TYPE HSRE/HLRE/HTRE

H SERIES HIGH PERFORMANCE COUPLINGS

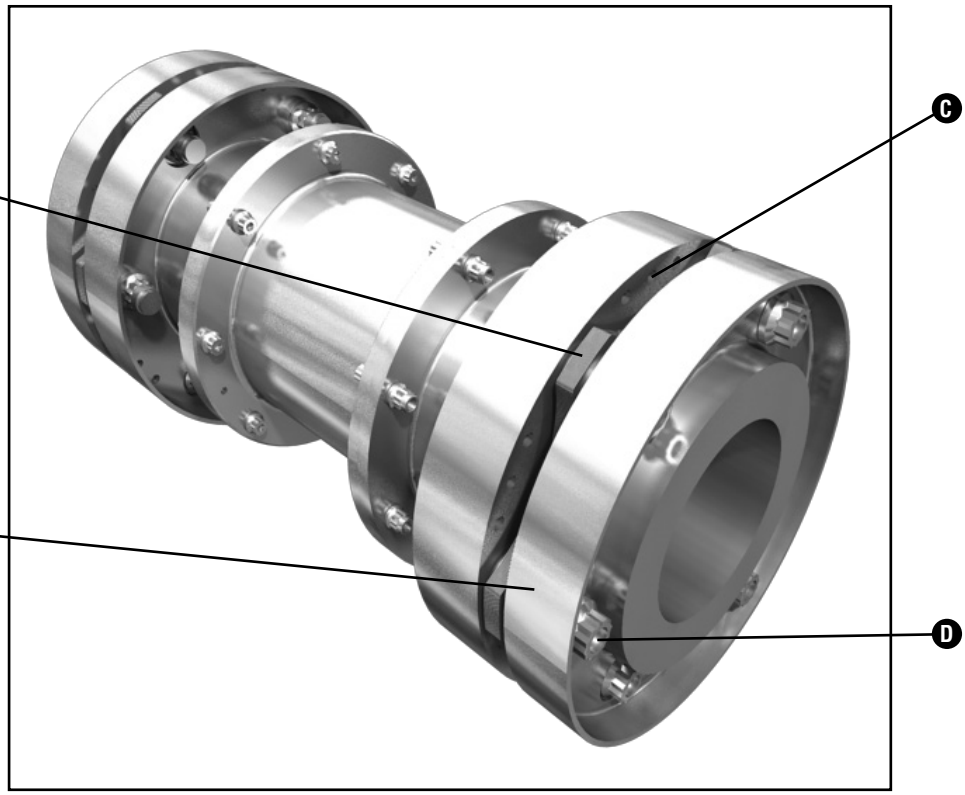
Technical Specification

A – High Strength Stainless Steel Flexible Membranes

B – Overload Collars

C – Trim Balance Holes

D – Shrouded Bolts



Product Description

John Crane's Metastream® HSRE/HLRE/HTRE reduced moment couplings use two factory assembled hub/flexible membrane units and a detachable spacer. This arrangement produces a high integrity coupling suited for most medium speed and high speed compressor drives.

- The factory assembled HSRE/HLRE/HTRE hub/flex units are designed to accommodate typical machine shaft sizes for turbo-compressor applications
- The separate spacer on the HSRE/HLRE/HTRE can be varied to provide the appropriate distance between shaft ends and the required torsional stiffness to suit individual applications
- On some applications, the coupling hub assembly on a compressor or gearbox input shaft is combined with the flange H-FE arrangement for a turbine driver

Design Features

- Reduced moment arrangement
- Flexible discs visible for easy inspection
- Factory assembled hub/flexible membrane units
- High reliability stainless steel flexible disc design
- Shrouded bolts to reduce windage
- Built-in overload collars for additional safety

TYPE HSRE/HLRE/HTRE

H SERIES HIGH PERFORMANCE COUPLINGS

Technical Specification

HSRE/HLRE/HTRE Technical Data (Metric)

