Ameridrives • Bibby
Engineered Couplings

Turboflex Disc Couplings

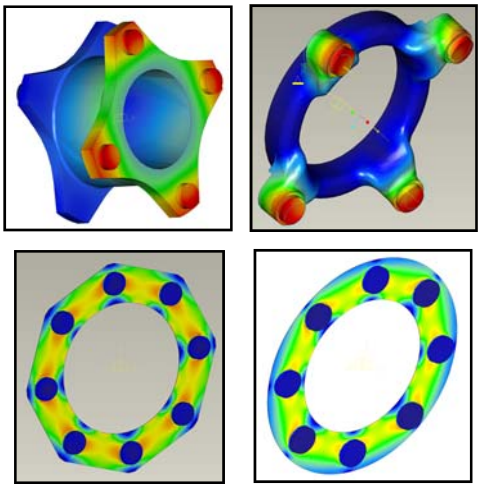
GC Series Flexible Disc Couplings

For Heavy Industrial Service

Turboflex GC Flexible Disc Coupling

Ameridrives' reputation has been built on specialized designs for demanding applications since 1928. Bibby-Turboflex were the original developers of the Profiled Disc Coupling principle over 40 years ago and have been a global leader in high-performance couplings ever since.

Ameridrives-Bibby has combined over 40 years of engineering and sales experience in general purpose disc couplings with Turboflex design technology to create the GC series couplings. These conservative designs have been optimized for heavy industrial applications including reciprocating and reversing equipment in low to medium speed ranges. They are ideal for engine driven equipment. Our engineering team has combined testing and FEA analysis of the GC Series vs. competitive products to pinpoint the torsional characteristics of our couplings, in order to assure accurate data for your system dynamics analysis. We are prepared to work directly with your engineers to design and produce modified and special couplings. Ameridrives-Bibby is committed to providing expedited delivery, when required, to keep your project on schedule.



Standard Features:

- Capacities to 1900 HP/100 RPM
- Unitized flex packs for ease of installation
- Straight-sided **carbon steel** flex packs
- Large diameter high strength bolts for added torque transmission

Advantages:

- Fewer coupling sizes - lower inventory cost and better spares availability
- More torque per size means lower cost per HP
- Unitized flex pack simplifies installation - no loose blades or washers
- Straight-sided flex pack results in better stress distribution and reduces production cost
- Unitized flex pack prevents blades from wearing into the bolt, which reduces galling and freezing of bolts in holes for easier maintenance

The Turboflex flex pack and washers are supplied as a unitized set. This eliminates handling loose blades and the risk of dropping or losing element washers.

Recommended Bore Tolerances

- Recommended standard bore tolerances for interference fit are shown in Table A.
- Bore tolerances conform to AGMA 9002-B04 standards.

Interference Fits Bores will be furnished with an interference fit and standard keyway. For **Keyless Shafts** consult factory for bore tolerance.

When **shaft sizes only** are stated on order and they consist of fractional or decimal dimensions without tolerance, the bore will be sized for an interference fit in accordance with Table A. If **exact shaft size** and tolerance do not agree with tables, the largest shaft dimension will be considered "basic" and the standard negative bore tolerance will be applied.

Clearance Fits are not recommended for GC series couplings, and will only be supplied on request, after review by Ameridrives engineering.

TABLE A - INTERFERENCE FIT (INCHES)

Nominal Bore Range Over	/	Thru	Shaft Tolerance	Bore Tolerance	Interference Range
0.0000	/	1.5000	+.0000 -.0005	-.0005 / -.0010	-.0000 / -.0010
1.5000	/	3.0000	+.0000 -.0010	-.0010 / -.0020	-.0000 / -.0020
3.0000	/	4.0000		-.0015 / -.0030	-.0005 / -.0030
4.0000	/	5.0000		-.0020 / -.0035	-.0010 / -.0035
5.0000	/	7.0000		-.0025 / -.0040	-.0015 /-.0040
7.0000	/	8.0000		-.0030 / -.0050	-.0020 / -.0050
8.0000	/	9.0000		-.0035 / -.0055	-.0025 / -.0055
9.0000	/	10.0000		-.0040 / -.0060	-.0030 / -.0060

