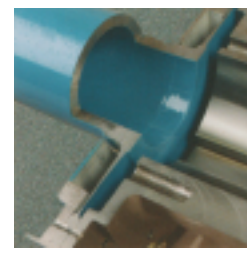


Flexible Diaphragm

By leveraging our aerospace technologies over the last half century, we have refined our flexible diaphragms, proven through field operation and in-house testing to be the preferred solution for accommodating misalignment and torque in a wide variety of applications.

- Non-lubricated design
- Proven performance based on test and finite element analysis (FEA)
- Designed to promote evenly distributed stresses, ensuring highest levels of reliability and safety



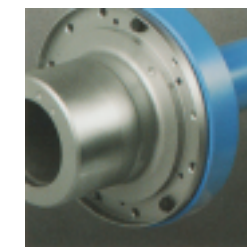
A Better Choice

Our research and development is guided by high standards, decades of experience, and a close working relationship with our customers. Our solid aerospace foundation provides us a distinct edge in coupling design, testing, research, and development.

- Designed and built to meet the most rigorous industry standards
- ISO 9001 and AS9100 Certified
- Provides the lowest total system cost with proven reliability
- Designed for infinite life using the most advanced analysis tools
- Couplings are lubrication-free, requiring no regularly scheduled maintenance
- Repairs with full OEM warranty

Superior Materials

- Superior Corrosion protection - SermeTel® coating, high-temperature paint
- Hub and Flanges - Forging AISI 4340 or equivalent
- Guards - AISI 4140
- Tubes - AISI 4130, 4340, or equivalent
- Shims - Low carbon steel, nickel plated or stainless steel
- Diaphragms - AISI 4340 alloy steel or AMS 5617 stainless steel

