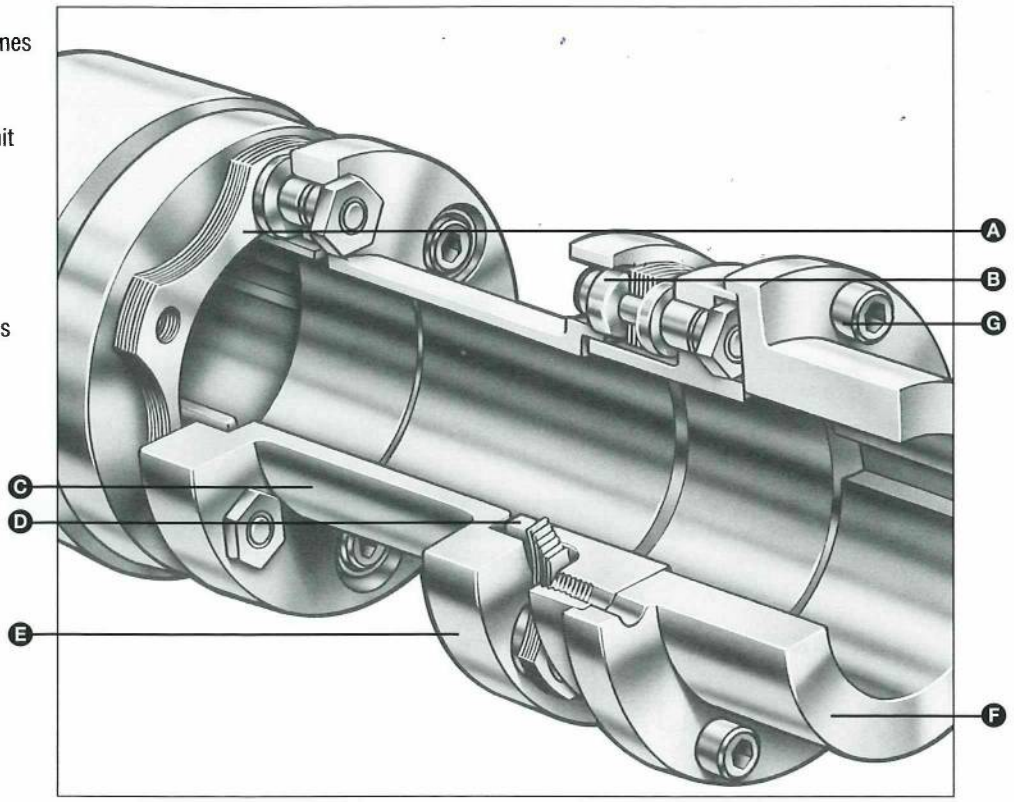
TSK

METASTREAM® T Series Couplings

A – Stainless Steel Flexible Membranes
B – Overload Collars
C – Cartridge Transmission Unit
D – Anti-Fly Feature
E – Anti-Corrosion Treatment
F – Hubs with Puller Holes
G – Robust Hub Bolts



Product Description

Metastream® T Series Couplings, pioneered by John Crane Flexibox®, incorporate a scalloped, stainless steel, flexible membrane design. This design gives the most flexible solution for high torque and misalignment.

- Easy to fit.
- Meets API 610 8th edition. Can be supplied to meet API 671.
- Intrinsic balance meets AGMA class 9.
- Ideally suited for electric motors and turbine drives in critical process industry, marine, and power generation applications.

Design Features

- Excellent power-to-weight ratio.
- High misalignment capability.
- Low imposed forces on machinery leading to:
  - Reduced machinery vibration
  - Maximized bearing life
- Stainless steel flexible membranes for maximum life.
- Cartridge transmission unit eases assembly and gives repeatable balance.
- Overload collars are fitted to protect the flexible membranes in case of a more severe torsional overload.
- Anti-fly retention of the spacer in the unlikely event of membrane failure.
- Jacking bolt feature for easy installation and removal of spacer assembly available.
- Puller holes incorporated into hubs as standard.

