RENOLD

AJAX

Compresi-Flex Couplings

- Fail-Safe Design
- No Lubrication Required
- Absorbs Torsional Impacts
- Zero Backlash
- Damps Torsional Vibration
- Variable Stiffness

RENOLD AJAX

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BRAKE PRODUCTS INCORPORATED™

Supplier of Industrial Brake Parts Since 1985

TABLE OF CONTENTS

Ajax Compresi-Flex Couplings

Ajax Compresi-Flex Couplings provide misalignment capability for shaft connections by transmitting torque through an elastomer, which is operating in compression. The flexibility of the elastomer not only allows for radial, axial and angular misalignment, but also provides a torsionally soft connection with excellent damping capabilities.

Absorbs Torsional Impacts and Damps Torsional Vibration

The torsional flexibility of the Ajax Compresi-Flex Coupling reduces driveline shock loads and vibrations, helping the connected equipment to operate with lower dynamic loads and provide a longer operating life.

Fail-Safe Design Requires No Lubrication

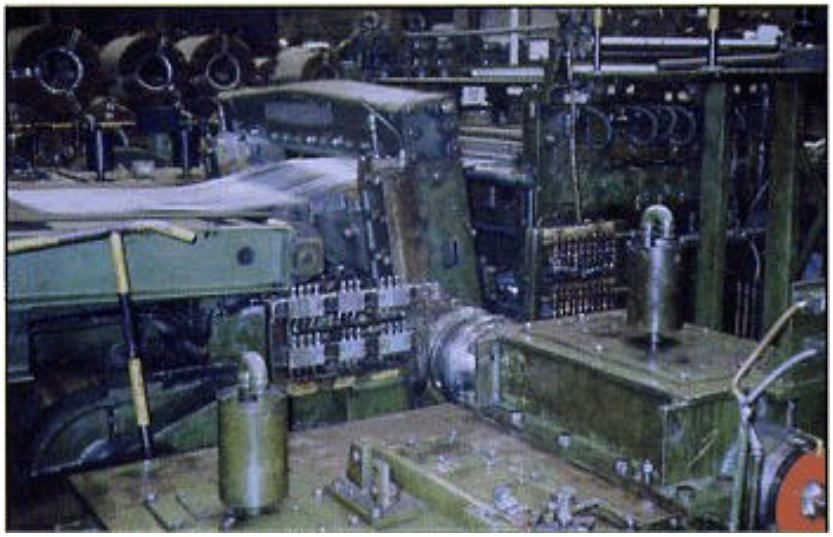
The absence of metal in sliding contact means that there is no lubrication used with the Ajax Compresi-Flex Coupling.

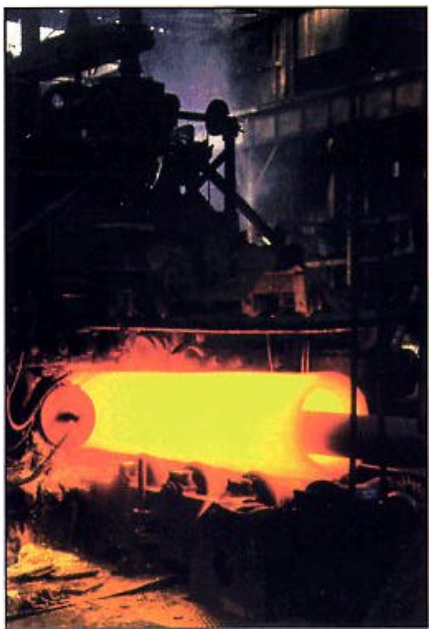
This feature makes it ideal for installations that are difficult to access, because no routine maintenance is necessary. In the unlikely event of destruction of the elastomer, the coupling will continue to transmit torque until servicing is possible.

Variable Stiffness and Zero Backlash

The design of the Ajax Compresi-Flex Coupling allows the use of different hardness elastomers, which provides the opportunity to “tune” the stiffness of the coupling and optimize performance of the drive system. The elastomer blocks are also preloaded, to eliminate all backlash. This removes any contribution to the Torque Amplification Factor (TAF) from the coupling.

Install it and forget about it!





Compresi-Flex Type 87

The Type 87 Compresi-Flex Coupling uses cylindrical blocks that are most commonly supplied in a polyurethane compound. It can be installed where a gear or grid type is currently operating, and eliminate the need for periodic greasing.

Typical applications include:

- Run-out tables
- Crane drives
- Manipulators
- Conveyors
- Pinch rolls/feed rolls

Compresi-Flex Type 90

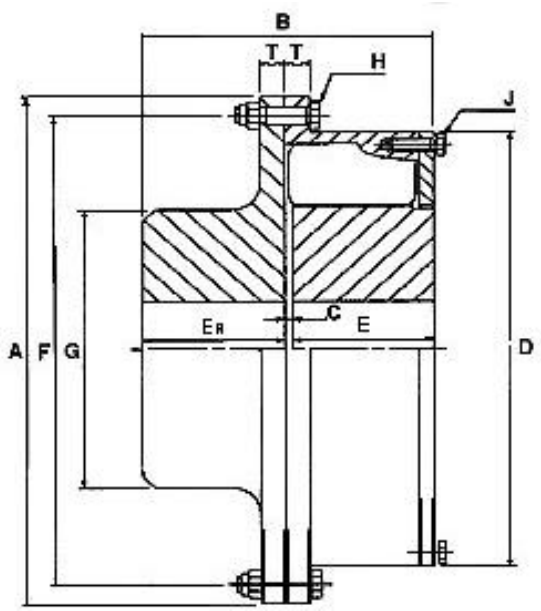
The Type 90 Compresi-Flex uses modified cylindrical blocks that are available in polyurethane or various rubber compounds. It is used in heavy-duty applications to provide maximum protection from severe shock loads.