STANDARD RECOMMENDED KEYWAYS

Nominal Bore Range Over	/	Thru	Keyway (Inches) Width	Depth Sq. Key	Depth Red. Key
.312	/	.438	.094	.047	—
.438	/	.562	.125	.063	.047
.562	/	.875	.188	.094	.062
.875	/	1.250	.250	.125	.094
1.250	/	1.375	.312	.156	.125
1.375	/	1.750	.375	.188	.125
1.750	/	2.250	.500	.250	.188
2.250	/	2.750	.625	.313	.219
2.750	/	3.250	.750	.375	.250
3.250	/	3.750	.875	.438	.313
3.750	/	4.500	1.000	.500	.375
4.500	/	5.500	1.250	.625	.438
5.500	/	6.500	1.500	.750	.500
6.500	/	7.500	1.750	.875	.750
7.500	/	9.000	2.000	1.000	.750
9.000	/	11.000	2.500	1.250	.875

Coupling Selection

Step 1. Select correct Service Factor from Service Factor Table or Load Classification Graphs
S.F. = Driven Component S.F. + Driver S.F.

Step 2. Determine the Selection Torque (lb-in) or HP/100 RPM

$$\text{Selection Torque} = \frac{\text{HP} \times 63025 \times \text{S.F.}}{\text{RPM}} \text{ (lb-in)} \qquad \text{HP/100 RPM} = \frac{\text{HP} \times 100 \times \text{S.F.}}{\text{RPM}}$$

Step 3. Select a coupling with a Rated Torque that is equal to or greater than the Selection Torque.

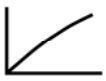
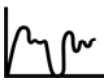
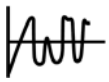
Step 4. Verify that coupling Max Bore is larger than or equal to the required bore size.

Step 5. Verify that the coupling Distance Between Shaft Ends (DBSE) will fit the application shaft spacing.

Step 6. Verify that known peak torques are less than coupling peak overload rating.

LOAD CLASSIFICATION GRAPHS

Service factors may be generally determined from the load classification graphs shown below. Consult Ameridrives Application Engineering for Heavy to Extremely Heavy load conditions

CLASS	SMOOTH	STEADY	MODERATE	MEDIUM	HEAVY	EXTRA HEAVY	EXTREMELY HEAVY
DRIVER TYPE	MOTOR OR TURBINE 	MOTOR OR TURBINE 	MOTOR OR TURBINE 	MOTOR OR TURBINE 	HIGH STARTING TORQUE MOTOR OR ENGINE 	ENGINE 	ENGINE 
LOAD TYPE	- SOFT START WITH STEADY LOAD - CENTRIFUGAL EQUIPMENT	- NORMAL STARTING LOADS - SLIGHT TORQUE VARIATIONS	- ABOVE AVERAGE STARTING LOADS - MODERATE LOAD VARIATIONS	- HIGH STARTING TORQUE - MEDIUM TO HEAVY LOAD VARIATIONS	- MILD SHOCK LOADING ENGINES WITH SMOOTH LOADING - EXTREME RELIABILITY	- HEAVY SHOCK LOADING - LIGHT TO MODERATE REVERSING	- EXTREME SHOCK LOADING - HEAVY REVERSING WIDE TORQUE VARIATION
SERVICE FACTOR	1.0	1.5	2.0	2.5	3.0	3.25	4.0

SERVICE FACTOR TABLE

The indicated service factors in the table below assume a smooth driver, such as electric motor or turbine drive. Add the driver service factor adders for other types of drivers, to the driven component service factor.

DRIVEN COMPONENT	S.F.
AGITATORS	
Pure Liquids	1.00
Liquids and Solids	1.25
Liquids-Variable Density	1.25
BLOWERS	
Centrifugal	1.00
Lobe	1.50
Vane	1.25
COMPRESSORS	
Centrifugal	1.25
Lobe, Vane, Screw	1.50
Reciprocating	CF
CONVEYORS - Uniformly Loaded or Fed	1.50
CONVEYORS - Non-Uniform Load, Heavy Duty	2.50
CRANES AND HOISTS	
Main Crane	2.00
Reversing	2.00
Skip Hoist	1.75
Trolley Drive	1.75
Bridge Drive	1.75
Slope	1.50
DREDGES	1.75
ELEVATORS	
Bucket	1.75
Centrifugal Discharge	1.50
Freight	2.00
Gravity Discharge	1.50
FOOD INDUSTRY	
Cereal Cookers	1.25
Dough Mixer	1.75
Meat Grinder	1.75