John Crane **TSK**

METASTREAM® **T Series Couplings**

TSK Technical Data

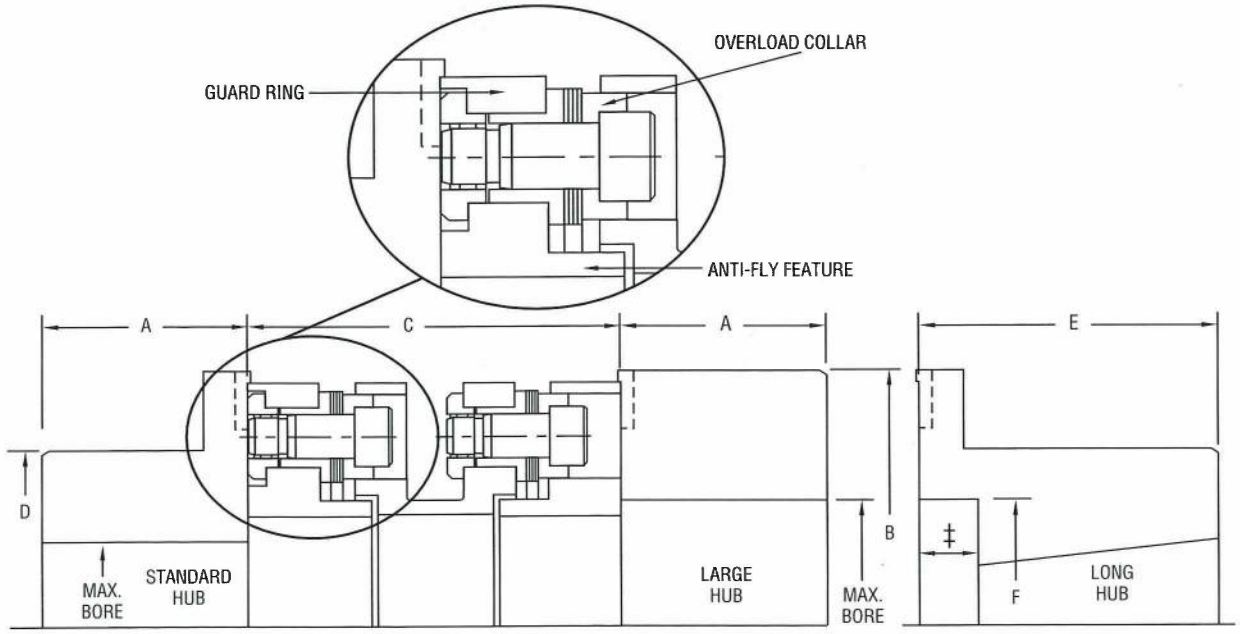
Coupling Size	Rating kW/ 1000 rpm	Max. Continuous Torque Nm	Peak Overload Torque Nm	Max. rpm	Weight - Transmission Unit Minimum DBSE - Kg	Weight - Transmission Unit Extra DBSE Kg/m	Weight Unbored Hubs - Kg Standard	Large	Long
0013	13	124	310	25,500	1.4	3.2	0.9	1.8	-
0033	33	315	790	20,000	2.7	5.3	1.6	3.1	-
0075	75	716	1,790	16,500	5.1	6.8	3.4	5.7	3.7
0135	135	1,289	3,220	14,400	8.9	11.0	5.6	8.8	6.7
0230	230	2,196	5,490	12,000	12.8	13.1	8.8	13.9	11.1
0350	350	3,342	8,360	10,500	16.0	12.5	15.7	-	18.8
0500	500	4,775	11,940	9,500	20.1	15.7	20.6	-	26.2
0740	740	7,066	17,670	8,000	25.4	19.8	29.4	-	37.2
0930	930	8,881	22,200	7,000	32.6	23.4	37.9	-	50.3
1400	1,400	13,369	33,400	6,000	46.2	31.4	51.8	-	72.5

Note that for the complete coupling, weights of two appropriate hubs plus a transmission unit are required.

The standard parallel bore machining tolerance is Grade 7, to give a light interference on the shaft.

TSK keyways will be cut to BS 4235 Pt.1(metric) or BS 46 Pt.1(inch).

TSK Typical Arrangement



‡To Suit Specific Applications

TSK Dimensional Data (mm)

Coupling Size	A	B	Distance Between Shaft Ends C Min.	C-Preferred* in.		in.		in.		D	E	F	MAXIMUM BORES Standard Hub**	Large Hub**	Long Hub***
0013	40	86	66	3.5	100	5.0	140	7.0	180	-	54	-	-	36	51	-
0033	45	105	79	3.5	100	5.0	140	7.0	180	-	69	-	-	46	70	-
0075	55	130	99	-	-	5.0	140	7.0	180	250	90	62	82	65	90	65
0135	62	152	121	-	-	-	140	7.0	180	250	112	77	104	80	102	80
0230	70	179	130	-	-	-	140	7.0	180	250	131	91	123	90	121	90
0350	90	197	131	-	-	-	-	-	180	250	163	106	116	115	-	115
0500	95	222	133	-	-	-	-	-	180	250	181	121	132	127	-	127
0740	107	247	138	-	-	-	-	-	180	250	206	135	151	140	-	140
0930	115	272	148	-	-	-	-	-	180	250	223	153	166	155	-	155
1400	130	297	171	-	-	-	-	-	180	250	248	183	180	172	-	172

All dimensions in mm unless otherwise stated, and should not be used for construction. Certified dimensions furnished upon request.

NOTES: * These Distance Between Shaft End (DBSE) sizes are more readily available. Other lengths to suit specific shaft separations are available.

** Maximum bores shown are based on standard ISO/BS rectangular keys.

*** Based on typical taper shafts. Consult John Crane.

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METASTREAM® T Series Couplings

Selection Procedure

1. Select appropriate service factor SF.
2. Calculate coupling rating R from
   $R = \frac{kW \times 1000 \times SF}{N}$
   where:
   kW = driver rated power
   N = speed (rev./min.)
3. Select a coupling with the same or higher rating.
4. Check that the hub bore capacity is suitable.
5. Check peak torque capability is suitable for application.
6. Check speed capability.
7. Check whether additional dynamic balancing is required.
8. Specify Distance Between Shaft Ends (DBSE).

