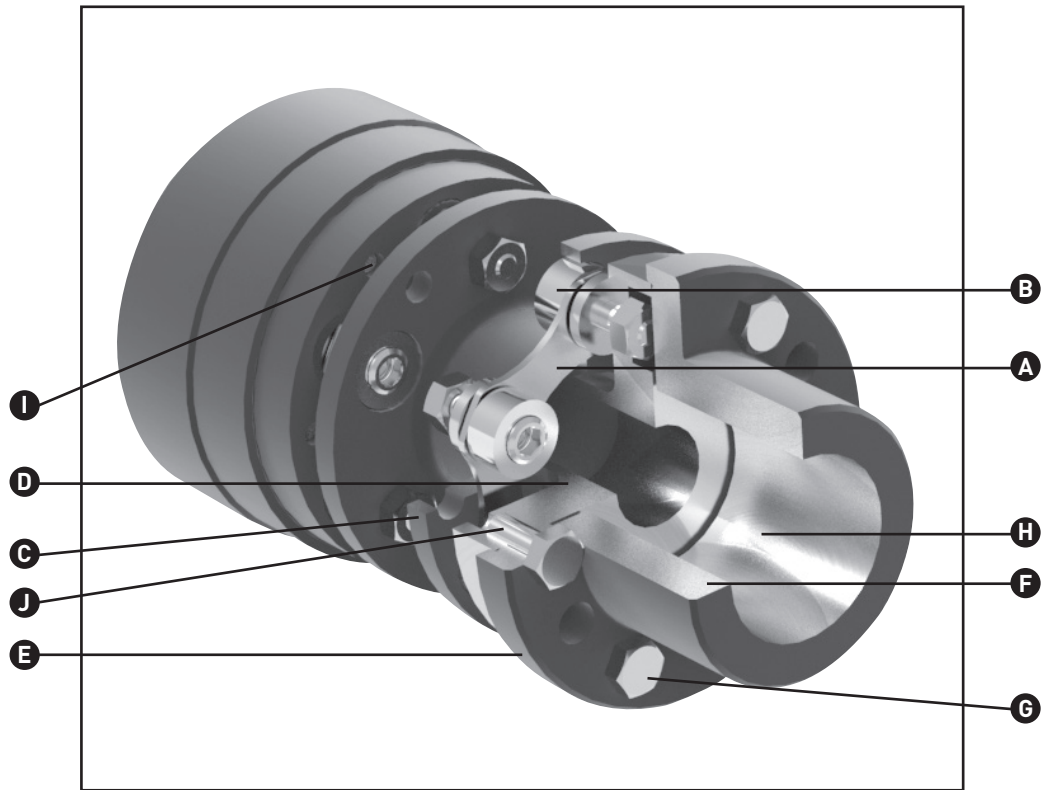


- A – Stainless steel flexible membranes
- B – Overload collars
- C – Cartridge transmission unit
- D – Anti-fly feature
- E – Anti-corrosion treatment
- F – Hubs with API puller holes
- G – Robust hub bolt
- H – Large shaft diameters accommodated
- I – Self-locking thread
- J – Compression bolt feature



Product Description

John Crane's Metastream T Series couplings incorporate scalloped, stainless-steel, flexible membranes. This design gives the most flexible solution for high-torque and misalignment conditions. This range of couplings has been specifically designed to meet the exacting standards of API 610 (ISO 13709), ISO 14691 and API 671 (ISO 10441), with exceptions.

The coupling is available as a cartridge design to maximize reliability, and increase ease of installation on site. This concept ensures the high level of integral balance is maintained when the coupling is installed.

The T Series range incorporates many features listed as standard to ensure safe and trouble-free operation. This gives the user that fit-and-forget reliability expected of all John Crane's Metastream couplings.

