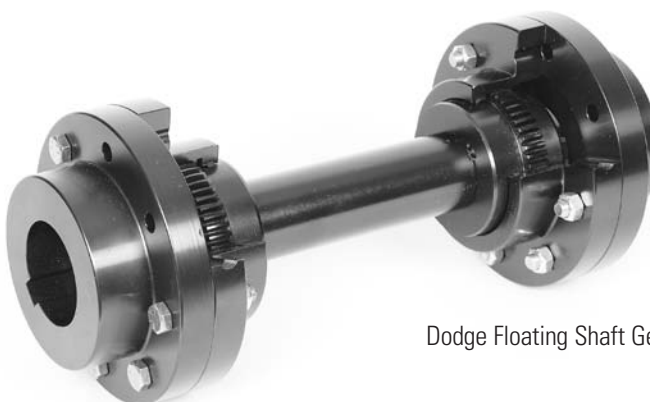
Custom Capabilities

The Dodge gear coupling product line has cataloged sizes up to AGMA size 7.0, however, manufacturing capabilities also allow for designs requiring:

- 1) Large sizes up to size 30.0
- 2) Shrouded bolt
- 3) Gear spacer couplings
- 4) Floating shaft designs
- 5) Limited end float (LEF)
- 6) Slide gear



Dodge Gear Coupling



Dodge Floating Shaft Gear Coupling



Dodge Spacer Gear Coupling

Gear Coupling Standard and Metric Ratings*

Style	Size Range	Max Torque		Power per 100 RPM		Max Speed	Max Bore		Misalignment Capability (Angular)	Misalignment Capability (Parallel)		Misalignment Capability (End-Float)	
		In-lbs	N-m	HP/100	kW/100		Inch	mm		Inch	mm	Inch	mm
Gear (Standard)	1.0 - 7.0	1,008,400	113,900	1600	1193	6,000/9,000**	9.50	255	1.5° ang. Misalign. per gear mesh – 1.0-5.0 0.75° ang. Misalign. per gear mesh – 6.0-7.0				
Gear (Made-To-Order)	8.0 – 30.0	47,269,000	5,340,000	75000	55916	1,900/2,850**	42.00	480	Consult Dodge Engineering for misalignment detail.				

*Listed values represent the range of the entire product line. Ratings are dependent upon coupling size. See Dodge engineering catalog and appropriate selection methods during sizing or contact application engineering for assistance.

**Balanced

METALLIC, GRID STYLE

Dodge Grid-Lign® Couplings

Compact in size, yet high in Torque Capability

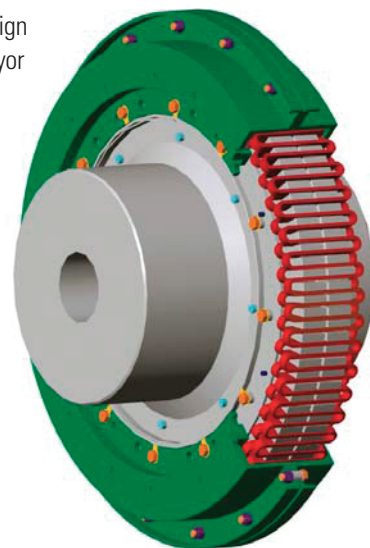
Dodge Grid-Lign couplings are available in a variety of sizes in standard and spacer styles. Every coupling features two steel shaft hubs, a tapered grid element, two seals and a cover assembly. Its versatile design allows for a motor or reducer output speed connection, and its speed capability ranges up to 6,000 RPM. Dodge Grid-Lign is also available in a spacer design up to size 1200T. This spacer offering can be used as a spacer coupling alone or mounted to a brake disc or drum.

Flexible Tapered Element

The Dodge Grid-Lign coupling's tapered grid element is engineered with high-strength, spring steel that is quenched and tempered. This feature helps isolate vibration and cushions shock loads. In addition, it allows uniform contact during light, normal, and shock-loading conditions for long machine life.

High Torque Capability

Torque capabilities on the Dodge Grid-Lign coupling range up to 7 million in-lbs (800,000 N-m). Whether it is overland conveyors or underground mines, the high torque ratings allow for customers to specify a Grid-Lign coupling in the largest conveyor applications.