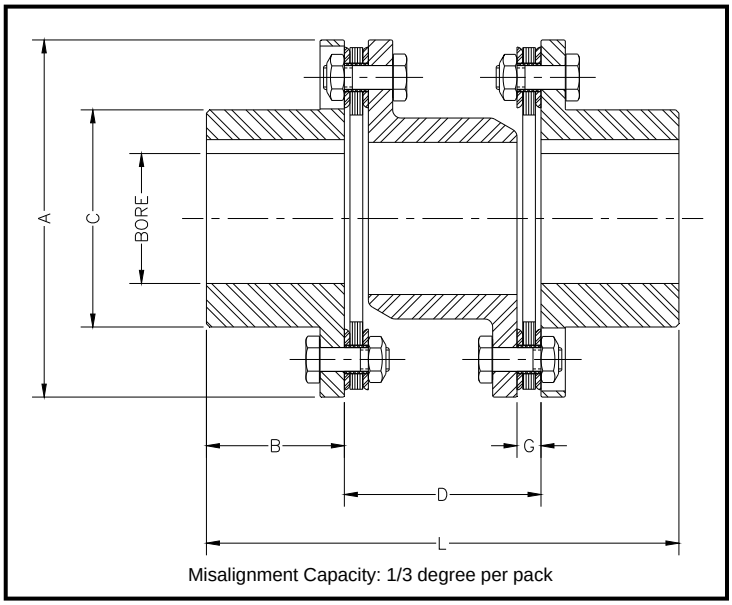
DRIVEN COMPONENT	S.F.
Slicers	1.75
Bottling	1.50
GENERATORS	
Non-Welding	1.50
Welding	3.00
LUMBER INDUSTRY	
Barkers-Drum Type	2.00
Edger Feed	2.00
Live Rolls	2.00
Log Haul	2.00
Off Bearing Rolls	2.00
Planers	1.75
Slab Conveyor	1.50
Sorting Table	1.50
Trimmer Feed	1.75
METAL MILLS	
Draw Bench	2.50
Forming Machines	2.50
Slitters	2.50
Table Conveyors - Non-Reversing	2.50
Table Conveyors - Reversing	3.00
Wire Drawing & Flattening Machine	2.00
Wire Winding Machine	2.00
PAPER MILLS	
Beater & Pulper	1.75
Bleacher	1.00
Calendars	2.00
Converting Machines	1.50
Couch	1.75
Cutters, Platers	2.00
Cylinders	1.75
Dryers	1.75
Felt Stretcher	1.50

DRIVEN COMPONENT	S.F.
Felt Whipper	2.00
Presses	2.00
Reel	1.50
Stock Chests	1.50
Suction Roll	1.75
Washers & Thickeners	1.50
Winders	1.50
PRINTING PRESSES	1.50
PUMPS	
Centrifugal	
General Duty (Liquids)	1.00
Boiler Feed	1.50
Slurry	1.50
Dredge	2.00
Reciprocating	
Double Acting	2.00
Single Acting 1-2 Cylinders	2.25
Single Acting 3 or more cylinders	1.75
Rotary-Gear, Lobe, Vane	1.50

DRIVER	ADD
TURBINES	0.0
AC MOTORS	
With Soft Start	0.0
NEMA A or B	0.0
NEMA C or D	1.0
DC MOTORS	
Shunt Type	0.0
Series or Compound	1.0
INTERNAL COMBUSTION ENGINES	
8 or more Cylinders	1.0
4-6 Cylinders	1.5
1-3 Cylinders	2.0

Turboflex Disc Couplings

GCH Series Coupling
Shaft to Shaft Connections



Misalignment Capacity: 1/3 degree per pack

The GCH coupling is ideal for low to medium speed equipment requiring shaft-to-shaft connection. Several spacer lengths are stocked to meet a variety of industry standard equipment spacings. Standard steel hubs are suitable for use on keyless shafts. Hubs are available in a variety of configurations to mate to straight or tapered shaft equipment. Special flange mountings are also available.

