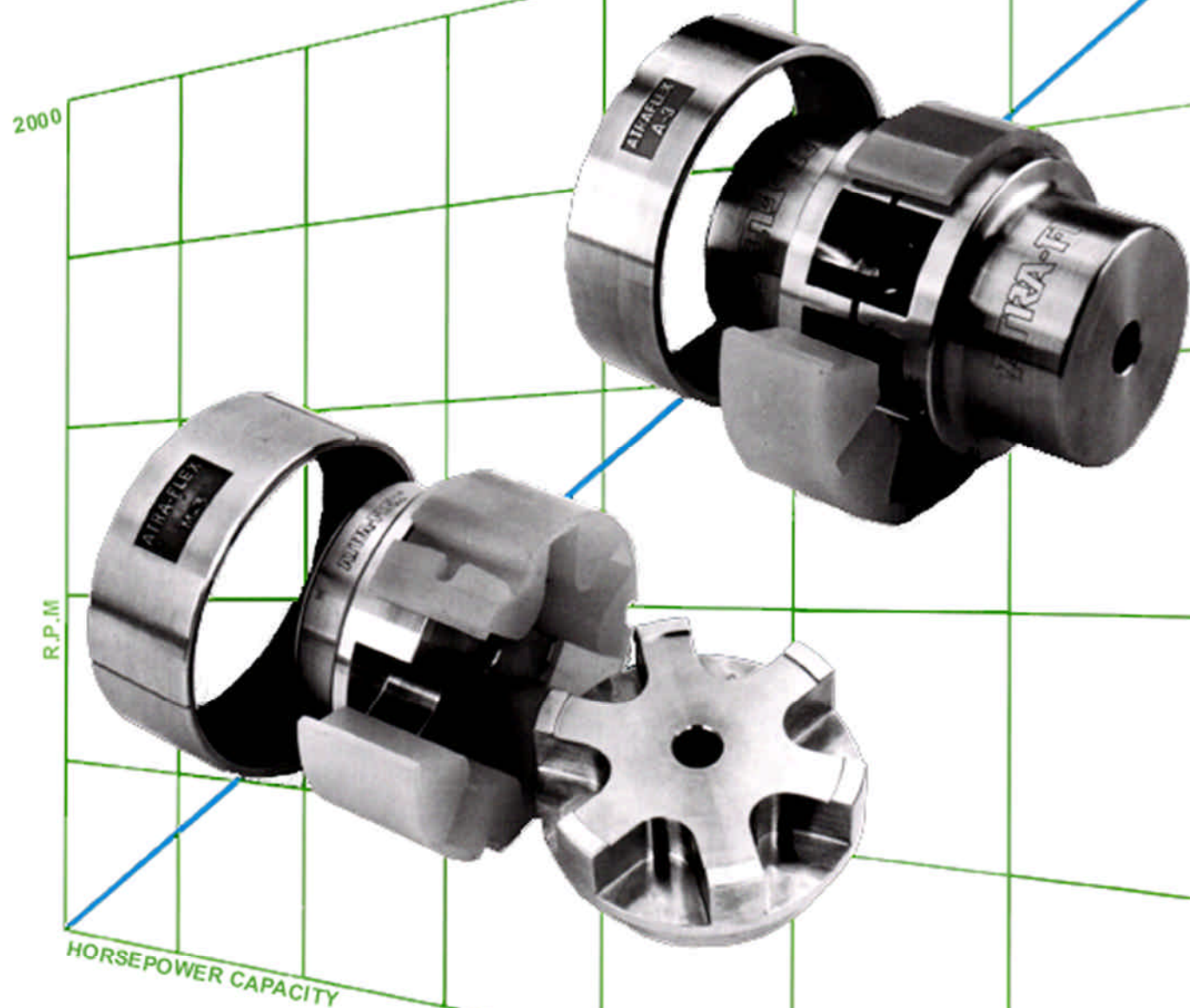


ATRA-FLEX[®]

flexible couplings



The quick, low-cost solution for coupling maintenance problems.

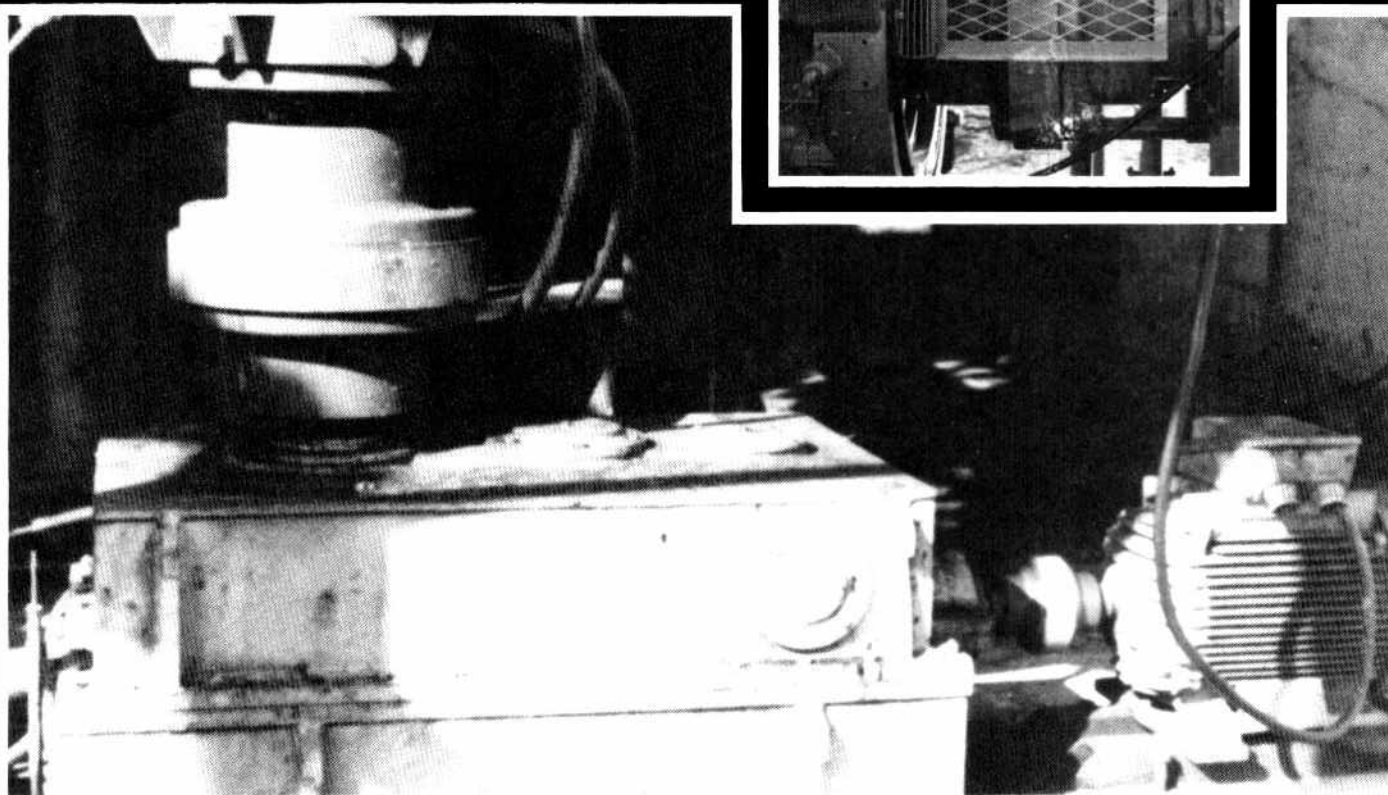
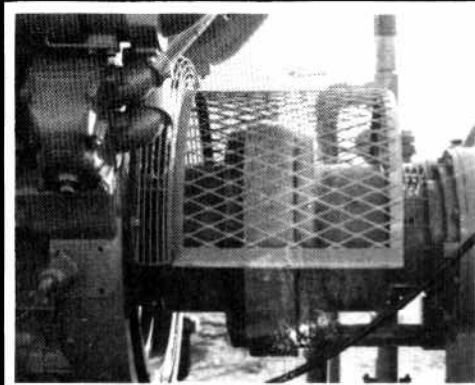


TABLE OF CONTENTS

ATRA-FLEX [®] Millennium [®] Non Spacer Couplings	Page 4
ATRA-FLEX [®] Millennium [®] Spacer Couplings	Page 5
ATRA-FLEX [®] Millennium [®] S.A.E. Flywheel Couplings	Page 6
ATRA-FLEX [®] Millennium [®] Drop-out Spacer Couplings	Page 7
ATRA-FLEX [®] Millennium [®] Floating Shaft Couplings	Page 8
ATRA-FLEX [®] Millennium [®] Horizontal Shear/Slide Couplings	Page 9
ATRA-FLEX [®] A-SERIES [®] Non Spacer Couplings	Page 10
ATRA-FLEX [®] A-SERIES [®] Spacer Couplings	Page 11
ATRA-FLEX [®] A-SERIES [®] & Millennium [®] Limited End Float Couplings	Page 12
ATRA-FLEX [®] A-SERIES [®] Horizontal Shear / Slide Couplings	Page 13
ATRA-FLEX [®] A-SERIES [®] S.A.E. Flywheel Couplings	Page 14
ATRA-FLEX [®] A-SERIES [®] Floating Shaft Couplings	Page 15
ATRA-FLEX [®] Brake Wheel & Disc Couplings	Page 16
ATRA-FLEX [®] A-SERIES [®] Couplings For Mill Motors	Page 17
ATRA-FLEX [®] (Orange) High Torque Inserts	Page 18
ATRA-FLEX [®] For API Standard 610 7th Edition	Page 19
ATRA-FLEX [®] Advantages	Page 20
ATRA-FLEX [®] A-SERIES [®] & Millennium [®] Selection Guide	Page 21
Technical Information	Page 22
ATRA-FLEX [®] Solving Misalignment, End Float and Vibration Problems	Page 23

ATR[®] Reserves the right to change designs without notice. The weights listed are approximate and sufficiently accurate for most users. The purchaser should use certified prints for construction where exact dimensions and weights are critical. Additional information will be provided if extreme accuracy is required.

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ATRA-FLEX[®] Millennium[®] **Non Spacer Couplings**

- Detect and Lock-On Ring Feature PATENT #5,657,525
- "Internal Support " of Insert for Higher Horse Power
- Higher Horse Power in a Smaller Package
- Larger Bore Capacity
- No Exposed Shaft on Spacer Coupling
- Very Economical

PATENT
 #5,738,585
 #5,908,355
 #6,019,684
 #6,024,644

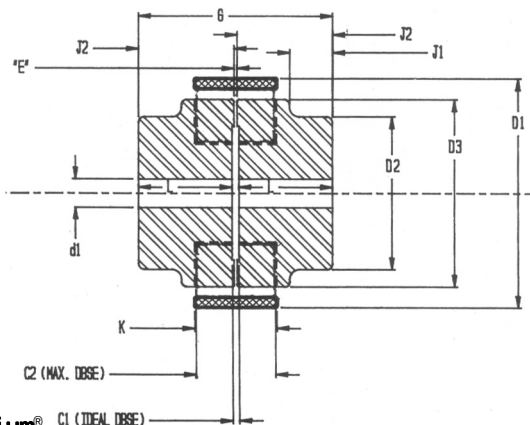


TABLE 1: DIMENSIONS - Millennium[®] C1 (IDEAL DBSE)

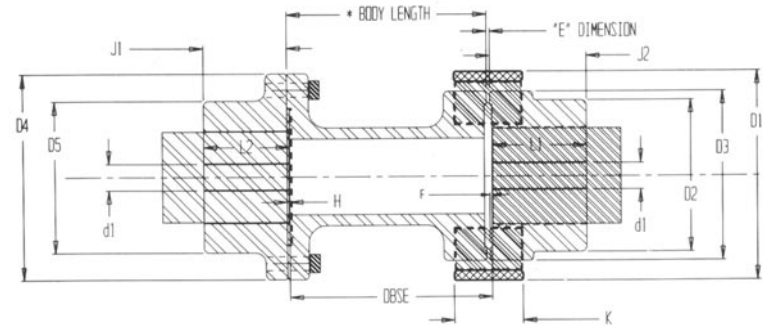
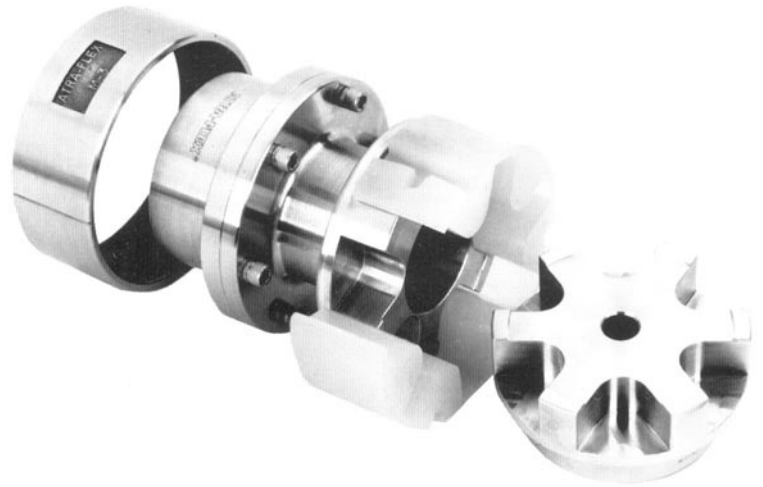
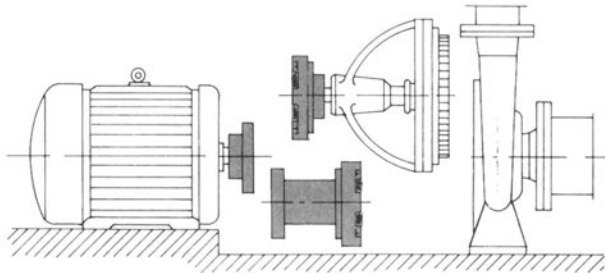
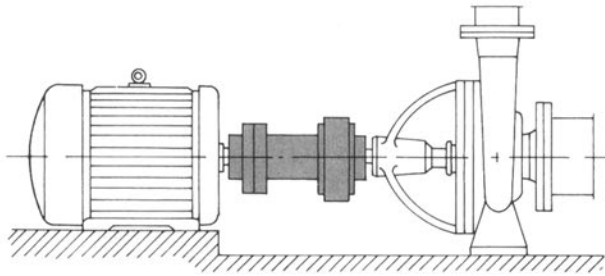
SIZE	M00	M0	M1	M1H	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
EXTERNAL D1	2.170	2.840	3.860	4.345	4.820	6.00	7.600	9.700	11.800	13.260	15.460	17.860	19.875	23.030	27.600	34.620
TOTAL LENGTH G	2.050	2.825	3.575	3.950	4.575	5.075	6.700	9.200	11.200	12.200	14.700	18.200	20.200	22.250	23.250	22.300
MAXIMUM BORE	1.0	1.375	1.750	1.9375	2.250	2.500	3.375	4.500	5.500	6.000	7.2500	9.000	10.000	11.000	13.250	16.000
PILOT BORE d1	0.250	0.300	0.500	0.609	0.609	0.750	0.940	1.00	1.500	1.750	2.450	2.900	3.750	4.000	4.000	7.000
C1 (IDEAL DBSE)	.120	.175	.175	.175	.175	.175	.300	.320	.320	.320	.320	.320	.320	0.372	.370	.500
C2 (MAX. DBSE)	.600	1.00	1.400	1.685	1.500	2.000	2.800	3.200	3.800	5.000	6.000	6.250	6.500	7.000	9.000	9.000
L	0.965	1.375	1.700	1.888	2.200	2.450	3.200	4.440	5.440	5.940	7.190	8.940	9.940	10.940	11.450	10.900
D2	1.60	2.200	2.875	3.100	3.500	4.000	5.500	6.500	8.000	9.000	10.500	12.000	14.000	15.000	18.500	24.000
D3	1.70	2.400	3.150	3.470	3.900	4.900	6.400	8.150	9.930	11.900	13.940	15.900	17.900	19.650	23.900	30.000
J1	0.600	0.775	0.850	1.038	1.250	1.125	1.350	2.300	3.000	2.500	2.750	4.375	5.500	5.250	5.500	3.000
J2	1.00	1.375	1.750	1.938	2.250	2.500	3.250	4.500	5.500	6.000	7.250	9.000	10.000	11.000	11.500	11.000
K	0.720	1.145	1.570	1.575	1.600	2.1500	3.100	3.500	3.900	5.180	6.280	6.530	6.650	7.700	9.200	12.340
E (GAP)	.062	.075	.075	.075	.075	.075	.200	.200	.200	.200	.200	.200	.250	0.250	.250	0.300
APPROX. WT. (LBS)	0.75	2	4	5	10	19	36	72	125	190	320	475	964	1050	1200	1500

TABLE 2: HORSEPOWER CAPACITY AT VARIOUS RPM - Millennium[®]

