thompson
COUPLINGS

TCAE

CERTIFIED ISO 9001:2015 COMPANY

MOTOR TO DRIVEN SHAFT ALIGNMENT ELIMINATING COUPLING

NO LASER ALIGNMENT

WIDER DEFLECTION ANGLES

LARGER OFFSETS

MAINTENANCE FREE

REDUCED OPERATING COSTS

BENEFITS

- Requires NO laser alignment
- Reduces operating costs – Long running life
- Maintenance Free – Sealed for life
- Quick and easy installation
- Reduces downtime breakdowns, operating temperatures and power losses
- Relieves the misalignment problems and premature wear caused by thermal expansion, vibration and soft footing
- Minimises the damaging forces that impact on bearings, seals and bodies through side load, overhung and axial load

CAPABILITIES

- Articulates up to 10 degrees angular misalignment, in combination with parallel misalignment.
- Extends and compresses to accommodate movement between connected devices.

AXIAL

PARALLEL

ANGULAR

COMBINATION

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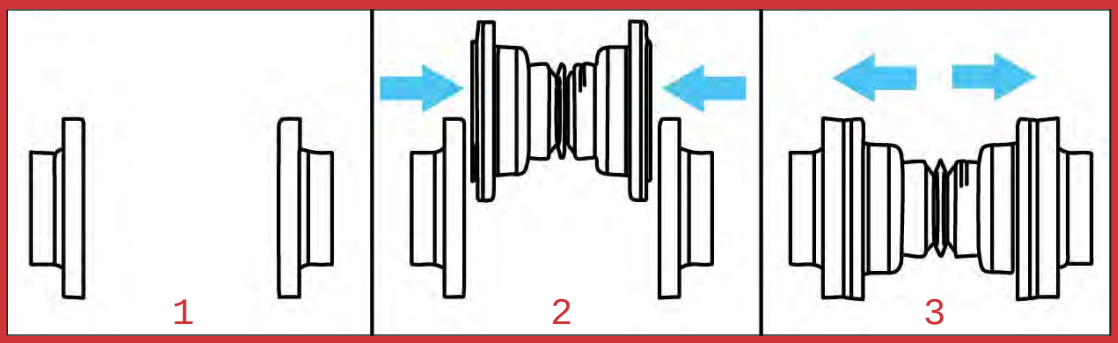
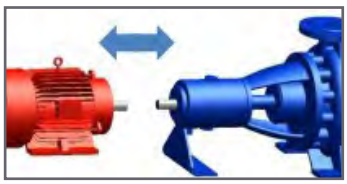
TCAE

Easy Installation

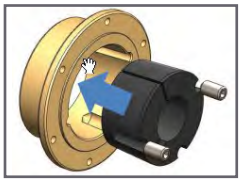
Quick Release Flanges allow for easy installation and replacement of the TCAE. Simply fix the flanges on the pump and motor shafts (1), compress the TCAE to fit in between (2) and then expand and attach the TCAE (3).



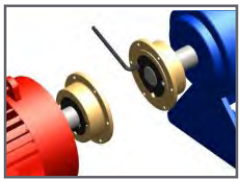
Installation Procedure



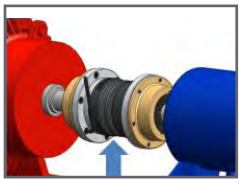
1 If necessary, move the drive / driven device to the correct "end-to-end" shaft distance, in order to fit the TCAE in between.



2 Slide the Taper Lock Bush inside the Quick Release Flange. Do not completely tighten the screws from the Taper Lock Bush against the flange. Repeat the operation for the other flange and bush.



3 Slide both of the Quick Release Flanges onto both drive and driven device shafts with appropriate shaft keys. For best results, locate flange ends flush with the end of the shaft. Alternatively, at least 50% of the flange should be placed on the shaft. Tighten the Taper Lock Bush screws adequately.