Coupling Designation	Coupling Rating	Continuous Torque Rating	Note 1 Peak Torque Rating	Max. Speed	Note 2 Weights Coupling Assembly	Note 2 Weights Additional Spacer Length	Note 2 Moment of Inertia Coupling Assembly	Note 2 Moment of Inertia Additional Spacer Length	Note 3 Weights Coupling Assembly	Note 3 Weights Additional Spacer Length	Note 3 Moment of Inertia Coupling Assembly	Note 3 Moment of Inertia Additional Spacer Length	Note 4 Torsional Stiffness Membrane unit Excluding shaft q1	Note 4 Torsional Stiffness Spacer Tube Per metre q2	Axial Misalignment Maximum per Coupling	Axial Misalignment Equivalent Axial Force	Note 5 Angular Misalignment Max Angle	Note 5 Angular Misalignment Restoring Moment
	kW/1000 rpm	Nm	Nm	rpm	kg	kg/m	kgm²	kgm²/m	kg	kg/m	kgm²	kgm²/m	MNm/rad	MNm/rad	± mm	N	Deg	Nm/Deg
HSRE-0074	129	1229	2090	37700	3.47	3.55	0.004	0.003	3.64	3.55	0.004	0.003	0.24	0.03	1.4	800	0.375	20
HSRE-0096	271	2586	4400	29500	6.26	4.60	0.012	0.006	6.39	4.60	0.013	0.006	0.47	0.07	1.8	1200	0.375	30
HSRE-0115	466	4453	7570	24300	9.83	5.59	0.028	0.011	10.40	5.59	0.030	0.011	0.86	0.12	2.2	1790	0.375	45
HSRE-0139	795	7590	12900	20100	16.54	8.08	0.065	0.024	17.51	8.08	0.071	0.024	1.48	0.25	2.7	2500	0.375	80
HSRE-0159	1188	11350	19300	17500	23.81	10.93	0.121	0.044	25.50	10.93	0.133	0.044	2.14	0.46	3.1	3180	0.375	125
HSRE-0179	1694	16182	27500	15400	35.47	12.23	0.231	0.061	36.80	12.23	0.247	0.061	3.22	0.64	3.5	4110	0.375	180
HSRE-0200	2350	22447	38200	13700	48.10	15.61	0.384	0.098	49.46	15.61	0.412	0.098	4.46	1.02	3.9	4960	0.375	270
HSRE-0220	3128	29877	50800	12400	61.68	19.39	0.588	0.148	64.17	19.39	0.635	0.148	6.09	1.54	4.3	6110	0.375	350
HSRE-0240	4062	38788	65900	11300	76.89	21.17	0.877	0.192	81.21	21.17	0.957	0.192	7.29	2.00	4.6	7150	0.375	450
HSRE-0262	5244	50077	85100	10300	101.56	25.68	1.377	0.278	104.85	25.68	1.467	0.278	9.83	2.90	5.1	8780	0.375	590
HSRE-0283	6589	62921	107000	9600	127.26	30.22	2.012	0.374	135.17	30.22	2.190	0.374	12.18	3.90	5.5	10000	0.375	740
HSRE-0320	9627	91942	156300	8500	177.36	40.37	3.505	0.639	188.88	40.37	3.852	0.639	17.96	6.66	6.3	12700	0.375	1050
HSRE-0357	13480	128737	218900	7500	254.82	48.40	6.335	0.949	265.90	48.40	6.853	0.949	25.16	9.90	6.9	16080	0.375	1430
HSRE-0409	20151	192439	327100	6500	368.78	63.42	11.897	1.635	390.55	63.42	13.097	1.635	38.03	17.05	8.0	21160	0.375	2100
HSRE-0449	26654	254547	432700	6000	466.01	78.46	17.726	2.446	496.42	78.46	19.637	2.446	50.19	25.52	8.7	25020	0.375	2600
HSRE-0485	33173	316802	538600	5500	582.87	89.50	26.014	3.259	629.20	89.50	29.231	3.259	63.34	34.00	9.5	29550	0.375	3150
HLRE-0115	663	6335	10770	24300	10.28	7.91	0.028	0.017	11.21	7.91	0.031	0.017	1.05	0.17	1.5	2150	0.25	85
HLRE-0139	1131	10797	18360	20100	17.34	10.87	0.067	0.033	19.00	10.87	0.075	0.033	1.82	0.34	1.9	3000	0.25	150
HLRE-0159	1691	16146	27450	17500	25.13	14.17	0.127	0.058	27.89	14.17	0.142	0.058	2.68	0.60	2.1	3800	0.25	240
HLRE-0179	2411	23022	39100	15400	37.11	17.66	0.239	0.090	39.82	17.66	0.261	0.090	4.00	0.94	2.4	4930	0.25	350
HLRE-0200	3344	31933	54300	13700	50.11	21.66	0.396	0.138	53.50	21.66	0.436	0.138	5.43	1.44	2.6	5960	0.25	530
HLRE-0220	4451	42503	72300	12400	64.51	26.08	0.607	0.202	69.38	26.08	0.671	0.202	7.36	2.11	2.9	7340	0.25	700
HLRE-0240	5778	55181	93800	11300	80.98	33.36	0.912	0.311	88.71	33.36	1.020	0.311	9.07	3.25	3.2	8580	0.25	880
HLRE-0262	7460	71241	121100	10300	105.99	36.30	1.420	0.401	113.55	36.30	1.551	0.401	12.16	4.18	3.5	10530	0.25	1150
HLRE-0283	9373	89513	152200	9600	133.52	44.45	2.083	0.563	147.24	44.45	2.327	0.563	15.24	5.88	3.8	12000	0.25	1450
HLRE-0320	13696	130799	222400	8500	185.37	56.46	3.627	0.912	205.19	56.46	4.096	0.912	22.08	9.51	4.3	15250	0.25	2100
HLRE-0357	19177	183145	311300	7500	266.85	69.89	6.556	1.401	289.33	69.89	7.282	1.401	31.27	14.62	4.7	19300	0.25	2800
HLRE-0409	28667	273770	465400	6500	388.46	92.16	12.401	2.429	426.67	92.16	14.005	2.429	47.39	25.34	5.5	25400	0.25	4100
HLRE-0449	37919	362127	615600	6000	490.33	110.05	18.556	3.501	544.53	110.05	21.165	3.501	61.75	36.52	6.0	30000	0.25	5100
HLRE-0485	47193	450693	766200	5500	612.36	123.60	27.052	4.586	687.71	123.60	31.286	4.586	78.59	47.84	6.6	35450	0.25	6200
HTRE-0179	3101	29618	50400	15400	38.79	23.20	0.250	0.121	41.50	23.20	0.272	0.121	6.47	1.27	1.7	6850	0.167	720
HTRE-0200	4302	41083	69800	13700	52.09	27.83	0.412	0.181	55.49	27.83	0.452	0.181	8.72	1.89	1.9	8270	0.167	1100
HTRE-0220	5726	54682	93000	12400	67.13	32.88	0.632	0.260	72.00	32.88	0.696	0.260	12.01	2.71	2.1	10200	0.167	1400
HTRE-0240	7434	70992	120700	11300	84.80	40.83	0.955	0.387	92.11	40.83	1.060	0.387	14.68	4.04	2.3	11900	0.167	1800
HTRE-0262	9597	91654	155800	10300	110.68	47.12	1.483	0.530	117.74	47.12	1.609	0.530	19.46	5.53	2.5	14630	0.167	2400
HTRE-0283	12059	115161	195800	9600	138.54	56.06	2.164	0.724	152.26	56.06	2.408	0.724	24.20	7.55	2.7	16680	0.167	3000
HTRE-0320	17621	168277	286100	8500	193.54	72.85	3.788	1.201	212.58	72.85	4.247	1.201	35.53	12.53	3.1	21180	0.167	4200
HTRE-0357	24672	235621	400600	7500	279.08	88.13	6.864	1.780	300.62	88.13	7.574	1.780	50.79	18.77	3.3	26800	0.167	5700
HTRE-0409	36881	352212	598800	6500	402.24	117.28	12.868	3.151	440.44	117.28	14.473	3.151	76.08	32.87	3.9	35270	0.167	8300
HTRE-0449	48784	465886	792000	6000	510.20	137.61	19.351	4.455	562.85	137.61	21.918	4.455	99.86	46.47	4.3	41690	0.167	10350
HTRE-0485	**60715**	**579828**	**985700**	**5500**	**634.44**	**158.31**	**28.070**	**5.984**	**707.97**	**158.31**	**32.245**	**5.984**	**126.21**	**62.43**	**4.7**	**49230**	**0.167**	**12500**