- Easy to fit
- Meets API 610 (ISO 13709) and ISO 14691. Can be supplied to API 671 (ISO 10441), with exceptions.
- Intrinsic balance exceeds AGMA class 9
- Ideally suited to pump applications; electric motor and turbine drives in critical process industry; marine and power generation applications
- Coated carbon steel for corrosion protection
- Choice of hub configuration to suit shaft diameters
- ATEX compliant
- Coupling constructions available for -55°C to 150°C

Design Features

- **Fit and forget** - Designed for infinite life and, with correct machinery alignment, will often outlast the machines it connects
- **Overload protection** - Fitted with overload collars to prevent flexible membrane rupture in the event of severe torsional overload
- **Anti-fly retention** - Specifically designed anti-fly guard rings to ensure safe operation, even in the unlikely event of flexible membrane and bolt failure
- **Low imposed loads** - Designed to optimize torque capability while minimizing reaction forces due to misalignment, thus maximizing the life of the machines connected
- **Zero maintenance** - Requires no lubrication or routine maintenance
- **Standard features:**
 - API 610 compliant puller holes
 - Self-locking features ensure hub bolts remain in place under all vibration conditions
 - Compression bolt features ease installation and removal of transmission unit
- **No backlash** - Torsionally stiff design ensures there is zero backlash, making coupling ideal for drives where constant speed is crucial

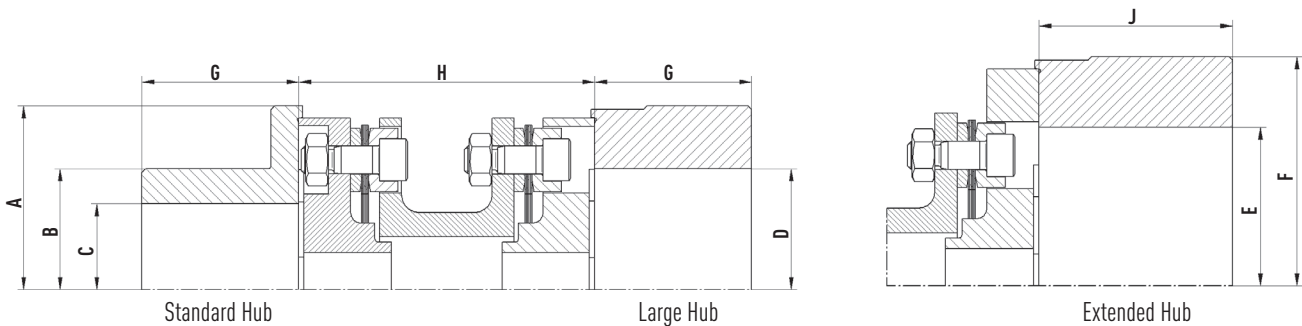
TSK Technical Data (Metric)

Coupling Size	Rating	Max. Continuous Torque Nm	Peak Overload Torque Nm	Max. Speed				(2) Weight – Transmission Unit			(2)(3) Weight – Unbored Hub		
				Standard & Large Hubs		Extended Hub		Standard Abs. Minimum DBSE kg	Extended Abs. Minimum DBSE kg	Per meter extra DBSE kg	Standard kg	Large kg	Extended kg
				Balanced rpm	Unbalanced rpm	Balanced rpm	Unbalanced rpm						
(1) 0014	14	134	268	25,500	8,700	20,000	7,800	1.7	1.9	4.2	0.9	1.7	2.9
0025	25	239	478	25,500	8,700	20,000	7,800	1.4	1.6	3.6	0.9	1.7	2.9
0055	55	525	1,051	20,000	7,800	16,500	6,900	2.6	3.2	6.4	1.5	2.9	5.5
0120	120	1,146	2,292	16,500	6,900	—	—	4.9	—	8.5	3.4	5.5	—
0215	215	2,053	4,107	14,400	6,100	—	—	8.4	—	12.0	5.5	8.6	—
0360	360	3,438	6,876	12,000	5,600	—	—	11.6	—	15.7	8.7	13.5	—
0500	500	4,775	11,938	9,500	4,000	—	—	20.1	—	15.7	20.6	—	—
0740	740	7,066	17,665	8,000	3,800	—	—	25.4	—	19.8	29.4	—	—
0930	930	8,881	22,203	7,000	3,700	—	—	32.6	—	23.4	37.9	—	—
1400	1,400	13,369	33,423	6,000	3,600	—	—	46.2	—	31.4	51.8	—	—

