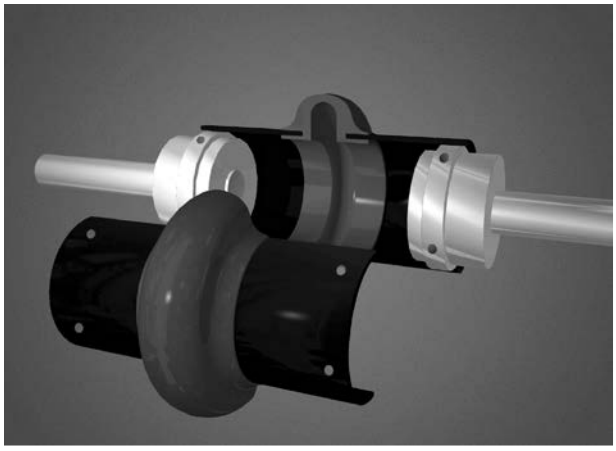
Dura-Flex® Couplings

F2

Patent No. 5,611,732



The specially designed split-in-half element can be easily replaced without moving any connected equipment.

FEATURES

- Designed from the ground up using finite element analysis to maximize flex life.
- Easy two piece element installation. No need to move the hubs during replacement.
- One spacer size to handle most different between shaft spacings.
- Light weight element absorbs shock loading and torsional vibration.
- Same hubs used on both spacer and standard elements.
- No lubrication.
- Good chemical resistance.
- Stock bore-to-size (BTS), Sure-Grip bushed (QD) and Taper-Lock® bushed (TL) Hubs.

® Taper-Lock is a registered trade name of Rockwell Automation-Dodge.

Dura-Flex® Coupling

Selection

A. Determine the Prime Mover Classification

Prime Mover	Class
• Electric Motors (Standard duty), Hydraulic Motors, Turbines	A
• Gasoline or Steam Engines (4 or more cylinders)	B
• Diesel or Gas Engines, High Torque Electric Motors	C

B. Determine the Load Characteristics and the Service Factor

Typical Applications	Load	Characteristics	Prime Mover Class		
			A	B	C
Agitators (pure liquids), Blowers (centrifugal), Can and Bottle Filling Machines, Conveyors - uniformly loaded or fed (belt, chain, screw), Fans (centrifugal), Generators (uniform load), Pumps (centrifugal), Screens (air washing, water), Stokers (uniform load), Woodworking Machines (planers, routers, saws)	Uniform	Even loads - no shock - non reversing - infrequent starts (up to 10 per hour) - low starting torques	1.0	1.5	2.0
Beaters, Blowers (lobe, vane), Compressors (centrifugal, rotary), Conveyors - non uniformly loaded or fed (belt, bucket, chain, screw), Dredge Pumps, Fans (forced draft, propeller), Kilns, Paper Mills (calendars, converting machines, conveyors, dryers, mixers, winders), Printing Presses, Pumps (gear, rotary), Shredders, Textile Machinery (dryers, dyers)	Moderate shock	Uneven loads – moderate shock – infrequent reversing – moderate torques	1.5	2.0	2.5
Cranes (bridge, hoist, trolley), Fans (cooling tower), Generators (welding), Hammer Mills, Mills (ball, pebble, rolling, tube, tumbling), Pumps (oil well), Wire Drawing Machines	Heavy shock	Uneven loads - heavy shock - frequent starts and stops - high starting torques -high inertia peak loads	2.0	2.5	3.0

Note: *The above applications depict the generally accepted conditions encountered in industry. Conditions subject to extreme temperatures, abrasive dusts, corrosive liquids, excessively high starting torques, etc., must be considered as extra heavy shock loads. These conditions will increase service factors. Consult TB Wood's for these selections.*

C. Calculate Design Horsepower or Design Torque

- If Prime Mover is a 1160, 1750, or 3500 rpm motor.
  Design Hp = Prime Mover HP x Service Factor
  Go to page F2—3 and reference the corresponding motor rpm column.
- If Prime Mover is not one of the three speeds listed above.
  Design HP @ 100 rpm = (Primer Mover Hp x Service Factor x 100) / Coupling RPM
  Go to page F2—3 and reference HP @ 100 RPM column.
- If Using Prime Mover Torque
  Design Torque = Prime Mover Torque x Service Factor
  Go to page F2—3 and reference Torque column.