TYPE HSRE/HLRE/HTRE

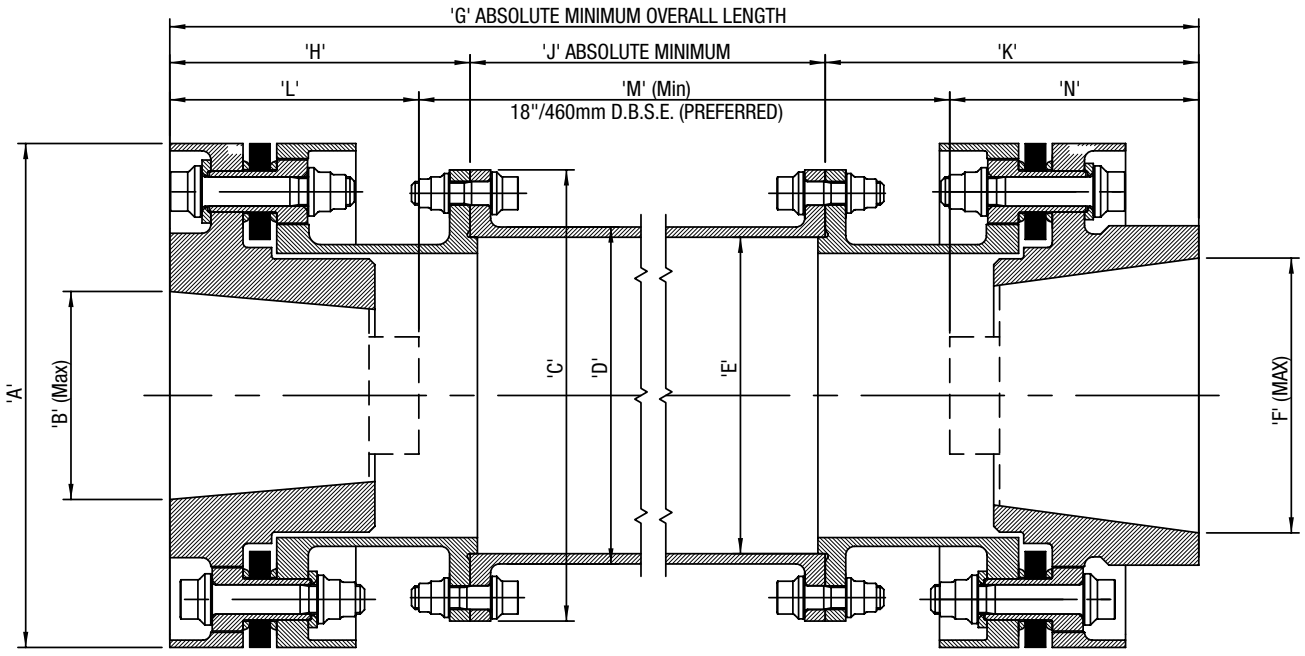
H SERIES HIGH PERFORMANCE COUPLINGS

Technical Specification

HSRE/HLRE/HTRE Dimensional Data (mm)