Our engineers commonly work with torsional analysts and design engineers to customize couplings to meet special system requirements. Special stiffness spacers, high-inertia hubs and flywheels are common modifications. We will work with you through the design and production of modified couplings for your special projects.

- **•Carbon Steel Flex Packs Standard**
- **•Unitized Flex Packs for Ease of Assembly**
- **•Steel Hubs Standard**
  - **•Special Lengths to Match Compressor**
  - **•Flange Mounts**
  - **•Taper Bores**
- **•Cast Spacers**
- **•Modified Designs Available**
  - **•Flywheel/ Inertia Hubs**
  - **•Tuned Stiffness**

SIZE	SPACER	MAX BORE		DIMENSIONS (INCHES)					
		(in)	(mm)	A	B	C	D	G	L
40	31	3.75	100	8.38	2.88	5.44	4.14	.57	9.89
	35						4.71		10.46
120	42	4.50	120	11.00	4.25	6.51	5.57	0.75	14.07
	45						6.07		14.57
	50						7.19		15.69
240	55	6.88	190	15.00	6.25	9.57	7.45	0.98	19.95
	60						8.45		20.95
560	70	8.00	220	18.00	7.25	11.63	9.63	1.32	24.13
	75						10.70		25.20
1100	80	10.00	280	22.00	9.00	14.50	11.39	1.56	29.39
	85						12.39		30.39
	92						13.89		31.89


Turboflex GCH560 shown with integral 34.3" OD flywheel for electric motor to reciprocating compressor application.

SIZE	SPACER	RATED TORQUE		PEAK OVERLOAD	MAX RPM	WEIGHT (1)	WR^2 (1)	AXIAL FLOAT
		HP PER 100 RPM	(lb-in)	(lb-in)		(lb)	(lb-in^2)	+/- in
40	31	64	40,000	60,000	3,400	43	344	0.06
	35					44	349	
120	42	190	120,000	180,000	2,500	106	1,373	0.08
	45					108	1,387	
	50					112	1,418	
240	55	380	240,000	360,000	1,800	278	7,157	0.10
	60					284	7,277	
560	70	889	560,000	840,000	1,500	529	19,551	0.12
	75					540	19,832	
1100	80	1,746	1,100,000	1,650,000	1,200	965	54,405	0.14
	85					981	55,046	
	92					1,016	61,098	

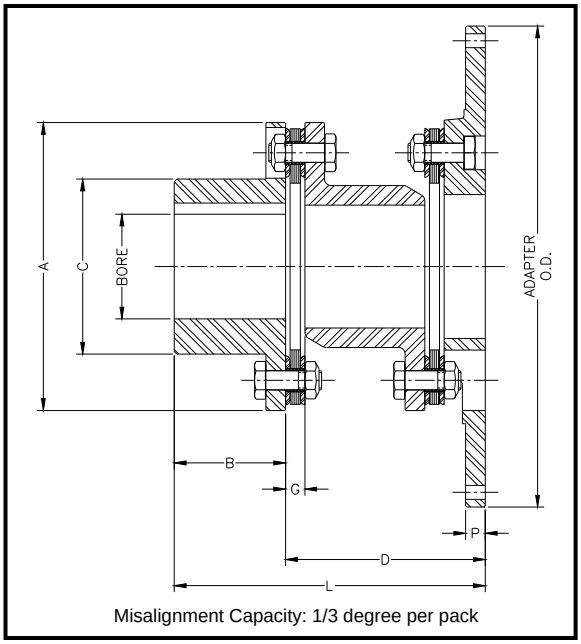
NOTES:
1) Weight and WR^2 are calculated with hubs at maximum bore size.
2) Consult factory for torsional stiffness and alternating torque limits.

ORDERING INFORMATION:
1) Specify coupling size and spacer option. Example: GCH240-60
2) Specify hub bore size and tolerance, keyway size or keyless, special hub length, etc. Please specify for each hub.

Turboflex Disc Couplings

GCF Series Coupling

Flywheel to Shaft Connections



Misalignment Capacity: 1/3 degree per pack

The GCF coupling has been optimized for use with engine driven reciprocating compressors. Five basic coupling sizes cover the full range of applications for lower spare parts costs and better availability. Spacer lengths are offered to match industry standard equipment spacings. Standard steel hubs are suitable for use on keyless shafts. Hubs are available in a variety of configurations to mate to straight or tapered shaft equipment. Special flange mountings are also available.