Dodge S-Series Grid-Lign Coupling



Dodge Grid-Lign Coupling

Grid-Lign Coupling Standard and Metric Ratings*

Style	Size Range	Max Torque		Power per 100 RPM		Max Speed	Max Bore		Misalignment Capability (Angular)	Misalignment Capability (Parallel)		Misalignment Capability (End-Float)	
		In-lbs	N-m	HP/100	kW/100		Inch	mm		Inch	mm	Inch	mm
Grid-Lign TL	1020T – 1130T	44,800	12,428	71	53	6,000	3.9375	110	0.5°	0.012	0.304	0.375	9.525
Grid-Lign Str Bore	1020T – 1200T	1,650,000	186,417	2618	1952	6,000	13.00	360	0.5°	0.012	0.304	0.375	9.525
Grid-Lign S-Series	150 - 480	7,080,585	800,000	11234	8376	320	21.85	555	Consult Dodge Engineering for misalignment detail.				

*Listed values represent the range of the entire product line. Ratings are dependent upon coupling size. See Dodge engineering catalog and appropriate selection methods during sizing or contact application engineering for assistance.

METALLIC, GRID STYLE

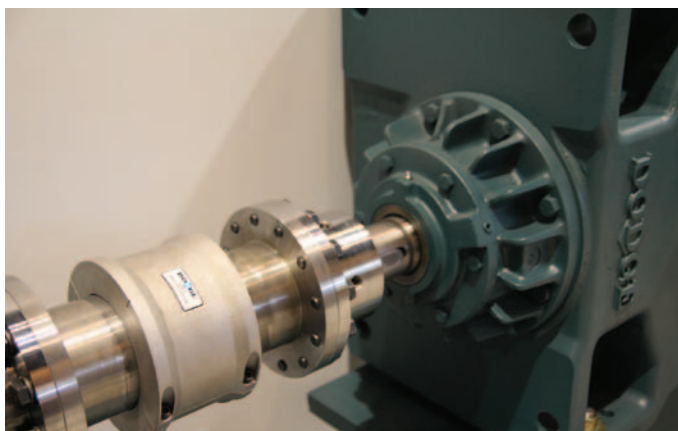
System Package Design

Dodge Grid-Lign couplings are commonly used in conveyor, pump, and fan applications across a variety of industries including mining, aggregate, power generation, oil & gas, steel, and pulp & paper.

The wide breadth and depth of the ABB, Baldor Electric, and Dodge product lines provide users a single source for all electrical and mechanical power transmission products (i.e. controls, drives, motor, coupling, reducer, bearings, and conveyor pulleys). As seen in Figure 1, ABB or Baldor Electric motors, Dodge couplings, and Dodge reducers can easily be combined into one system package.

Figure 1

Dodge Grid-Lign Spacer coupling mounted between a Baldor-Reliance motor and a Dodge MagnaGear reducer