Coupling Designation															
HSRE	HLRE	HTRE	A	B (Max)	C	D	E	F (Max)	G	H	J	K	L	M	N
HSRE-0074			95	40	91	60	55	45	214	75	43	96	75	45	96
HSRE-0096			120	51	113	77	72	60	240	85	43	112	85	45	112
HSRE-0115	HLRE-0115		144	65	134	93	88	75	274	96	43	135	96	45	135
HSRE-0139	HLRE-0139		172	77	154	112	106	90	328	112	55	161	112	57	161
HSRE-0159	HLRE-0159		197	90	168	130	123	102	379	135	55	189	135	57	189
HSRE-0179	HLRE-0179	HTRE-0179	222	100	200	145	138	115	425	147	70	208	147	72	208
HSRE-0200	HLRE-0200	HTRE-0200	248	110	219	162	154	130	462	160	70	232	160	72	232
HSRE-0220	HLRE-0220	HTRE-0220	272	120	236	179	170	140	492	171	70	251	171	72	251
HSRE-0240	HLRE-0240	HTRE-0240	297	135	253	195	186	155	548	193	70	285	193	72	285
HSRE-0262	HLRE-0262	HTRE-0262	324	145	274	213	203	165	581	208	70	303	208	72	303
HSRE-0283	HLRE-0283	HTRE-0283	348	160	302	228	217	180	644	224	90	330	224	92	330
HSRE-0320	HLRE-0320	HTRE-0320	390	180	335	258	245	205	707	247	90	370	247	92	370
HSRE-0357	HLRE-0357	HTRE-0357	438	200	375	287	273	230	807	276	120	411	276	122	411
HSRE-0409	HLRE-0409	HTRE-0409	500	230	419	329	313	265	902	312	120	470	312	122	470
HSRE-0449	HLRE-0449	HTRE-0449	544	254	453	362	344	290	970	337	120	513	337	122	513
HSRE-0485	HLRE-0485	HTRE-0485	590	275	479	391	372	315	1038	363	120	555	363	122	555

Typical Arrangement



Notes:

- This limit applies to a maximum of 5000 cycles in the life of the coupling
- Weight and inertia for coupling with minimum spacer length/standard hubs with maximum bore
- Weight and inertia for coupling with minimum spacer length/large hubs with maximum bore
- To calculate coupling torsional stiffness:-

$$1/Qc = 2/q1 + 1/q2 + 1/q3 + 1/q4$$

Where Qc = Torsional Stiffness of coupling
q1 = Torsional Stiffness of membrane unit (excluding shaft)
q2 = Torsional Stiffness of spacer tube
q3 = Torsional Stiffness of driver shaft penetration
q4 = Torsional Stiffness of driven shaft penetration

- Maximum angular misalignmemt per disc pack. For further information on misaligments capacities, see back page.
- A minimum service factor of 1.5 is recommended. (see selection procedure)

TYPE HSRE/HLRE/HTRE

H SERIES HIGH PERFORMANCE COUPLINGS

Technical Specification

HSRE/HLRE/HTRE Technical Data (Inches)