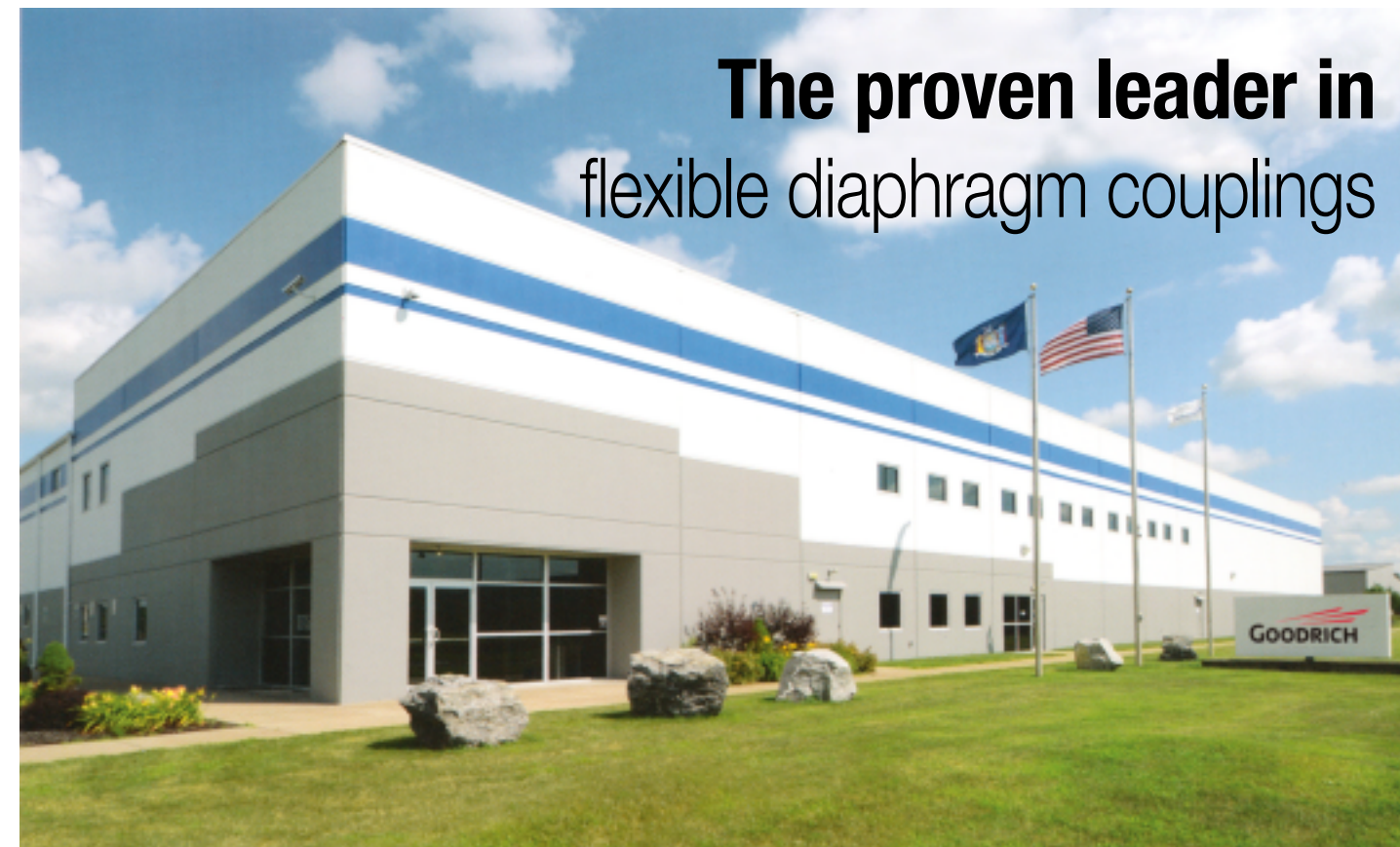


GOODRICH

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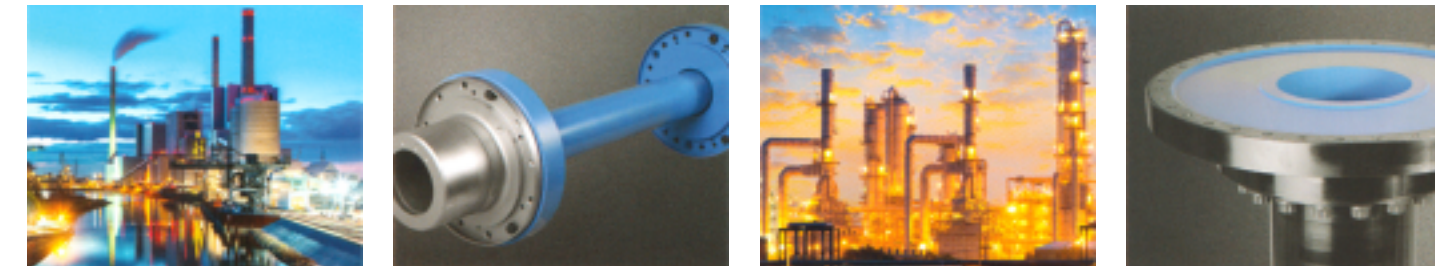
The proven leader in flexible diaphragm couplings



Our state-of-the-art facility in Rome, New York, USA designs, tests and manufactures the world's most advanced couplings.

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Goodrich Industrial Couplings Flexible Diaphragm Couplings



GOODRICH

The Proven Leader In Flexible Diaphragm Couplings

History of Excellence

Since 1949, our Power Transmissions Systems business has set the standard for designing, developing, and manufacturing diaphragm couplings to meet the harshest requirements in Aerospace, Marine, and Industrial markets. In both new and retrofit applications, our innovative products are the industry's most trusted diaphragm couplings.

Optimal Configurations

We have couplings in two standard configurations—welded and bolted—custom-designed to meet any application.

WELDED

- Optimized configuration reduces number of joints for improved performance
- Best for applications with reduced distances between shaft ends
- Nondestructive testing (NDT) on each weld ensures high quality
- Preferred in high-speed applications