SIZE	TORQUE RATING	WORKING (SERVICE FACTOR OF ONE)	R P M											MAX. BORE	MAX. RPM W/O BALANCING	MAX. RPM WITH BALANCING
	(LBS. INCHES)		100	300	600	900	1200	1500	1750	2400	3000	3600				
M-00	180	CONTINUOUS (LOAD)	0.29	0.86	1.71	2.57	3.43	4.28	5.00	6.85	8.57	10.28	1.0	13483	20,200	
	300	INTERMITTENT (PEAK LOAD)	0.48	1.43	2.86	4.28	5.71	7.14	8.33	11.42	14.28	17.14				
M-0	600	CONTINUOUS (LOAD)	0.95	2.86	5.71	8.57	11.42	14.28	16.66	22.85	28.56	34.27	1.375	8100	12,200	
	1,000	INTERMITTENT (PEAK LOAD)	1.59	4.76	9.52	14.28	19.04	23.80	27.77	38.08	47.60	57.12				
M-1	1,260	CONTINUOUS (LOAD)	2.00	6.00	12.00	17.99	23.99	29.99	35	48	60	72	1.750	7280	11,000	
	2,100	INTERMITTENT (PEAK LOAD)	3.33	10.00	19.99	29.99	40	50	58	80	100	120				
M-1H	2400	CONTINUOUS (LOAD)	3.81	11.42	22.85	34.27	45.70	57.12	66.64	91.39	114.24	137.09	1.9375	6500	9,000	
	4000	INTERMITTENT (PEAK LOAD)	6.35	19.04	38.08	57.12	76.16	95.20	111.07	152.32	190.40	228.48				
M-2	3,000	CONTINUOUS (LOAD)	4.76	14.28	28.56	43	57	71	83	114	143	171	2.250	5800	8,800	
	5,000	INTERMITTENT (PEAK LOAD)	7.93	23.80	47.60	71	95	119	139	190	238	286				
M-3	5,760	CONTINUOUS (LOAD)	9.14	27	55	82	110	137	160	219	274	329	2.500	4700	7,000	
	9,600	INTERMITTENT (PEAK LOAD)	15.23	46	91	137	183	228	267	366	457	548				
M-4	12,600	CONTINUOUS (LOAD)	20	60	120	180	240	300	350	480	600	720	3.375	3600	5,300	
	21,000	INTERMITTENT (PEAK LOAD)	33	100	200	300	400	500	583	800	1,000	1,200				
M-5	28,800	CONTINUOUS (LOAD)	46	137	274	411	548	685	800	1,097	1,371	1,645	4.500	2800	4,200	
	48,000	INTERMITTENT (PEAK LOAD)	76	228	457	685	914	1,142	1,333	1,828	2,285	2,742				
M-6	48,000	CONTINUOUS (LOAD)	76	228	457	685	914	1,142	1,333	1,828	2,285	2,742	5.500	2300	3,400	
	80,000	INTERMITTENT (PEAK LOAD)	127	381	762	1,142	1,523	1,904	2,221	3,046	3,808	4,570				
M-7	111,000	CONTINUOUS (LOAD)	176	528	1,057	1,585	2,113	2,642	3,082	4,227	5,284	6,340	6.00	2000	2,900	
	185,000	INTERMITTENT (PEAK LOAD)	294	881	1,761	2,642	3,522	4,403	5,137	7,045	8,806	10,567				
M-8	186,600	CONTINUOUS (LOAD)	296	888	1,776	2,665	3,553	4,441	5,181	7,106	8,882	10,659	7.250	1700	2,400	
	311,000	INTERMITTENT (PEAK LOAD)	493	1,480	2,961	4,441	5,921	7,402	8,635	11,843	14,804	17,764				
M-9	273,000	CONTINUOUS (LOAD)	433	1,299	2,599	3,898	5,198	6,497	7,580	10,396	12,995	15,594	9.00	1450	2,100	
	455,000	INTERMITTENT (PEAK LOAD)	722	2,166	4,332	6,497	8,663	10,829	12,634	17,326	21,658	25,990				
M-10	420,000	CONTINUOUS (LOAD)	666	1,999	3,998	5,998	7,997	9,996	11,662	15,994	19,992	23,990	10.0	1300	1,900	
	700,000	INTERMITTENT (PEAK LOAD)	1,111	3,332	6,664	9,996	13,328	16,660	19,437	26,656	33,320	39,984				
M-11	686000	CONTINUOUS (LOAD)	1,088	3,265	6,531	9,795	13,061	16,327	19,048				11.00	1165	1,700	
	1150000	INTERMITTENT (PEAK LOAD)	1,825	5,474	10,948	16,422	21,896	27,370	31,932							
M-12	960,000	CONTINUOUS (LOAD)	1,523	4,570	9,139	13,709	18,278	22,848	26,656	36,557	45,696	54,835	13.250	960	1,400	
	1,600,000	INTERMITTENT (PEAK LOAD)	2,539	7,616	15,232	22,848	30,464	38,080	44,427	60,928	76,160	91,392				
M-13	1,900,000	CONTINUOUS (LOAD)	3,015	9,044	18,088	27,132	36,176						16,000	700	1,100	
	3,200,000	INTERMITTENT (PEAK LOAD)	5,077	15,232	30,464	45,696	60,928									

Rating chart for ATRA-FLEX Millennium with yellow (standard) insert
 NOTE: See page 22 for Bushing specifications.

ATRA-FLEX[®] Millennium[®] **Spacer Couplings** **Patent #5,657,525**



*SPACER BODY LENGTH IS ORDERED BY DISTANCE
 BETWEEN SHAFT ENDS (DBSE) SPACER BODY
 SHORTENED BY THE "E" DIMENSION AT THE FACTORY

TABLE 3: DIMENSIONS (IN INCHES) FOR Millennium[®] SPACER COUPLINGS

SIZE	M00	M0	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
EXTERNAL D1	2.170	2.840	3.860	4.820	6.00	7.600	9.700	11.800	13.260	15.460	17.860	19.875	23.03	27.600
MAXIMUM BORE HUB	1.0	1.375	1.750	2.250	2.500	3.375	4.500	5.500	6.000	7.2500	9.000	10.000	11	13.250
MAXIMUM BORE FLANGE HUB	0.875	1.375	1.875	2.375	2.875	3.125	4.0	5.0	5.75	7.125	8.25	10.5	11.00	14.250
MAX BORE HEAVY DUTY FLANGE						3.375	5.000*	6.875*	7.125*	8.875*	9.250*	11.875*		
PILOT BORE d1	0.250	0.300	0.500	0.609	0.750	0.940	1.00	1.500	1.750	2.450	2.900	3.750	N/A	4.000
L1	0.965	1.375	1.700	2.200	2.450	3.200	4.450	5.440	5.940	7.190	8.940	9.940	N/A	11.450
L2	1.025	1.438	1.63	2.000	2.375	2.610	3.412	4.312	4.560	7.100	9.100	11.100	9.812	11.625
D2	1.600	2.200	2.875	3.500	4.000	5.500	6.500	8.000	9.000	10.500	12.000	14.000	N/A	18.500
D3	1.700	2.400	3.150	3.900	4.900	6.400	8.180	9.930	11.900	13.900	15.900	17.900	N/A	23.900
D4	2.500	3.415	3.940	4.750	5.515	6.950	8.860	10.000	10.500	12.800	15.087	19.000	17.900	23.900
D5 (FOR HEAVY DUTY FLANGE USE D4)	1.35	2.275	2.825	3.500	4.000	4.600	5.800	7.250	8.500	10.000	11.000	13.000	14.000	18.000
J1	1.088	1.375	1.562	1.940	2.315	2.548	3.350	4.250	4.500	7.000	9.000	11.000	9.750	11.500
J2	1.00	1.375	1.750	2.250	2.500	3.250	4.500	5.550	6.000	7.250	9.000	10.000	N/A	13.250
F	0.035	0.035	0.050	0.050	0.050	0.050	0.060	0.060	0.060	0.060	0.060	0.060		0.060
H	0.02	0.020	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.100	0.100	0.100	0.125	0.125
K	0.720	1.145	1.570	1.600	2.1500	3.100	3.500	3.900	5.150	6.280	6.530	6.650	N/A	9.200
E (GAP)	.062	.075	.075	.075	.075	.200	.200	.200	.200	.200	.200	.250	N/A	.250
STANDARD BODY LENGTH	3.5	3.0, 3.5,	3.0, 3.5, 3.75, 4.0, 4.5, 5.0	3.0, 3.5, 3.75, 4.0, 5.0, 5.5, 7.0	3.5, 3.75, 5.0, 5.25, 5.5, 7.0, 7.25, 7.5	4.0, 5.0, 6.0, 7.0, 9.5, 9.75	5.0, 6.0, 7.0, 7.25, 9.75, 10.0, 12.0	7.0 TO 18.0	7.0 TO 18.0	7.5 TO 18.0	9.5 TO 18.0	9.5 TO 20.0	9.5 TO 20.0	12.0 TO 24.0

CUSTOM LENGTHS AVAILABLE
 WITH EXTRA CHARGE

NOTE: Use Table 2 (page 4) Horsepower
 Capacity at Various RPM.

ATRA-FLEX® Millennium®
S.A.E. FLY WHEEL COUPLINGS
 Patent #5,657,525

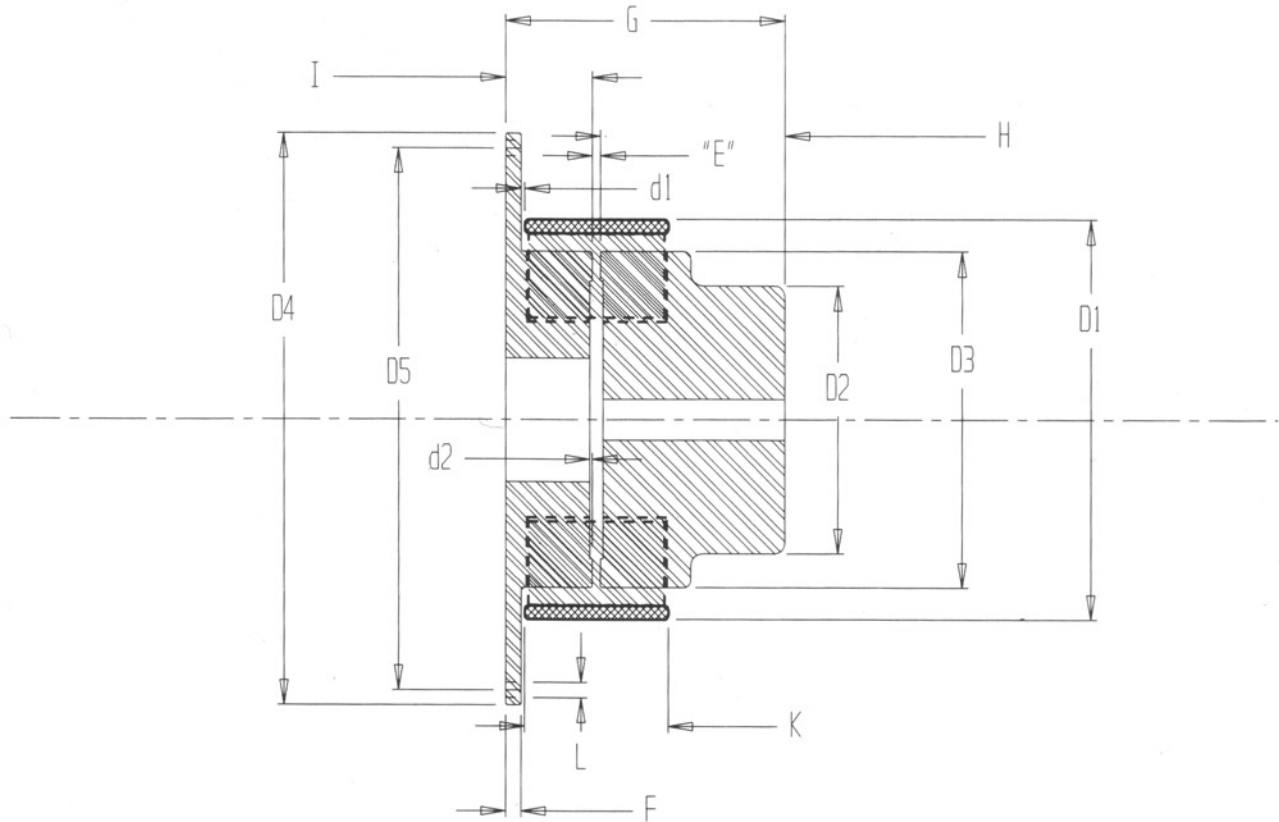


TABLE 4: SAE FLYWHEEL COUPLING DIMENSIONS (IN INCHES) FOR Millennium®

SIZE	D1	D2	D3	D4	D5	d1	d2	E	F	G	H	I	L	MAX. BORE	MAX. RPM W/O BALANCING
M-4	7.600	5.500	6.400	13.870	13.120	0.500	0.050	0.200	0.375	5.725	3.250	2.275	13/32	3.375	3000
M-5	9.700	6.500	8.180	18.370	17.250	0.090	0.060	0.200	0.375	6.815	4.500	2.115	17/32	4.500	2500
M-6	11.800	8.000	9.930	22.500	21.370	0.600	0.060	0.200	0.625	8.875	5.550	3.125	21/32	5.500	2100
M-7	13.260	9.000	11.900	26.500	25.250	1.000	0.060	0.200	0.750	10.450	6.000	4.250	21/32	6.000	1800
M-8	15.460	10.500	13.900	28.870	27.250	1.500	0.060	0.200	0.750	12.700	7.250	5.250	25/32	7.250	1500
M-9	17.860	12.000	15.900	REQUIREMENT	REQUIREMENT	1.500	0.060	0.200	1.000	14.825	9.000	5.625	REQUIREMENT	9.000	1300
M-10	19.875	14.000	17.900	REQUIREMENT	REQUIREMENT	1.250	0.060	0.250	1.250	16.000	10.000	5.750	REQUIREMENT	10.000	1000
M-11															
M-12	27.600	18.500	23.900	REQUIREMENT	REQUIREMENT	1.500	0.060	0.250	1.25	20.750	13.250	7.250	REQUIREMENT	13.250	900

*Factory recommends a service factor of 3.0 to 4.0

**Refer to horsepower capacity at various RPM on page 4 for Millennium®

***Consult factory for custom sizes

ATRA-FLEX® Millennium® **DROP-OUT SPACER COUPLINGS**

CONVERT YOUR GREASE LUBRICATED GRID SPACER COUPLING WITH
THE ADVANTAGE OF NON-LUBRICATED LOW MAINTENANCE ATRA-FLEX

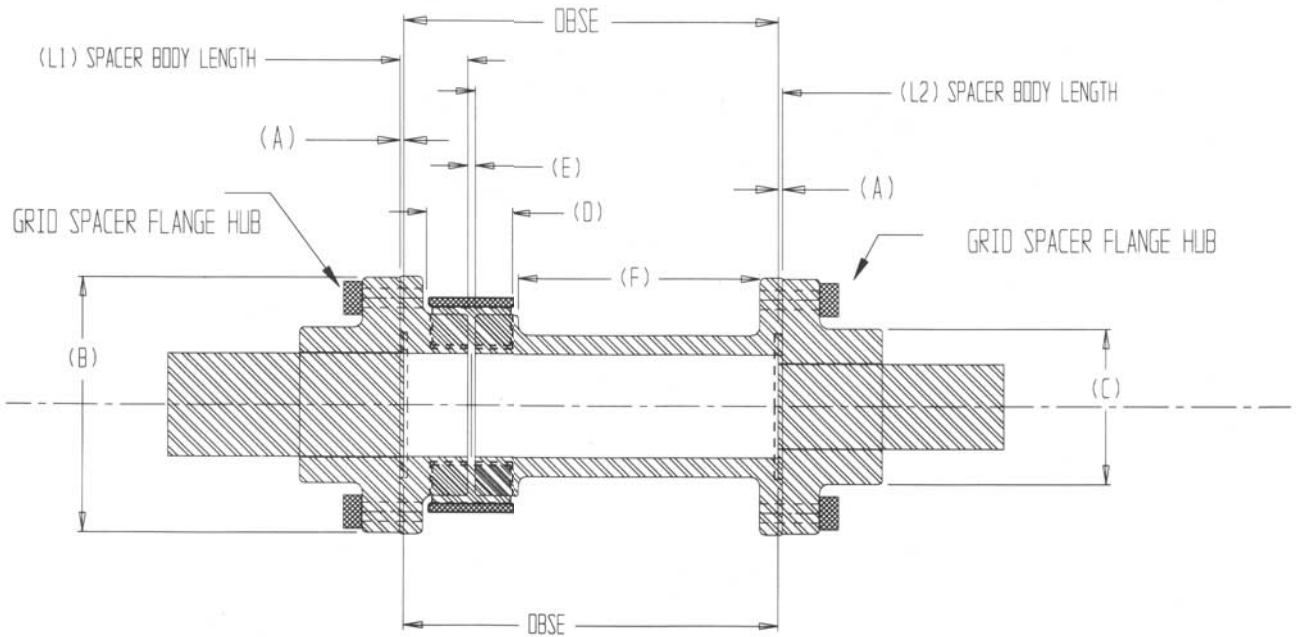


TABLE 5: DIMENSIONS GRID DROP-OUT CONVERSION CHART

GRID SIZE	SIZE ATRA-FLEX	ANSI STD. DBSE	A	B	C	D (RING WIDTH)	F	"E"	L1	DBSE/ = L2	G(BC)
1020 T31	20SB0MF	3.5" 4.380" 5.00"	.0650"	3.300	2.060	1.145	1.700 2.580 3.200	.075"	0.900	3.500" = 2.600" 4.380" = 3.480" 5.00" = 4.100"	2.835
1030 T31	30SB1MF	3.5" 4.380" 5.0" 7.250"	.0650"	3.618	2.340	1.57	0.900 1.780 2.400 4.650	.075"	1.300	3.500" = 2.200" 4.380" = 3.080" 5.00" = 3.700" 7.250" = 5.950"	3.110
1040 T31	40SB2MF	3.5" 4.380" 5.0" 7.250"	.0650"	4.375	3.090	1.600	.700 1.580 2.200 4.450	.075"	1.400	3.500" = 2.100" 4.380" = 2.980" 5.00" = 3.600" 7.250" = 5.850"	3.898
1050 T31	50SB2MF	4.380" 5.0" 7.250"	.0650"	4.875	3.440	1.600	1.580 2.200 4.450	.075"	1.400	4.380" = 2.980" 5.000" = 3.600" 7.250" = 5.850"	3.898
1060 T31	60SB3MF	5.00" 7.250" 9.750" 12.250"	.0650"	5.690	4.060		1.05 3.300 5.800 10.275	.075"	1.975	5.00" = 3.025" 7.250" = 5.275" 9.750" = 7.775" 12.250" = 10.275"	4.900
1070 T31	70SB4MF	5.00" 7.250" 9.750" 12.250"	.0650"	6.000	4.310	3.100	.900 3.150 5.050 8.150	.200"	2.1	5.0" = 2.800" 7.250" = 5.050" 9.750" = 7.550" 12.250" = 10.050"	5.275
1080 T31	80SB5MF	7.250" 9.750" 12.250"	.0650"	7.000	4.800	3.500	1.350 3.850 6.350	.200"	3.075	7.250" = 4.175" 9.750" = 6.675" 12.250" = 9.175"	6.000
1090 T31	90SB5MF	7.250" 9.750" 12.250"	.0650"	8.250	5.620	3.500	1.350 3.850 6.351	.200"	3.075	7.250" = 4.175" 9.750" = 6.675" 12.250" = 9.175"	6.000