Coupling Designation	Coupling Rating	Continuous Torque Rating	Note 1 Peak Torque Rating	Max. Speed	Note 2 Weights Coupling Assembly	Note 2 Weights Additional Spacer Length	Note 2 Moment of Inertia Coupling Assembly	Note 2 Moment of Inertia Additional Spacer Length	Note 3 Weights Coupling Assembly	Note 3 Weights Additional Spacer Length	Note 3 Moment of Inertia Coupling Assembly	Note 3 Moment of Inertia Additional Spacer Length	Note 4 Torsional Stiffness Membrane unit Excluding shaft q1	Note 4 Torsional Stiffness Spacer Tube Per metre q2	Axial Misalignment Maximum per Coupling	Axial Misalignment Equivalent Axial Force	Note 5 Angular Misalignment Max Angle	Note 5 Angular Misalignment Restoring Moment
	HP/100rpm	lbf in x 10^3	lbf in x 10^3	rpm	lb	lb/in	lb in^2	lb in^2/in	lb	lb/in	lb in^2	lb in^2/in	lbf in/rad x 10^6	lbf in/rad x 10^6	± in	lbf	Deg	lbf in/Deg
HSRE-0074	17.3	10.90	18.5	37700	7	0.12	13.6	0.26	8	0.12	13.6	0.26	2.13	0.007	0.05	180	0.375	175
HSRE-0096	36.4	22.9	38.9	29500	13	0.15	40.9	0.53	13	0.15	44.3	0.53	4.16	0.016	0.07	270	0.375	263
HSRE-0115	62.6	39.4	67.0	24300	21	0.18	95.4	0.97	22	0.18	102.2	0.97	7.62	0.03	0.09	403	0.375	394
HSRE-0139	107	67.2	114	20100	35	0.27	221	2.11	37	0.27	242	2.11	13.11	0.06	0.11	563	0.375	700
HSRE-0159	160	100.5	171	17500	50	0.36	412	3.87	54	0.36	453	3.87	18.96	0.1	0.12	716	0.375	1094
HSRE-0179	228	143	243	15400	75	0.40	787	5.36	78	0.40	842	5.36	28.53	0.14	0.14	925	0.375	1575
HSRE-0200	316	199	338	13700	101	0.51	1308	8.61	104	0.51	1404	8.61	39.52	0.23	0.15	1116	0.375	2363
HSRE-0220	420	264	450	12400	130	0.64	2004	13.00	135	0.64	2164	13.00	53.96	0.35	0.17	1375	0.375	3063
HSRE-0240	546	343	583	11300	162	0.70	2988	16.87	171	0.70	3261	16.87	64.60	0.45	0.18	1609	0.375	3938
HSRE-0262	705	443	753	10300	214	0.84	4692	24.43	221	0.84	4999	24.43	87.10	0.65	0.20	1976	0.375	5163
HSRE-0283	886	557	947	9600	269	0.99	6856	32.86	285	0.99	7462	32.86	108	0.88	0.21	2250	0.375	6475
HSRE-0320	1294	814	1380	8500	374	1.33	11943	56.15	399	1.33	13125	56.15	159	1.5	0.25	2858	0.375	9188
HSRE-0357	1812	1139	1940	7500	538	1.59	21586	83.39	561	1.59	23351	83.39	223	2.23	0.27	3618	0.375	12513
HSRE-0409	2708	1703	2900	6500	778	2.09	40538	144	824	2.09	44627	144	337	3.84	0.31	4761	0.375	18375
HSRE-0449	3582	2253	3830	6000	983	2.58	60400	215	1047	2.58	66911	215	445	5.74	0.34	5630	0.375	22750
HSRE-0485	4458	2804	4770	5500	1230	2.94	88640	286	1328	2.94	99602	286	561	7.65	0.37	6649	0.375	27563
HLRE-0115	89.1	56.1	95	24300	22	0.26	95.4	1.49	24	0.26	105.6	1.49	9.30	0.04	0.06	484	0.25	744
HLRE-0139	152	95.6	162	20100	37	0.36	228	2.90	40	0.36	255.6	2.90	16.13	0.08	0.07	675	0.25	1313
HLRE-0159	227	143	243	17500	53	0.47	433	5.10	59	0.47	483.9	5.10	23.75	0.14	0.08	855	0.25	2100
HLRE-0179	324	204	346	15400	78	0.58	814	7.91	84	0.58	889.3	7.91	35.44	0.21	0.09	1109	0.25	3063
HLRE-0200	449	283	481	13700	106	0.71	1349	12.13	113	0.71	1485.6	12.13	48.12	0.32	0.10	1341	0.25	4638
HLRE-0220	598	376	640	12400	136	0.86	2068	17.75	146	0.86	2286.4	17.75	65.22	0.47	0.11	1652	0.25	6125
HLRE-0240	777	488	830	11300	171	1.10	3108	27.33	187	1.10	3475.5	27.33	80.37	0.73	0.12	1931	0.25	7700
HLRE-0262	1003	631	1070	10300	224	1.19	4839	35.24	240	1.19	5284.9	35.24	108	0.94	0.14	2369	0.25	10063
HLRE-0283	1260	792	1350	9600	282	1.46	7098	49.47	311	1.46	7929.0	49.47	135	1.32	0.15	2700	0.25	12688
HLRE-0320	1841	1158	1970	8500	391	1.86	12359	80.14	433	1.86	13956.7	80.14	196	2.14	0.17	3431	0.25	18375
HLRE-0357	2577	1621	2760	7500	563	2.30	22339	123	610	2.30	24812.7	123.11	277	3.29	0.18	4343	0.25	24500
HLRE-0409	3853	2423	4120	6500	820	3.03	42255	213	900	3.03	47720.6	213.44	420	5.7	0.21	5715	0.25	35875
HLRE-0449	5096	3205	5450	6000	1035	3.62	63228	308	1149	3.62	72117.6	307.63	547	8.22	0.23	6750	0.25	44625
HLRE-0485	6343	3989	6780	5500	1292	4.07	92177	403	1451	4.07	106603.9	402.97	696	10.77	0.26	7976	0.25	54250
HTRE-0179	417	262	446	15400	82	0.76	852	10.63	88	0.76	926.8	10.63	57.33	0.29	0.07	1541	0.167	6300
HTRE-0200	578	364	618	13700	110	0.92	1404	15.90	117	0.92	1540.1	15.90	77.27	0.43	0.07	1861	0.167	9625
HTRE-0220	770	484	823	12400	142	1.08	2153	22.85	152	1.08	2371.6	22.85	106	0.61	0.08	2295	0.167	12250
HTRE-0240	999	628	1070	11300	179	1.34	3254	34.01	194	1.34	3611.8	34.01	130	0.91	0.09	2678	0.167	15750
HTRE-0262	1290	811	1380	10300	234	1.55	5053	46.57	248	1.55	5482.5	46.57	172	1.24	0.10	3292	0.167	21000
HTRE-0283	1621	1019	1730	9600	292	1.84	7374	63.62	321	1.84	8205.0	63.62	214	1.7	0.11	3753	0.167	26250
HTRE-0320	2368	1489	2530	8500	408	2.40	12907	105.53	449	2.40	14471.2	105.53	315	2.82	0.12	4766	0.167	36750
HTRE-0357	3316	2085	3550	7500	589	2.90	23388	156.41	634	2.90	25807.6	156.41	450	4.22	0.13	6030	0.167	49875
HTRE-0409	4957	3117	5300	6500	849	3.86	43846	276.88	929	3.86	49315.3	276.88	674	7.4	0.15	7936	0.167	72625
HTRE-0449	6557	4123	7010	6000	1077	4.53	65937	391.46	1188	4.53	74683.4	391.46	885	10.46	0.17	9380	0.167	90563
HTRE-0485	8160	5132	8720	5500	1339	5.21	95646	525.81	1494	5.21	109871.6	525.81	1118	14.05	0.18	11077	0.167	109375