D. Select Coupling (DURA-FLEX Couplings are sold by component)

A DURA-FLEX Assembly consists of one element (STD or Spacer) and two hubs (BTS or QD). Optional high speed rings may also be ordered for spacer elements. Below is an ordering example for Dura-Flex Couplings.

	Part #	Description	Size 20 Example
Element (1)	WE2 - WE80	Standard element, sizes 2 through 80	WE20
	WES2 - WES80	Spacer element, sizes 2 through 80	WES20
Hubs (2)	WE[2-80] x Bore	BTS hubs - stock bore (specify bore size)	WE20H138
	WE[4-80] - Bushing	QD hubs (sizes 4 through 80, bushing not included)	WE20H
	WE[3-80] - TL Bushing	TL hubs (sizes 3 through 80, bushing not included)	WE20HTL
HS Rings (1)	WE[20-80]R	High speed rings - sizes 20-80 (standard for sizes 2-10)	WE20R

Selection

COUPLING RATINGS (STD & SPACER)

Coupling Size	HP@RPM				Torque (IN LBS)	Stiffness in lbs/ Radian	Maximum RPM		Max. Misalignment	
	100	1160	1750	3500			Standard	Spacer	Parallel	Angular
WE2	.30	3.5	5.3	11	190	3170	7500	7500	1/16	4°
WE3	.58	6.7	10	20	365	4710	7500	7500	1/16	4°
WE4	.88	10	15	31	550	5370	7500	7500	1/16	4°
WE5	1.5	17	26	51	925	9820	7500	7500	1/16	4°
WE10	2.3	27	40	81	1450	15800	7500	7500	1/16	4°
WE20	3.7	42	64	128	2300	27600	6600	4800	3/32	3°
WE30	5.8	67	101	203	3650	42200	5800	4200	3-32	3°
WE40	8.9	101	153	305	5500	65200	5000	3600	3/32	3°
WE50	12	141	212	425	7650	123000	4200	3100	3-32	3°
WE60	20	230	347	694	12500	167000	3800	2800	1/8	2°
WE70	35	407	615	1229	22125	205000	3600	2600	1/8	2°
WE80	63	727	1097	2195	39500	305000	2000	1800	1/8	2°

*Maximum spacer RPM = Maximum standard RPM if using optional high speed rings. Operating temperature range is -40 F to 200 F.

BTS HUBS - STOCK BORES

Bore Size	Bore Designation*	WE2H	WE3H	WE4H	WE5H	WE10H	WE20H	WE30H	WE40H	WE50H	WE60H	WE70H	WE80H
1/2	**12**	OS	OS										
5/8	**58**	X	X	OSX									
3/4	**34**	XS	XS		OS								
7/8	**78**	XS	XS	XS	X	OS	OS						
15/16	**15/16**			X									
1	**1**	XS	XS	XS	X	X	X	OS	OS				
1-1/16	**1116**				X								
1-1/8	**118**	XS	XS	XS	XS	XS	XS	X		O	O		
1-3/16	**1316**			X	X								
1-1/4	**114**		XS	X	X	X	XS						
1-5/16	**1516**			X	X								
1-3/8	**138**		XS	XS	XS	XS	XS	XS				O	
1-7/16	**1716**			X	X	X							
1-1/2	**112**			X	X	X	XS	XS	XS				
1-9/16	**1916**			X									
1-5/8	**158**			XS	XS	XS	XS	XS	XS				
1-11/16	**11116**			X	X	X	X	X					
1-3/4	**134**				X	X	XS	XS	XS	X			
1-7/8	**178**				XS	XS	XS	XS	XS	X			O
1-15/16	**11516**					X	X						
2	**2**					S	X	XS					
2-1/8	**218**					X	XS	XS	X	X	X		
2-3/16	**2316**						X						
2-1/4	**214**						XS	XS	X	X			
2-3/8	**238**						XS	XS	XS	X	X	X	
2-1/2	**212**							XS	X				
2-5/8	**258**											X	
2-3/4	**234**							XS	XS				
2-7/8	**278**							XS	XS	X	X	X	X
3-3/8	**338**								XS	X	X	X	X
3-3/4	**334**												X
3-7/8	**378**										X	X	X
4	**4**										X		
4-3/8	**438**											X	
4-7/8	**478**												X
MAX BORE		1-1/8	1-3/8	1-11/16	1-7/8	2-1/8	2-3/8	2-7/8	3-3/8	3-5/8	4	4-1/2	6

O NO KEYSEAT
X STANDARD KEYSEAT
S STEEL HUB OPTION
MAX. BORE INCLUDES STANDARD KEYSEAT

*** PRODUCT NUMBER EXAMPLE** → WE5H114 for WE5 x 1-1/4 HUB
WE5HS118 for WE5 x 1-1/8 STEEL HUB

BORE TOLERANCES (BTS)

BORE SIZE	TOLERANCE
UP TO AND INCLUDING 2"	+.0005 to +.0015
OVER 2"	+.0005 to +.0020

Dura-Flex® BTS Couplings

Dimensions

Assembly Dimensions for BTS Couplings.