Typical applications include:

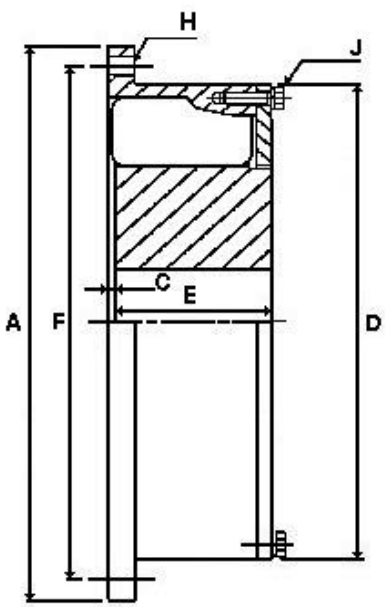
- Main mill drive motor couplings
- Intermediate spacer couplings
- Jack shafts
- Crop shears

Type 87 Dimensional Information

Full Coupling



Flex Half



Dimensions, Weight, Inertia, & Misalignment Capability									
COUPLING SIZE		1.5	2	2.5	3	3.5	4	5	6
DIMENSIONS (in)	A	7.87	9.37	10.25	12.13	14.13	18.37	20.00	22.75
	B	4.13	4.87	5.37	6.87	7.63	9.19	10.25	11.25
	C	0.13	0.13	0.13	0.13	0.13	0.19	0.25	0.25
	E_R	2.00	2.37	2.63	3.37	3.75	4.50	5.00	5.50
	E	2.00	2.37	2.63	3.37	3.75	4.50	5.00	5.50
	G	3.13	4.00	4.75	6.00	7.25	8.75	11.00	13.00
	F	7.00	8.37	9.25	11.00	12.75	17.25	18.50	21.13
	D	6.16	7.34	8.27	9.88	11.61	14.25	17.13	19.74
	T	0.50	0.63	0.69	0.75	0.75	0.75	0.87	1.00
	J	(5)-M8	(6)-M8	(6)-M10	(6)-M10	(6)-M12	(6)-M12	(7)-M12	(8)-M12
	H	(6)-M8	(6)-M10	(8)-M10	(8)-M12	(10) M-12	(16)-M12	(12)-M16	(12)-M16
	MAX. BORE	1.97	2.56	3.15	3.74	4.53	551	6.69	8.27
	MIN. BORE	1.18	1.57	1.57	2.17	2.17	2.76	3.15	3.54
POLYURETHANE BLOCKS	PER CAVITY	1	1	1	1	1	1	1	1
	PER COUPLING	10	12	12	12	12	12	14	16
WEIGHT[1] (lb)	INNER ELEMENT	6.39	12.83	17.59	31.53	53.35	85.54	14.91	244.7
	OUTER ELEMENT	8.58	13.73	17.79	30.20	41.23	76.06	96.78	129.6
	RIGID FLANGE	9.48	17.42	24.03	40.34	69.00	108.0	172.0	262.4
INERTIA[1]	INNER ELEMENT	0.12	0.39	0.73	1.69	4.22	9.73	24.68	56.95
	OUTER ELEMENT	0.53	1.28	2.18	5.32	9.21	25.98	50.78	78.78
(lb ft^2)	RIGID FLANGE	0.39	1.14	1.69	3.87	7.50	20.88	39.87	80.68
ALLOWABLE MISALIGNMENT[2]									
RADIAL (in)		0.03	0.03	0.03	0.04	0.06	0.06	0.06	0.06
AXIAL (in)		0.06	0.06	0.06	0.06	0.06	0.08	0.12	0.12
ANGULAR (degree)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

[1] Weights and inertias are calculated at the minimum bore size.

[2] All allowable misalignments can be tolerated simultaneously.