**Refer to horsepower capacity at various RPM on page 4 and page 18

***Consult factory for larger sizes

ATRA-FLEX® Millennium® FLOATING SHAFT COUPLINGS FOR CONNECTING EQUIPMENT WITH LARGE DISTANCE BETWEEN SHAFT ENDS

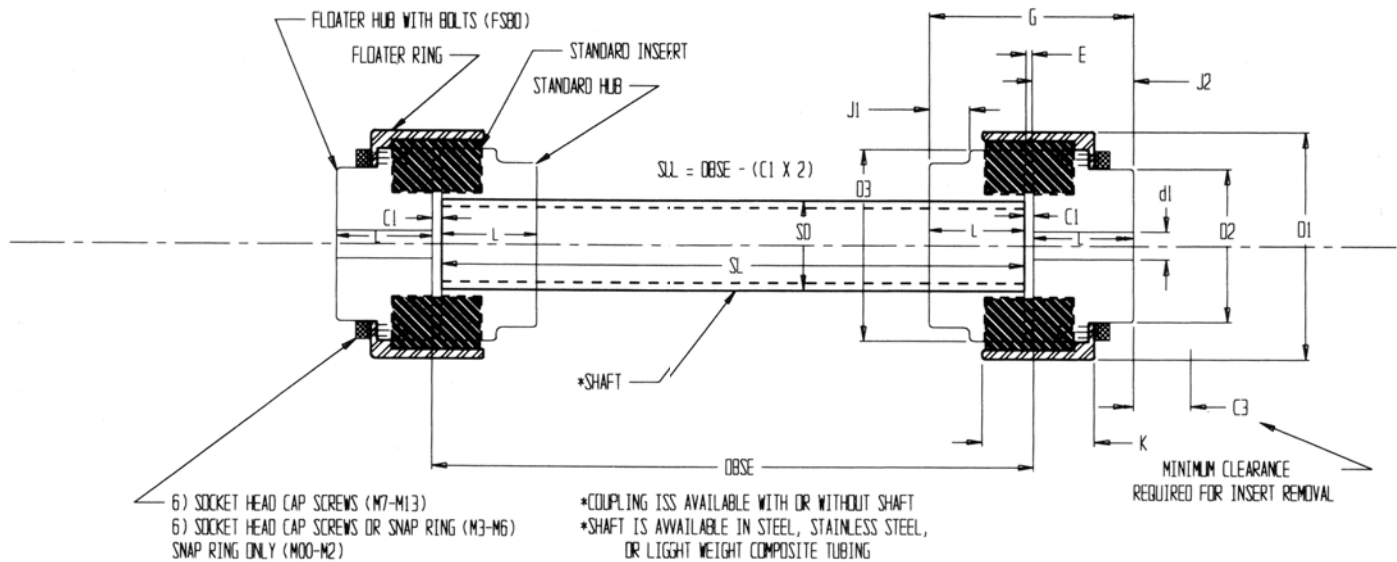
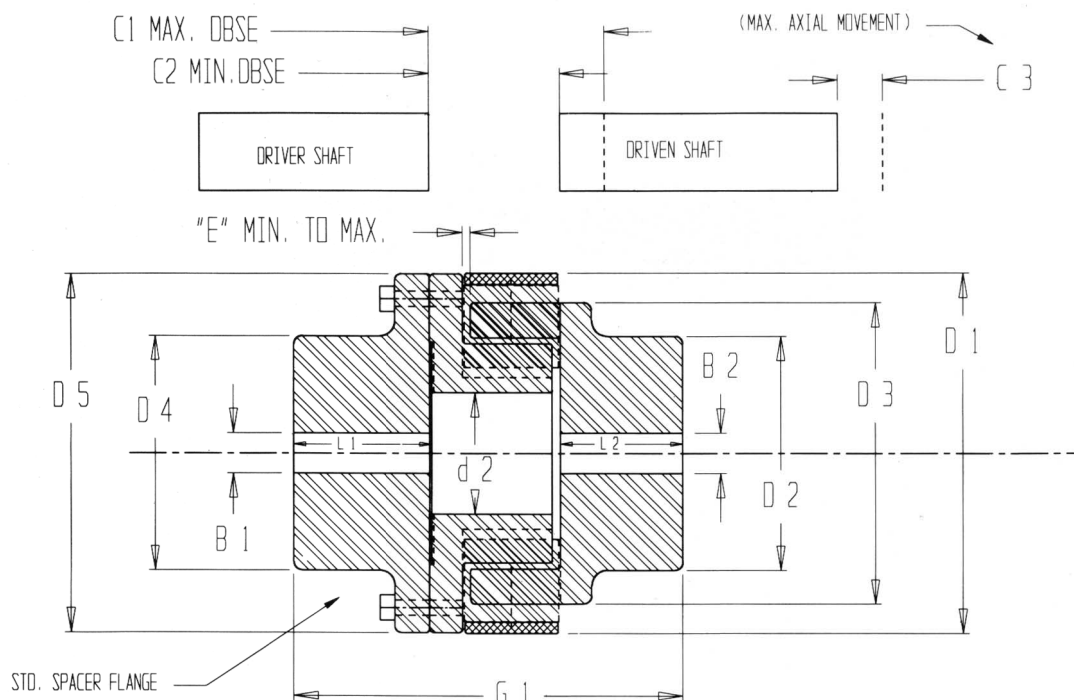


TABLE 6: DIMENSIONS - Millennium® FLOATING SHAFT

SIZE	M00	M0	M1	M1H	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
EXTERNAL D1	2.170	2.840	3.860	4.345	4.820	6.00	7.600	9.700	11.800	13.260	15.460	17.860	19.875	23.03	27.600	34.620
G	2.050	2.825	3.575	3.950	4.575	5.075	6.700	9.200	11.200	12.200	14.700	18.200	20.200	22.250	23.250	22.300
MAXIMUM BORE	1.000"	1.375"	1.750"	1.9375"	2.250"	2.500"	3.375"	4.500"	5.500"	6.000"	7.250"	9.000"	10.000"	11.000"	13.250"	16.000"
PILOT BORE d1	0.250	0.300	0.500	0.609	0.609	0.750	0.940	1.10	1.500	1.750	2.450	2.900	3.750	4.000	4.000	7.000
C1	0.132"	.145"	.195"	.195"	.195"	.195"	.300"	.300"	.300"	.300"	.300"	.300"	.370"	.370"	.370"	.400"
C3	0.185"	0.45	0.82	0.625	1.65	1.25	1.93	1.43	1.46	3.18	4.25	2.625	1.43	2.485	4.475	8.900
L	0.965	1.340	1.690	1.878	2.190	2.440	3.190	4.440	5.440	5.940	7.190	8.940	9.940	10.940	11.440	10.900
D2	1.60	2.200	2.875	3.100	3.500	4.000	5.500	6.500	8.000	9.000	10.500	12.000	14.000	15.000	18.500	24.000
D3	1.70	2.400	3.150	3.470	3.900	4.900	6.400	8.100	9.930	11.900	13.940	15.900	17.900	19.650	23.900	30.000
J1	0.600	0.775	0.850	1.038	1.250	1.125	1.350	2.300	3.000	2.500	2.750	4.375	5.500	5.750	5.500	3.000
J2	1.00	1.375	1.750	1.938	2.250	2.500	3.250	4.500	5.500	6.000	7.250	9.000	10.000	11.000	11.500	11.000
K	0.885	1.325	1.870	1.860	2.050	2.7500	3.780	4.330	5.060	6.680	8.250	8.500	8.180	9.735	11.475	14.150
*SD (SHAFT DIAMETER)	1.000	1.250	1.500	1.500	2.000	2.0000	3.000	4.000	5.000	5.500	7.000	8.500	9.500	10.500	13.000	15.500
E (GAP)	0.62"	.075"	.075"	.075"	.075"	.075"	.200"	.200"	.200"	.200"	.200"	.200"	.250"	.250"	.250"	.300"

*Shaft Dimensions subject to change without notice.
Refer to Horsepower Capacity at various RPM on pages 4 & 18



HORIZONTAL SHEAR COUPLING
PATENT # 5295911

- No lubrication or seals to create a hydraulic effect.
- Allows axial free movement (see chart below).
- No metal to metal contact.
- Horizontal shear plane creates no axial thrust loads.
- Coupling insert can be changed in minutes.
- Two part hub for easier installation.
- Same insert as standard & Millennium®
- Also Available in Spacer, Couplings

TABLE 7: DIMENSIONS HORIZONTAL SHEAR / SLIDE COUPLINGS

SIZE	HS-1M	HS-2M	HS-3M	HS-4M	HS-5M	HS-6M	HS-7M	HS-8M	HS-9M	HS-10M
EXTERNAL D1	3.150	4.820	6.000	7.600	9.700	11.800	13.260	15.460	17.860	19.875
TOTAL LENGTH G1MIN./MAX.	4.122/4.422	5.640/6.240	6.670/7.470	8.523/9.923	0.600/12.100	12.700/14.395	14.200/16.450	19.510/22.510	22.775/26.275	25.600/28.000
MAXIMUM BORE B1	1.875"	2.375"	2.875"	3.375"	4.000"	5.000"	6.000"	7.125"	9.250"	10.000"
MAXIMUM BORE B2	1.750"	2.250"	2.500"	3.375"	4.500"	5.500"	6.000"	7.250"	9.000"	10.000"
PILOT BORE d1	0.438	0.609	0.750	0.9375	1.000"	1.500"	1.750"	2.450"	2.900"	3.750"
C1 MAX. DBSE	1.597	2.790	3.640	4.481"	4.980"	5.460"	8.440"	2.160"	11.300"	12.000"
C2 MIN. DBSE	1.297	2.190	2.840	4.123	4.410"	4.710"	6.190"	6.260"	7.800"	.350"
C3 MAX. AXIAL TRAVEL	.300"	.600"	.800"	1.200"	1.500"	1.695"	2.250"	3.000"	3.500"	3.600"
L1	1.625	2.000	2.440	2.548	3.350	4.312	4.560	7.100	9.100	9.800
L2	1.200	1.450	1.450	1.790	2.840	3.750	3.450	10.250	5.825	7.500
d2	1.000	2.000	2.500	3.250	4.500	5.500	6.000	7.250	9.000	12.000
D2	2.370	3.500	4.000	5.500	6.500	8.000	9.000	10.500	12.000	10.000
D3	2.505	3.900	4.900	6.400	8.150	9.930	11.900	13.900	15.900	17.900
D4	2.825	3.250	4.200	4.600	5.800	7.250	8.000	10.000	11.000	14.000
D5	3.940	4.750	5.515	6.950	8.860	10.000	11.900	13.900	15.087	17.900
E MIN./MAX.	.040/.340	.075/.675	.075/.875	.200/1.400	.200/1.700	.200/1.895	.200/2.250	.200/3.200	.200/3.700	.350/3.950
APPROX. WT (LBS)	5.0	10.0	20.0	35	70	120	185	300	480	800
HP PER 100 RPM (CONT.)	1.600	3.800	7.300	16	36.8	60	141	236	346	532
HP PER 100 RPM (PEAK)	2.660	6.344	12.184	26.4	60.8	101.6	235	394	577	890

ATRA-FLEX® A-SERIES® **Non Spacer Couplings**

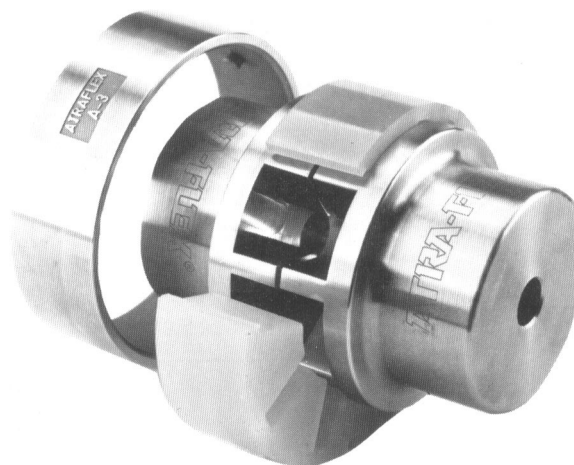
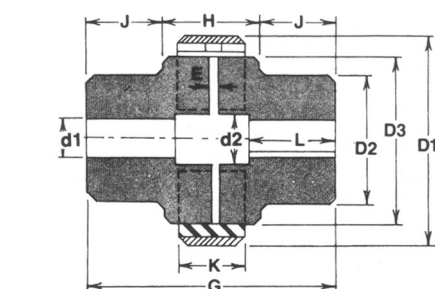


TABLE 8: HORSEPOWER CAPACITY AT VARIOUS RPM - A-SERIES®

SIZE	TORQUE RATING (LBS. INCHES)	WORKING (SERVICE FACTOR OF ONE)	R P M											MAX. BORE	MAX. RPM W/O BALANCING
			100	300	600	900	1200	1500	1750	2400	3000	3600			
A-00	105 176	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	0.17 0.28	0.50 0.84	1.00 1.68	1.50 2.51	2.00 3.35	2.50 4.19	2.92 4.89	4.00 6.70	5.00 8.38	6.00 10.05	7/8"	14,000	
A-0	265 411	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	0.42 0.70	1.26 2.10	2.52 4.20	3.78 6.30	5.05 8	6.31 10	7 12	10 17	13 21	15 25	1 1/4"	9800	
A-1	340 819	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	0.54 1.30	1.62 3.90	3.24 7.80	5 12	6 16	8 19	9 23	13 31	16 39	19 47	1 1/2"	7300	
A-2	1325 2205	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	2.10 3.50	6 10	13 21	19 31	25 42	32 52	37 61	50 84	63 105	76 126	1 5/8"	5400	
A-3	2650 4410	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	4 7	13 21	25 42	38 63	50 84	63 105	74 122	101 168	126 210	151 252	2 3/8"	4200	
A-4	5300 8820	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	8 14	25 42	50 84	76 126	101 168	126 210	147 245	202 336	252 420	303 504	2 5/8"	3600	
A-5	13230 22050	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	21 35	63 105	126 210	189 315	252 420	315 525	367 612	504 840	630 1,050	756 1,260	4.0"	2600	
A-6	21200 35280	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	34 56	101 168	202 336	303 504	404 672	505 840	589 980	807 1,343	1,009 1,679	1,211 2,015	5.0"	2200	
A-7	42350 70560	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	67 112	202 336	403 672	605 1,008	806 1,343	1,008 1,679	1,176 1,959	1,613 2,687	2,016 3,359	2,419 4,030	6.0"	1900	
A-8	79400 132300	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	126 210	378 630	756 1,260	1,134 1,889	1,512 2,519	1,890 3,149	2,205 3,674	3,024 5,038	3,779 6,298	4,535 7,557	7 1/8"	1600	
A-9	120300 200500	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	191 318	573 954	1,145 1,909	1,718 2,863	2,291 3,818	2,863 4,772	3,340 5,567	4,581 7,635	5,726 9,544	6,872 11,453	9 1/4"	1300	
A-11	300000 500000	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	476 793	1,428 2,380	2,856 4,760	4,284 7,140	5,712 9,520	7,140 11,900	8,330 13,883	11,424 19,040	14,280 23,800	17,136 28,560	10.5"	1150	