(All dimensions in inches) Minimum Shaft Spacing = .25”

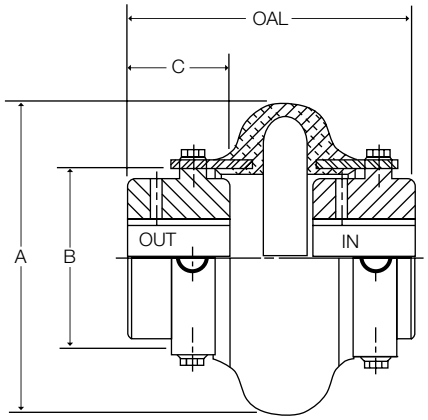
Dimensions Common to BTS Standard and Spacer Assemblies

SIZE	A	B	C	Max. Bore
WE2 & WES2	3.70	1.85	0.94	1-1/8
WE3 & WES3	4.24	2.32	1.50	1-3/8
WE4 & WES4	4.52	2.60	1.69	1-11/16
WE5 & WES5	5.40	3.13	1.75	1-7/8
WE10 & WES10	6.48	3.65	1.88	2-1/8
WE20 & WES20	7.36	4.48	2.06	2-3/8
WE30 & WES30	8.41	5.42	2.31	2-7/8
WE40 & WES40	9.71	6.63	2.50	3-3/8
WE50 & WES50	11.34	8.13	2.75	3-5/8
WE60 & WES60	12.53	8.75	3.25	4
WE70 & WES70	14.00	9.25	3.62	4-1/2
WE80 & WES80	16.00	11.30	4.98	6

Standard Element Assembly

Product No.*	OAL MAX	OAL MIN	Maximum DBSE	Weight lbs.
WE2	3.78	3.22	1.90	1.5
WE3	4.32	3.80	1.32	3.3
WE4	4.68	3.82	1.30	4.4
WE5	5.30	4.32	1.80	7.4
WE10	5.57	4.33	1.81	11.2
WE20	6.82	4.62	2.70	16.3
WE30	7.61	5.19	2.99	27.7
WE40	8.16	5.56	3.16	45.4
WE50	9.21	6.13	3.71	59.0
WE60	10.70	7.20	4.20	82.6
WE70	11.88	8.24	4.64	109
WE80	16.60	10.48	6.64	242

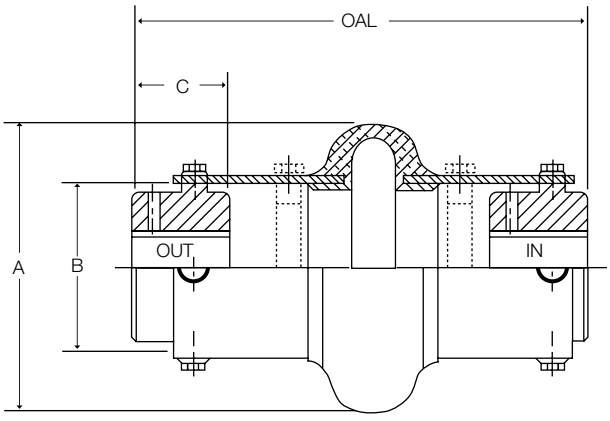
** Product number is element only.*



Spacer Element Assembly

Product No.*	OAL MAX	OAL MIN	Maximum DBSE	Weight lbs.
WES2	5.92	5.72	4.04	2.5
WES3	8.02	7.50	5.02	4.8
WES4	8.38	7.52	5.00	6.1
WES5	8.50	7.52	5.00	9.4
WES10	8.76	7.52	5.00	13.6
WES20	11.17	9.35	7.05	19.2
WES30	11.65	9.35	7.03	31.0
WES40	11.89	9.35	6.89	48.9
WES50	12.31	9.35	6.81	63.5
WES60	16.28	12.78	9.78	91.0
WES70	16.81	13.17	9.57	128
WES80	19.73	13.61	9.77	258

** Product number is element only.*



Sizes WES2 through WES10 are furnished with high speed rings. All larger sizes, rings can be ordered as an option.