Type 87 Performance Information

Polyurethane Blocks								
COUPLING SIZE	1.5	2	2.5	3	3.5	4	5	6
NOMINAL TORQUE T_{KN} (in lb)	3337	6054	9338	18370	29000	54330	97270	138600
MAXIMUM TORQUE T_{max}(in lb)	10010	18160	28010	55120	87010	162900	291800	415800
VIBRATORY TORQUE T_{KW} (in lb)	708.1	1151	1770	3363	5310	9736	17700	26550
MAXIMUM SPEED[1] (rpm)	6000	5000	4500	4000	3300	2800	2500	2100
DYNAMIC TORSIONAL STIFFNESS (*10^3 in lb/rad)								
@ 0.25 T_{KN}	0.1505	0.2300	0.3451	0.6815	1 062	1.982	3.558	5.302
@ 0.55 T_{KN}	0.1416	0.2213	0.3275	0.6461	1.018	1.903	3.408	5.081
@ 0.75 T_{KN}	0.1594	0.2478	0.3718	0.7346	1.151	2.150	3.859	5.744
@ 1.00 T_{KN}	0.2124	0.3276	0.4868	0.9647	1.513	2.832	5.071	7.559
RADIAL STIFFNESS (*10^3 lb/in)	12.63	17.99	19.41	26.32	28.55	35 @57	46.68	59.21
AXIAL STIFFNESS (*10^3 lb/in)	5.40	7.54	8.45	11.08	12.28	15.07	19.70	24.90

[1] For speeds in excess of 80% of maximum, balancing is recommended.

When sizing, please refer to the recommended minimum service factors on page 11. The maximum torque allowable is three times the nominal torque. This should be the highest torque value expected during normal drive conditions, eg. start up or passing through critical speeds. Exceptional shock loads may be allowed up to three times the quoted maximum torque value.

The allowable vibratory torque values given here apply at a frequency of 10 Hz. Allowable vibratory torques at other frequencies may be calculated using the formula:

T_{AV} = Catalog T_{kw} x SQRT(1 0/F)

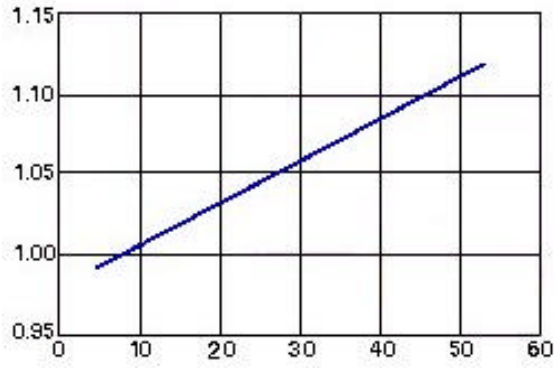
The dynamic torsional stiffness depends upon the effective frequency and vibratory torque. The listed dynamic torsional values are based upon measurements taken at an ambient temperature of 7T F, frequency of 10 Hz and the listed vibratory torques.

To obtain greater accuracy of torsional stiffness, the quoted value may be corrected by factors taken from the graphs, compensating for actual frequency and vibratory torque.

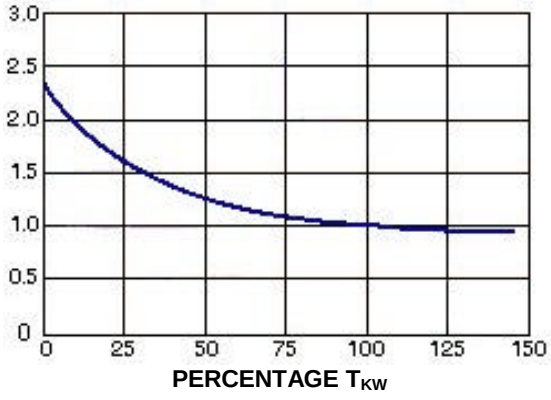
Actual Dynamic Stiffness = Catalog dyn. x S_F x S_V

Correction Factors

S_F



S_V



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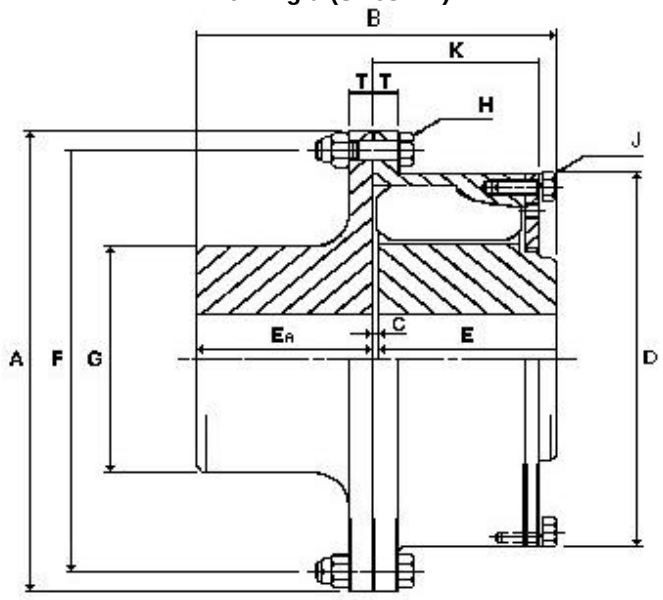
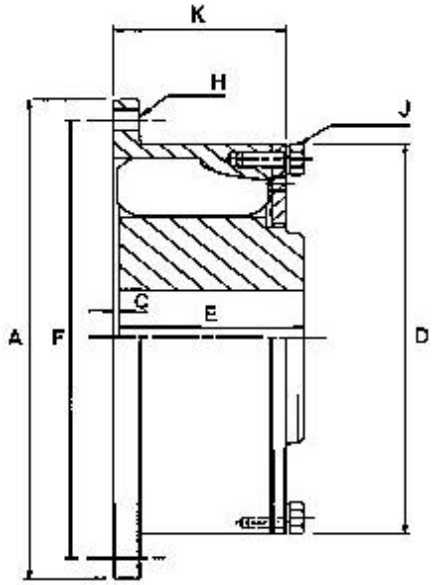
Type 90 Dimensional Information

size 1-7

Flex-Rigid (Sizes 1-7)