Note:

- Coupling size 0014 is a 4-link coupling with coupling designation TDKS-0014.
- For complete coupling weight, weights of two appropriate hubs plus a transmission unit are required.
- Hubs will be supplied unbored, unless specified. Contact your local sales office regarding standard bore and keyway tolerances.
- Coupling sizes shaded are non-preferred, and TLK coupling should be selected whenever possible.

TSK Typical Arrangement



TSK Dimensional Data (Millimeters)

Coupling Size	A	B	(1) C (Max)		(1) D (Max)		(1) E (Max)		F	G	(2) H - DBSE							J		
			Rect. Key (BS 4235)	Sq. Key (AGMA)	Rect. Key (BS 4235)	Sq. Key (AGMA)	Rect. Key (BS 4235)	Sq. Key (AGMA)			Min. mm		3.5 in.	100 mm	5 in.	140 mm	7 in.		180 mm	250 mm
											Preferred	Absolute								
0014	86	54	40	39	51	49	69	66	105	40	79.9	72.9	X	X	X	X	-	X	X	45
0025	86	54	39	36	51	49	69	66	105	40	78.5	73.3	X	X	X	X	-	X	X	45
0055	105	69	49	44	69	66	90	86	130	45	90.7	84.8	X	X	X	X	X	X	X	55
0120	130	90	65	58	90	86	—	—	—	55	108.2	100.4		X	X	X	X	X	X	—
0215	152	112	81	72	112	107	—	—	—	62	135.1	123.6			X	X	X	X	X	—
0360	179	131	94	83	130	122	—	—	—	70	129.3	123.2			X	X	X	X	X	—
0500	222	181	141	131	—	—	—	—	—	95	133.0	133.0								—
0740	247	206	161	147	—	—	—	—	—	107	138.0	138.0								—
0930	272	223	173	162	—	—	—	—	—	115	148.0	148.0								—
1400	297	248	194	178	—	—	—	—	—	130	171.0	171.0								—

Notes:

- Maximum bores shown are based on standard BS/AGMA rectangular/square keys. Unless otherwise specified, parallel bores will be machined to an IT 7 tolerance, with Js9 key-ways to DIN 6885, BS 4235 or BS 46 Pt1 (in.).
- These DBSE sizes are more readily available. Other lengths to suit specific shaft separations are available on request.
- The coupling sizes shaded are non-preferred, and TLK couplings should be selected whenever possible.
- Dimensions should not be used for construction. Certified dimensions furnished upon request.

Selection Procedure (Metric)

1. Select appropriate service factor (SF) from table below.
2. Calculate the coupling rating (R) from:

$$R = \frac{kW \times 1,000 \times SF}{N}$$

Where:

kW = rated power for drive equipment (kW)
 N = speed (rpm)

3. Select a coupling with the same or higher rating.
4. Check the hub bore capacity is suitable. If not, select a large hub or a larger size coupling.
5. Check peak torque capability is suitable for application.
6. Check speed capability is suitable.
7. Check whether additional dynamic balancing is required.
8. Specify distance between shaft ends (DBSE).

Example:

900 kW electric motor connected to a centrifugal pump at 1,500 rpm with a 180 mm DBSE

$$SF = 1.0$$

$$R = \frac{900 \times 1,000 \times 1.0}{1500}$$

R = 600 kW per 1,000 rpm

Selection: TLKS – 0750

Standard hub bore up to 110 mm
 Large hub bore up to 148 mm
 Peak torque capability – 14 kNm
 Additional balancing should not be required.

Service Factor (SF)

Suggested service factors for electric motor, steam turbine and gas turbine drivers are given below.