TABLE 9: DIMENSIONS - A-SERIES®

SIZE (in inches)	A-00	A-0	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-11
EXTERNAL D1	1.80	2.50	3.15	4.25	5.56	7.00	8.89	10.68	12.12	14.45	16.95	20.00
TOTAL LENGTH G	2.10	2.79	3.56	4.83	5.98	6.99	8.61	10.19	12.19	14.19	16.22	20.10
MAXIMUM BORE d1	0.88	1.25	1.63	1.94	2.38	2.94	4.00	5.00	6.00	7.13	9.25	10.50
PILOT BORE	0.25	0.30	0.43	0.50	0.63	0.95	1.13	1.50	1.75	2.45	2.90	3.74
L	.78	1.06	1.34	1.78	2.13	2.40	3.07	3.70	4.57	5.36	6.17	7.75
d2	0.88	1.23	1.40	1.65	2.00	2.70	3.35	4.45	5.25	5.93	7.35	7.75
D2	1.35	2.00	2.37	3.07	3.52	4.36	5.79	7.25	7.80	9.50	11.00	13.00
D3	1.39	2.07	2.51	3.36	4.51	5.87	7.45	9.25	10.49	12.80	15.09	17.90
H	0.90	1.06	1.39	2.03	2.42	3.48	3.93	4.69	4.99	5.99	6.41	9.10
J	0.6	0.87	1.09	1.40	1.78	1.76	2.34	2.75	3.60	4.10	4.91	5.50
K	0.5	0.55	0.88	1.25	1.63	2.03	2.33	2.78	3.03	3.35	3.78	5.00
E (GAP)	0.047	0.062	0.062	0.062	0.062	0.188	0.188	0.188	0.188	0.188	0.219	0.100
APPROX WT (LBS)	0.78	2.24	4	9.26	17	33.18	67.68	115	175	308	456	770

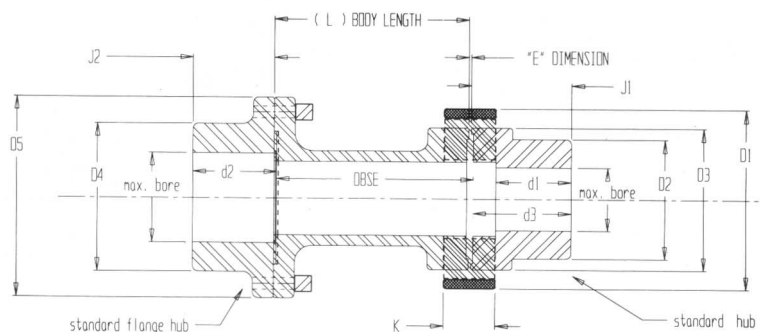
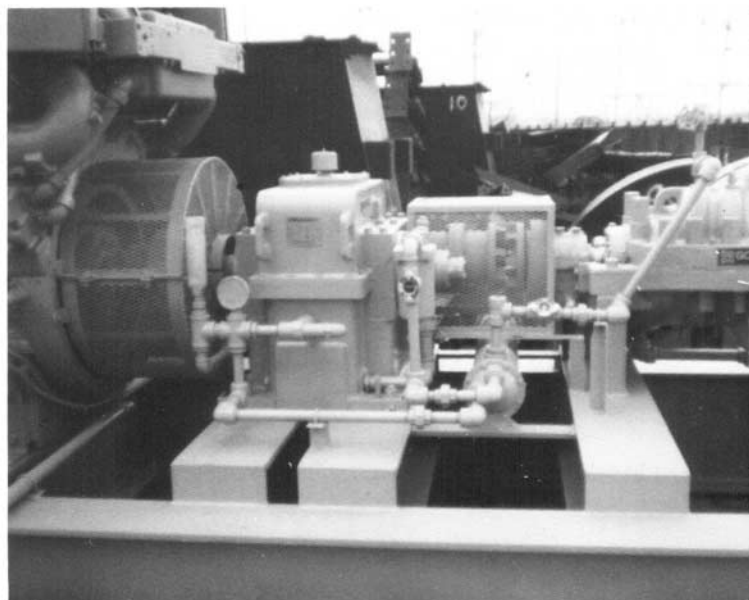
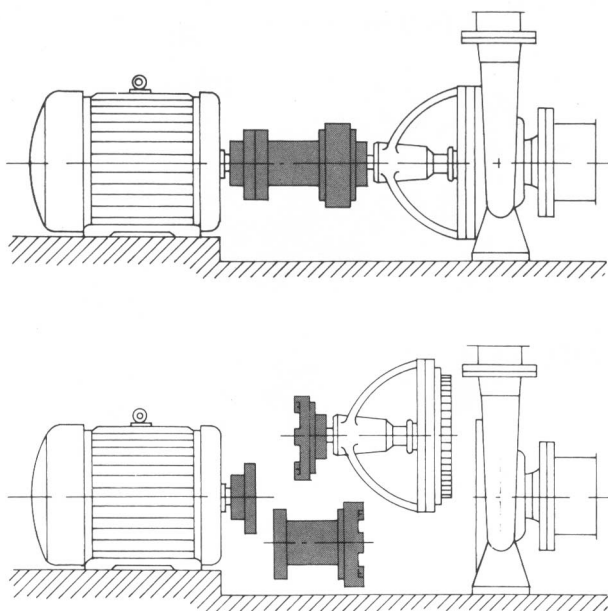


Note: on Heavy Duty (maximum bore) hubs - D2 will be same as D3

ATR® reserves the right to change designs without notice. The weights listed are approximate and sufficiently accurate for most users. The purchaser should use certified prints for construction where exact dimensions and weights are critical. Additional information will be provided if extreme accuracy is required.

NOTE: See page 22 for Bushing specifications.

ATRA-FLEX® A-SERIES® Spacer Couplings



NOTES:
SPACER BODY (L) IS ORDERED BY DISTANCE BETWEEN SHAFT ENDS (DBSE)
** SPACER BODY IS SHORTENED BY THE "E" DIMENSION AT THE FACTORY
*** STD. HUB SIDE SHAFT END IS INSTALLED SO THAT THE END OF SHAFT IS PERPENDICULAR WITH THE END OF THE WINGS ON THE HUB
**** CAN BE ORDERED TO MEET ALL API STANDARDS 610 / 7TH EDITION

TABLE 10: DIMENSIONS (IN INCHES)

SIZE	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A11
EXTERNAL D1	2.500	3.150	4.250	5.56	7.00	8.890	10.68	12.12	14.45	16.95	20.00
MAXIMUM BORE HUB	1.250	1.625	1.9375	2.375	2.9375	4.000	5.000	6.000	7.1250	9.250	10.500
MAXIMUM BORE FLANGE HUB	1.375	1.875	2.375	2.875	3.125	4.000	5.000	5.750	7.125	8.250	10.500
MAX BORE HEAVY DUTY FLANGE					3.375	5.000*	6.875*	7.125*	8.875*	9.250*	11.875*
PILOT BORE	0.300	0.430	0.500	0.625	0.950	1.13	1.500	1.750	2.450	2.900	3.740
d1	1.055	1.340	1.775	2.130	2.400	3.070	3.700	4.570	5.360	6.165	7.750
d2	1.450	1.620	2.125	2.410	2.610	3.410	4.312	4.625	7.000	9.100	9.850
d3	1.365	1.750	2.325	2.900	3.340	4.150	4.940	5.940	6.940	7.940	9.940
D2	1.995	2.370	3.070	3.520	4.360	5.790	7.250	7.800	9.500	11.000	13.000
D3	2.065	2.505	3.360	4.505	5.872	7.450	9.250	10.490	12.800	15.087	17.900
D4 (FOR HEAVY DUTY FLANGE USE D5)	2.280	2.875	3.500	4.200	4.600	6.300	7.250	8.375	10.000	11.000	14.000
D5	3.415	3.940	4.710	5.515	6.950	8.860	10.000	10.490	12.800	15.087	17.900
J1	1.365	1.750	2.385	2.96	3.400	4.210	5.000	6.000	7.000	8.000	10.000
J2	1.390	1.560	2.065	2.350	2.550	3.350	4.252	4.565	6.900	9.000	9.750
K	0.550	0.875	1.250	1.6250	2.025	2.325	2.775	3.025	3.350	3.775	5.000
E (GAP)	0.062	0.062	0.062	0.062	0.188	0.188	0.188	0.188	0.188	0.219	0.100
STANDARD BODY LENGTH	3.0, 3.5	3.0, 3.5, 3.75, 4.0, 4.5, 5.0	3.0, 3.5, 3.75, 4.0, 5.0, 5.5, 7.0	3.5, 3.75, 5.0, 5.25, 5.5, 7.0, 7.25, 7.5	4.0, 5.0, 6.0, 7.0, 9.5, 9.75	5.0, 6.0, 7.0, 7.25, 9.75, 10.0, 12.0	7.0, 7.0, 18.0	7.0, 7.0, 18.0	7.5, 7.5, 18.0	9.5, 9.5, 18.0	9.5, 9.5, 20.0
CUSTOM LENGTHS AVAILABLE WITH EXTRA CHARGE											

SEE TABLE 1 FOR HORSEPOWER CAPACITY AT VARIOUS RPM

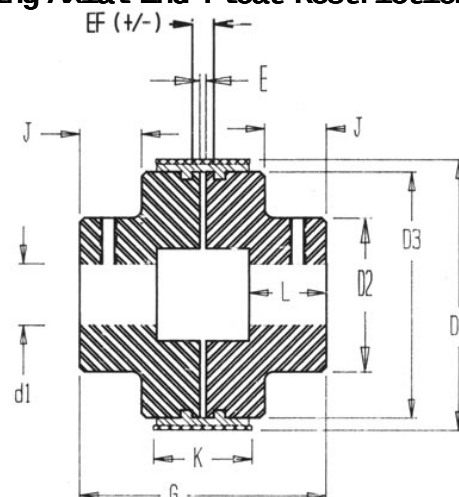
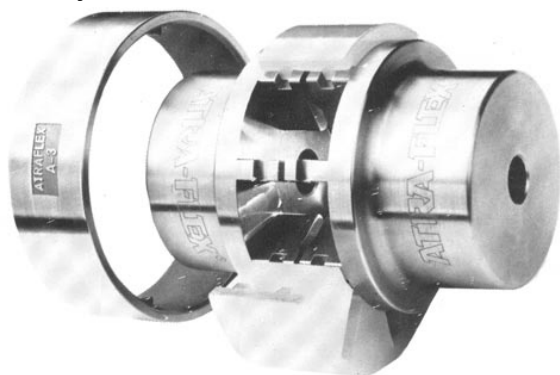
ATRA® reserves the right to change designs without notice. The weights listed are approximate and sufficiently accurate for most users. The purchaser should use certified prints for construction where exact dimensions and weights are critical. Additional information will be provided if extreme accuracy is required.

ATRA-FLEX® Available in A-SERIES® & Millennium®

Limited End Float Couplings

Patent #5,139,460

For Sleeve Bearing Motors, And All Other Applications Requiring Axial End-Float Restrictions
Consult Factory For Millennium®



(Meets API 610 Standards Maximum Coupling End Float Requirements)

TABLE 11: DIMENSIONS - ATRA-FLEX EF SERIES

SIZE	A-EF-2	A-EF-3	A-EF-4	A-EF-5	A-EF-6	A-EF-7	A-EF-8	A-EF-9	A-EF-11
EXTERNAL D1	4.25	5.56	7	8.89	10.68	12.12	14.45	16.62	20.00
TOTAL LENGTH G1	4.83	5.98	6.98	8.6	10.18	12.18	14.19	16.21	20.10
MAXIMUM BORE d1	1.938	2.375	2.938	4.000	5.000	6.000	7.125	9.250	10.500
PILOT BORE	0.61	0.75	0.94	1.00	1.50	1.75	2.45	2.90	3.74
L	1.79	2.16	2.45	3.10	3.75	4.60	5.42	6.22	7.50
d2	1.76	2.05	2.72	3.52	4.75	5.30	6.12	7.55	8.00
D2	3.07	3.52	4.36	5.79	7.00	7.80	9.50	11.00	13.00
D3	3.36	4.50	5.87	7.45	9.13	10.39	12.80	15.08	17.90
H	2.03	2.42	3.47	3.95	4.68	5.22	5.98	6.40	9.10
J	1.40	1.78	4.36	2.32	7.00	3.48	4.10	4.90	5.50
K	1.28	1.69	2.08	2.30	2.75	3.00	3.32	3.75	5.00
E	0.062	0.062	0.188	0.188	0.188	0.188	0.188	0.219	0.10
AXIAL END FLOAT +/-	.040 +/-	.050 +/-	.090 +/-	.090 +/-	.090 +/-	.125 +/-	.190 +/-	.190 +/-	.190 +/-
APPROX WT (LBS)	9	17	33	67	115	175	308	456	770

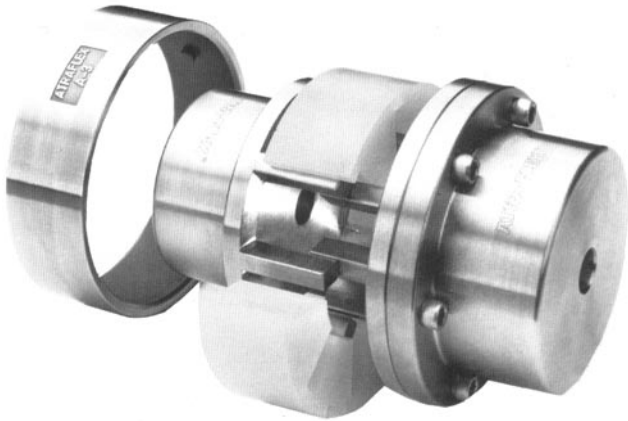
TABLE 12: HORSEPOWER AT VARIOUS RPM - ATRA-FLEX EF SERIES

SIZE	TORQUE RATING (LBS. INCHES)	WORKING (SERVICE FACTOR OF ONE)	R P M											MAX. B O R E	MAX. RPM W/O BALANCING	AXIAL +/- MOVEMENT
			100	300	600	900	1200	1500	1750	2400	3000	3600				
A-EF-2	1325 2205	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	2.10 3.50	6 10	13 21	19 31	25 42	32 52	37 61	50 84	63 105	76 126	1 ¹⁵ / ₁₆ "	5400	.040 +/-	
A-EF-3	2650 4410	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	4 7	13 21	25 42	38 63	50 84	63 105	74 122	101 168	126 210	151 252	2 ³ / ₈ "	4200	.050 +/-	
A-EF-4	5300 8820	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	8 14	25 42	50 84	76 126	101 168	126 210	147 245	202 336	252 420	303 504	2 ¹⁵ / ₁₆ "	3600	.050 +/-	
A-EF-5	13230 22050	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	21 35	63 105	126 210	189 315	252 420	315 525	367 612	504 840	630 1,050	756 1,260	4.0"	2600	.090 +/-	
A-EF-6	21200 35280	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	34 56	101 168	202 336	303 504	404 672	505 840	589 980	807 1,343	1,009 1,679	1,211 2,015	5.0"	2200	.090 +/-	
A-EF-7	42350 70560	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	67 112	202 336	403 672	605 1,008	806 1,343	1,008 1,679	1,176 1,959	1,613 2,687	2,016 3,359	2,419 4,030	6.0"	1900	.125 +/-	
A-EF-8	79400 132300	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	126 210	378 630	756 1,260	1,134 1,889	1,512 2,519	1,890 3,149	2,205 3,674	3,024 5,038	3,779 6,298	4,535 7,557	7 ⁷ / ₈ "	1600	.190 +/-	
A-EF-9	120300 200500	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	191 318	573 954	1,145 1,909	1,718 2,863	2,291 3,818	2,863 4,772	3,340 5,567	4,581 7,635	5,726 9,544	6,872 11,453	9 ¹ / ₄ "	1360	.190 +/-	
A-EF-11	300000 500000	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	476 793	1,428 2,380	2,856 4,760	4,284 7,140	5,712 9,520	7,140 11,900	8,330 13,883	11,424 19,040	14,280 23,800	17,136 28,560	10.5"	1150	.190 +/-	