Flex Half



Dimensions, Weight, Inertia, & Misalignment Capability

COUPLING SIZE		1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	7
DIMENSIONS (in)	A	7.37	8.50	10.25	10.24	11.89	13.31	15.43	17.32	19.29	22.36	25.12	28.66
	B	4.33	5.12	5.63	6.89	7.60	8.72	10.0	11.44	12.95	14.86	17.03	19.17
	C	0.08	0.08	0.12	0.12	0.12	0.14	0.16	0.18	0.20	0.22	0.26	0.28
	E_R	2.13	2.52	2.76	3.39	3.74	4.29	4.92	5.63	6.38	7.32	8.39	9.45
	E	2.13	2.52	2.76	3.39	3.74	4.29	4.92	5.63	6.38	7.32	8.39	9.45
	G	3.62	4.25	4.80	5.31	5.83	6.61	7.68	8.66	9.92	11.42	12.99	14.69
	F	6.75	7.75	9.25	9.45	10.87	12.28	14.17	16.02	18.03	20.79	23.54	26.77
	D	6.18	7.13	8.70	8.74	9.65	11.02	12.60	14.45	16.46	18.86	21.57	24.41
	T	0.43	0.47	0.57	0.43	0.53	0.55	0.63	0.73	0.83	0.94	1.04	1.22
	J	(5)-M8	(6)-M8	(6)-M8	(8)-M8	(8)-M10	(8)-M12	(8)-M16	(8)-M16	(8)-M16	(8)-M20	(8)-M20	(8)-M24
	H	(8)-M8	(8)-M8	(8)-M8	(12)-M8	(12)-M12	(12)-M12	(12)-M16	(12)-M16	(16)-M16	(12)-M20	(16)-M20	(16)-M24
	K	1.54	1.81	2.36	3.19	3.50	4.02	4.65	5.28	6.01	6.85	7.87	8.90
	MAX. BORE	2.01	2.52	2.87	3.35	3.74	4.29	4.92	5.63	6.38	7.32	8.39	945
	MIN. BORE	1.06	1.38	1.46	2.05	2.60	2.83	3.15	3.62	4.13	4.72	5.51	6.30
RUBBER BLOCKS	PER CAVITY	1	1	1	1	1	1	1	1	1	1	2	2
	PER COUPLING	10	12	12	16	16	16	16	16	16	16	32	32
WEIGHT[1] (lb)	INNER MEMBER	6.17	9.92	15.21	19.62	25.61	39.10	59.51	88.56	131.1	197.2	290.9	421.2
	OUTER MEMBER	6.39	10.14	13.22	14.44	24.07	34.96	54.20	77.89	111.2	171.5	246.8	364.2
	RIGID FLANGE	9.48	14.55	22.04	23.89	33.37	46.81	72.80	105.4	152.8	230.6	334.5	490.2
INERTIA[1] ($lbft^2$)	INNER MEMBER	0.09	0.19	0.43	0.62	1.19	2.40	4.82	9.30	17.94	35.38	68.15	126.5
	OUTER MEMBER	0.33	0.45	1.16	1.71	3.54	6.48	13.29	24.70	45.04	91.77	170.6	324.6
	RIGID FLANGE	0.31	0.59	1.19	1.38	2.75	4.60	9.63	17.75	31.92	64.52	117.6	227.0
ALLOWABLE MISALIGNMENT[2]													
RADIAL (in)		0.03	0.03	0.05	0.06	0.06	0.06	0.06	0.07	0.08	0.09	0.11	0.13
AXIAL (in)		0.05	0.05	0.05	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.13	0.14
ANGULAR (degree)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

[1] Weights and inertias are calculated at the minimum bore size. [2] All allowable misalignments can be tolerated simultaneously.