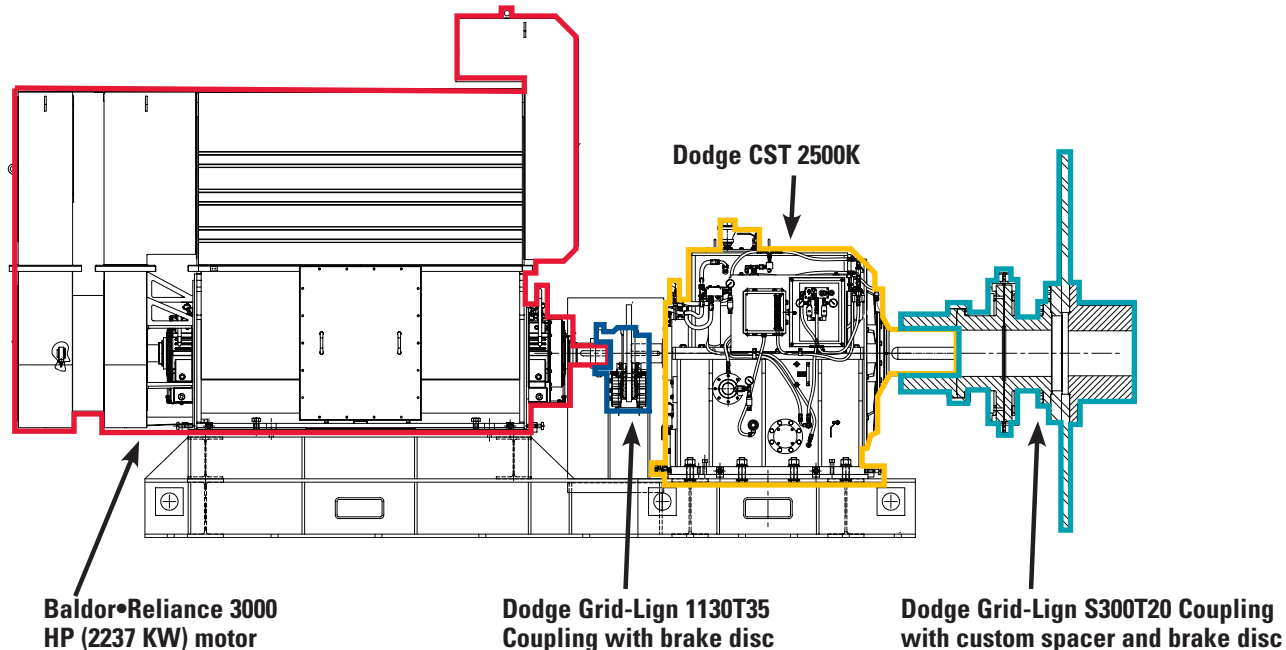


Custom System Engineering Capabilities

Baldor-Reliance and Dodge have been designing custom engineered conveyor drive systems for decades. Combining the ABB, Baldor-Reliance, and Dodge product lines into one package allows users to receive a complete, custom designed drive system for bulk material handling applications that include controls, drives, motors, gearing, couplings, bearings, conveyor pulleys, and drive components from a single source. As seen in Figure 2 below, complex packaged drive systems for conveying applications are an absolute core competency of Dodge engineering. Mining, aggregate, power generation, oil & gas, steel, pulp & paper, and general industrial users can all benefit from depending on Dodge as a trusted engineering source for all their design needs.

Figure 2

Baldor•Reliance and Dodge Engineered System Package



METALLIC, DISC STYLE

Dodge Disc Couplings

Engineered for Longer Life, Improved Reliability

The Dodge Disc coupling offers industry leading torque capacity and misalignment capability resulting in longer life and improved reliability. Disc couplings have become the preferred design for pumping and compressor applications used in the oil and gas industry due to the high torque, speed, misalignment, and maintenance-free features. The advantages of the disc style coupling have also driven the API 610 specification which can be met by all Dodge Disc couplings. In addition to the high torque and misalignment capabilities, the Dodge Disc coupling also provides features for customers to save money by downsizing with a large hub option and prevent unexpected downtime costs with strobe light inspection during operation.



Pumping System Packages

The Dodge Disc coupling can be specified into any API 610 pumping application due to its wide range of capabilities. ABB drives, ABB motors, and Baldor•Reliance motors have become the standard in the oil and gas industry due to their reliability and long life. Now oil and gas users can realize the same reliability and long life by packaging Dodge Disc couplings, ABB or Baldor•Reliance motors, and ABB drives, into one complete pump driver system.

Disc Coupling Standard and Metric Ratings*

Style	Size Range	Max Torque		Power per 100 RPM		Max Speed	Max Bore		Misalignment Capability (Angular)	Misalignment Capability (Parallel)		Misalignment Capability (End-Float)	
		In-lbs	N-m	HP/100	kW/100		Inch	mm		Inch	mm		
Disc (Standard)	94-310	177,000	20,000	280	209	9,100/22,700**	7.88	200	1° - 1.5°	0.107	2.714	0.224	5.70
Disc (Made-to-Order)	333-702	2,292,000	259,000	3636	2712	1,360/3,400**	15.25	385	0.5° - 1°	N/A	N/A	0.299	7.60

*Listed values represent the range of the entire product line. Ratings are dependent upon coupling size. See Dodge engineering catalog and appropriate selection methods during sizing or contact application engineering for assistance.