ATRA-FLEX® A-SERIES®

Horizontal Shear/Slide Couplings

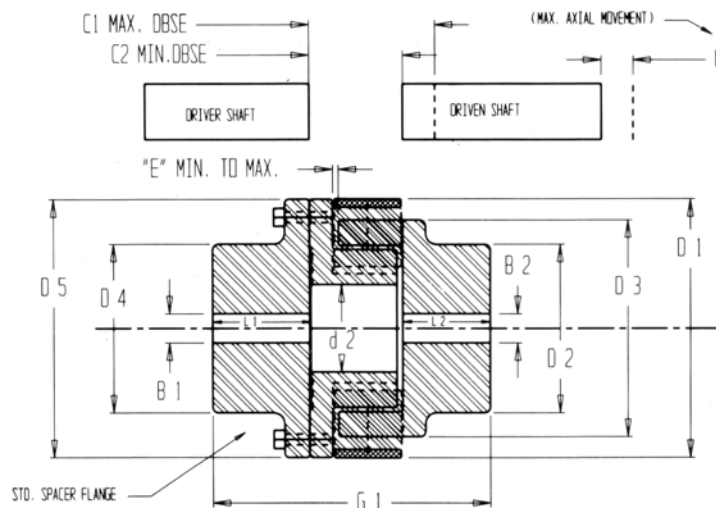
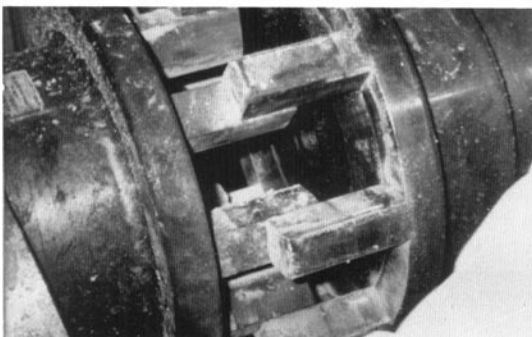
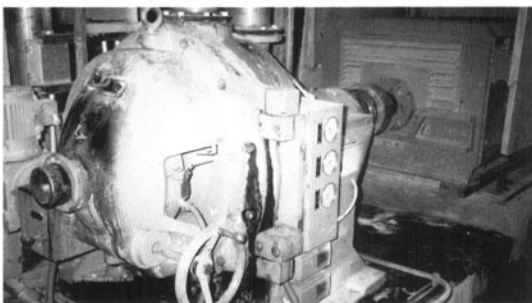
Patent # 5,295,911



- No lubrication or seals to create a hydraulic effect.
- Allows axial free movement (see chart below).
- No metal to metal contact.
- Horizontal shear plane creates no axial thrust loads.
- Coupling insert can be changed in minutes.
- Two part hub for easier installation.
- Same insert as standard **A-SERIES®**
- Also Available in Spacer, Couplings

TABLE 13:

SIZE	HS-1	HS-4	HS-5	HS-6	HS-7	HS-8	HS-9	HS-11
EXTERNAL D1	3.150	7.00	8.890	10.690	12.120	14.450	16.620	20.000
TOTAL LENGTH G1MIN./MAX.	4.122/4.422	7.801/8.701	9.605/10.715	11.450/12.700	13.865/15.365	18.450/20.030	22.594/24.384	23.700/26.200
MAXIMUM BORE B1	1.875	3.125	4.00	5.00	6.50	7.125	9.25	10.50
MAXIMUM BORE B2	1.625	2.9375	4.00	5.00	6.00	7.125	9.25	10.50
PILOT BORE d1	0.438"	.9375	1.00	1.50	1.75	2.50	2.9375	3.75
C1 MAX. DBSE	1.597"	3.691"	4.340"	4.950"	5.805"	6.190"	6.844"	9.488"
C2 MIN. DBSE	1.297"	2.791"	3.230"	3.700"	4.305"	4.610"	5.044"	6.988"
C3 MAX. AXIAL TRAVEL	.300"	.900"	1.110"	1.250"	1.500"	1.580"	1.800"	2.500"
L1	1.625	2.610	3.412	4.312	4.620	7.100	9.100	9.812
L2	1.200	2.400	3.020	3.500	4.570	6.840	8.450	9.750
d2	1.000	2.715	3.000	3.500	5.250	5.400	6.000	7.000
D2	2.370	4.360	5.790	7.000	7.800	9.500	12.500	14.000
D3	2.505	5.870	7.450	9.250	10.490	12.800	15.087	17.900
D4	2.825	4.600	5.800	7.250	8.500	10.000	11.000	14.000
D5	3.940	6.950	8.860	10.000	10.500	12.800	15.087	17.900
E MIN./MAX.	.040/.340	.188/1.088	.188/1.298	.188/1.438	.188/1.688	.188/1.768	.219/2.019	.200/2.700
APPROX. WT (LBS)	5.0	35	70	120	180	300	460	700
HP PER 100 RPM (CONT.)	0.432	4.5	11.2	22.4	45	85	140	460
HP PER 100 RPM (PEAK)	1.040	11.2	28	45	90	170	280	625



HORIZONTAL SHEAR COUPLING
PATENT # 5295911

ATRA-FLEX[®] A-SERIES[®] S.A.E. Fly Wheel Couplings

ATRA-FLEX Couplings are made to mount onto SAE Flywheels common to most gasoline, LP, and diesel engines.

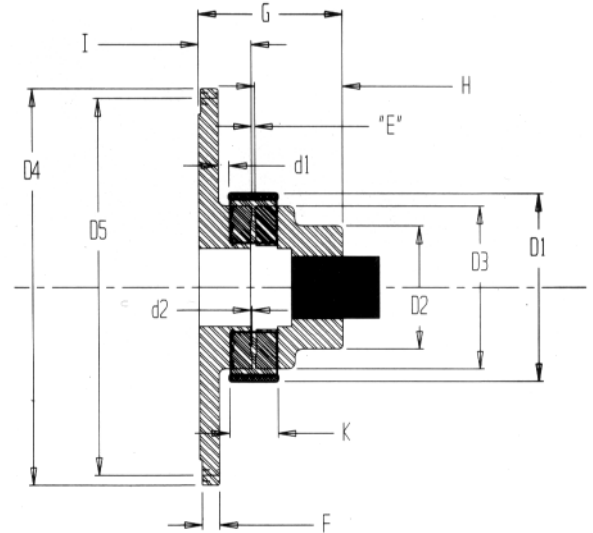
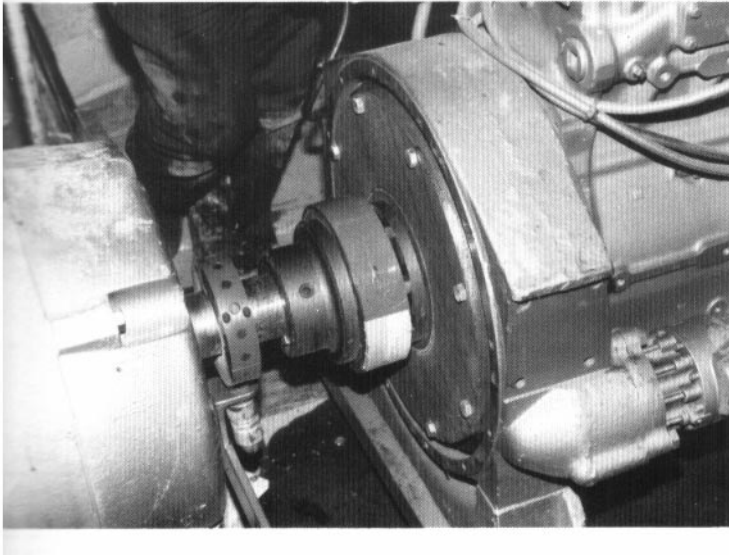


TABLE 14: FLYWHEEL COUPLING (IN INCHES) FOR A-SERIES[®]

SIZE	D1	D2	D3	D4	D5	d1	d2	E	F	G	H	I	MAX. BORE	MAX RPM W/O BALANCING
A-3	5.560	3.520	4.500	12.375	11.625	0.755	0.050	0.062	0.375	4.577	2.960	1.555	2.375	3000
A-4	7.000	4.360	5.870	13.870	13.120	0.700	0.060	0.188	0.375	5.613	3.400	2.025	2.9375	2500
A-5	8.890	5.790	7.450	18.370 / 20.31	17.250 / 19.250	0.775	0.060	0.188	0.625	6.903	4.210	2.776	4.000	2100
A-6	10.680	7.000	9.250	22.500	21.370	0.620	0.060	0.188	0.750	7.964	5.000	2.620	5.000	1800
A-7	12.120	7.800	10.440	26.500	25.250	1.870	0.060	0.188	0.750	10.208	6.000	4.020	6000	1500
A-8	14.450	9.500	12.800	26.500 / 28.87	25.250 / 27.250	1.900	0.060	0.188	0.750	11.418	7.000	4.230	7.125	1300

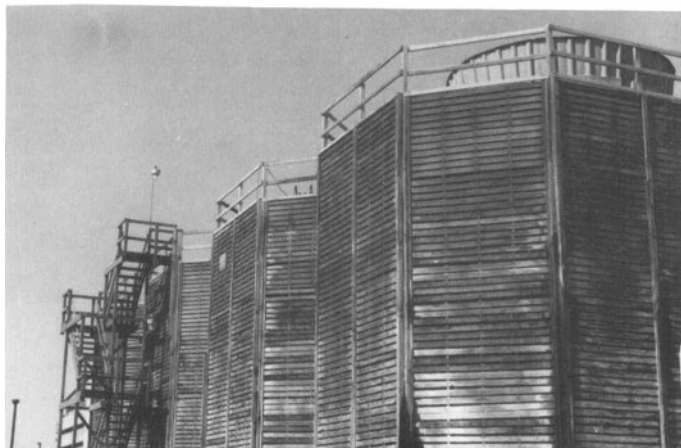
CONSULT FACTORY FOR OTHER SIZES

TABLE 15: HORSEPOWER CAPACITY AT VARIOUS RPM

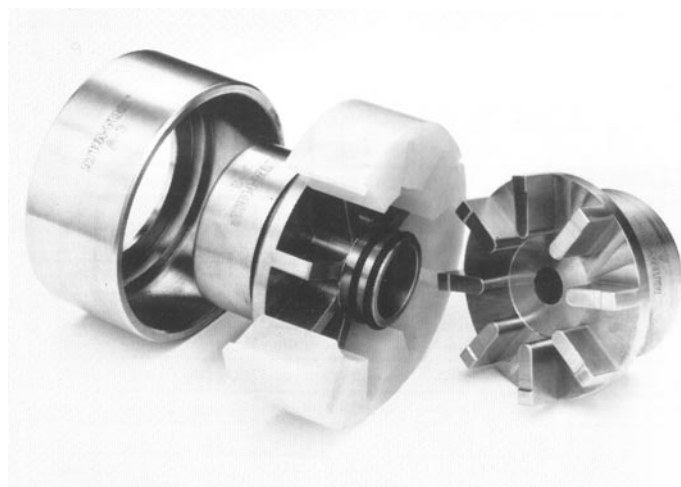
SIZE NORMAL MAX.	TORQUE RATING (Lbs. inches)	WORKING MAX.	RPM										MAX BORE	MAX. RPM
			100	300	600	900	1200	1500	1800	2400	3000	3600		
A-4	8820	Continuous	5.6	16.8	33.6	50.4	67.2	84	100.8	134.4	168	201	2 ²⁵ / ₃₂ "	7,000
		Intermittent	14	42	84	126	168	210	252	336	420	504		
A-5	22050	Continuous	14	42	84	126	168	210	252	336	420		4 ¹ / ₄ "	5,800
		Intermittent	35	105	210	315	420	525	630	840	1050			
A-6	35280	Continuous	28	84	168	252	336	420	504	672			5"	5,000
		Intermittent	56	168	336	504	672	840	1008	1344				
A-7	70560	Continuous	56	168	336	504	672	840	1008	1344			6"	4,400
		Intermittent	112	336	672	1008	1344	1680	2016	2688				
A-8	132300	Continuous	105	315	630	945	1260	1575	1890				7 ¹ / ₈ "	3,700
		Intermittent	210	630	1260	1890	2520	3150	3780					

* FACTORY RECOMMENDS A SERVICE FACTOR OF 3.0 TO 4.0

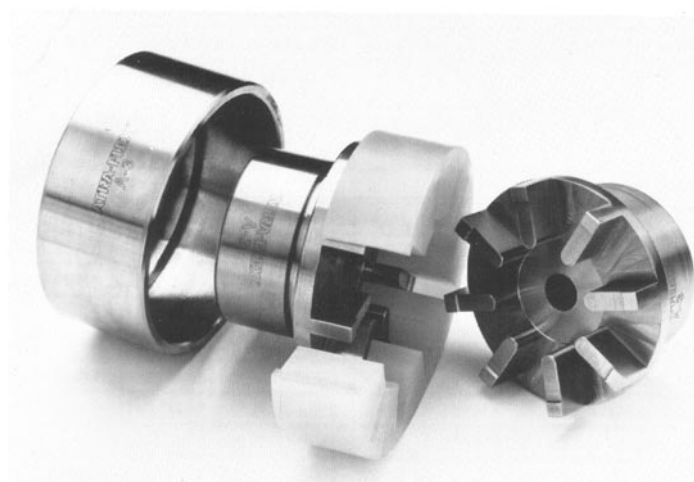
ATRA-FLEX[®] Available in A-SERIES[®] & Millennium[®] FLOATING SHAFT COUPLINGS



Floating Shaft Type ATRA-FLEX is especially designed to connect two shafts that cannot be spaced closely enough to permit the use of a standard coupling. The design eliminates the need for intermediate supporting bearings. The Ring and the Hubs are especially designed for floating shaft, however, you can use ATRA-FLEX Standard Inserts.

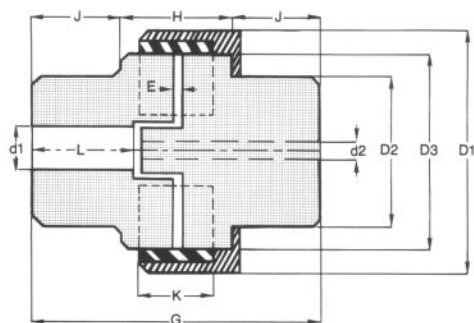


FS-SW
SNAP RING WITH BOSS



FS-SO
SNAP RING WITHOUT BOSS

TABLE 16: DIMENSIONS



SIZE (IN INCHES)	A-2	A-3	A-4	A-5
EXTERNAL D1	4.21	5.46	6.94	8.77
TOTAL LENGTH G	4.95	6.00	6.86	8.26
MAXIMUM BORE d1	1.87	2.12	2.87	4.25
MAXIMUM BORE d2	1.25	1.5	2.12	2.75
PILOT BORE	.66	.75	.93	1.13
L	1.79	2.06	2.34	2.92
D2	3.12	3.31	4.29	5.46
D3	3.35	4.52	5.85	7.37
H	2.06	2.65	3.19	3.90
J	1.44	1.57	1.83	2.18
K	1.24	1.63	1.93	2.30
APPROX. WEIGHT (lbs)	10	17	35	67

Note: Same H.P. ratings as standard ATRA-FLEX. (See table 1)

FS-SO Snap Ring Without Boss
 FS-SW Snap Ring With Boss
 FS-B0 Bolted Ring Without Boss
 FS-BW Bolted Ring With Boss

All sizes Available-Consult Factory

ATRA-FLEX[®] A-SERIES[®] Brakewheel & Disc Couplings

For applications requiring a brakewheel or disc, for braking purposes. One hub of ATRA-FLEX is designed to receive brakewheel or disc. All other parts, are standard ATRA-FLEX (Ring, remaining Hub, Insert)

Also available in Millennium[®]

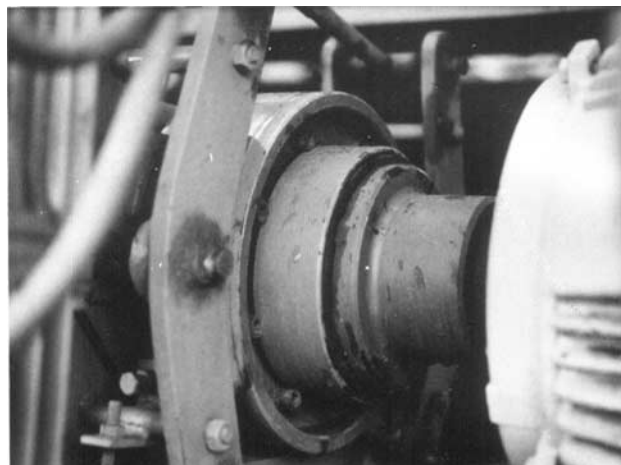


TABLE 17: BRAKE WHEEL DIMENSIONS

BRAKE WHEEL DIA. X THK. (B X F)	SIZE	MAX. RPM WITHOUT BALANCING	MAX. BORE	A	B	D1	D2	D3	D4	D5 (BC)	J	"E"	G	I	K	M	N	O	IDEAL SPACING (DBSE) H	SIZE BOLTS	NO. # BOLTS
10 x 3.750	A-4	3500	2.9375"	1.864	0.620	7.00	4.360	5.870	6.950	6.000	3.400	.188"	6.998	0.011	3.739	1.875	0.125	0.500	2.088"	3/8	8
13 x 5.750	A-5	2600	4.000"	2.104	0.675	8.890	5.790	7.450	8.860	7.000	4.210	.188"	8.668	0.771	4.979	2.875	0.125	0.500	2.408"	3/8	8
19 x 8.750	A-6	2200	5.000"	2.469	0.900	10.680	7.000	9.250	10.490	9.500	5.000	.188"	10.188	1.906	6.844	4.375	0.125	0.500	2.688"	1/2	8
23 x 11.250	A-7	1900	6.000"	2.739	1.020	12.120	7.800	10.440	11.900	10.875	6.000	.188"	12.188	2.886	8.364	5.625	0.125	0.500	3.088"	1/2	8
30 x 14.250	A-8	1600	7.125"	3.119	1.220	14.450	9.500	12.800	13.900	13.000	7.000	.188"	14.188	4.006	10.244	7.125	0.125	0.500	3.348"	1/2	8