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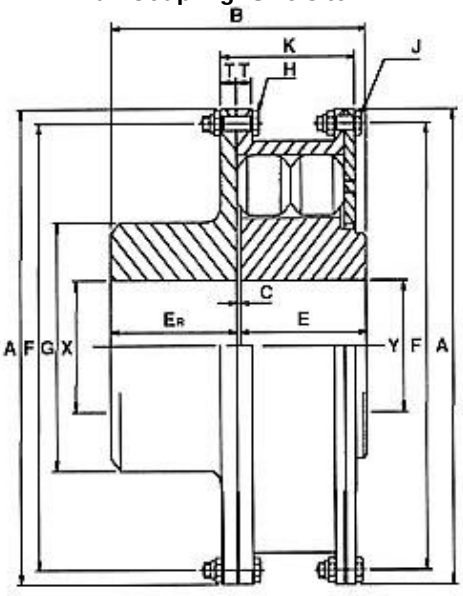
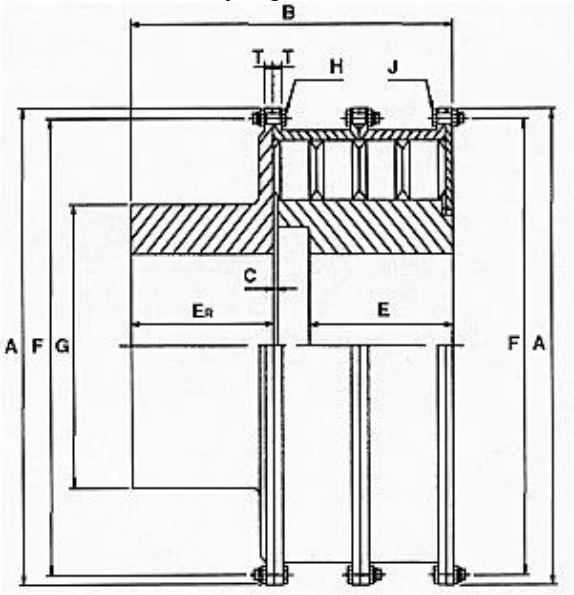
Type 90 Dimensional Information

sizes 8-24

Full Coupling: Size 8 to 11



Full Coupling: Size 12 to 24



Dimensions, Weight, Inertia, & Misalignment Capability											
COUPLING SIZE		8	9	10	11	12	14	16	18	20	24
DIMENSIONS (in)	A	31.42	36.42	41.93	47.05	46.85	52.36	58.66	66.34	75.79	87.01
	B	21.42	24.53	27.97	31.97	40.31	45.59	50.83	58.19	66.34	75.91
	C	0.31	0.35	0.41	0.47	0.45	0.49	0.55	0.65	0.73	0.85
	E_R	10.55	12.09	13.78	15.75	17.91	20.28	22.60	25.87	29.49	33.74
	E	10.55	12.09	13.78	15.75	17.91	20.28	22.60	25.87	29.49	33.74
	G	16.34	18.70	21.34	24.41	27.80	31.42	35.00	40.08	45.67	52.28
	F	29.53	34.06	39.06	44.17	44.88	50.39	56.30	63.98	73.03	83.66
	T	1.32	1.42	1.69	2.05	1.04	1.32	1.42	1.42	1.69	2.05
	J	(12)-M24	(12)-M30	(12)-M36	(24)-M36	(32)-M24	(32)-M24	(32)-M30	(32)-M30	(32)-M36	(32)-M42
	H	(20)-M24	(20)-M30	(20)-M36	(24)-M36	(32)-M24	(32)-M24	(32)-M30	(32)-M30	(32)-M36	(32)-M42
	K	9.92	11.36	12.91	14.80	22.40	25.31	28.23	32.32	36.85	42.17
	MAX. BORE	10.55	12.09	13.78	15.75	17.91	20.28	22.60	25.87	29.49	33.74
	MIN. BORE	6.57	7.56	9.13	11.10	—	—	—	—	—	—
RUBBER BLOCKS	PER CAVITY	2	2	2	2	4	4	4	4	4	4
	PER COUPLING	32	32	32	32	64	64	64	64	64	64
WEIGHT (lb)	INNER MEMBER	578.27	857.60	1239.9	1793.0	2556.3	2739.2	5223.8	7693.0	11607	16987
	OUTER MEMBER	588.15	912.71	1396.4	2004.2	1118.8	2340.2	3268.4	5003.4	7063.6	10337
	RIGID FLANGE	655.65	964.08	1435.6	2087.1	2094.4	2991.7	3187.9	4488.6	9182.2	13774
INERTIA (lbft2)	INNER MEMBER	216.90	424.30	807.55	1555.3	4912.2	6490.3	12957	25249	47840	94779
	OUTER MEMBER	683.44	1407.2	2835.8	5225.4	4081.6	9978.6	17418	34622	63431	123493
	RIGID FLANGE	364.26	709.30	1439.49	2745.6	2657.8	4864.7	5552.9	14119	31300	61627
ALLOWABLE MISALIGNMENT											
RADIAL(in)		0.14	0.15	0.18	0.20	0.20	0.21	0.24	0.28	0.31	0.37
AXIAL (in)		0.16	0.18	0.21	0.24	0.23	0.25	0.28	0.32	0.36	0.42
ANGULAR (degree)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Type 90 Performance Information