If your system requires a modified coupling, our engineers will work with torsional analysts and design engineers to customize a coupling to meet your exact needs. In most cases we can design and produce a special coupling to meet your production schedule.

- **Fits Compressor Industry Standard Spacing**
- **Carbon Steel Flex Packs Standard**
- **Unitized Flex Packs for Ease of Assembly**
- **Steel Hubs Standard**
  - **Special Lengths to Match Compressor**
  - **Flange Mounts**
  - **Taper Bores**
- **Cast Spacers and Flywheel Adapters**
- **Modified Designs Available**
  - **Flywheel/ Inertia Hubs**
  - **Tuned Stiffness**
- **High Torque Designs Available**

SIZE	SPACER	MAX BORE		DIMENSIONS (INCHES)						
		(in)	(mm)	A	B	C	D	G	L	P
40	31	3.75	100	8.38	2.88	5.44	5.31	0.57	8.19	0.50
	35						5.88		8.76	
120	42	4.50	120	11.00	4.25	6.51	7.14	0.75	11.39	0.75
	45						7.64		11.89	
	50						8.76		13.01	
240	55	6.88	190	15.00	6.25	9.57	9.89	0.98	16.14	1.00
	60						10.89		17.14	
560	70	8.00	220	18.00	7.25	11.63	12.44	1.32	19.69	1.13
	75						13.51		20.76	
1100	80	10.00	280	22.00	9.00	14.50	14.76	1.56	23.76	1.38
	85						15.76		24.76	
	92						17.26		26.26	

CPLG SIZE	ADAPTER O.D. / STOCKED BOLT PATTERN						
	12.375	13.875	18.375	20.375	22.500	26.500	28.875
	12	14	18	20	22	26	28
40	Order	SAE	SAE	Order	SAE		
120			SAE	Order	SAE	SAE/HD	SAE/HD
240			SAE/HD	Order	SAE/HD	SAE/HD	SAE/HD
560					SAE/HD	SAE/HD	SAE/HD
1100						SAE/HD	SAE/HD
SAE BOLTING							
BC	11.625	13.125	17.250	19.250	21.375	25.250	27.250
QTY	8	8	8	8	6	12	12
DIA	0.41	0.41	0.53	0.53	0.65	0.65	0.78
HD BOLTING							
BC	11.500	12.500	16.750	18.500	20.500	24.500	26.875
QTY	8	8	8	8	8	12	12
DIA	0.53	0.65	0.78	0.91	1.03	1.03	1.03
SPEED LIMIT BY ADAPTER O.D. (2b)							
RPM	3,400	3,400	2,900	2,600	2,400	2,000	1,800

SIZE	SPACER	RATED TORQUE		PEAK OVERLOAD	MAX RPM (2a)	WEIGHT (1)	WR^2 (1)	AXIAL FLOAT
		HP PER 100 RPM	(lb-in)	(lb-in)		(lb)	($lb\text{-}in^2$)	+/- in
40	31	64	40,000	60,000	3,400	46	561	0.06
	35					47	566	
120	42	190	120,000	180,000	2,500	127	3,223	0.08
	45					128	3,237	
	50					132	3,268	
240	55	380	240,000	360,000	1,800	260	8,258	0.10
	60					267	8,378	
560	70	889	560,000	840,000	1,500	489	22,321	0.12
	75					501	22,602	
1100	80	1,746	1,100,000	1,650,000	1,200	871	58,922	0.14
	85					887	59,563	
	92					922	65,615	

NOTES:

1) Weight and WR^2 calculated with hub at maximum bore size and minimum available adapter size.
2) a) Max RPM shown for smallest available adapter size, do not exceed this speed for any given coupling size.
   b) Verify that adapter speed limit is adequate for application speed, do not exceed coupling MAX rpm. (See note 2a)
3) Flywheel mounting hardware is not supplied with coupling.
4) Consult factory for torsional stiffness and alternating torque limits.

ORDERING INFORMATION:

1) Specify coupling size and spacer option. Example: GCF240-60
2) Specify adapter size code. Specify bolting pattern for items noted as drilled per order. Example: GCF240-60-26 or GCF240-60-20HD
3) Specify hub bore size and tolerance, keyway size or keyless, special hub length, etc.