TABLE 18: BRAKE DISC DIMENSIONS

BRAKE DISC DIA. X THK. (B X F)	SIZE	MAX. RPM WITHOUT BALANCING	MAX. BORE	A	C	D1	D2	D3	D4	D5 (BC)	J	"E"	G	N	IDEAL SPACING (DBSE) H	SIZE BOLTS	NO. # BOLTS
12 x .250	A-4	3500	2.9375"	1.739	0.620	7.000	4.360	5.870	6.950	6.000	3.400	.188"	6.998	0.125	2.088"	3/8	8
11 x .50																	
16 x .50	A-5	2600	4.000"	2.104	0.675	8.890	5.790	7.450	8.860	8.000	4.210	.188"	8.668	0.125	2.408"	3/8	8
18 x .50	A-6	2200	5.000"	2.469	0.900	10.680	7.000	9.250	10.490	9.500	5.000	.188"	10.188	0.125	2.688"	1/2	8
20 x .50	A-7	1900	6.000"	2.739	1.020	12.120	7.800	10.440	11.900	10.875	6.000	.188"	12.188	0.125	3.088"	1/2	8
24 x .50	A-8	1600	7.125"	3.119	1.220	14.450	9.500	12.800	13.900	13.000	7.000	.188"	14.188	0.125	3.348"	1/2	8
36 x 1.0	A-9	1360	9.250"	3.314	1.195	16.620	11.000	15.080	15.900	15.000	8.000	.219"	16.219	0.125	3.769"	1/2	8

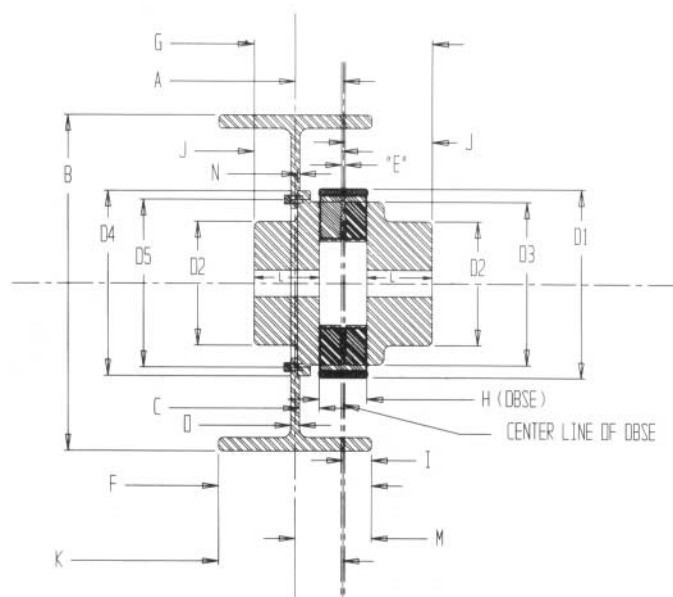


TABLE 17

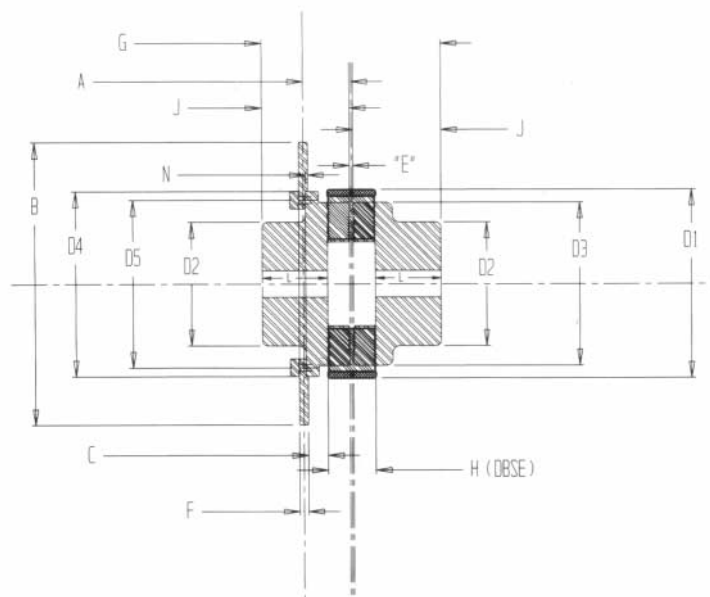
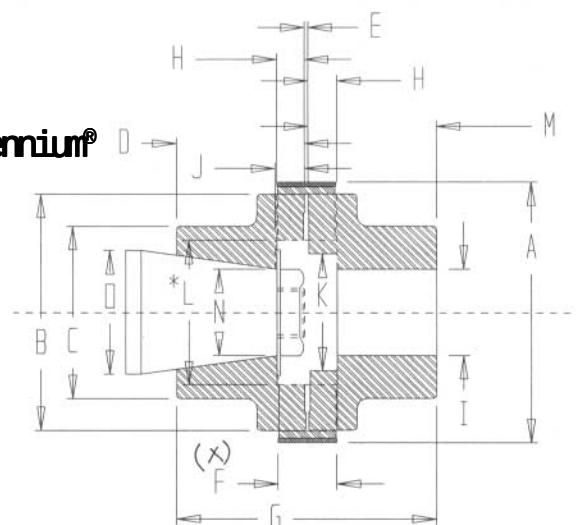


TABLE 18

ATRA-FLEX® A-SERIES® **Couplings for Mill Motors**

Consult factory for availability in the **ATRA-FLEX Millennium®**



MILL MOTOR COUPLING DIMENSIONS

NOTE:

*CROSS SECTION OF NUT AND OR LOCKING WASHER
MUST BE SMALLER THAN THE "L" DIMENSION

TABLE 19: MILL MOTORS SIZE & DIMENSIONS

MILL MOTOR FRAME SIZES	COUPLING SIZE	A	B	C	D	E	F	G TOTAL LENGTH	H	I MAX BORE	J	K	*L	M	N	O	KEYWAY
602, 802, AB&C, AC 1, 2&4	A#4 MM	7.00	5.87	4.36	4.00	0.188	2.088	7.59	0.95	2.94	1.04	2.72	3.125	3.40	1.437	1.75	.500X.250
	A#5 MM	8.90	7.45	5.79	4.00	0.188	2.408	8.40	1.11	4.00	1.11	3.38	4.20	4.21	1.437	1.75	.500X.250
	A#6 MM	10.68	9.25	7.00	4.00	0.188	2.688	9.19	1.25	5.00	1.25	4.75	5.10	5.00	1.437	1.75	.500X.250
603, 604, 803, 804,	A#4 MM	7.00	5.87	4.36	4.60	0.188	2.088	8.19	0.95	2.94	1.10	2.72	3.125	3.40	1.635	2	.500X.250
	A#5 MM	8.90	7.45	5.79	4.60	0.188	2.408	9.00	1.11	4.00	1.11	3.38	4.20	4.21	1.635	2	.500X.250
	A#6 MM	10.68	9.25	7.00	4.60	0.188	2.688	9.79	1.25	5.00	1.25	4.75	5.10	5.00	1.635	2	.500X.250
606, 806, AC 8&12	A#5 MM	8.90	7.45	5.79	5.22	0.188	2.408	9.62	1.11	4.00	1.22	3.38	4.20	4.21	2.083	2.5	.500X.250
	A#6 MM	10.68	9.25	7.00	5.22	0.188	2.688	10.41	1.25	5.00	1.25	4.75	5.10	5.00	2.083	2.5	.500X.250
	A#7 MM	12.12	10.44	7.80	5.22	0.188	3.088	11.41	1.40	6.00	1.40	5.30	6.25	6.00	2.083	2.5	.500X.250
608, 808	A#6 MM	10.68	9.25	7.00	5.85	0.188	2.688	11.04	1.11	5.00	1.41	4.75	5.10	5.00	2.531	3	.750X.250
	A#7 MM	12.12	10.44	7.80	5.85	0.188	3.088	12.04	1.40	6.00	1.41	5.30	6.25	6.00	2.531	3	.750X.250
	A#8 MM	14.45	12.8	9.50	5.85	0.188	3.348	13.04	1.58	7.13	1.58	6.13	7.50	7.00	2.531	3	.750X.250
610, 810, AC 18	A#6 MM	10.68	9.25	7.00	5.98	0.188	2.688	11.17	1.11	5.00	1.54	4.75	5.10	5.00	2.781	3.25	.750X.250
	A#7 MM	12.12	10.44	7.80	5.98	0.188	3.088	12.17	1.40	6.00	1.54	5.30	6.25	6.00	2.781	3.25	.750X.250
	A#8 MM	14.45	12.8	9.50	5.98	0.188	3.348	13.17	1.58	7.13	1.58	6.13	7.50	7.00	2.781	3.25	.750X.250
612, 812, AC 25&30	A#7 MM	12.12	10.44	7.80	6.66	0.188	3.088	12.85	1.40	6.00	1.66	5.30	6.26	6.00	3.104	3.625	.750X.250
	A#8 MM	14.45	12.8	9.50	6.66	0.188	3.348	13.85	1.58	7.13	1.66	6.13	7.50	7.00	3.104	3.625	.750X.250
	A#9 MM	16.62	15.08	11.00	6.66	0.219	3.769	15.01	1.78	9.25	1.78	7.45	9.22	8.13	3.104	3.625	.750X.250
614, 814, AC 40&50	A#7 MM	12.12	10.44	7.80	6.82	0.188	3.088	13.01	1.40	6.00	1.82	5.30	6.25	6.00	3.729	4.25	1.00X.375
	A#8 MM	14.45	12.8	9.50	6.82	0.188	3.348	14.01	1.58	7.13	1.82	6.13	7.50	7.00	3.729	4.25	1.00X.375
616, 816	A#8 MM	14.45	12.8	9.50	7.45	0.188	3.348	14.64	1.58	7.13	1.95	6.13	7.50	7.00	4.052	4.625	1.250X.375
	A#9 MM	16.62	15.08	11.00	7.45	0.219	3.769	15.80	1.78	9.25	1.95	7.45	9.22	8.13	4.052	4.625	1.250X.375
618, 818	A#8 MM	14.45	12.8	9.50	7.52	0.188	3.348	14.71	1.58	7.13	1.58	6.13	7.50	7.00	4.375	5	1.250X.500
	A#9 MM	16.62	15.08	11.00	7.52	0.219	3.769	15.87	1.78	9.25	1.78	7.45	9.22	8.13	4.375	5	1.250X.500
	A#11 MM	20.00	17.9	13.00	7.52	0.10	5.1	17.62	2.50	10.50	2.50	8.00	9.63	10.00	4.375	5	1.250X.500
620	A#9 MM	16.62	15.08	11.00	8.70	0.219	3.769	17.05	1.78	9.25	1.95	7.45	9.22	8.13	5.172	5.875	1.500X.700
	A#11 MM	20.00	17.9	13.00	8.70	0.10	5.1	18.80	2.50	10.50	2.50	8.00	9.63	10.00	5.172	5.875	1.500X.700
622	A#9 MM	16.62	15.08	11.00	9.88	0.219	3.769	18.23	1.78	9.25	2.63	7.45	9.22	8.13	5.495	6.25	1.500X.700
	A#11 MM	20.00	17.9	13.00	9.88	0.1	5.1	19.98	2.50	10.50	2.63	8.00	9.63	10.00	5.495	6.25	1.500X.700
624	A#9 MM	16.62	15.08	11.00	11.95	0.219	3.769	20.30	1.78	9.25	2.70	7.45	9.22	8.13	6.037	7	1.500X.700
	A#11 MM	20.00	17.9	13.00	11.95	0.1	5.1	22.05	2.50	10.50	2.70	8.00	9.63	10.00	6.037	7	1.500X.700

NOTE: *CROSS SECTION OF NUT AND OR LOCKING WASHER MUST BE SMALLER THAN THE "L" DIMENSION

ATRA-FLEX[®]
 HIGH TORQUE (ORANGE) INSERTS

TABLE 20: A-SERIES[®] HIGH TORQUE (ORANGE) INSERT RATINGS

SIZE	TORQUE RATING (LBS. INCHES)	WORKING (SERVICE FACTOR OF ONE)	R P M											MAX. BORE	MAX. RPM W/O BALANCING
			100	300	600	900	1200	1500	1750	2400	3000	3600			
A-00	200 334	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	0.32 0.53	0.95 1.59	1.90 3.18	2.86 4.77	3.81 6.36	4.76 7.95	5.55 9.27	7.62 12.72	9.52 15.90	11.42 19.08	0.875	14,000	
A-0	503 838	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	0.80 1.33	2.39 3.99	4.79 7.98	7.18 11.97	9.58 16	11.97 20	14 23	19 32	24 40	29 48	1.250	9600	
A-1	646 1556	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	1.02 2.47	3.07 7.41	6.15 14.81	9 22	12 30	15 37	18 43	25 59	31 74	37 89	1.625	7300	
A-2	2518 4190	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	4.00 6.65	12 20	24 40	36 60	48 80	60 100	70 116	96 160	120 199	144 239	1.938	5400	
A-3	5035 8379	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	8 13	24 40	48 80	72 120	96 160	120 199	140 233	192 319	240 399	288 479	2.375	4200	
A-4	10070 16758	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	16 27	48 80	96 160	144 239	192 319	240 399	280 465	383 638	479 798	575 957	2.938	3600	
A-5	25137 41895	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	40 66	120 199	239 399	359 598	479 798	598 997	698 1,163	957 1,595	1,197 1,994	1,436 2,393	4.000	2600	
A-6	40280 67032	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	64 106	192 319	383 638	575 957	767 1,276	959 1,595	1,118 1,861	1,534 2,553	1,917 3,191	2,301 3,829	5.000	2200	
A-7	80465 134064	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	128 213	383 638	766 1,276	1,149 1,914	1,532 2,553	1,915 3,191	2,234 3,723	3,064 5,105	3,830 6,381	4,596 7,658	6.000	1900	
A-8	150860 251370	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	239 399	718 1,197	1,436 2,393	2,154 3,590	2,872 4,786	3,590 5,983	4,189 6,980	5,745 9,572	7,181 11,965	8,617 14,358	7.125	1600	
A-9	228570 380950	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	363 604	1,088 1,813	2,176 3,627	3,264 5,440	4,352 7,253	5,440 9,067	6,347 10,578	8,704 14,507	10,880 18,133	13,056 21,760	9.250	1360	
A-10	402192 670331	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	638 1,064	1,914 3,191	3,829 6,382	5,743 9,572	7,658 12,763	9,572 15,954	11,168 18,613	15,316 25,526	19,144 31,908	22,973 38,289	10.000	1100	
A-11	570000 950000	CONTINUOUS (LOAD) INTERMITTENT (PEAK LOAD)	904 1,507	2,713 4,522	5,426 9,044	8,140 13,566	10,853 18,088	13,566 22,610	15,827 26,378	21,706 36,176	27,132 45,220	32,559 54,264	10.500	1150	