sizes 1-7

COUPLING SIZE		1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	7
NOMINAL TORQUE T_{KN} (*10^3 in lb)		1.974	3.806	8.851	17.70	23.60	35.40	53.10	79.66	118.0	177.0	265.5	383.5
MAX. TORQUE T_{kmax} (*10^3 in lb)		5.930	11.51	26.55	53.10	70.81	106.2	159.3	239.0	354.0	531.0	796.6	1151
VIB. TORQUE[1] T_{KW} (*10^3 in lb)		0.7435	1.443	3.319	6.638	8.851	13.28	19.91	29.87	44.25	66.38	99.57	143.8
MAXIMUM SPEED (rpm)		6300	5400	4500	4480	3860	3450	2975	2650	2380	2050	1830	1600
DYNAMIC TORSIONAL[2] STIFFNESS (*106 in lb/rad)													
© 0.25 T_{KN}	R 50	0.035	0.097	0.230	0.673	0.894	1.345	2.018	3.026	4.487	6.726	10.090	14.592
	R 60	0.044	0.106	0.257	0.919	1.230	1.841	2.761	4.142	6.133	9.204	13.800	19.932
	R 70	0.071	0.159	0.381	1.310	1.744	2.620	3.929	5.894	8.735	13.092	19.644	28.380
	R 80	0.115	0,265	0.637	1.699	2.266	3.398	5.098	7.646	11.328	16.992	25.488	36.816
@0.5T_{KN}	R 50	0.062	0.150	0.354	0.973	1.301	1.946	2.921	4.381	6.487	9.734	14.592	21.084
	R 60	0.071	0.168	0.407	1.310	1.744	2.620	3.929	5.894	8.735	13.092	19.644	28.380
	R 70	0.089	0.221	0.513	1.752	2.336	3.504	5.257	7.885	11.682	17,520	26.280	37.956
	A 80	0.133	0.319	0.761	2.284	3.044	4.567	6.850	10.274	15.216	22.836	34.248	49.476
© @0.75 T_{KN}	R 50	0.089	0.221	0.531	1.452	1.938	2.903	4.354	6.532	9.673	14.508	21.768	31.440
	R60	0.106	0.257	0.611	1.946	2.593	3.894	5.842	8.761	12.972	19.464	29.196	42.180
	R 70	0.124	0.292	0.690	2.513	3.354	5.027	7.541	11.310	16.752	25.128	37.704	54.456
	A 80	0.159	0.381	0.903	4.546	4.460	6.691	10,036	15.048	22.296	33.456	50.184	72.480
@ 1.0T_{KN}	R 50	0.150	0.336	0.797	2.302	3.071	4.602	6.902	10.355	15.336	23.016	34.512	49.848
	A 60	0.159	0.381	0.903	2.832	3.779	5.664	8.496	12.744	18.876	28.320	42.480	61.356
	A 70	0.159	0.389	0.929	3.504	4.673	7.009	10.514	15.768	23.364	35.040	52.572	75.936
	R 80	0.186	0.451	1.080	4.832	6.443	9.665	14.496	21.744	32,20	848.324	72.48	104.700
RADIALSTIFFNESS (*10^3 lb/in)	R 50	3.83	6.23	10.4	23.2	25,6	29,3	33.6	38.4	43.8	50.2	57.4	64.9
	R 60	4.13	7.08	11.7	28.7	31.6	36.3	41.5	47.5	52.4	62.0	71.0	80.3
	A 70	6.45	11.1	18.5	48.2	53.1	60.8	69.6	79.7	90.9	104	119	135
	R 80	10.4	17.8	29.6	67.6	74.5	85.3	97.8	112	128	146	167	189
AXIAL STIFFNESS (*10^3 lb/in)	H 50	2.63	3.59	4.34	4.65	5.12	5.86	6.72	7.69	8.77	10.0	11.5	13.0
	R 60	2.87	4.08	5.54	7.52	8.29	9.49	10.9	12.4	14.2	16.2	18.6	21.0
	R 70	4.73	6.74	9.19	10.1	11.2	12.8	14.7	16.8	19.1	21.9	25.1	28.3
	R 80	6.62	9.54	12.7	16.9	18.6	21.3	24.4	28.0	31.9	36.5	41.8	47.2

[1] At 10 Hz only, allowable vibratory torque at higher or lower frequencies fe = Vib. Torque *SQRT(10 Hz/fe)

[2] These values apply to conditions of low amplitude, steady vibration at a mean torque.
Consult Renold Ajax Couplings for values applying to high amplitude transient vibration.

When sizing, please refer to the recommended minimum service factors on page 11. The maximum torque allowable is three times the nominal torque. This should be the highest torque value expected during normal drive conditions, eg. start up or passing through critical speeds. Exceptional shock loads such as “short circuit” torques may be allowed up to three times the quoted maximum torque value.