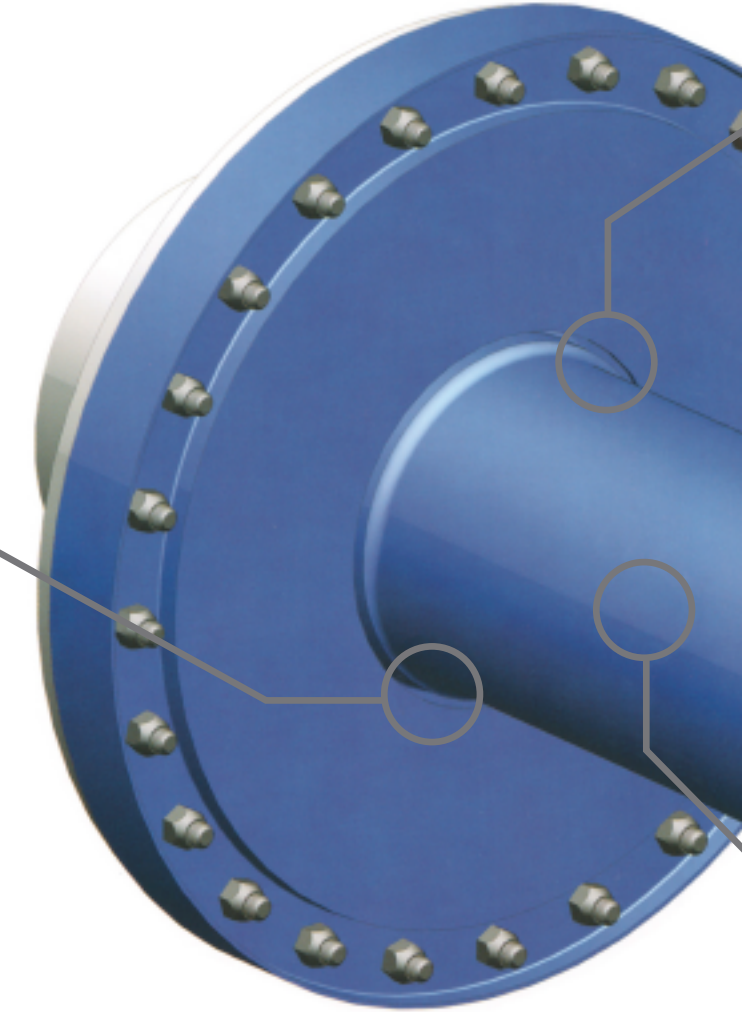
BOLTED

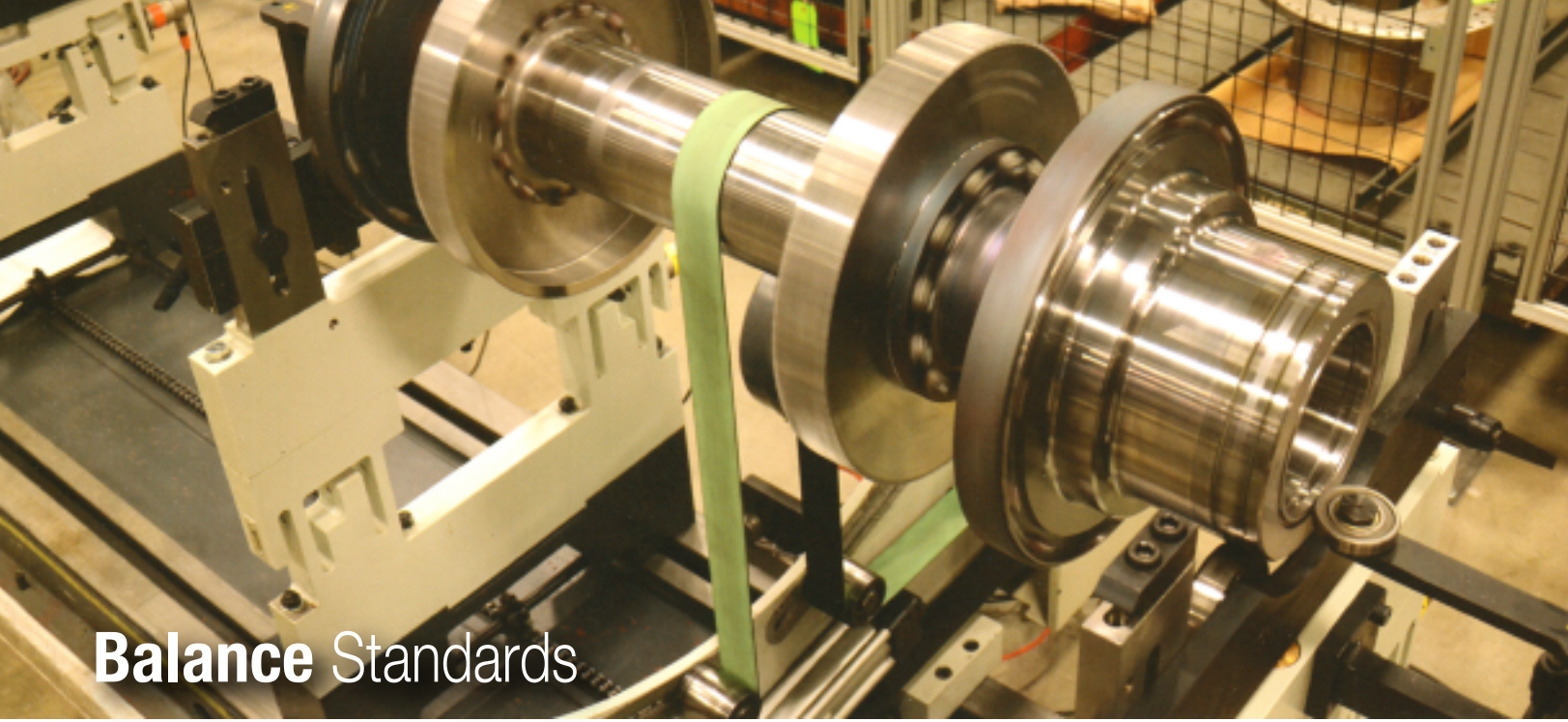
- Allows for additional material configuration and design flexibility, improving costs
- Highest quality weight-matched hardware for simpler installation and removal
- Match-marked for consistent assembly