**Balanced

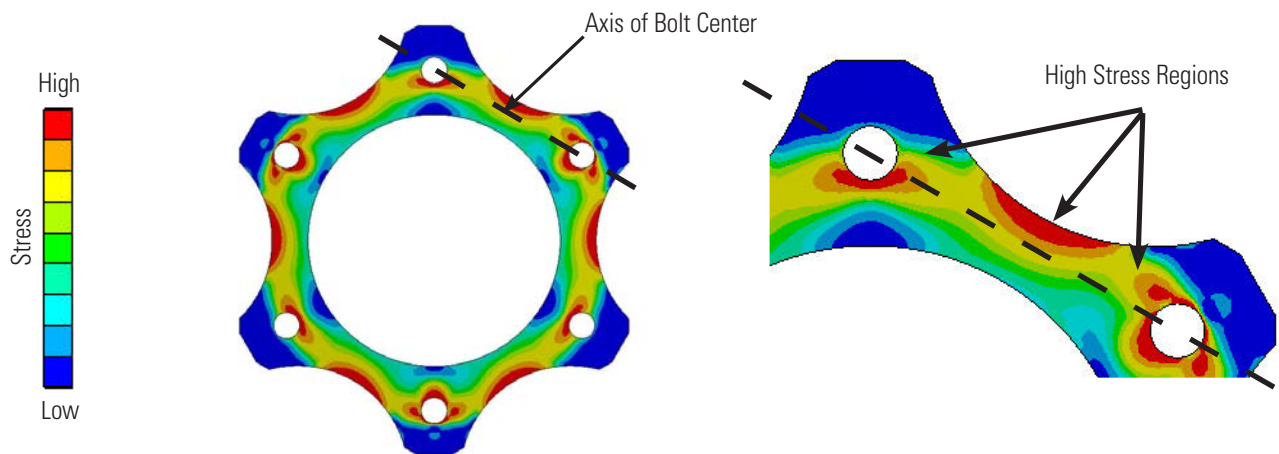
METALLIC, DISC STYLE

Competitor Disc Geometry

Many disc coupling competitors utilize the disc geometry seen below which features a scalloped outside diameter and circular inside diameter. As seen in Figure 3, this single scalloped design unevenly distributes material along the “axis of bolt center”, which negatively impacts the torque ratings and the misalignment capability of the disc. Figure 3 shows large peak stress areas (shown in red) are created around the bolt holes and along the outside diameter of each leg between bolts, resulting in lower torque ratings. Additionally, the uneven distribution of material along the “axis of bolt center” drastically reduces misalignment capability during operation.

Figure 3

Competitor Disc Geometry - Single Scalloped Design

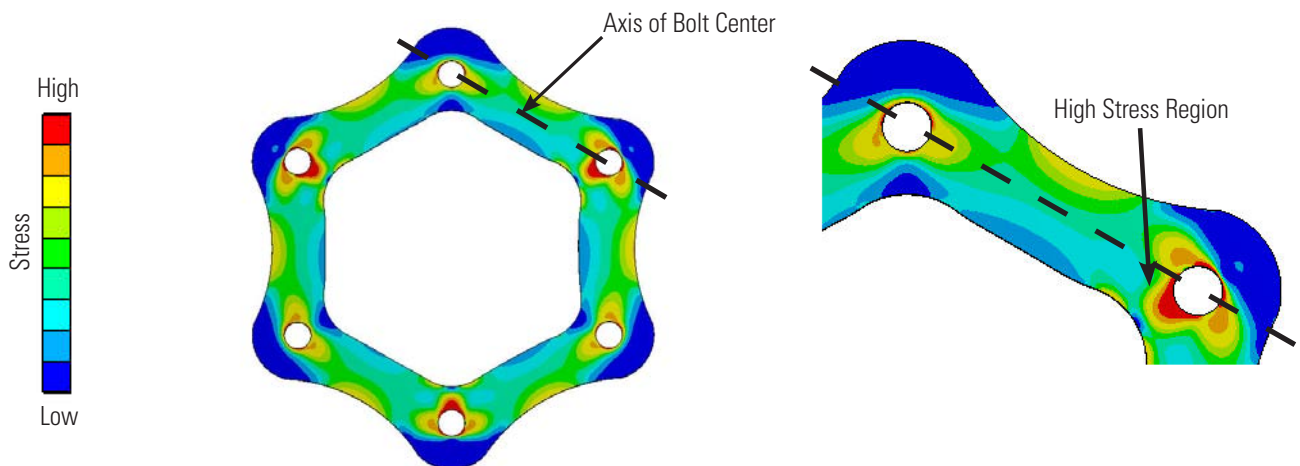


Dodge Disc Geometry

The Dodge Disc coupling utilizes the newest generation of disc geometry, a dual scalloped design, which offers an even distribution of material along the “axis of bolt center”. Figure 4 shows a drastically reduced number of high stress areas within the disc limited to only a small area around the bolt hole. Also, the peak stress shown in the Dodge Disc geometry is 13% less than the competitor’s geometry, resulting in an average of double the torque capacity. Additionally, an even distribution of material along the “axis of bolt center” maximizes misalignment capability and offers up to three times the misalignment of the leading competitor. Industry leading torque ratings and misalignment capability will ultimately lead to longer coupling life, improved reliability, and reduced unexpected downtime.

