TYPE ZMH

METASTREAM M SERIES COOLING TOWER COUPLING

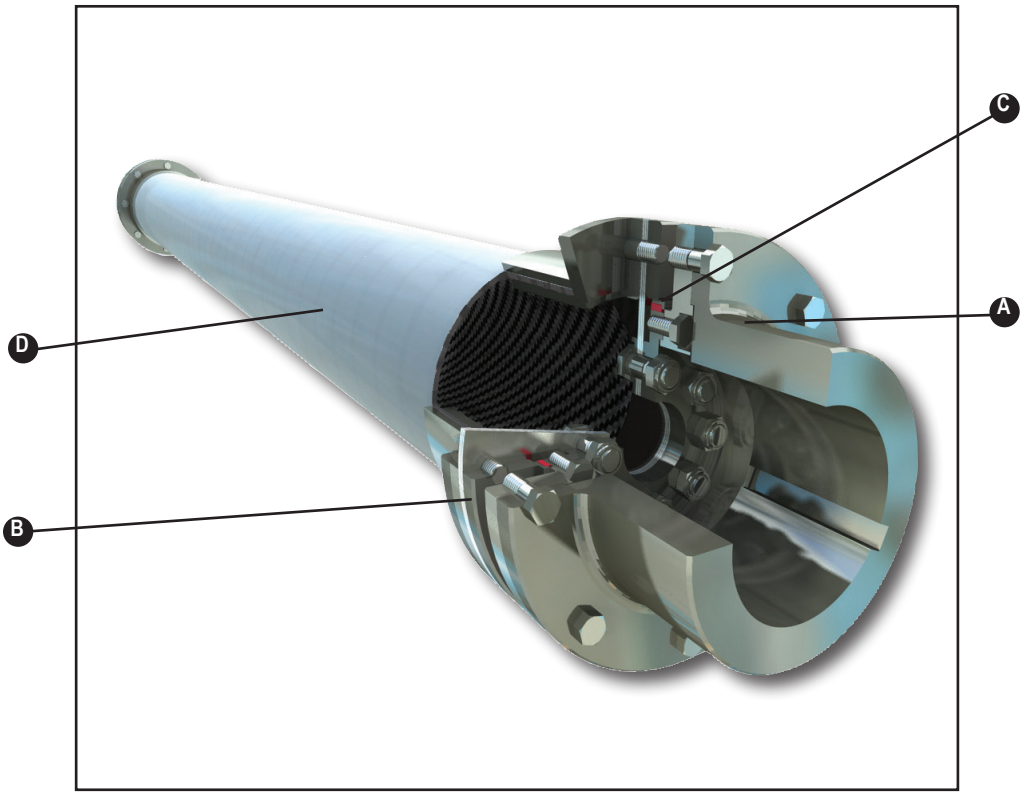
Technical Specification

A – All Stainless Steel Construction

B – Cartridge Membrane Assembly

C – Non-Metallic Anti-Fly Bush

D – Composite Fiber Spacer



Product Description

John Crane's Metastream® ZMH coupling is a non-lubricated, non-wearing, flexible coupling which has been designed to connect remote machines in the humid atmosphere of cooling towers.

The design is based on the M Series coupling and incorporates a radial spoke, stainless steel, flexible membrane design. This design gives the most reliable and safe solution available, and has the added advantage of allowing the machines to disconnect in the event of membrane failure. In the hostile environment of a forced draft cooling tower, the fan drive shaft is a vital element.

- Easy to fit
- Corrosion resistant to cooling tower environments at temperatures up to 300°F / 150°C
- Unitized membrane unit protects the composite fibre spacer assembly in the event of failure
- Up to 80 percent lighter than comparable metal construction designs
- Shaft separation up to 14.5 feet / 4.4 meters in a single span with no need for intermediate bearing
- Tube designs virtually eliminate thermal expansion and sag

Design Features

- Fit and Forget - Designed for infinite life, giving users the confidence to run unspared machinery for longer periods
- Low Imposed Loads - Minimizes the imposed loads on critical machinery components such as bearings and seals, allowing running periods between planned shutdowns to be increased
- Failsafe - Inbuilt close-clearance non-metallic bearing retains the spacer, avoiding damage to adjacent components such as the fan blades
- Reduced Life Cycle Costs - Requires no lubrication, has no wearing parts and can be fitted without special tools
- Ease of Installation - Simply fitted and accurately centered in the hub recesses after shaft alignment

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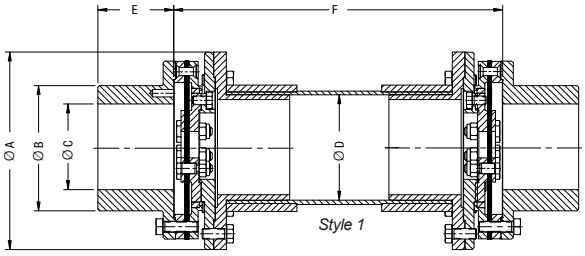
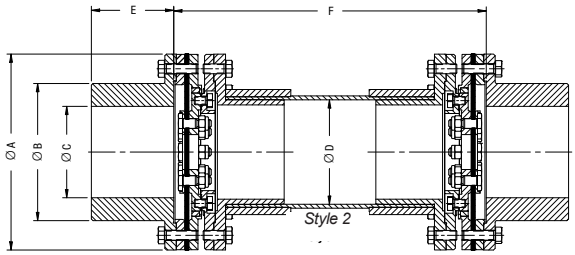
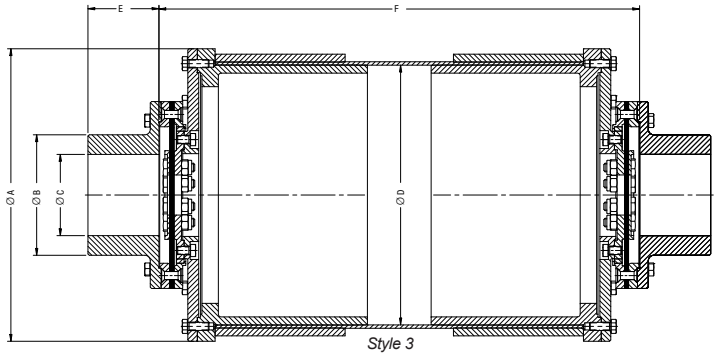
ZMH Technical Data (Metric)