Special Features

Some applications require special adaptations of our standard designs. Our engineers have extensive experience meeting your application requirements.

- **Backup Gear** - for over-speed protection
- **Electrical Isolation** - protection in applications such as electric motor drives
- **Torque Limiting Shear Devices** - providing predicted failure to protect critical equipment
- **Hybrids** - alternatives to full reduced moment couplings, for applications where the overhung moment is only critical for either the driving or driven equipment
- **Torque Measurement** - designed for use with various torque monitoring equipment





Balance Standards

Our standardized balance method eliminates errors associated with arbor balancing.

Degree of Balance

We provide various balance levels as required by the three methods described in API 671. In addition, we'll work with you to perform additional balance to your specifications.

Optional Balance Checks:

- Residual unbalance check
- Repeatability
- Interchangeability check

Balance Repeatability

Designed and built for best balance repeatability

- Minimum number of assembly joints
- No wear surfaces
- Match-marked for consistent assembly
- Weight-matched bolts and nuts
- All machining done before balancing
- Close-fitting locating bolts



Alignment Stand

Coupling Repair

We provide extensive inspection and refurbishment services:

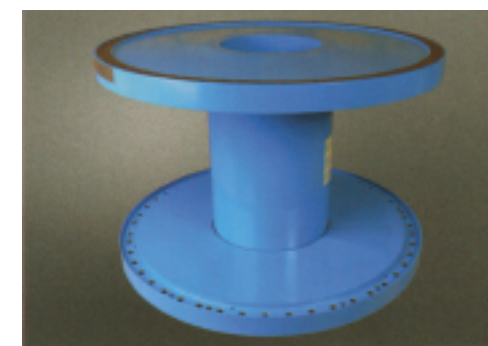
- Upon arrival, each component is disassembled, tagged and visually inspected
- We design custom refurbishment procedures for each coupling based on our engineering review of the coupling's condition
- **Your coupling is returned with a full warranty (as newly manufactured)**

Standard repair/refurbishment includes:

- Cleaning and de-greasing
- Corrosion protection
- Paint removal
- Painting and inspection
- Ultrasonic and dye penetrant inspection
- Grinding and polishing



Before



After

Alloy and Stainless Steel Welded Couplings

Lightweight | Simple Design | Superior balance repeatability | Ideal for any application



UTAS API 671 Standard alloy steel coupling designs range from 6-inch overall diameter to 22.5-inch overall diameter for use in light- to heavy-duty applications. The stainless steel option provides greater torque-carrying capability in the same diaphragm envelope.

Each standard coupling selection can be customized for your application.

- 1 Peak torque is 140% of the Rated torque. Couplings subjected to transient conditions should be evaluated using the Peak torque. Limit torque is 165% of the Rated torque. Couplings subjected to a "one-time" momentary load should be evaluated using the Limit torque.
 - 2 Axial deflection is based on the Rated torque listed.
 - 3 Total parallel offset equals the value shown multiplied by the distance between flexures.
 - 4 Total coupling weight was calculated using an 18 in. DBSE and two hubs at maximum bore diameter.
- * Contact UTAS engineering for coupling selections requiring: higher speed, axial/angular misalignment or torque.