Figure 4

Dodge Disc Geometry - Dual Scalloped Design



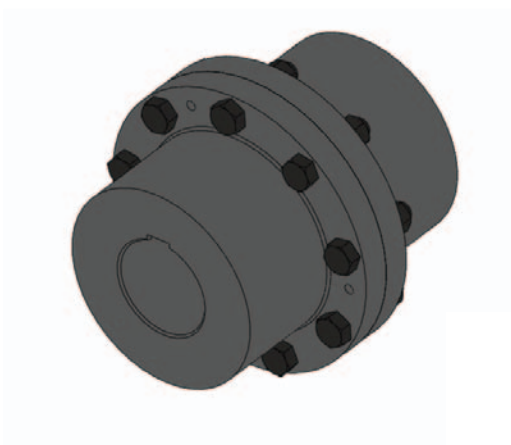
METALLIC, RIGID STYLE

Dodge Moment Coupling

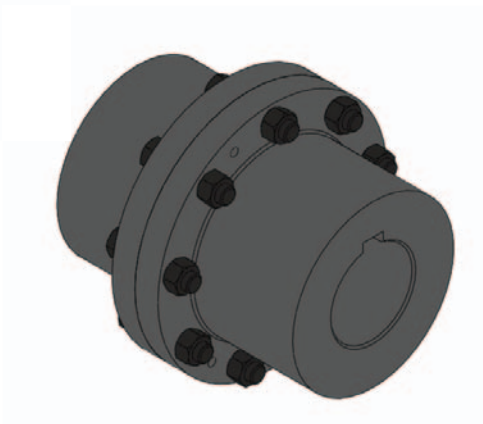
Dodge® Moment couplings are specifically designed to make the rigid connection between the output shaft of a gearbox and head pulley. Highly engineered to meet the most rigorous application requirements, these couplings are capable of handling both the required application torque and the bending moment forces of the suspended weight of a drive package, including the gearbox, motor, high-speed coupling, and swing base. This design allows for an alignment-free drive by eliminating the time consuming process of aligning the gearbox assembly to the head pulley shaft. The male and female hubs are manufactured from 4140 alloy steel and are assembled with Grade 8 bolts.

Information needed for Dodge engineering to select the appropriate Moment coupling for an application:

- Power / Torque / Speed Requirements
- Driver and Driven Shaft Sizes
- Overhung Load
- Length of Lever Arm
- Application Specifics: Type of Operation; Required Stops and Starts; Shock Loads and Vibration



Moment Couplings



Moment Coupling Standard and Metric Ratings*

Style	Size Range	Max Torque		Power per 100 RPM		Max Speed	Max Bore	
		In-lbs	N-m	HP/100	kW/100		Inch	mm
Moment	DM100-DM920	920,000	103,945.30	1,459.70	1,088.40	4,000	11.00	279.40

*Listed values represent the range of the entire product line. Ratings are dependent upon coupling size. See Dodge engineering catalog and appropriate selection methods during sizing or contact application engineering for assistance.

MECHANICAL SOFT STARTS

Dodge Fluid Couplings

Dodge Fluid Coupling Operation

Dodge Fluid couplings are fixed fill mechanical soft start devices which utilize hydrokinetic energy to transmit torque via a system of impellers. The input impeller functions similar to a centrifugal pump and hydraulic turbine. When the input drive moves, it transmits kinetic energy to the oil which is distributed in the housing and transmits torque by engaging the outer impeller.

The Dodge Fluid coupling allows the driver to start under “no load”, resulting in a smooth start up and reduction of amp draw from the motor. Since there is no physical connection inside the housing, the Dodge Fluid coupling has built-in overload protection and inherent torsional vibration absorption. Additionally, load balancing is possible with the use of asynchronous motors, instead of custom motors, since the Fluid couplings automatically adjust to load speed.