Coupling Designation	Style	(1) Rating	A	B	C	D	E	F	
		kW/ 1000RPM	mm	mm	mm	mm	mm	mm 1800 RPM	mm 1500 RPM
ZMH1-0030	2	27	191	100	70	102	51	3400	3730
ZMH2-0030	2	27	219	100	70	152	51	4060	4445
ZMH1-0060	2	54	191	121	83	102	68	3400	3730
ZMH2-0060	2	54	219	121	83	152	68	4060	4445
ZMH1-0100	1	71	191	133	89	102	81	3400	3730
ZMH2-0100	2	89	219	133	89	152	81	4060	4445
ZMH2-0200	1	164	219	143	95	152	83	4060	4445

ZMH Typical Arrangement







ZMH Technical Data (Imperial)

Coupling Designation	Style	(1) Rating	A	B	C	D	E	F	
		HP/100 rpm	Inch	Inch	Inch	Inch	Inch	Inch 1800 RPM	Inch 1500 RPM
ZMH1-0030	2	3.6	7.5	3.94	2.75	4	2	134	147
ZMH2-0030	2	3.6	8.63	3.94	2.75	6	2	160	175
ZMH1-0060	2	7.2	7.5	4.75	3.25	4	2.69	134	147
ZMH2-0060	2	7.2	8.63	4.75	3.25	6	2.69	160	175
ZMH1-0100	1	9.5	7.5	5.25	3.5	4	3.19	134	147
ZMH2-0100	2	12	8.63	5.25	3.5	6	3.19	160	175
ZMH2-0200	1	22	8.63	5.63	3.75	6	3.28	160	175

Notes:
1 These ratings include an appropriate Service Factor for fan applications.

Selection Procedure

1. Calculate the coupling rating R from:

   $$R = \frac{HP \times 100}{N}$$

   Where:
   HP = rated power for driven equipment (HP)
   N = speed
2. Select coupling with the same or higher rating.
3. Check hub bore capacity is suitable, if not, select a higher rated coupling.
4. Check DBSE vs. speed is suitable.

1. Calculate the coupling rating R from:

   $$R = \frac{kW \times 1000}{N}$$

   Where:
   kW = rated power for driven equipment (kW)
   N = speed
2. Select coupling with the same or higher rating.
3. Check hub bore capacity is suitable, if not, select a higher rated coupling.
4. Check DBSE vs. speed is suitable.

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Coupling Alignment

Correct installation and alignment of couplings 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 can detune a system to prevent high amplitude axial vibration.

These values are maximums for each type of misalignment. It is recommended that the coupling is initially aligned to 10 percent of these values to allow for inevitable movements during the life of the machines.

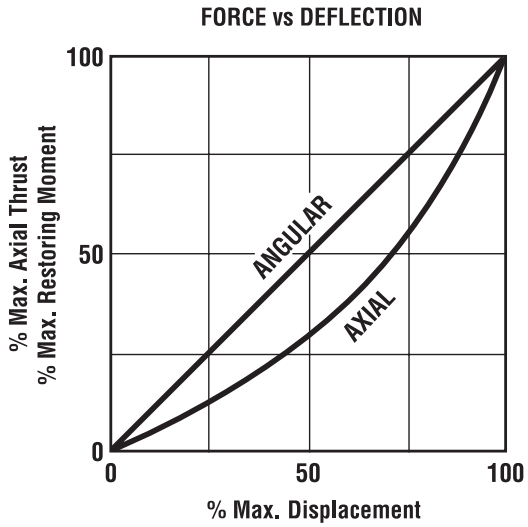
ZMH - Metric Misalignment Capabilities					
Coupling Size	Max. Axial ± mm	Equivalent Thrust kN	(2) Max. Angular Degrees	Restoring Moment at Max. Angle Nm	(3) Max. Parallel mm
0030	1.98	0.7	0.5	16	17.3
0060	2.18	1	0.5	26	17.3
0100	2.18	1.3	0.5	30	17.3
0200	2.18	1.7	0.5	37	17.2

ZMH - Imperial Misalignment Capabilities					
Coupling Size	Max. Axial ± in	Equivalent Thrust lbf	(2) Max. Angular Degrees	Restoring Moment at Max. Angle in.lb	(3) Max. Parallel in
0030	0.08	157	0.5	142	0.681
0060	0.09	225	0.5	230	0.681
0100	0.086	292	0.5	266	0.681
0200	0.086	382	0.5	327	0.679

Notes

2 Per Membrane Bank

3 Values based on angular deflection of 1/2° per end and a DBSE of 79" / 2000mm.



Balance Condition

- John Crane will balance the spacer assembly as standard.
- Hubs and membrane units may also be balanced if specified.

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

Europe
United Kingdom
Tel: 44-1753-224000

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

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

Asia Pacific
Singapore
Tel: 65-6518-1800

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