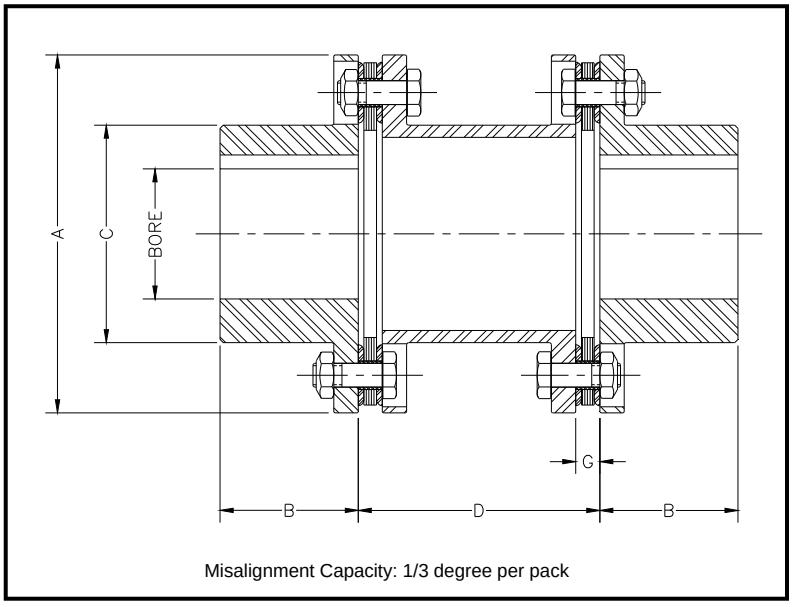
GCS Series Coupling

Spacer Coupling - General Purpose Use

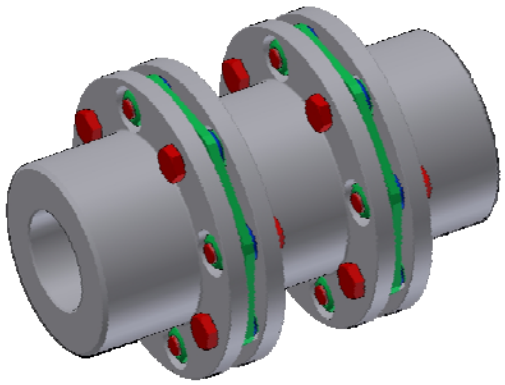
- **Carbon Steel Flex Packs Standard**
- **Unitized Flex Packs for Ease of Assembly**
- **Steel Hubs Standard**
- **Machined Steel Spacers**
- **Modified Designs Available**
- **High Torque Designs Available**

The GCS coupling is a general purpose design for higher speed applications. It replaces the cast spacer of the GCH coupling with a fully machined steel spool spacer. This coupling is suitable for moderate to high speed operation on a wide range of general purpose motor and turbine driven equipment, including pumps, compressors and fans. It can be supplied with custom length spacers, balancing and other modifications to suit your special system requirements.

GCS couplings use stocked GC hubs and hardware. Spacers are machined to order to meet your application requirements.



Misalignment Capacity: 1/3 degree per pack



SIZE	MAX BORE		DIMENSIONS (INCHES)				
	(in)	(mm)	A	B	C	D min.	G
40	3.75	100	8.38	2.88	5.44	4.62	0.57
120	4.50	120	11.00	4.25	6.51	6.60	0.75
300	6.88 (3)	190	15.00	6.25	9.57	7.94	0.98
640	8.00 (3)	220	18.00	7.25	11.63	10.18	1.32
1200	10.00 (3)	280	22.00	9.00	14.50	11.72	1.56

ORDERING INFORMATION:

1) Specify coupling size and DBSE required. Example: GCS300, D=8.00 in.
2) Specify hub bore size and tolerance, keyway size or keyless, special hub length, etc. Please specify for each hub.