Torque Variation	Typical Application	Service Factor
Constant Torque	Centrifugal pump Centrifugal compressor Axial compressor Centrifugal blower	1.0*
Slight Torque Fluctuation	Screw compressor gear, lobe and vane pumps Forced draft fan Medium duty mixer Lobe blower	1.5
Substantial Torque Fluctuations	Reciprocating pumps Heavy duty mixers Induced draft fans	2.0

*Use a minimum service factor of 1.25 on electric motor drives through a gearbox.

*Use a minimum service factor of 1.75 on electric motor drives with VFD coupled to high inertia driven machines.

The examples given are for typical machines and are empirically based guidelines. Knowledge of actual torque characteristics may indicate a different service factor. Consult John Crane for advice.



Kselect is an internet-based selection program for the TSK/TLK. This selection program provides all necessary technical data, including inertias and torsional stiffness.

Visit www.johncrane.com to access this program.

Available Options

- Spark-resistant couplings for hazardous zone operation
- Special materials for low-temperature applications and/or higher corrosion resistance
- Electrical insulation
- Adjustable shims for taper shafts
- Axially rigid construction
- Torque limiting and shear pin designs

Consult John Crane for any other special requirements. John Crane couplings can be adapted to suit virtually all power transmission coupling needs.

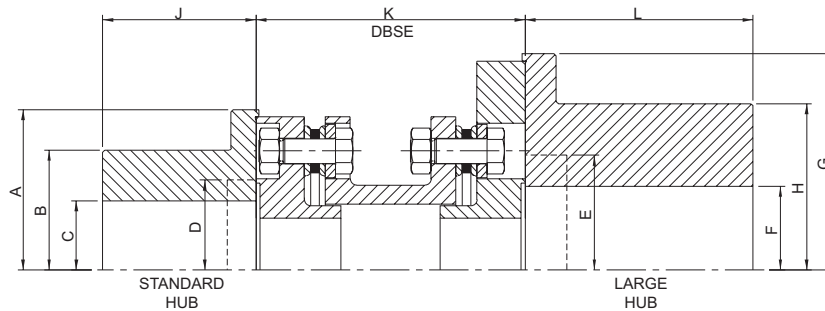
TLK Technical Data (Metric)

Coupling Size	Rating	Max. Continuous Torque	Peak Overload Torque	Max Speed			(1) Weight - Transmission Unit		(1)(2) Weight - Unbored Hub	
				Standard Hub		Large Hub	Abs. Minimum DBSE	Per meter extra DBSE	Standard	(3) Large
				Balanced	Unbalanced	Unbalanced				
	kW/1,000rpm	kNm	kNm	rpm	rpm	rpm	kg	kg	kg	kg
0300	300	2.9	5.7	15,300	5,700	11,300	8.6	16.2	8	19.1
0500	500	4.8	9.6	12,800	5,000	10,100	13.6	21.7	13.7	30.9
0750	750	7.2	14	11,300	4,600	9,000	19.5	27.2	19.3	41.8
1050	1,050	10	20.1	10,100	4,200	9,000	27.9	34	31.1	41.8
1500	1,500	14	28.7	9,000	3,900	8,200	37.5	41.8	42.2	53.7
2000	2,000	19	38.2	8,200	3,700	7,400	49	49	54	70.9
2600	2,600	25	49.7	7,400	3,400	—	66	60	71	—
3350	3,350	32	64.0	6,900	3,200	—	80	68	101	—
4250	4,250	41	81.2	6,300	3,000	—	105	81	135	—
6010	6,010	57	115	5,600	2,850	—	147	101	189	—
8500	8,500	81	162	5,000	2,500	—	212	132	269	—
9013	13,000	124	248	4,200	2,200	—	340	169	406	—
9017	17,000	162	325	3,800	2,050	—	454	203	709	—
9021	21,000	201	401	3,600	1,950	—	547	234	873	—
9036	36,000	344	688	3,050	1,750	—	867	328	1,423	—
9049	49,000	468	936	2,800	1,600	—	1,153	403	1,934	—

Notes:

- For a complete coupling, weights of two appropriate hubs plus a transmission unit are required.
- Hubs will be supplied unbored unless specified. Contact your local sales office regarding standard bore and keyway tolerances.
- Additional weight of extended guard ring is included.