Type 90 Performance Information

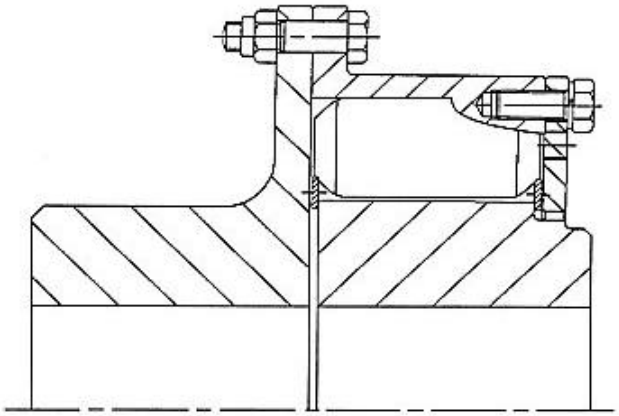
sizes 8-24

COUPLING SIZE		8	9	10	11	12	14	16	18	20	24
NOMINAL TORQUE TKN (*10^3 in lb)		530.0	800.0	1180	1770	2655	3830	5310	7965	11800	17700
MAX. TORQUE TKmax (*10^3 in lb)		1590	2390	3540	5310	7965	11500	15900	23900	35400	53100
VIB. TORQUE[1] TKW (*10^3) in lb)		200.0	298.7	442.5	663.8	995.7	1438	1991	2987	4425	6638
MAXIMUM SPEED(rpm)		1460	1260	1090	975	975	860	770	680	600	520
DYNAMIC TORSIONAL[2] STIFFNESS (*10^6 in lb/rad)											
© 0.25 T_{KN}	R50	20.18	30.27	44.85	67.26	—	—	—	—	—	—
	R 60	27.61	41.43	61.36	92.04	—	—	—	—	—	—
	R 70	39.29	58.95	87.33	130.98	71.70	103.55	143.38	215.05	318.60	477.90
	R 80	50.98	76.46	113.28	169.92	83.63	120.80	167.26	251.34	371.70	557.54
@ 0.5 T_{KN}	R 50	29.21	43.82	64.90	97.35	—	—	—	—	—	—
	R 60	39.29	58.95	87,33	131.0	—	—	—	—	—	—
	R 70	52.57	78.85	116.8	175.2	103.6	149.6	207.1	310.6	460.2	690.3
	R 80	68.50	102.7	152.2	228.3	143.4	207.1	286.7	430.1	637.2	955.8
© 0.75T_{KN}	A 50	43.54	65.33	96.74	145.1	—	—	—	—	—	—
	R 60	58.41	87.61	129.8	194.7	—	—	—	—	—	—
	R70	75.40	113.1	167.5	251.3	153.1	221.3	307.1	460,2	681.5	1022
	R 80	100.4	150.5	223.0	334.5	185.0	267.3	370.8	555.8	823.1	12360
© 1.0T_{KN}	R 50	69.03	103.5	153.4	230.1	—	—	—	—	—	—
	R 60	84.96	127.4	188.8	283.2	—	—	—	—	—	—
	R 70	105.1	157.7	233.6	350.5	208.9	301.8	417.7	627.5	929.26	1392
	R 80	145.0	217.4	322.1	483.2	237.2	342.5	473.5	710.7	1053	1584
RADIAL STIFFNESS (*10^3 lb/in)	R 50	72.4	82.8	94.4	108	—	—	—	—	—	—
	R60	89.5	102	117	134	—	—	—	—	—	—
	R70	150	172	195	224	161	182	203	232	265	397
	R80	210	241	275	314	263	297	33'	379	432	649
AXIAL STIFFNESS (*10^3 lb/in)	R 50	14.5	16.6	18.9	21.6	—	—	—	—	—	—
	R 60	89.5	102	117	134	—	—	—	—	—	—
	R 70	31.6	36.1	41.2	47.2	7.05	7.97	8.88	10.2	11.6	17.4
	R 80	52.6	60.3	68.7	78.6	11.2	12.7	14.1	16.2	18.5	27.7

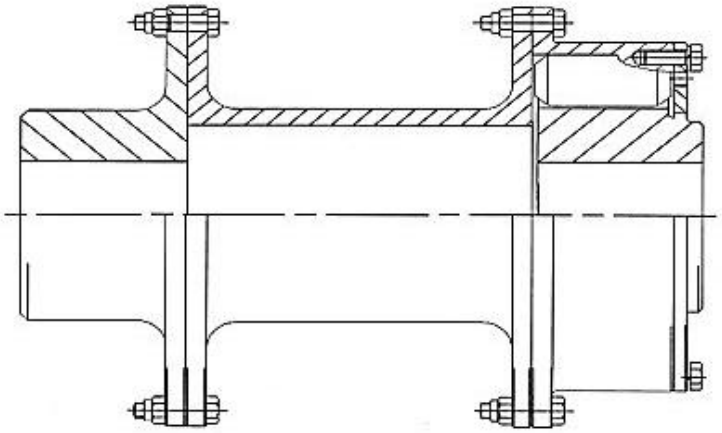
[1] At 10 Hz only, allowable vibratory torque at higher or lower frequencies fe = Vib. Torque *SQRT(1 0 Hz/fe)

[2] These values apply to conditions of low amplitude, steady vibration at a mean torque.
Consult Renold Ajax Couplings for values applying to high amplitude transient vibration.