TYPE HSRE/HLRE/HTRE

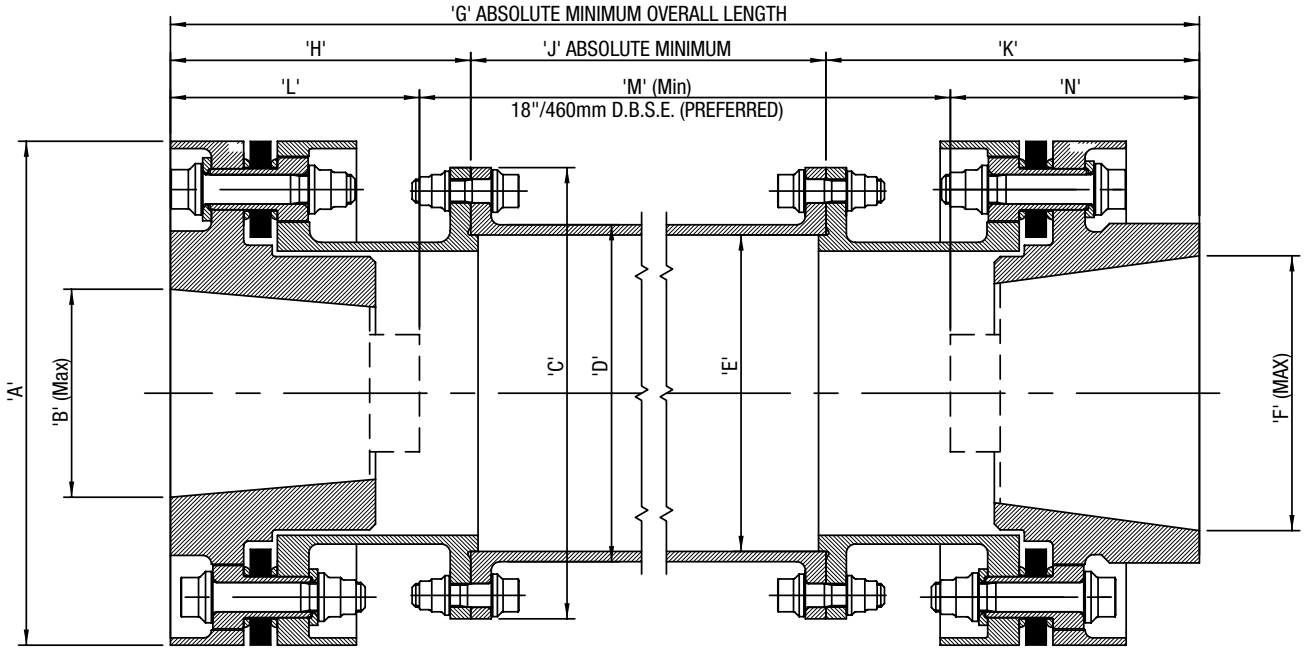
H SERIES HIGH PERFORMANCE COUPLINGS

Technical Specification

HSRE/HLRE/HTRE Dimensional Data (Imperial)