TLK Typical Arrangement



TLK Dimensional Data (mm)

Coupling Size	A	B	(1) C (Max)		D	E	(1) F (Max)		G	H	J	(2) K - DBSE					L	
			Rect. Key (BS 4235)	Sq. Key (AGMA B04)			Rect. Key (BS 4235)	Sq. Key (AGMA B04)				Min. mm		140 mm	7 in.	180 mm		250 mm
			Preferred	Absolute														
300	155	116	82	76	106	143	110	102	209	161	84	130	117	X	X	X	X	110
500	185	143	100	95	127	167	134	127	235	187	100	148	130	—	X	X	X	134
750	209	161	110	102	143	185	148	139	262	208	110	169	146	—	X	X	X	148
1050	235	187	134	127	167	185	148	139	262	208	134	183	161	—	X	X	X	148
1500	262	208	148	139	185	200	161	152	288	225	148	207	179	—	—	—	X	161
2000	288	225	161	152	200	229	184	172	318	255	161	229	197	—	—	—	X	166
2600	318	255	184	172	229	—	—	—	—	—	166	241	210	—	—	—	X	—
3350	342	286	212	197	257	—	—	—	—	—	191	255	221	—	—	—	X	—
4250	371	315	235	219	285	—	—	—	—	—	212	273	244	—	—	—	X	—
6010	417	354	260	242	320	—	—	—	—	—	234	303	269	—	—	—	—	—
8500	465	402	290	280	365	—	—	—	—	—	261	345	311	—	—	—	—	—
9013	529	464	330	318	424	—	—	—	—	—	297	381	346	—	—	—	—	—
9017	611	546	420	381	503	—	—	—	—	—	378	422	387	—	—	—	—	—
9021	653	588	446	419	538	—	—	—	—	—	401	457	416	—	—	—	—	—
9036	761	696	520	483	632	—	—	—	—	—	468	533	496	—	—	—	—	—
9049	834	769	580	546	695	—	—	—	—	—	522	587	552	—	—	—	—	—

Notes:

- Maximum bores shown are based on standard BS/AGMA rectangular/square keys. Unless otherwise specified, parallel bores will be machined to an IT 7 tolerance, with Js9 key-ways to DIN 6885, BS 4235 or BS 46 Pt1 (in.).
- These DBSE sizes are more readily available. Other lengths to suit specific shaft separations are available on request.
- Dimensions should not be used for construction. Certified dimensions furnished upon request.

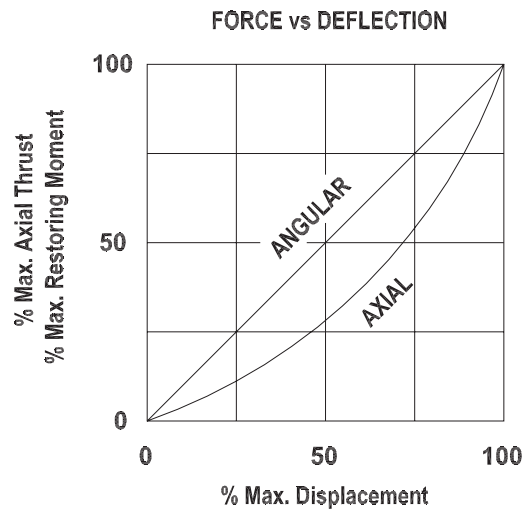
Shaft Alignment

Correct alignment of shafts is essential for reliable machinery performance.

The angular and axial restoring forces in the table below are given at maximum deflections. The chart can be used to determine forces across the full deflection range. The nonlinear characteristics of axial stiffness can dampen a system to prevent high-amplitude axial vibration.