TABLE 21: Millennium[®] HIGH TORQUE (ORANGE) INSERT RATINGS

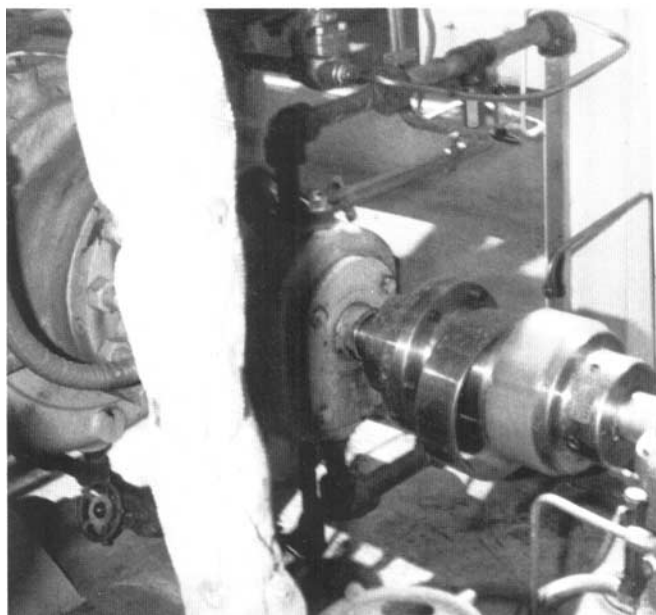
SIZE	TORQUE RATING	WORKING (SERVICE FACTOR OF ONE)	R P M											MAX . BORE	MAX. RPM W/O BALANCING
	(LBS. INCHES)		100	300	600	900	1200	1500	1750	2400	3000	3600			
M-00	342	CONTINUOUS (LOAD)	0.54	1.63	3.26	4.88	6.51	8.14	9.50	13.02	16.28	19.54	1.0	13483	
	570	INTERMITTENT (PEAK LOAD)	0.90	2.71	5.43	8.14	10.85	13.57	15.83	21.71	27.13	32.56			
M-0	1140	CONTINUOUS (LOAD)	1.81	5.43	10.85	16.28	21.71	27.13	31.65	43.41	54.26	65.12	1.375	8100	
	1900	INTERMITTENT (PEAK LOAD)	3.01	9.04	18.09	27.13	36.18	45.22	52.76	72.35	90.44	108.53			
M-1	2394	CONTINUOUS (LOAD)	3.80	11.40	22.79	34.19	45.58	56.98	66	91	114	137	1.750	7280	
	3990	INTERMITTENT (PEAK LOAD)	6.33	18.99	37.98	56.98	76	95	111	152	190	228			
M-1H	4560	CONTINUOUS (LOAD)	7.24	21.71	43.41	65.12	86.82	108.53	126.62	173.65	217.06	260.47	1.9375	6500	
	7600	INTERMITTENT (PEAK LOAD)	12.06	36.18	72.35	108.53	144.70	180.88	211.03	289.41	361.76	434.11			
M-2	5700	CONTINUOUS (LOAD)	9.04	27.13	54.26	81	109	136	158	217	271	326	2.250	5800	
	9500	INTERMITTENT (PEAK LOAD)	15.07	45.22	90.44	136	181	226	264	362	452	543			
M-3	10944	CONTINUOUS (LOAD)	17.36	52	104	156	208	260	304	417	521	625	2.500	4700	
	18240	INTERMITTENT (PEAK LOAD)	28.94	87	174	260	347	434	506	695	868	1,042			
M-4	23940	CONTINUOUS (LOAD)	38	114	228	342	456	570	665	912	1,140	1,367	3.375	3600	
	39900	INTERMITTENT (PEAK LOAD)	63	190	380	570	760	950	1,108	1,519	1,899	2,279			
M-5	54720	CONTINUOUS (LOAD)	87	260	521	781	1,042	1,302	1,519	2,084	2,605	3,126	4.500	2800	
	91200	INTERMITTENT (PEAK LOAD)	145	434	868	1,302	1,736	2,171	2,532	3,473	4,341	5,209			
M-6	91200	CONTINUOUS (LOAD)	145	434	868	1,302	1,736	2,171	2,532	3,473	4,341	5,209	5.500	2300	
	152000	INTERMITTENT (PEAK LOAD)	241	724	1,447	2,171	2,894	3,618	4,221	5,788	7,235	8,682			
M-7	210900	CONTINUOUS (LOAD)	335	1,004	2,008	3,012	4,016	5,019	5,856	8,031	10,039		6.00	2000	
	351500	INTERMITTENT (PEAK LOAD)	558	1,673	3,346	5,019	6,693	8,366	9,760	13,385	16,731				
M-8	354540	CONTINUOUS (LOAD)	563	1,688	3,375	5,063	6,750	8,438	9,844	13,501			7.250	1700	
	590900	INTERMITTENT (PEAK LOAD)	938	2,813	5,625	8,438	11,251	14,063	16,407	22,502					
M-9	518700	CONTINUOUS (LOAD)	823	2,469	4,938	7,407	9,876	12,345	14,403				9.00	1450	
	864500	INTERMITTENT (PEAK LOAD)	1,372	4,115	8,230	12,345	16,460	20,575	24,004						
M-10	798000	CONTINUOUS (LOAD)	1,266	3,798	7,597	11,395	15,194	18,992	22,158				10.0	1300	
	1330000	INTERMITTENT (PEAK LOAD)	2,110	6,331	12,662	18,992	25,323	31,654	36,930						
M-11	1303400	CONTINUOUS (LOAD)	2,068	6,204	12,408	18,613	24,817	31,021	36,191				11.00	1166	
	2185000	INTERMITTENT (PEAK LOAD)	3,467	10,401	20,801	31,202	41,603	52,003	60,670						
M-12	1824000	CONTINUOUS (LOAD)	2,894	8,682	17,365	26,047	34,729	43,411					13.250	960	
	3040000	INTERMITTENT (PEAK LOAD)	4,823	14,470	28,941	43,411	57,882	72,352							
M-13	3610000	CONTINUOUS (LOAD)	5,728	17,184	34,367	51,551	68,735						16.000	700	
	6080000	INTERMITTENT (PEAK LOAD)	9,647	28,941	57,882	86,823	115,764								

NOTE: The orange insert is not recommended for high speed applications. (Consult factory for limitations)

ATRA-FLEX® COUPLINGS

For API Standard 610 7th Edition

Available in Both A-SERIES® & Millennium®

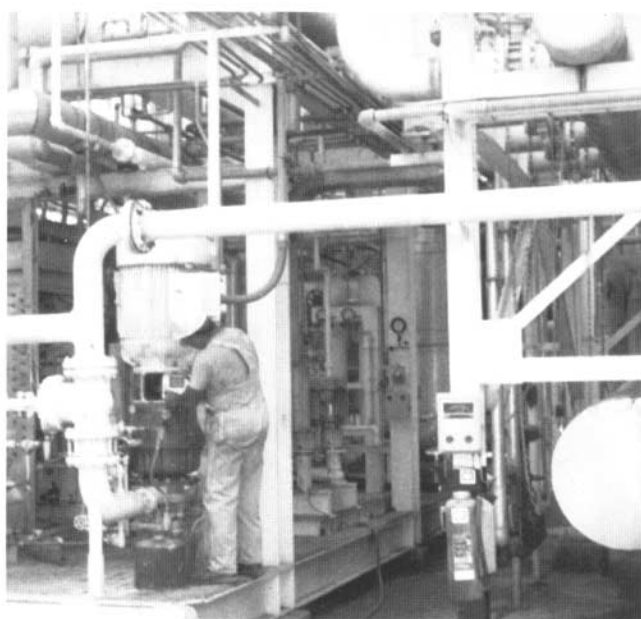
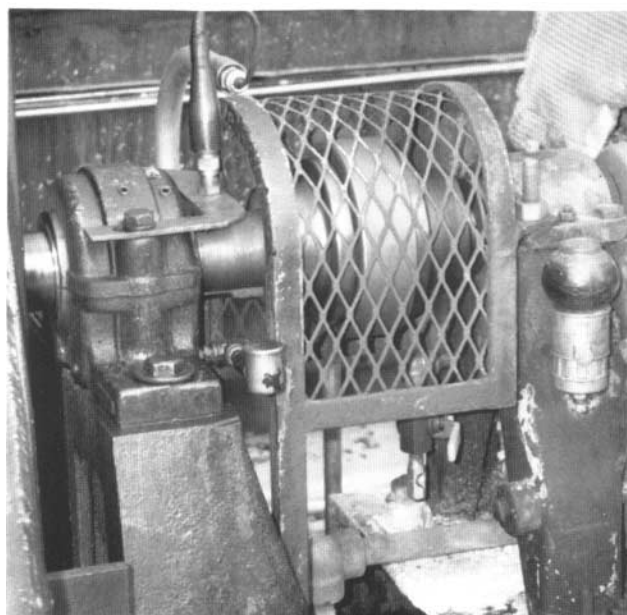


All the advantages of standard ATRA-FLEX® Couplings plus:

- Hubs & Flanges Balanced to AGMA Class 10 (ISO G2.5).
- Hubs & Flanges have Puller Holes.
- Mounting & Puller Holes are Fine Threads.
- Couplings have a Total Indicated Run Out of .0005 to a Maximum of .003.

ATRA-FLEX® Design Retains the Spacer Body if a Flexible Element is Ruptured and Throws No Material.

See Tables on page 5 & 11 for Millennium® & A-SERIES® Spacer Coupling Dimensions.



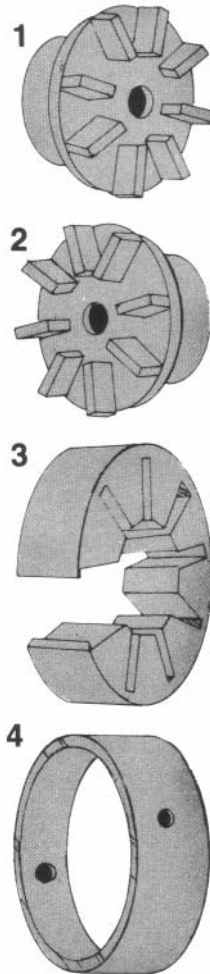
ATRA-FLEX®

means savings in manpower
and downtime, easy installation, economy and
long, trouble-free service

ATRA-FLEX® offers
all these advantages

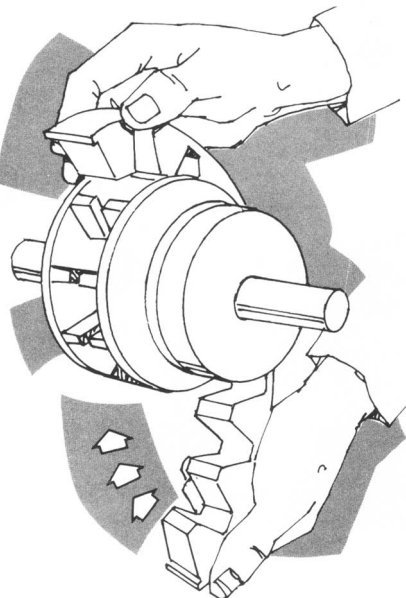
Now there's a new solution to one of the most persistent and troublesome problems facing maintenance personnel - periodic coupling failure and the downtime and expense that go with it. If a new insert is needed, a low-cost replacement can be installed in minutes without moving either the prime mover or the driven equipment.

There are only four parts in ATRA-FLEX couplings. The two identical hubs (number 1 and 2, right) are made of steel, each with four, six or eight teeth, depending on load and size. The split insert (number 3), which is made of specially compounded polyurethane, fits between the hubs. The outer steel holding ring (number 4) has no nuts or bolts!

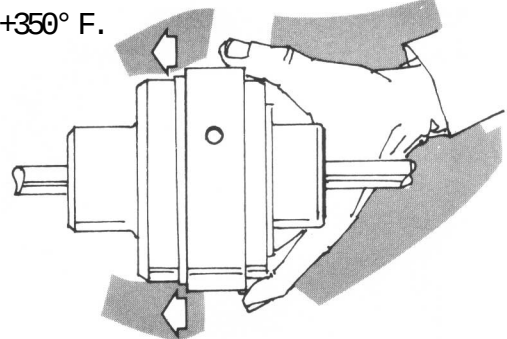


- Changeout of coupling insert is faster than any other.
- Custom compounded polyurethane inserts provide elasticity and resistance to high torque, shear and shock loads
- Unlike others, a single ATRA-FLEX coupling can be purchased to fit two different shaft sizes.
- Elastic insert is highly resistant to humidity, oils, corrosion and chemicals; retains performance characteristics at temperatures from -60°F to +200°F.
- No lubrication or service is required.
- ATRA-FLEX couplings have run 70,000 hours and more with no signs of wear.
- ATRA-FLEX couplings may be installed horizontally or vertically; can rotate in either direction.
- No bolts or sharp edges provide safer operation.
- Operation is completely silent at all speeds and loads.
- No metal-to-metal contact between coupling parts.
- Initial cost is low, and maintenance and downtime are minimal.
- High temperature insert (red) available to +350° F.

Assembly and disassembly



After hubs (1) and (2) and holding ring (4) are installed on shafts, the teeth are then aligned parallel to each other, but not touching. Once installed the hubs never need to be moved again. The elastic insert (3) can then be installed in the slots formed by the parallel teeth. When the insert is in position, slide holding ring (4) onto the polyurethane insert starting, centrifugal force will expand the elastic insert to fix it tightly to the inside of the steel ring.



To disassemble, remove the ring. The insert can then be quickly and easily removed and replaced. No special tools, screws, bolts or other fasteners needed.

Selection Guide

A-SERIES® & Millennium®

Refer to horsepower capacity at various RPM on page 4 for Millennium® (100 RPM column), horsepower capacity at various RPM on page 10 for A-SERIES® (100 RPM column), and page 18 for high torque low RPM applications (100 RPM column).

COUPLING SELECTION FORMULA: (constant multiplier) $100 \times K \times \frac{N}{n} = \text{Adjusted Horsepower}$

METHOD :

Data needed to correctly select coupling size

- (1) H.P. of driver (N)
- (2) R.P.M. of driver (n)
- (3) Service coefficient (k)

(A) Use figures obtained from graph tables 18, 19 and 20 for determining "K"

$$K = F1 \times F2 \times F3$$

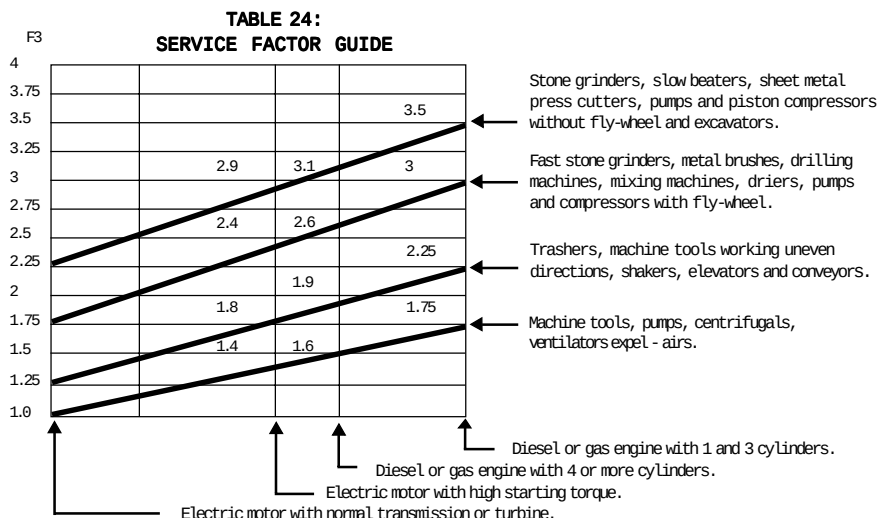
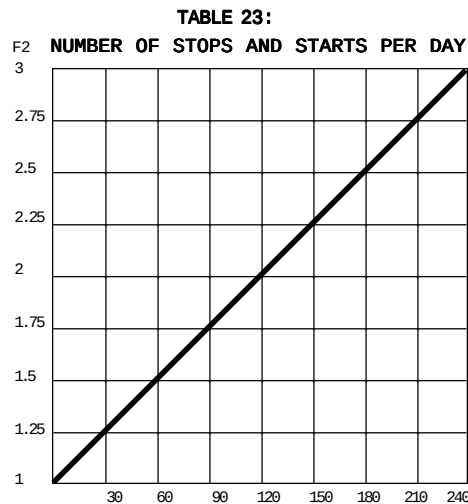
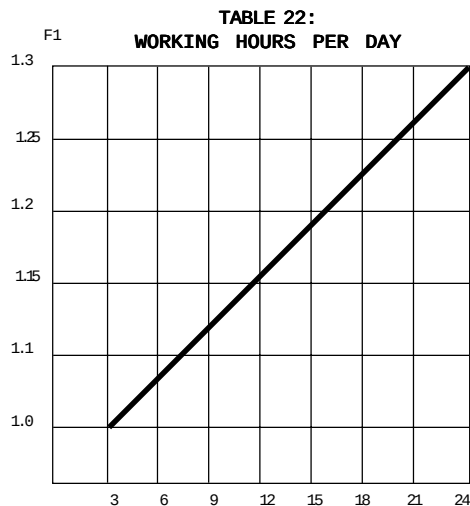
- (4) Shaft and keyway size of driver and driven equipment.

EXAMPLE :

- Electric Motor - 50 H.P.
- RPM - 1750
- Driven equipment - centrifugal pump.
- Working 24 hours per day
- Shaft - 1 7/8 x 2 1/4

$$K = F1 \times F2 \times F3 \text{ or } 1.3 \times 1.0 \times 1.0 = (1.3)$$

$100 \times 1.3 \times \frac{50}{1750} = 3.71 \text{ H.P.} = \text{Adjusted Horsepower}$ - go to TABLE 2 for Millennium® & TABLE 8 for A-SERIES®, * always use RPM (100) column and follow down to Continuous Horsepower equal to or greater than Adjusted Horsepower (3.71). Select size A-3 or M-2.