4 If necessary, use a sling to insert the TCAE in a horizontal position. Compressing and expanding the TCAE as necessary, slide it between both flanges.Secure the TCAE to both flanges by tightening the bolts in a diametrically opposite sequence.

TCAE-5 at Pindo Deli Indonesia

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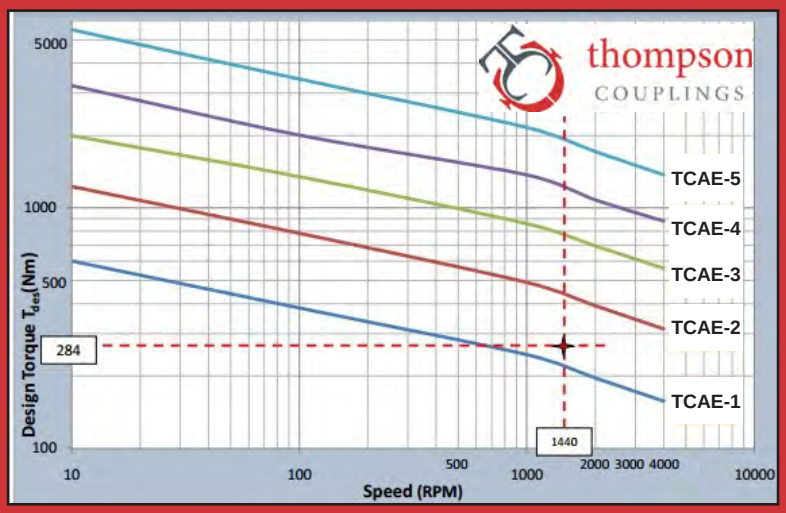
TCAE Size Selection

Design Guide and Sizing Instructions

1. **Determine nominal torque (Nm) for application = T_{nom}**
2. **Determine machine service factor from table = MSF**
3. **Determine duty cycle factor from formula = DCF**
4. **Determine angle factor for coupling from formula = AF**
5. **Calculate design torque (Nm) from formula = T_{des}**
6. **View graph using design torque (T_{des}) and shaft speed (rpm)**
7. **Select appropriate TCAE above intersection point**

Machine Service Factor	MSF
Electric motor	1
Petrol engine (4cyl +)	1.25
Machinery with minor vibrations	1.5
Petrol engine (3 cyl -)	1.5
Diesel engine (4 cyl +)	2
Diesel engine (3 cyl -)	3
Machinery with large impact loads	3



Duty Cycle Factor - DCF

From the required operation hours per day (HPD):

$$DCF = 0.5 \times \sqrt[3]{HPD}$$

Service interval of the TCAE is based on 3 years operation (8 hrs pd, 25 days pm = 7,200hours)

Angle Factor - AF

Operating angle (A^0) of the TCAE is adjustable with the installation:

$$AF = 1-0.035 \times A^0$$

Design Torque - T_{des}

$$T_{des} = \frac{T_{nom}}{AF} \times DCF \times MSF$$

Example

A 35kW electric motor driven centrifugal water pump operates at 1440rpm for 12 hours per day. Installation shows the maximum misalignment angle for the shafts will be 2 degrees.

T_{nom} = 9549 x 35 (kW)/1440(rpm) = 232Nm

MSF = 1 (electric motor with no pulsations)

DCF = 1.14

AF = 0.93

T_{des} = 232 x 1.14 x 1/0.93 = 284Nm

From the graph - select a TCAE-2


TCAE-2 at Visy Australia

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Thompson Coupling Alignment Eliminator Specifications *