Coupling Designation															
HSRE	HLRE	HTRE	A	B (Max)	C	D	E	F (Max)	G	H	J	K	L	M	N
HSRE-0074			3.74	1.57	3.58	2.36	2.17	1.77	8.43	2.95	1.69	3.78	2.95	1.77	3.78
HSRE-0096			4.72	2.01	4.45	3.03	2.83	2.36	9.45	3.35	1.69	4.41	3.35	1.77	4.41
HSRE-0115	HLRE-0115		5.67	2.56	5.28	3.66	3.46	2.95	10.79	3.78	1.69	5.31	3.78	1.77	5.31
HSRE-0139	HLRE-0139		6.77	3.03	6.06	4.41	4.17	3.54	12.91	4.41	2.17	6.34	4.41	2.24	6.34
HSRE-0159	HLRE-0159		7.76	3.54	6.61	5.12	4.84	4.02	14.92	5.31	2.17	7.44	5.31	2.24	7.44
HSRE-0179	HLRE-0179	HTRE-0179	8.74	3.94	7.87	5.71	5.43	4.53	16.73	5.79	2.76	8.19	5.79	2.83	8.19
HSRE-0200	HLRE-0200	HTRE-0200	9.76	4.33	8.62	6.38	6.06	5.12	18.19	6.30	2.76	9.13	6.30	2.83	9.13
HSRE-0220	HLRE-0220	HTRE-0220	10.71	4.72	9.29	7.05	6.69	5.51	19.37	6.73	2.76	9.88	6.73	2.83	9.88
HSRE-0240	HLRE-0240	HTRE-0240	11.69	5.31	9.96	7.68	7.32	6.10	21.57	7.60	2.76	11.22	7.60	2.83	11.22
HSRE-0262	HLRE-0262	HTRE-0262	12.76	5.71	10.79	8.39	7.99	6.50	22.87	8.19	2.76	11.93	8.19	2.83	11.93
HSRE-0283	HLRE-0283	HTRE-0283	13.70	6.30	11.89	8.98	8.54	7.09	25.35	8.82	3.54	12.99	8.82	3.62	12.99
HSRE-0320	HLRE-0320	HTRE-0320	15.35	7.09	13.19	10.16	9.65	8.07	27.83	9.72	3.54	14.57	9.72	3.62	14.57
HSRE-0357	HLRE-0357	HTRE-0357	17.24	7.87	14.76	11.30	10.75	9.06	31.77	10.87	4.72	16.18	10.87	4.80	16.18
HSRE-0409	HLRE-0409	HTRE-0409	19.69	9.06	16.50	12.95	12.32	10.43	35.51	12.28	4.72	18.50	12.28	4.80	18.50
HSRE-0449	HLRE-0449	HTRE-0449	21.42	10.00	17.83	14.25	13.54	11.42	38.19	13.27	4.72	20.20	13.27	4.80	20.20
HSRE-0485	HLRE-0485	HTRE-0485	23.23	10.83	18.86	15.39	14.65	12.40	40.87	14.29	4.72	21.85	14.29	4.80	21.85

Typical Arrangement



Notes:

- This limit applies to a maximum of 5000 cycles in the life of the coupling
- Weight and inertia for coupling with minimum spacer length/standard hubs with maximum bore
- Weight and inertia for coupling with minimum spacer length/large hubs with maximum bore
- To calculate coupling torsional stiffness:-

$$1/Qc = 2/q1 + 1/q2 + 1/q3 + 1/q4$$

Where
Qc = Torsional Stiffness of coupling
q1 = Torsional Stiffness of membrane unit (excluding shaft)
q2 = Torsional Stiffness of spacer tube
q3 = Torsional Stiffness of driver shaft penetration
q4 = Torsional Stiffness of driven shaft penetration

- Maximum angular misalignmemt per disc pack. For further information on misaligments capacities, see back page.
- A minimum service factor of 1.5 is recommended. (see selection procedure)

TYPE HSRE/HLRE/HTRE

H SERIES HIGH PERFORMANCE COUPLINGS

Technical Specification

Selection Procedure

1. For proper selection, the following data should be obtained:
   - Maximum continuous power (kW or HP)
   - Speed (N rpm)
   - Peak torque (short circuit/overload) (Nm or lb-in)
   - Maximum speed
   - Distance Between Shaft Ends (DBSE)
   - Driver shaft diameter
   - Driven shaft diameter
   - Maximum axial displacements
   - Maximum parallel shaft offset or angular alignment
2. Calculate (Tm) the machine continuous rated torque.

$$\mathbf{Tm = \frac{kW}{N} = kW \text{ per rpm}} \qquad \mathbf{Tm = \frac{100xHP}{N} = HP \text{ per 100 rpm}}$$

3. Calculate minimum coupling rating required using the appropriate application factor Ka.
   Note: API 671 application factor 1.5 minimum

$$\mathbf{T_c = T_m \,.\, K_a}$$

Where $\mathbf{T_c}$ **is the coupling continuous rated torque**
$\mathbf{T_m}$ **is the machine continuous rated torque**
$\mathbf{K_a}$ **is the application factor**
$\mathbf{K_e}$ **is the experience factor consult John Crane**

4. Select coupling size from tables provided.
5. Check maximum hub bores will accommodate shaft sizes.
6. Check maximum speed, misalignment and peak torque capacities are adequate.

Application Factor

Driving machine	Driven machine	Value of K_a
Turbine or electric motor	Generator	1.5
	Centrifugal pump or compressor < 3800rpm	1.5
	Centrifugal pump or compressor > 3800rpm	1.5 .K_e
	Fan or screw compressor	2.25
	Reciprocating pump or compressor with 4 or more cylinders	4
	Reciprocating pump or compressor with less than 4 cylinders	5
Reciprocating engine	All	To be agreed, preferably based on torsional analysis

Ke- Experience Factor

John Crane recommends an experience factor (Ke) to reduce the service factor below 1.5