TSK - Misalignment Capabilities					
Coupling Size	AXIAL (1) (3)		ANGULAR (2) (3)		(4) Max Parallel +/-m
	Maximum Per Coupling	Equivalent Max Thrust	Max. Angular	Restoring Moment at Max. Angle	
	+/- mm	kN	deg	Nm	
0014	1.5	0.13	0.8	0.7	0.66
0025	1	0.42	0.5	1	0.36
0055	1.25	0.44	0.5	3	0.42
0120	2	1.00	0.5	9	0.51
0215	2.5	1.66	0.5	16	0.58
0360	2.75	1.71	0.5	28	0.55
0500	3.25	1.1	0.5	41	0.48
0740	3.75	1.3	0.5	48	0.59
0930	4.25	1.5	0.5	54	0.71
1400	5.00	2.7	0.5	61	0.88

TLK - Misalignment Capabilities					
Coupling Size	AXIAL (1) (3)		ANGULAR (2) (3)		(4) Max Parallel +/-m
	Maximum Per Coupling	Equivalent Max Thrust	(5) Max. Angular	Restoring Moment at Max. Angle	
	+/- mm	kN	deg	Nm	
0300	1.4	1.2	0.33	23	0.4
0500	1.7	2.2	0.33	43	0.5
0750	1.9	2.8	0.33	67	0.6
1050	2.2	4	0.33	100	0.6
1500	2.4	5	0.33	145	0.7
2000	2.7	6	0.33	190	0.8
2600	3	7.1	0.33	250	0.8
3350	3.2	8.3	0.33	320	0.8
4250	3.5	9.5	0.33	410	0.9
6010	3.9	11.4	0.33	580	1
8500	4.4	13.5	0.33	780	1.1
9013	5	16.9	0.33	1,130	1.2
9017	5.5	19.5	0.33	1,400	1.3
9021	6	22.4	0.33	1,700	1.4
9036	7.1	29.2	0.33	2,900	1.6
9049	7.9	34	0.33	3,800	1.8



Notes:

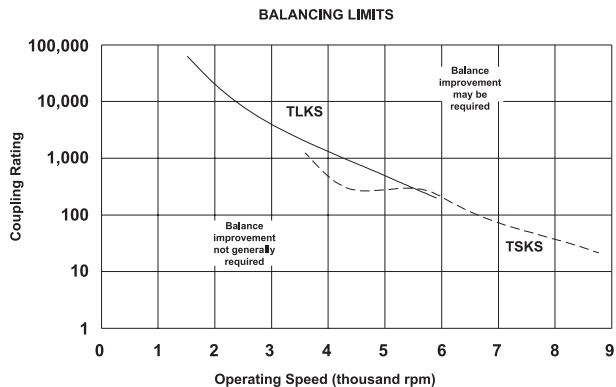
1. Meets NEMA end float specification without modification.
2. Maximum angular misalignment will reduce with rotational velocity in excess of 3600 rpm (only on sizes 0500 to 1400).
3. Maximum angular misalignment will be 50% at the maximum axial, and vice-versa.
4. Values based on preferred min DBSE and maximum angular misalignment. Greater parallel offset is achievable by increasing the DBSE.
5. The coupling sizes shaded are non-preferred, and TLK couplings should be selected whenever possible.

Balance Condition

These couplings are designed with a high inherent balance, due to the precision of the manufacturing process. It is important that all parts are carefully stored and fitted to maintain this integrity.

The inherent balance of the T Series meets AGMA standard 9000-D11 class 9. The adjacent chart relates the T series rating to operating speeds on the basis of the AGMA class 9 characteristic to provide a general guide to determine if dynamic balance improvement is necessary.

When balancing improvement is requested, John Crane will dynamically balance the transmission unit. Hubs may also be dynamically balanced, and this will be carried out after machining the bore but before cutting single keyways.



john crane

TYPE TSK/TLK

METASTREAM®

T SERIES METAL MEMBRANE COUPLINGS

Technical Specification

john crane

TYPE TSK/TLK

METASTREAM®

T SERIES METAL MEMBRANE COUPLINGS

Technical Specification



North America
United States of America
Tel: 1-847-967-2400
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United Kingdom
Tel: 44-1753-224000
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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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