Technical Information

Bushings for A-SERIES® & Millennium®

TABLE 25: STANDARD KEYWAYS

BORE SIZE	KEYWAY	BORE SIZE	KEYWAY	BORE SIZE	KEYWAY	BORE SIZE	KEYWAY
$\frac{1}{2}$ to $\frac{9}{16}$	$\frac{1}{8} \times \frac{1}{16}$	$\frac{1}{16}$ to $1\frac{3}{4}$	$\frac{3}{8} \times \frac{3}{16}$	$\frac{3}{16}$ to $3\frac{3}{4}$	$\frac{7}{8} \times \frac{7}{16}$	$\frac{6}{16}$ to $7\frac{1}{2}$	$1\frac{3}{4} \times \frac{7}{8}$
$\frac{5}{8}$ to $\frac{7}{8}$	$\frac{3}{16} \times \frac{3}{32}$	$1\frac{13}{16}$ to $2\frac{1}{4}$	$\frac{1}{2} \times \frac{1}{4}$	$3\frac{13}{16}$ to $4\frac{1}{2}$	$1 \times \frac{1}{2}$	$7\frac{9}{16}$ to 9	2 X 1
$\frac{15}{16}$ to $1\frac{1}{4}$	$\frac{1}{4} \times \frac{1}{8}$	$2\frac{5}{16}$ to $2\frac{3}{4}$	$\frac{5}{8} \times \frac{5}{16}$	$4\frac{9}{16}$ to $5\frac{1}{2}$	$1\frac{1}{4} \times \frac{5}{8}$	$9\frac{1}{16}$ to 11	$2\frac{1}{2} \times 1\frac{1}{4}$
$1\frac{5}{16}$ to $1\frac{3}{8}$	$\frac{5}{16} \times \frac{5}{32}$	$2\frac{13}{16}$ to $3\frac{1}{4}$	$\frac{3}{4} \times \frac{3}{8}$	$5\frac{9}{16}$ to $6\frac{1}{2}$	$1\frac{1}{2} \times \frac{3}{4}$		

**TABLE 26:
TOLERANCES FOR BORES**

Qplg. Size	Type of Bore	Bore Range	Tolerances
ØØ thru 6	AGMA Class 2 Clearance Fit	Up to 4"	+ .002 - .000
7 thru 13	Custom or Int. Fit	3" and over	+ .0000 - .002

TABLE 27: A-SERIES® TOLERANCES - RADIAL, AXIAL, ANGULAR

SIZE	A-ØØ	A-0	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11
DISTANCE BETWEEN HUBS	.047	.062	.062	.062	.062	.188	.188	.188	.188	.188	.219	.250	.100
RADIAL TOLERANCE	.02	.02	.039	.039	.039	.068	.068	.068	.068	.068	.078	.078	.078
AXIAL TOLERANCE	+ .039	+ .039	+ .058	+ .058	+ .078	+ .078	+ .117	+ .117	+ .117	+ .156	+ .156	+ .156	+ .156
ANGULAR TOLERANCE	2°	2°	2°	2°	2°	1.3°	1.3°	1.3°	1°	1°	1°	1°	1°

TABLE 28: Millennium® TOLERANCES - RADIAL, AXIAL, ANGULAR

SIZE	M-ØØ	M-0	M-1	M-2	M-3	M-4	M-5	M-6	M-7	M-8	M-9	M-10	M-11	M-12
DISTANCE BETWEEN HUBS "E"	.060"	.075"	.075"	.075"	.075"	.200"	.200"	.200"	.200"	.200"	.200"	.200"	.200"	.250"
RADIAL TOLERANCE (TIR)	.020"	.040"	.040"	.040"	.040"	.060"	.060"	.060"	.060"	.060"	0.60"	.080"	.080"	.105"
AXIAL TOLERANCE:														
MINUS	.010"	.010"	.020"	.020"	.020"	.040"	.040"	.040"	.040"	.040"	.060"	.100"	.100"	.100"
PLUS	.030"	.040"	.040"	.040"	.040"	.075"	.100"	.100"	.100"	.100"	.100"	.150"	.150"	.200"
ANGULAR TOLERANCE (DEGREE)	2	2	2	2	2	1	1	1	1	1	1	1	1	1

TABLE 29: BUSHINGS FOR A-SERIES®

ATRA-FLEX SIZE	BROWNING SIZE	BROWNING BUSHING RANGE	Q D SIZE	QD BUSHING RANGE **	(EXT.) TAPER LOCK SIZE	TAPER LOCK RANGE	(INT.) TAPER LOCK SIZE	TAPER LOCK RANGE
A-0	G	$\frac{3}{8}$ to $\frac{7}{8}$	JA	$\frac{1}{2}$ to $1\frac{1}{16}$	1008	$\frac{1}{2}$ to 1	N/A	N/A
A-1	H	$\frac{3}{8}$ to $1\frac{1}{16}$	Q T	$\frac{3}{8}$ to $1\frac{1}{2}$	1108	$\frac{1}{2}$ to $1\frac{1}{8}$	1108	$\frac{1}{2}$ to $1\frac{1}{8}$
A-2	P1	$\frac{1}{2}$ to $1\frac{3}{4}$	S D	$\frac{1}{2}$ to $1\frac{15}{16}$	1615	$\frac{1}{2}$ to $1\frac{5}{8}$	1210	$\frac{1}{2}$ to $1\frac{1}{4}$
A-3	P1	$\frac{1}{2}$ to $1\frac{3}{4}$	SK	$\frac{1}{2}$ to $2\frac{1}{2}$	2012	$\frac{1}{2}$ to $2\frac{1}{8}$	1610	$\frac{1}{2}$ to $1\frac{5}{8}$
A-4	Q1	$\frac{3}{4}$ to $2\frac{11}{16}$	SF	$\frac{1}{2}$ to $2\frac{13}{16}$	2517	$\frac{1}{2}$ to $2\frac{1}{2}$	2012	$\frac{1}{2}$ to $2\frac{1}{8}$
A-5	R1	$1\frac{1}{8}$ to $3\frac{3}{4}$	F	1 to $3\frac{15}{16}$	3020	$\frac{15}{16}$ to 3	2517	$\frac{1}{2}$ to $2\frac{1}{2}$
A-6	S1	$1\frac{11}{16}$ to $4\frac{1}{4}$	J	2 to $4\frac{1}{2}$	3535	$1\frac{13}{16}$ to $3\frac{1}{2}$	3535	$1\frac{3}{16}$ to $3\frac{1}{2}$
A-7	S1	$1\frac{11}{16}$ to $4\frac{1}{4}$	M	2 to $5\frac{1}{2}$	4545	$1\frac{15}{16}$ to $4\frac{1}{2}$	4040	$1\frac{7}{16}$ to $4\frac{7}{16}$
A-8	U1	$3\frac{1}{4}$ to $5\frac{1}{2}$	N	$2\frac{7}{16}$ to 6	5050	$2\frac{7}{16}$ to 5	4545	$\frac{15}{16}$ to $4\frac{1}{2}$
A-9	W 1	$3\frac{3}{4}$ to $7\frac{7}{16}$	P	$3\frac{7}{16}$ to 7	6050	$4\frac{7}{16}$ to 6	5050	$2\frac{7}{16}$ to 5
A-11	W 1	$3\frac{3}{4}$ to $7\frac{7}{16}$	W	4 to 8	7060	$4\frac{15}{16}$ to 7	6050	$4\frac{7}{16}$ to 6

A-6 thru A-11 consult factory for availability of bushings not listed.

Hubs can be machined for all types of different locking devices, consult factory.

*Dimensions and overall length of couplings will change with bushed hubs. If dimensions are critical please refer to factory.

TABLE 30: BUSHINGS FOR Millennium®

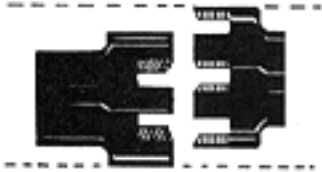
SIZE ATRA-FLEX	SIZE BROWNING	BROWNING BORE RANGE	SIZE Q D	Q D BORE RANGE	EXTERNAL TAPER LOCK SIZE	TAPER LOCK BORE RANGE	INTERNAL TAPER LOCK SIZE	TAPER LOCK BORE RANGE
M-0	G 2	$\frac{3}{8}$ to 1.0"	JA	$\frac{1}{2}$ to $1\frac{1}{4}$ "	1008	$\frac{1}{2}$ to $\frac{9}{16}$ "	N/A	N/A
M-1	H	$\frac{3}{8}$ to $1\frac{1}{2}$ "	SH	$\frac{1}{2}$ to $1\frac{11}{16}$ "	1108	$\frac{1}{2}$ to $1\frac{1}{8}$ "	1108	$\frac{1}{2}$ to $1\frac{1}{8}$ "
M-1H	P1	$\frac{1}{2}$ to $1\frac{3}{4}$ "	SH	$\frac{1}{2}$ to $1\frac{11}{16}$ "	1215	$\frac{1}{2}$ to $1\frac{1}{4}$ "	1215	$\frac{1}{2}$ to $1\frac{1}{4}$ "
M-2	P1	$\frac{1}{2}$ to $1\frac{3}{4}$ "	SDS	$\frac{1}{2}$ to 2.0"	1815	$\frac{1}{2}$ to $1\frac{11}{16}$ "	1310	$\frac{1}{2}$ to $1\frac{3}{8}$ "
M-3	B	$\frac{1}{2}$ to $2\frac{7}{16}$ "	SK	$\frac{1}{2}$ to $2\frac{1}{2}$ "	2012	$\frac{1}{2}$ to $2\frac{1}{8}$ "	1610	$\frac{1}{2}$ to $1\frac{5}{8}$ "
M-4	Q1	$\frac{3}{4}$ to $2\frac{11}{16}$ "	SF	$\frac{1}{2}$ to $2\frac{15}{16}$ "	2525	$\frac{1}{2}$ to $2\frac{1}{2}$ "	2012	$\frac{1}{2}$ to $2\frac{1}{8}$ "
M-5	S1	$1\frac{11}{16}$ to $4\frac{1}{4}$ "	F	1.0 to 4.0"	3020	$\frac{15}{16}$ to 3.0"	3020	$\frac{15}{16}$ to 3
M-6	S1	$1\frac{11}{16}$ to $4\frac{1}{4}$ "	J	2 to $4\frac{1}{2}$	4040	$1\frac{7}{16}$ to $4\frac{7}{16}$	3535	$1\frac{3}{16}$ to $3\frac{1}{2}$
M-7	U1	$3\frac{1}{4}$ to $5\frac{1}{2}$	M	2 to $5\frac{1}{2}$	6050	$2\frac{7}{16}$ to 5	4040	$1\frac{7}{16}$ to $4\frac{7}{16}$
M-8	U1	$3\frac{1}{4}$ to $5\frac{1}{2}$	N	$2\frac{7}{16}$ to 6	6050	$4\frac{7}{16}$ to 6	4545	$1\frac{15}{16}$ to $4\frac{1}{2}$
M-9	W 1	$3\frac{3}{4}$ to $7\frac{7}{16}$	P	$3\frac{7}{16}$ to 7	7060	$4\frac{15}{16}$ to 7	5050	$2\frac{7}{16}$ to 5
M-10	W 1	$3\frac{3}{4}$ to $7\frac{7}{16}$	W	4 to 8	8065	$5\frac{7}{16}$ to 8	6050	$4\frac{7}{16}$ to 6
M-11	W 2	$3\frac{3}{4}$ to $7\frac{7}{16}$	W	4 to 8	8065	$5\frac{7}{16}$ to 8	6050	$4\frac{7}{16}$ to 6
M-12	Y0	6 to 10	S	$5\frac{1}{2}$ to 10	10085	7 to 10	8065	$5\frac{7}{16}$ to 8

M-6 THRU M-12 - Refer to factory for availability of bushings not listed. Hubs can be machined for all types of locking devices, refer to factory.

*Dimensions and overall length of couplings will change with bushed hubs.

If dimensions are critical please refer to factory.

SOLVING MISALIGNMENT, END FLOAT, AND VIBRATION PROBLEMS WITH ATRA-FLEX.®



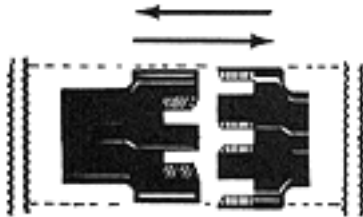
(1) RADIAL/PARALLEL

THE FREE MOVEMENT OF THE ATRA-FLEX INSERT ACCOMMODATES PARALLEL MISALIGNMENT, AND STILL MAINTAIN FULL SHOCK AND VIBRATION DAMPING.



(2) ANGULAR

ATRA-FLEX INSERT ALLOWS THE ROCKING AND SLIDING ACTION OF THE HUBS UNDER AN ANGULAR MISALIGNMENT, WITHOUT ANY LOSS OF POWER THROUGH THE RESILIENT ADIPRENE INSERT.



(3) AXIAL

ATRA-FLEX INSERT ALLOWS UNRESTRAINED END FLOAT FOR BOTH DRIVING AND DRIVEN MEMBERS.

NOTE: ALIGNMENT !!

A FLEXIBLE COUPLING IS NOT DESIGNED TO COMPENSATE FOR EXCESSIVE MISALIGNMENT. ITS PURPOSE IS TO PERMIT SLIGHT MOVEMENT OF PUMP OR DRIVER SHAFTS OR ANY DRIVEN EQUIPMENT WHILE TRANSMITTING POWER. EXCESS MISALIGNMENT CAN CAUSE SHORT COUPLING LIFE DUE TO SLIDING AND WORKING ACTION OF COUPLING CONNECTORS. MODERN MACHINERY OPERATES AT EVER INCREASING SPEEDS; EVEN MINOR ALIGNMENT ERRORS LEAD TO HIGH VIBRATION ON BEARING LOADS RESULTING IN MACHINERY DAMAGE AND PRODUCTION DOWNTIME.

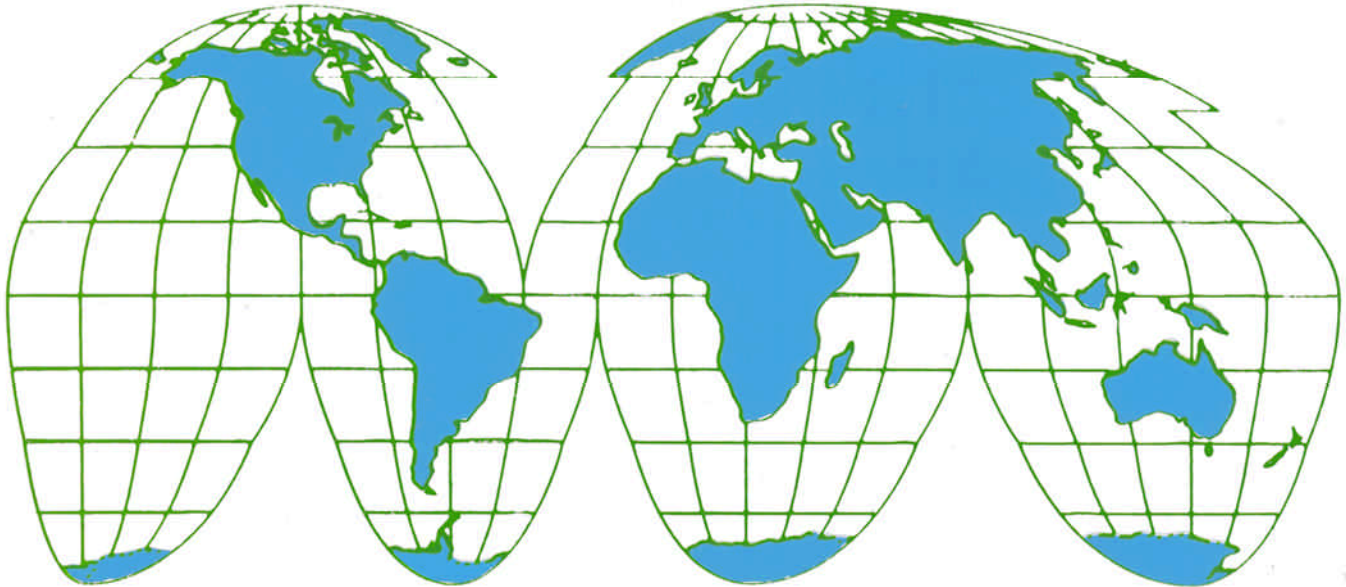
ATRA-FLEX® SOLVES:

MISALIGNMENT PROBLEMS BY A "FAIL SAFE" METHOD. IF YOU SHOULD EXCEED OUR ALIGNMENT TOLERANCES (WHICH IS THE MAXIMUM YOUR EQUIPMENT SHOULD BE SUBJECTED TO WITHOUT SUBSTANTIAL LOSS OF EQUIPMENT LIFE) THE RING WILL WALK OFF THE INSERT TO PHYSICALLY INDICATE A GROSS MISALIGNMENT. CORRECT THE MISALIGNMENT AND THE RING WILL STAY IN PLACE. AT THAT TIME, YOU HAVE GUARANTEED YOURSELF MAXIMUM LIFE OUT OF YOUR ROTATIONAL EQUIPMENT WHICH EQUALS = \$\$\$\$ DOLLARS \$\$\$\$ SAVED!!!

* Refer to page 22 for Tolerances.

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