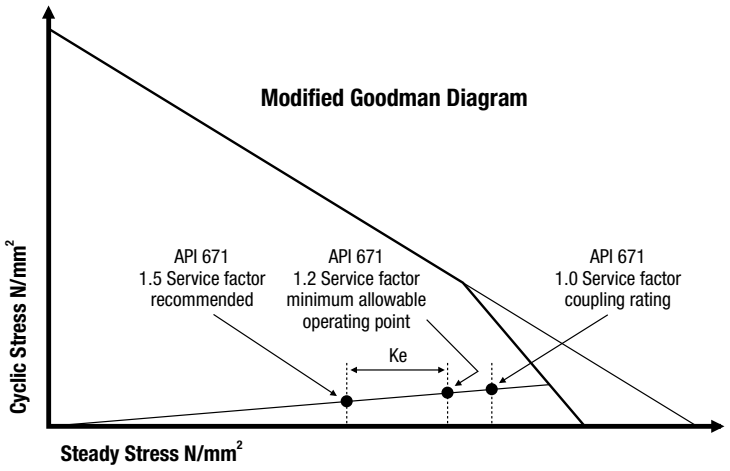
In accordance with API 671:

A lower service factor (1.2 minimum) can be used by mutual consent should weight and or overhung moment of the selected coupling fail to be commensurate to the rotor dynamics.

Refer to:

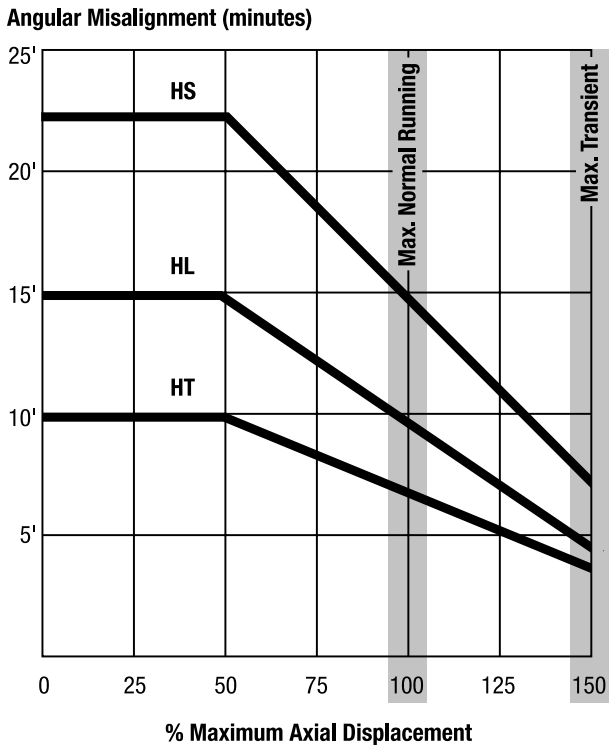
API 671

EN ISO 10441

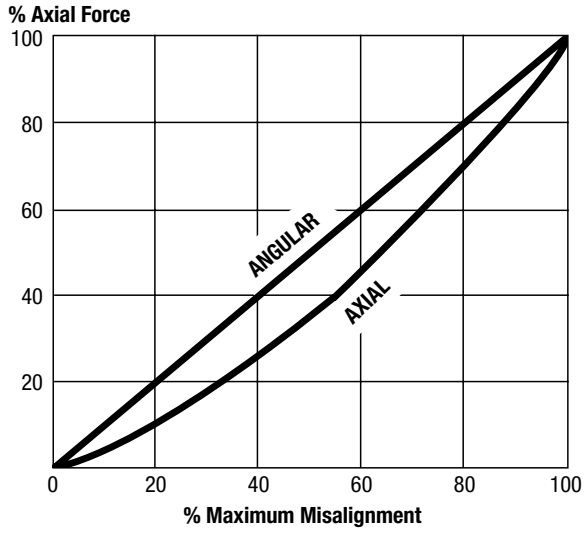


Angular Misalignment vs. Axial Displacement

Axial and angular misalignment have a combine effect on the flexible membrane stresses. Therefore, a reduction in one permits an increase in the other. The trade off is shown in the graph opposite. Transient or short term misalignment limits are also shown in this graph, and are usually applicable to the high thermal growths often caused during start up and shut down of turbine drives. A detailed review of a coupling selection may require consideration of the relative casing and shaft expansions on such applications. Couplings can often be installed with axial pre-stretch to allow their continuous operation at lower displacements.



Restoring Force vs. Displacement



The axial and angular restoring forces can be calculated from the data given in the tables and the graph opposite. The axial load characteristic makes the coupling resistant to axial resonance. The nonlinear characteristic detunes the system, preventing high amplitudes of vibration. John Crane can provide full details of the axial response curves upon request.

TYPE HSRE/HLRE/HTRE

H SERIES HIGH PERFORMANCE COUPLINGS

Technical Specification

North America
United States of America
Tel: 1-847-967-2400
Fax: 1-847-967-3915

Europe
United Kingdom
Tel: 44-1753-224000
Fax: 44-1753-224224

Latin America
Brazil
Tel: 55-11-3371-2500
Fax: 55-11-3371-2599

Middle East & Africa
United Arab Emirates
Tel: 971-481-27800
Fax: 971-488-62830

Asia Pacific
Singapore
Tel: 65-6518-1800
Fax: 65-6518-1803

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