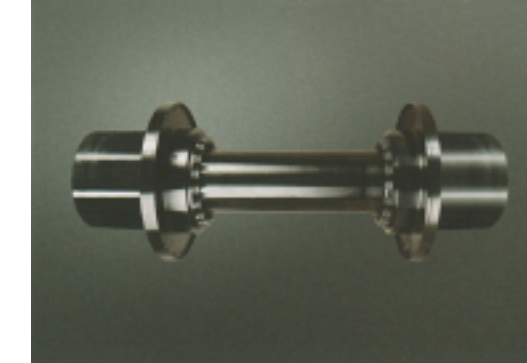
High Performance Alloy Steel 88 Series

Maximum Performance Stainless Steel 100 Series

Type Size	Rated Torque (in-lb)	Axial Deflection (± in.)	Rated Torque (in-lb)	Axial Deflection (± inches)	Misalignment per End (± Deg)	Parallel Offset (in./in.)	Rated Speed (RPM)	Coupling OD (inches)	Max Taper Bore (inches)	Alloy Steel Coupling Weight (lbs)	Stainless Steel Coupling ¹⁰ Weight (lbs)
305	18,000	0.055	27,400	0.049	0.333	0.0058	15,000	6.055	2.75	27.3	26.1
405	26,000	0.044	38,000	0.040	0.250	0.0044	15,000	6.055	2.75	28.5	28.3
505	32,000	0.039	48,000	0.032	0.200	0.0035	15,000	6.055	2.75	29.8	29.7
306	38,000	0.058	55,500	0.060	0.333	0.0058	15,000	7.055	3.45	43.2	42.0
406	51,000	0.053	76,000	0.047	0.250	0.0044	15,000	7.055	3.45	44.9	45.5
506	63,000	0.046	95,000	0.040	0.200	0.0035	15,000	7.055	3.45	47.2	43.4
308	83,000	0.082	124,550	0.075	0.333	0.0058	10,000	9.175	4.75	96.6	96.6
408	113,000	0.070	169,000	0.063	0.250	0.0044	10,000	9.175	4.75	99.3	102.0
508	141,000	0.061	212,000	0.051	0.200	0.0035	10,000	9.175	4.75	102.7	105.2
310	154,500	0.101	231,000	0.086	0.333	0.0058	10,000	10.930	5.95	182.5	182.5
410	211,000	0.087	317,000	0.072	0.250	0.0044	10,000	10.930	5.95	185.6	190.6
510	264,000	0.076	397,000	0.058	0.200	0.0035	10,000	10.930	5.95	191.2	195.4
312	289,000	0.118	430,000	0.105	0.333	0.0058	7,500	13.050	7.33	322.5	323.9
412	386,000	0.104	580,000	0.087	0.250	0.0044	7,500	13.050	7.33	328.5	335.8
512	482,000	0.091	725,000	0.073	0.200	0.0035	7,500	13.050	7.33	338.2	342.7
314	429,000	0.128	638,000	0.115	0.333	0.0058	7,500	14.805	8.32	446.6	449.1
414	572,000	0.115	861,000	0.097	0.250	0.0044	7,500	14.805	8.32	454.4	464.2
514	715,000	0.101	1,076,000	0.081	0.200	0.0035	7,500	14.805	8.32	466.7	473.1
316	682,000	0.136	1,010,000	0.126	0.333	0.0058	7,500	16.805	9.66	687.8	693.7
416	910,000	0.126	1,373,000	0.107	0.250	0.0044	7,500	16.805	9.66	698.6	713.9
516	1,138,000	0.112	1,715,000	0.090	0.200	0.0035	7,500	16.805	9.66	715.3	725.9
318	925,000	0.162	1,385,000	0.148	0.333	0.0058	5,000	18.805	10.67	920.4	920.6
418	1,234,000	0.148	1,854,000	0.125	0.250	0.0044	5,000	18.805	10.67	932.5	945.0
518	1,543,000	0.131	2,317,000	0.106	0.200	0.0035	5,000	18.805	10.67	945.0	959.6
322	1,763,000	0.211	2,651,000	0.172	0.333	0.0058	5,000	22.550	13.10	1,695.2	1,699.5
422	2,352,000	0.196	3,535,000	0.148	0.250	0.0044	5,000	22.550	13.10	1,718.7	1,736.8
522	2,938,000	0.154	4,418,000	0.128	0.200	0.0035	5,000	22.550	13.10	1,731.8	1,759.5