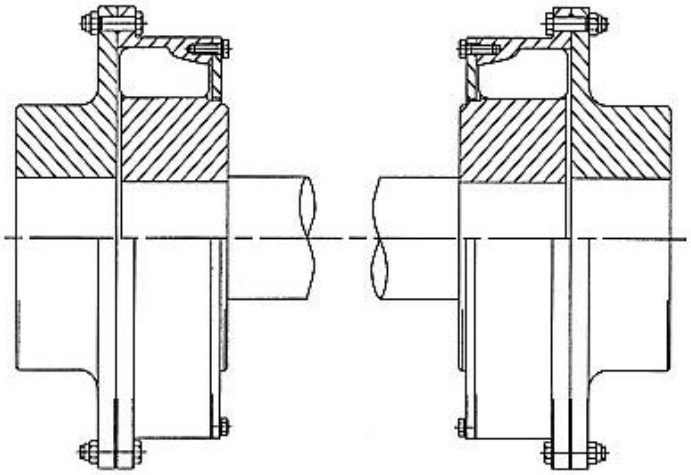
Common Configurations



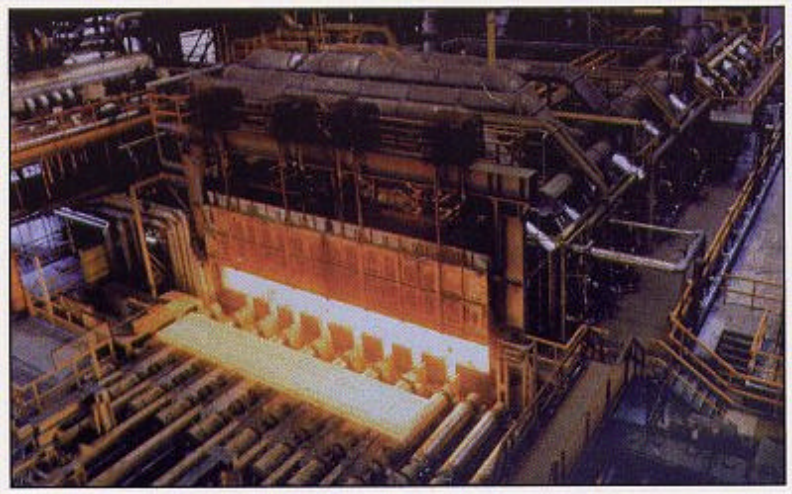
Limited End Floating Coupling

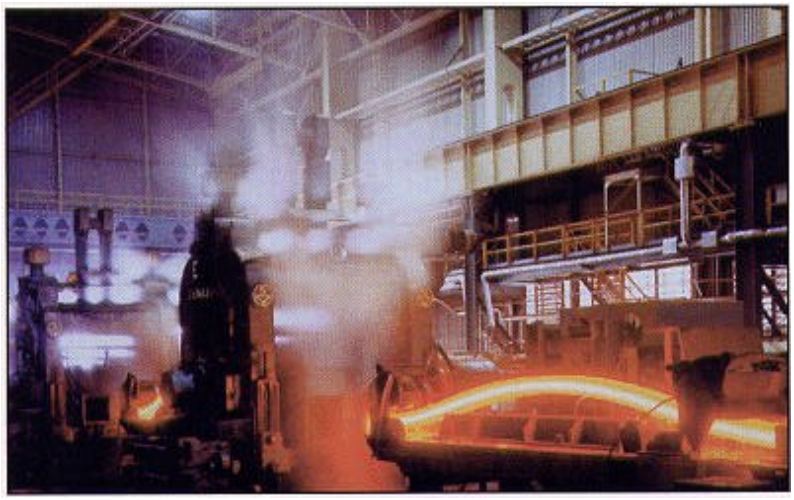


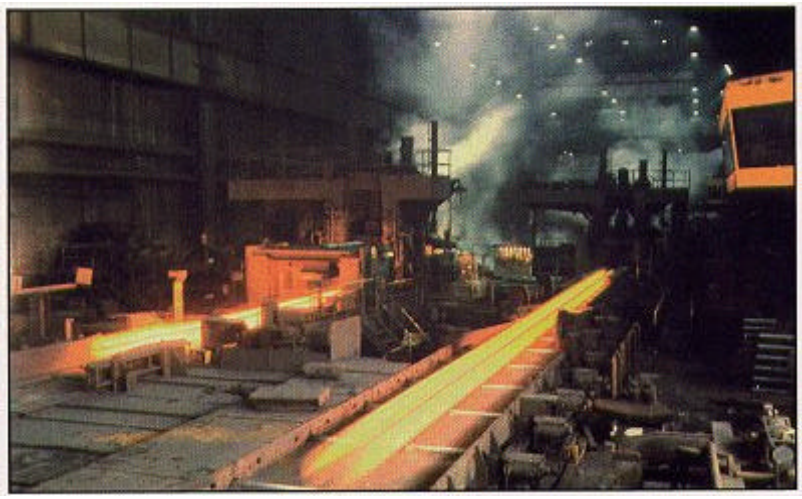
Type 90 Coupling with Spacer



Floating Shaft Assembly







Recommended Minimum Service Factors	
Bar Mill	2.0
Blooming Mill	3.0
Coiler	2.5
Cold Mill	2.0
Draw Beach	2.0
Edger Drive	2.5
Feed Rolls	3.0
Furnace Pusher	2.5
Hot Mill-Finishing	2.5
Hot Mill-Roughing	3.5
Ingot Car	2.0
Manipulator	3.0
Piercer	3.0
Reel Drives	2.0
Runout Table	2.0
Saw Drive	2.0
Slitter	1.5
Wire Drawing	2.0