All weights shown are with MPB style hubs.

Shaft Spacing from 1/4” up to the MAX DBSE can be accommodated by positioning hubs IN or OUT or by using various existing hole patterns.
OAL - Over All Length does not include bolt heads

Dimensions

Assembly Dimensions for QD Bushed Couplings.

(All dimensions in inches) Minimum Shaft Spacing = .25”

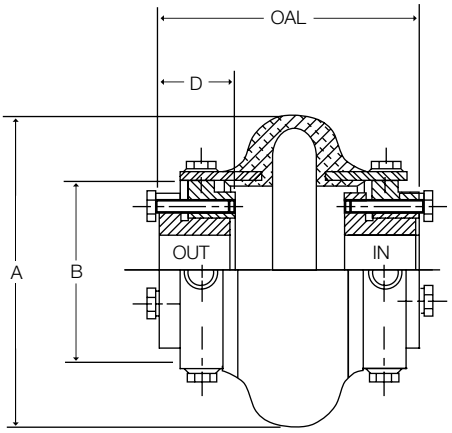
Dimensions Common to QD Bushed Standard and Spacer Assemblies

SIZE	A	B	D	Bushing	Max. Bore
WE4 & WES4	4.52	2.60	1.00	JA	1-1/4
WE5 & WES5	5.40	3.13	1.25	SH	1-11/16
WE10 & WES10	6.48	3.65	1.31	SDS	2
WE20 & WES20	7.36	4.48	1.88	SK	2-5/8
WE30 & WES30	8.41	5.42	2.00	SF	2-15/16
WE40 & WES40	9.71	6.63	2.63	E	3-1/2
WE50 & WES50	11.34	8.13	2.63	E	3-1/2
WE60 & WES60	12.53	8.75	3.63	F	4
WE70 & WES70	14.00	9.25	4.50	J	4-1/2
WE80 & WES80	16.00	11.3	6.75	M	5-1/2

Standard Element Assembly

Product No.*	OAL MAX	OAL MIN	Maximum DBSE	Weight lbs.
WE4	3.88	3.24	1.88	3.8
WE5	4.50	4.24	2.00	6.0
WE10	5.07	3.83	2.45	8.8
WE20	6.62	4.38	2.86	15.9
WE30	6.19	5.43	2.19	25.1
WE40	7.00	6.50	1.74	47.0
WE50	8.13	6.61	2.87	48.0
WE60	9.00	8.68	1.74	79.4
WE70	10.86	10.12	1.86	124
WE80	15.10	13.97	1.60	268

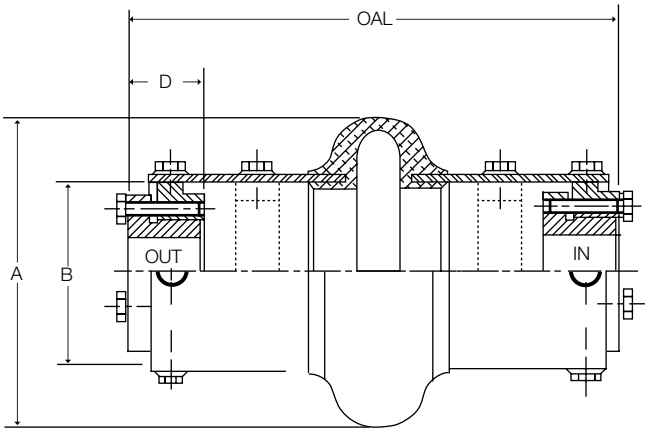
** Product number is element only.*



Spacer Element Assembly

Product No.*	OAL MAX	OAL MIN	Maximum DBSE	Weight lbs.
WES4	7.58	7.28	5.58	5.5
WES5	7.70	7.44	5.20	8.0
WES10	8.26	7.28	5.64	11.2
WES20	10.97	9.35	7.21	18.8
WES30	10.23	9.47	6.23	28.4
WES40	10.73	10.23	5.47	50.5
WES50	11.23	9.71	5.99	52.5
WES60	14.58	14.34	7.32	107
WES70	15.79	15.05	6.79	143
WES80	18.23	17.11	4.73	284

** Product number is element only.*



Sizes WES4 through WES10 are furnished with high speed rings. All larger sizes, rings can be ordered as an option.

All weights shown are with MPB bushings.