Product Line Overview

Dodge Fluid couplings can accommodate applications up to 1360 HP at 1750 RPM and 1840 KW at 1450 RPM. In addition to the standard housing configuration available, Dodge Fluid couplings also offer single and double delay fill options for longer start up times. Shaft attachment options include:

- Direct Coupled with Dodge gear coupling hubs (KCM)
- Belt driven (KSD)
- Direct coupled with a flexible Para-Flex element and flange (KCP)

Package System Solutions

Dodge Fluid couplings are most commonly used on remote location conveyor drive applications in the mining, aggregate, cement, and power generation industries where electronic controls and drives are difficult to power, program, and maintain. The Dodge System-1 group provides the service of packaging Dodge Fluid couplings into a complete, single source conveyor drive system using Baldor Electric motors, Dodge MagnaGear®, Dodge bearings, and Dodge conveyor pulleys.



Dodge KCM Fluid Coupling



Dodge KCP Fluid Coupling



Dodge KSD Fluid Coupling

OTHER ELASTOMERIC, METALLIC, AND MECHANICAL SOFT START DESIGNS

Poly-Disc® Couplings

This elastomeric “pin style” flexible coupling features a molded polyurethane disc that helps cushion shock loads. It requires no lubrication and no periodic maintenance. Both flanges on the Poly-Disc coupling are machined all over and taper bored for Taper-Lock bushings.



Specifications

Sizes: 2.625 to 10

Bore Range: 0.5" to 3.25" [13mm – 80mm]

O.D. Range: 2.63" to 10" [66.6mm – 254mm]

Misalignment Capability*:

- 2° angular
- 0.03125" parallel [0.794mm]
- 0.03125" end float [0.794mm]

** Dependent upon size.*

Taper-Lock Rigid Couplings

The Dodge Taper-Lock Rigid coupling is machined all over for good inherent balance. Capable of operating at speeds up to 4965 RPM*, it connects shafts of different diameters and requires no maintenance.



Specifications

Sizes: R16 to R60

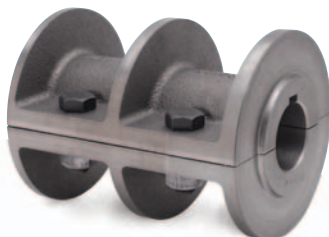
Bore Range: 0.5" to 6" [13mm – 152mm]

O.D. Range: 5" to 20" [127mm – 508mm]

** Dependent upon size.*

Ribbed Rigid Couplings

The Dodge Ribbed Rigid coupling has operating speeds up to 5360 RPM* and can be clamp fit onto shafts of equal diameter with a full-length key.



Specifications

Sizes: 1 to 7

Bore Range: 1" to 7"

O.D. Range: 3.625" to 15.5"

** Dependent upon size.*

Chain Couplings

Dodge provides a broad line of chain couplings with Taper-Lock bushed hubs, finished bore, or reborable flanges. Interchangeable with industry-standard dimensions, these couplings offer a simple, widely accepted, and inexpensive way to couple two shafts. Their compact design features all metallic components and helps provide excellent torque-to-bore capacity.



Specifications

Sizes: 4012 to 12020

Bore Range: 0.5" to 4.6875" [13mm – 119.06mm]

O.D. Range: 2.41" to 12.25" [61.21mm – 311.15mm]

Misalignment Capability*:

- 2° angular
- 0.015" parallel [0.381mm]
- 0.3" axial [7.62mm]

** Dependent upon size.*

Dodge Flexidyne®

The Dodge Flexidyne is a mechanical soft start device providing smooth, controlled acceleration with reduced current draw from the motor. Flexidyne is available for use in belted-duty or direct drive applications, utilizing either HIGH SPEED Para-Flex or Poly-Disc couplings, for increased versatility.

Flexidyne operates at 100% efficiency, using centrifugal forces which cause the flow charge to be distributed throughout the housing, engaging the internal rotor and thus moving the driven load. The result is the equivalent of a “no load” start on the motor, meaning that the initial amp draw is significantly lower. Additional advantages of the Dodge Flexidyne are that the motor can

be sized based upon running torque of the application, instead of start up torque, and equipment life is prolonged as a result of decreased wear and tear.

Since the Flexidyne is a mechanical device, it does not require an additional power supply or programming, making it ideal for remote locations.







P.O. Box 2400, Fort Smith, AR 72902-2400 U.S.A., Ph: (1) 479.646.4711, Fax (1) 479.648.5792, International Fax (1) 479.648.5895

Baldor - Dodge

6040 Ponders Court, Greenville, SC 29615-4617 U.S.A., Ph: (1) 864.297.4800, Fax: (1) 864.281.2433

www.baldor.com