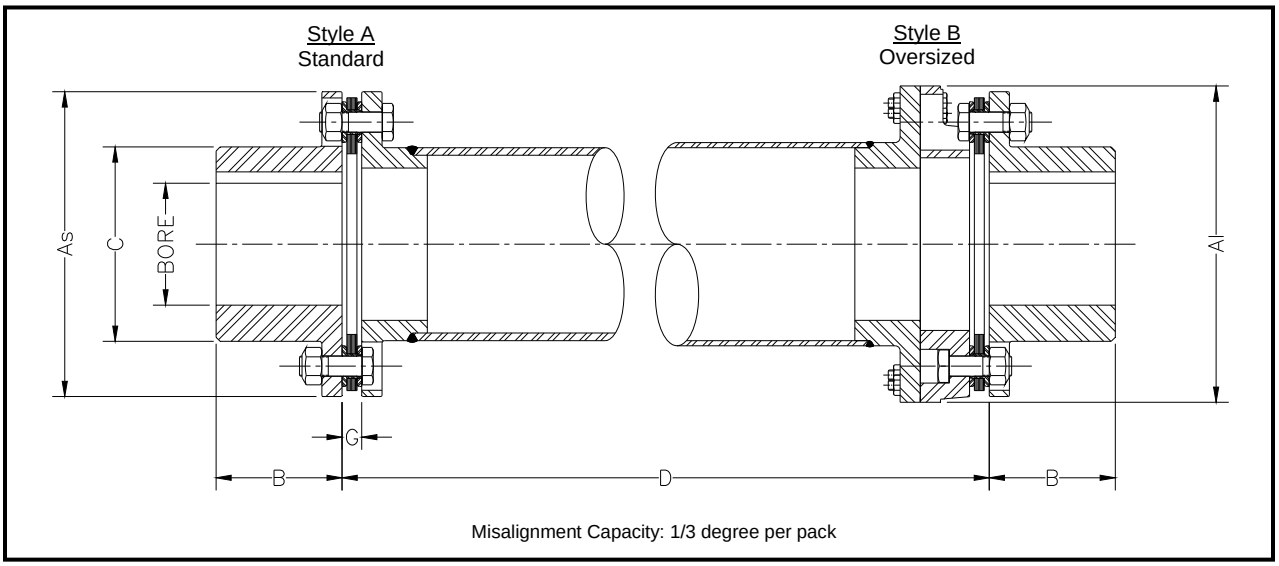
SIZE	RATED TORQUE		PEAK OVERLOAD	MAX RPM UNBALANCED	MAX RPM BALANCED	WEIGHT (lb)		WR^2 (lb-in^2)		AXIAL FLOAT
	HP PER 100 RPM	(lb-in)	(lb-in)			AT D min. (1)	ADD PER INCH	AT D min. (1)	ADD PER INCH	+/- in
40	64	40,000	80,000	6,100	12,000	45	0.87	399	6.0	0.06
120	190	120,000	240,000	5,000	9,800	113	1.88	1,635	17.9	0.08
300	476	300,000	600,000	4,100	7,100	287	3.12	8,126	66.0	0.10
640	1,015	640,000	1,280,000	3,500	5,900	540	5.54	22,009	170	0.12
1200	1,904	1,200,000	2,300,000	3,100	4,800	984	8.29	60,443	397	0.14

NOTES:
1) Weight and WR^2 are calculated for couplings with DBSE = D min. and hubs at maximum bore size.
2) Consult factory for torsional stiffness and alternating torque limits.
3) Size 300, 640 & 1200 hubs are heat treated when bore size is within 1/4 in. of max bore.

GCT Series Coupling
Floating Shaft Spacer

- **Carbon Steel Flex Packs Standard**
- **Unitized Flex Packs for Ease of Assembly**
- **Steel Hubs Standard**
- **Steel or Composite spacer tubing is available**
- **Vertical installation modifications are available**
- **High Torque Designs Available**

The GCT coupling uses a fabricated spacer for long spans. Spacers are welded, straightened and balanced to order. Custom steel or composite tube sizes are available to meet most application requirements. Couplings may also be modified for vertical operation. Semi-floating versions can be supplied if bearing supports or multi-section drivelines are required.