Example: 150 kW electric motor to centrifugal pump at 2960 rpm

$R = \frac{150 \times 1000 \times 1}{2960}$

R = 50.7 kW per 1000 rpm

Selection: TSK - 0075

Standard hub bore up to 65 mm.
Large hub bore up to 90 mm.
Peak torque capability - 1790 Nm

Additional dynamic balancing should not be required.

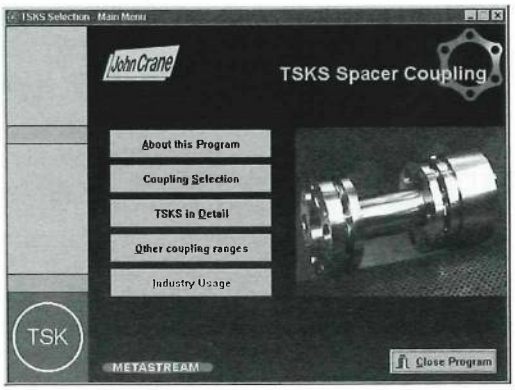
Service Factor SF

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

Torque Variation		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.

The examples given are for typical machines and are empirically based guidelines. Knowledge of actual torque characteristics may indicate a different service factor. For example, variable-speed electric motors may exhibit a fluctuating torque characteristic. Consult John Crane for advice.



A Windows® based computer selection program for the TSK is available. This selection program provides all necessary technical data, inertias, torsional stiffness, etc. Contact John Crane.

Available Options

- Spark-resistant couplings for hazardous zone operation.
- Special materials for low temperature applications and/or higher corrosion resistance.
- Electrical insulation.
- Torque limiting and shear pin designs.

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

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METASTREAM® T Series Couplings

Coupling Alignment

Correct installation and alignment of couplings is essential for reliable machinery performance.

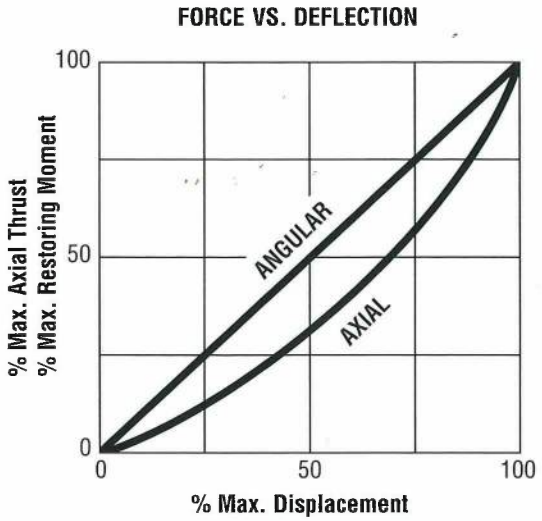
John Crane supplies a variety of shaft alignment equipment and offers alignment training courses.

TSK MISALIGNMENT				
	Max. Axial Misalignment *		Max. Parallel Misalignment **	
Coupling Size	+/– mm.	Equivalent Thrust kN	mm.	Restoring Moment Nm
0013	1.00	210	0.30	4.1
0033	1.25	280	0.36	6.1
0075	1.50	360	0.45	8.8
0135	2.00	560	0.55	11.8
0230	2.50	740	0.60	14.7
0350	2.75	780	0.64	34.3
0500	3.25	1080	0.65	40.7
0740	3.75	1270	0.68	47.6
0930	4.25	1470	0.72	53.9
1400	5.00	2700	0.83	61.3

NOTES: * Meets NEMA end float specification without modification.

** Values based on angular deflection of 1/2° per end and minimum DBSE. Greater misalignment accommodation is possible by increasing dimension C.

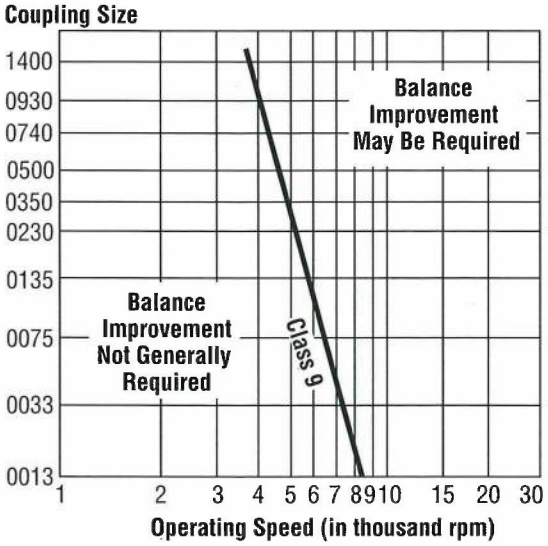
The angular and axial restoring forces in the table below left are given at maximum deflections. The chart can be used to determine forces across the full deflection range. The nonlinear characteristics can detune a system to prevent high amplitude axial vibration.



Balance Recommendations

The inherent balance of the TSK range meets AGMA standard 9000-C90 class 9. The adjacent chart relates the TSK sizes to operating speeds on the basis of this 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 usually be carried out after machining the bore but before cutting single keyways.



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