Bolted Couplings

Cost Efficient | Component Interchangeability



UTAS API 671 Standard bolted coupling designs range from 6-inch overall diameter to 22.5-inch overall diameter for use in light- to heavy-duty applications. The bolted design configuration gives us greater flexibility to create custom designs using various material and diaphragm profiles.

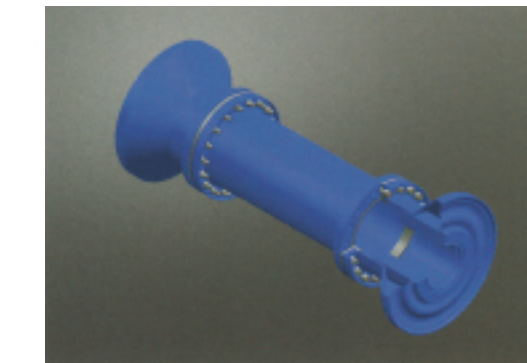
Each bolted coupling selection can be customized for your application.

- 1 Peak torque is 140% of the Rated torque. Couplings subjected to transient conditions should be evaluated using the Peak torque. Limit torque is 165% of the Rated torque. Couplings subjected to a "one-time" momentary load should be evaluated using the Limit torque.
 - 2 Axial deflection is based on the Rated torque listed.
 - 3 Total parallel offset equals the value shown multiplied by the distance between flexures.
 - 4 Total coupling weight was calculated using an 18 in. DBSE and two hubs at maximum bore diameter.
- * Contact UTAS engineering for coupling selections requiring: higher speed, axial/angular misalignment or torque.

Type Size	Rated Torque (in-lb)	Axial Deflection (± in.)	Misalignment per End (± Deg)	Parallel Offset (in./in.)	Rated Speed (RPM)	Coupling OD (inches)	Max Taper Bore (inches)	Coupling Weight (lbs)
305	18,000	0.055	0.333	0.0058	15,000	6.055	2.75	31.5
405	26,000	0.044	0.250	0.0044	15,000	6.055	2.75	31.6
505	32,000	0.039	0.200	0.0035	15,000	6.055	2.75	31.6
306	38,000	0.058	0.333	0.0058	15,000	7.055	3.45	54.4
406	51,000	0.053	0.250	0.0044	15,000	7.055	3.45	54.5
506	63,000	0.046	0.200	0.0035	15,000	7.055	3.45	54.6
308	83,000	0.082	0.333	0.0058	10,000	9.175	4.75	113.3
408	113,000	0.070	0.250	0.0044	10,000	9.175	4.75	113.5
508	141,000	0.061	0.200	0.0035	10,000	9.175	4.75	113.8
310	154,500	0.101	0.333	0.0058	10,000	10.930	5.95	212.4
410	211,000	0.087	0.250	0.0044	10,000	10.930	5.95	212.8
510	264,000	0.076	0.200	0.0035	10,000	10.930	5.95	213.3
312	289,000	0.118	0.333	0.0058	7,500	13.050	7.33	372.8
412	386,000	0.104	0.250	0.0044	7,500	13.050	7.33	373.7
512	482,000	0.091	0.200	0.0035	7,500	13.050	7.33	374.6
314	429,000	0.128	0.333	0.0058	7,500	14.805	8.32	525.6
414	572,000	0.115	0.250	0.0044	7,500	14.805	8.32	526.9
514	715,000	0.101	0.200	0.0035	7,500	14.805	8.32	528.2
316	682,000	0.136	0.333	0.0058	7,500	16.805	9.66	795.0
416	910,000	0.126	0.250	0.0044	7,500	16.805	9.66	796.1
516	1,138,000	0.112	0.200	0.0035	7,500	16.805	9.66	800.3
318	925,000	0.162	0.333	0.0058	5,000	18.805	10.67	1,048.0
418	1,234,000	0.148	0.250	0.0044	5,000	18.805	10.67	1,051.0
518	1,543,000	0.131	0.200	0.0035	5,000	18.805	10.67	1,054.0
322	1,763,000	0.211	0.333	0.0058	5,000	22.550	13.10	1,892.0
422	2,352,000	0.196	0.250	0.0044	5,000	22.550	13.10	1,899.0
522	2,938,000	0.154	0.200	0.0035	5,000	22.550	13.10	1,906.0