Shaft Spacing from 1/4” up to the MAX DBSE can be accommodated by positioning hubs IN or OUT or by using various existing hole patterns.
OAL - Over All Length does not include bolt heads

Dura-Flex® Taper-Lock® Bushed Couplings

Dimensions

Assembly Dimensions for Taper-Lock® Bushed Couplings.

(All dimensions in inches) Minimum Shaft Spacing = .25”

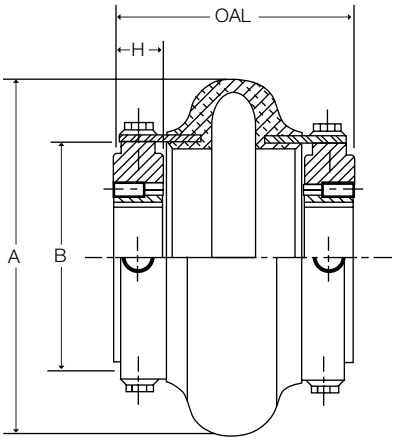
Dimensions Common to Taper-Lock® Bushed Standard and Spacer Assemblies

SIZE	A	B	H	Bushing	Max. Bore
WE3 & WES3	4.24	2.32	0.88	TL1008	1
WE4 & WES4	4.52	2.60	0.88	TL1008	1
WE5 & WES5	5.40	3.13	0.88	TL1108	1-1/8
WE10 & WES10	6.48	3.65	1.00	TL1310	1-7/16
WE20 & WES20	7.36	4.48	1.00	TL1610	1-11/16
WE30 & WES30	8.41	5.42	1.25	TL2012	2-1/8
WE40 & WES40	9.71	6.63	1.75	TL2517	2-11/16
WE50 & WES50	11.34	8.13	1.75	TL2517	2-11/16
WE60 & WES60	12.53	8.75	2.00	TL3020	3-1/4
WE70 & WES70	14.00	9.25	3.50	TL3535	3-15/16
WE80 & WES80	16.00	11.3	4.00	TL4040	4-7/16

Standard Element Assembly

Product No.*	OAL	Maximum DBSE	Weight lbs.
WE3	3.44	1.68	1.8
WE4	3.44	1.68	2.6
WE5	3.94	2.18	4.0
WE10	4.07	2.07	6.0
WE20	4.50	2.50	9.0
WE30	5.07	2.57	13.6
WE40	5.88	2.38	21.8
WE50	6.51	3.01	31.5
WE60	7.32	3.32	46.6
WE70	9.42	2.42	66.7
WE80	11.72	3.72	82.0

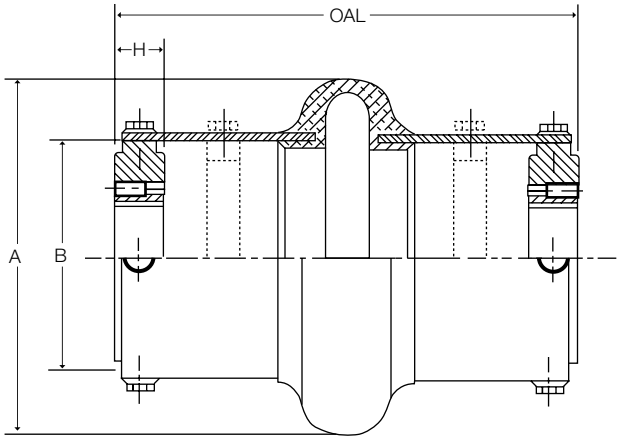
** Product number is element only.*



Spacer Element Assembly

Product No.*	OAL MAX	OAL MIN	Maximum DBSE	Weight lbs.
WES3	7.14	7.28	5.38	3.2
WES4	7.14	7.28	5.38	4.2
WES5	7.14	7.28	5.38	6.0
WES10	7.26	7.28	5.26	7.9
WES20	8.85	9.35	6.85	11.9
WES30	9.11	9.35	6.61	18.0
WES40	9.61	9.61	6.11	26.8
WES50	9.61	9.61	6.11	37.4
WES60	12.90	12.90	8.90	60.7
WES70	14.35	14.35	7.35	81.4
WES80	14.85	14.35	6.85	93.2

** Product number is element only.*



Sizes WES3 through WES10 are furnished with high speed rings. All larger sizes, rings can be ordered as an option.

All weights shown are with MPB bushings.

®Taper-Lock is a registered trade name of Rockwell Automation-Dodge.