Misalignment Capacity: 1/3 degree per pack

SIZE	SPACER STYLE	MAX BORE		DIMENSIONS (INCHES)										
				As	Al	B	C	D min	G	MAX D PER RPM (3)				
		(in)	(mm)							1800	1500	1200	900	600
40	A	3.75	100	8.38	-	2.88	5.44	20.00	0.57	111	122	136	157	193
120	A	4.50	120	11.00	-	4.25	6.51	20.00	0.75	123	135	151	174	213
240	A	6.88 (4)	190	15.00	-	6.25	9.57	20.00	0.98	150	164	184	212	260
300	B				16.00			30.00		165	180	202	233	285
500	A	8.00 (4)	220	18.00	-	7.25	11.63	20.00	1.32	165	180	202	233	285
640	B				19.69			30.00		183	200	223	258	316
840	A	10.00 (4)	280	22.00	-	9.00	14.50	20.00	1.56	182	200	223	258	316
1200	B				24.50			30.00		207	227	254	294	360

SIZE	SPACER STYLE	RATED TORQUE		PEAK OVERLOAD	WEIGHT (lb)		WR^2 (lb-in^2)		AXIAL FLOAT
		HP PER 100 RPM	(lb-in)	(lb-in)	AT D min (1)	ADD PER INCH	AT D min (1)	ADD PER INCH	+/- in
40	A	64	40,000	80,000	68	1.12	656	7.00	0.06
120	A	190	120,000	240,000	152	2.05	2,382	19.34	0.08
240	A	380	240,000	480,000	348	3.06	11,654	63.81	0.10
300	B	476	300,000	600,000	500	3.73	18,457	116	
500	A	793	500,000	1,000,000	631	4.92	29,645	149	0.12
640	B	1,015	640,000	1,280,000	841	4.57	45,329	212	
840	A	1,333	840,000	1,680,000	1091	6.04	79,869	275	0.14
1200	B	1,904	1,200,000	2,300,000	1541	7.82	129,359	600	

ORDERING INFORMATION:

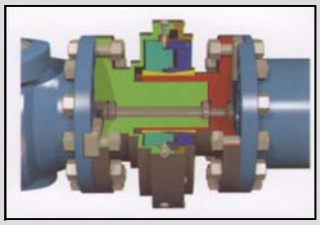
1) Specify coupling size and DBSE required. Example: GCT240, D=149.50 in.
2) Specify hub bore size and tolerance, keyway size or keyless, etc. Please specify for each hub.

NOTES:

1) Weight and WR^2 are calculated at D min, with hubs at maximum bore size.
2) Consult factory for torsional stiffness and alternating torque limits.
3) Please consult factory for longer Distances Between Shaft Ends.
4) Size 300, 640 & 1200 hubs are heat treated when bore size is within 1/4 in. of max bore.

Ameridrives • Bibby
Engineered Couplings

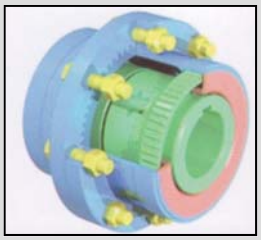
Offers You a Complete Line of Power Transmission Products



"New" Torque Sentry
Torque Overload Protection

Disc Couplings
Full Line of Standard and
Made to Order High Performance

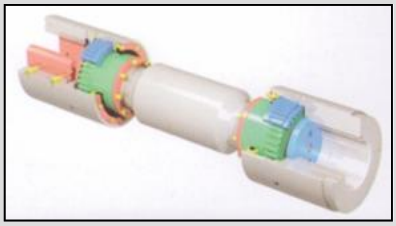
Gear Couplings
High Torque, High Misalignment



Metal Seal
"Original Gear" Coupling

"Original Grid" Coupling
Fully Interchangeable

Full Line of Mill Duty
Industrial Universal Joints



Mill Spindles
Maximum Torque and Service Life
Custom Designs

Ameriflex Diaphragm
Ultimate in Dry Coupling Design

"New" Ameriflex
Dry Disconnect Coupling

Ameridrives International
Oil & Gas Products
1411 FM 1101, Suite B, New Braunfels, Texas 78130
Phone: (830) 626-8759 Fax: (830) 626-8772
Email: info@ameridrives.com

Headquarters
1802 Pittsburgh Avenue, Erie, Pennsylvania 16512-4000
Phone: (814) 480-5000 Fax: (814) 453-5891
Email: info@ameridrives.com www.ameridrives.com

Bibby Transmissions Limited
Cannon Way, Mill Street West, Dewsbury, West Yorkshire, WF13 1EH
Phone: +44 (0) 1924 460801 Fax: +44 (0) 1924 457668

A Division of Altra Industrial Motion
The Power of Experience