Reduced Moment Couplings

High Speed | Light Weight | Superior Balance Repeatability



UTAS API 671 Standard reduced moment coupling designs range from 6-inch overall diameter to 15-inch overall diameter for use in light- to medium-duty applications. This design is ideal for those applications where rotor dynamic characteristics are a concern.

Each reduced moment coupling selection can be customized for your application.

- 1 Couplings subjected to transient conditions should be evaluated using the Peak torque. Limit torque is 133% of the Peak torque. Couplings subjected to a "one-time" momentary load should be evaluated using the Limit torque.
 - 2 Axial deflection is based on the Rated torque listed.
 - 3 Parallel offset equals the value shown multiplied by the distance between flexures.
 - 4 Total coupling weight was calculated using an 18 in. DBSE and two hubs at maximum bore diameter.
- * Contact UTAS engineering for coupling selections requiring: higher speed, axial/angular misalignment or torque.

Type Size	Rated Torque (in-lb)	Axial Deflection (± in.)	Misalignment per End (± Deg)	Parallel Offset (in./in.)	Rated Speed (RPM)	Limit Speed (RPM)	Coupling OD (inches)	Max Taper Bore (inches)	Coupling Weight (lbs)	CG Location (inches)
305	9,300	0.049	0.333	0.0058	15,000	39,000	4.560	1.50	8.0	-1.593
405	11,700	0.041	0.250	0.0044	15,000	44,000	4.560	1.50	8.1	-1.594
505	15,300	0.034	0.200	0.0035	15,000	49,000	4.560	1.50	8.1	-1.594
307	20,100	0.059	0.333	0.0058	15,000	29,000	6.050	2.00	15.2	-1.946
407	29,400	0.049	0.250	0.0044	15,000	33,000	6.050	2.00	15.3	-1.947
507	40,500	0.041	0.200	0.0035	15,000	37,000	6.050	2.00	15.4	-1.949
308	30,000	0.063	0.333	0.0058	15,000	24,500	7.325	2.50	24.2	-2.375
408	53,700	0.053	0.250	0.0044	15,000	28,500	7.325	2.50	24.4	-2.378
508	78,600	0.044	0.200	0.0035	15,000	31,500	7.325	2.50	24.5	-2.380
309	56,400	0.092	0.333	0.0058	10,000	21,000	8.705	3.00	38.2	-2.697
409	79,200	0.077	0.250	0.0044	10,000	24,000	8.705	3.00	38.5	-2.700
509	112,100	0.064	0.200	0.0035	10,000	26,500	8.705	3.00	38.7	-2.703
311	60,600	0.102	0.333	0.0058	10,000	17,500	10.270	3.50	61.6	-3.166
411	110,700	0.085	0.250	0.0044	10,000	20,500	10.270	3.50	62.0	-3.170
511	163,200	0.071	0.200	0.0035	10,000	22,500	10.270	3.50	62.4	-3.173
312	75,600	0.115	0.333	0.0058	9,000	15,500	11.730	4.00	84.2	-3.501
412	160,200	0.096	0.250	0.0044	9,000	18,000	11.730	4.00	84.8	-3.506
512	247,200	0.080	0.200	0.0035	9,000	19,500	11.730	4.00	85.4	-3.511
314	125,700	0.130	0.333	0.0058	8,000	14,000	12.960	4.50	115.1	-3.971
414	240,900	0.108	0.250	0.0044	8,000	16,500	12.960	4.50	115.9	-3.977
514	367,500	0.090	0.200	0.0035	8,000	18,000	12.960	4.50	116.7	-3.984
315	188,700	0.144	0.333	0.0058	8,000	12,500	14.400	5.00	154.1	-4.502
415	240,000	0.120	0.250	0.0044	8,000	14,500	14.400	5.00	155.3	-4.100
515	439,800	0.100	0.200	0.0035	8,000	16,000	14.400	5.00	156.4	-4.518