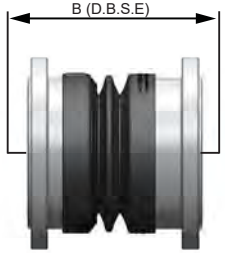
TCAE

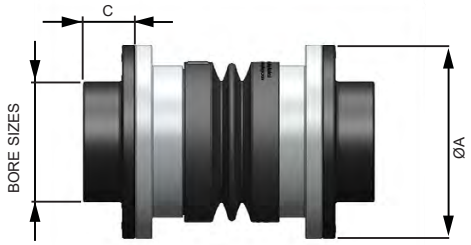
PARAMETERS	UNIT	TCAE-1	TCAE-2	TCAE-2LR
MAXIMUM MISALIGNMENT ANGLE	Degree°	5	10	10
MINIMUM MISALIGNMENT ANGLE	Degree°	0	0	0
MAXIMUM PARALLEL SHAFT OFFSET	E mm	3	5	5
MAXIMUM SERVICE TEMPERATURE	°C	120	120	120
SERVICE LIFE		As per customer application		
DIMENSION ΦA	mm	117	148	178
DIMENSION B NOMINAL D.B.S.E. (range)	mm	86 (82 to 90)	140 (133 to 147)	168 (162 to 178)
DIMENSION C	mm	34	48	48
BORE SIZES	mm	14 to 50	16 to 60	16 to 60
	inch	0.75 to 2.00	0.75 to 2.50	0.75 to 2.50
ALLOWABLE TORQUE (Dynamic & Unfactored)	N.m	390	630	1470
UNFACTORED. POWER CAP (AT 1440 RPM)	kW	15	30	80

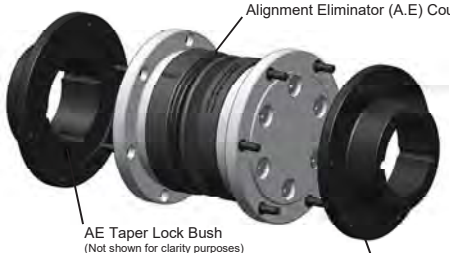
PARAMETERS	UNIT	TCAE-3	TCAE-4	TCAE-5
MAXIMUM MISALIGNMENT ANGLE	Degree°	10	10	10
MINIMUM MISALIGNMENT ANGLE	Degree°	0	0	0
MAXIMUM PARALLEL SHAFT OFFSET	E mm	8	8	8
MAXIMUM SERVICE TEMPERATURE	°C	120	120	120
SERVICE LIFE		As per customer application		
DIMENSION ΦA	mm	215	253	278
DIMENSION B NOMINAL D.B.S.E. (range)	mm	295 (285 to 305)	295 (285 to 305)	315 (300 to 330)
DIMENSION C	mm	61	74	74
BORE SIZES	mm	25 to 75	35 to 95	35 to 95
	inch	1.25 to 3.00	1.50 to 4.00	1.50 to 4.00
ALLOWABLE TORQUE (Dynamic & Unfactored)	N.m	2890	4000	5880
UNFACTORED. POWER CAP (AT 1440 RPM)	kW	120	200	300

* Taper Lock Bush sold separately

* Quick Release flange sold separately







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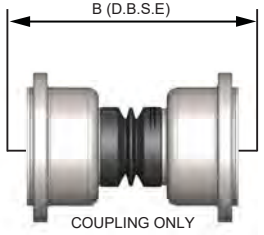
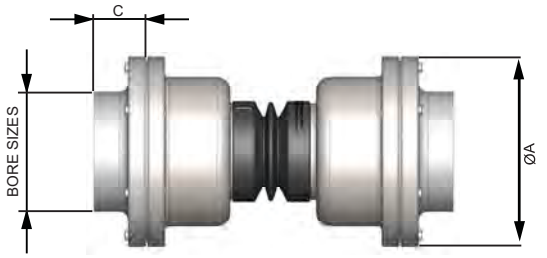
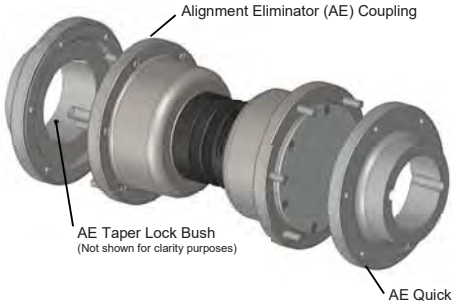
* Taper lock Bush sold separately

* Quick Release flange sold separately







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