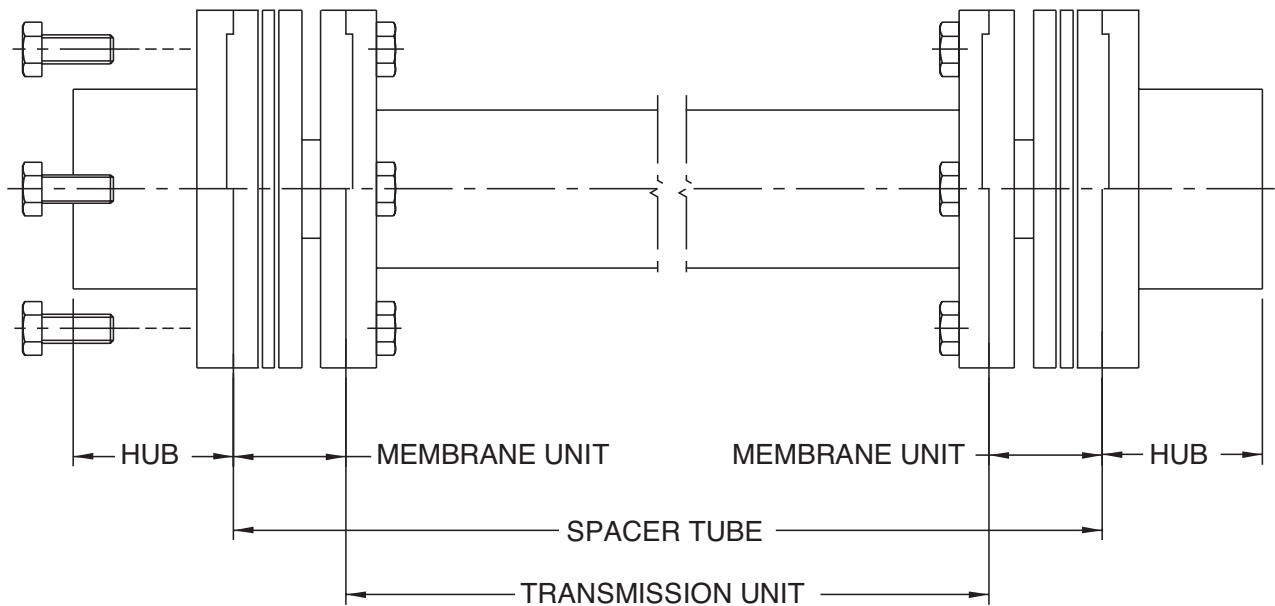


## General Description

The ZMH designs are precision-built couplings comprising two flexible membrane unit assemblies connected by a composite torque tube. The flexing membrane unit assemblies are all stainless steel, as well as the bolts and remaining metal components.

FIGURE 1



## Handling and Storage

1. The coupling is normally dispatched in wooden crates. The packing case should contain a copy of the appropriate assembly drawing (if requested) and the installation and maintenance instructions.
2. The coupling should be stored horizontally and should not be kept on end for long periods.
3. Avoid shocks during handling and protect against corrosion if stored for long periods.
4. On receipt and immediately before assembly, check that items are undamaged and that pilots, recesses and bores are free of burrs.
5. The spacer tube is dynamically balanced using an epoxy compound weight located inside and at each end of the spacer tube. These weights must not be removed.

### Installation Procedure

1. Reference the assembly drawing (if supplied) for all dimensions.
2. Inspect the coupling to insure that it is undamaged, paying particular attention to the spacer tube.
3. Disassemble the coupling by removing the hub bolts on each end. Fit the appropriate hubs to the driver and driven shafts in the usual manner, ensuring that the shaft ends are flush with the faces of the hubs (Figure 2). Tighten the set screws to fix the hub location relative to the shafts.

**NOTE:** If axial setting adjustments are necessary (see Step 5) corrections can be made by overhanging the hub(s). Hub overhang must not exceed 0.13 inch and the shaft must never extend beyond the hub face. Insure the set screws are tightened after any axial adjustments.

4. Check that the hub pilots and flange diameters are concentric to the center of rotation to within 0.004 inch total indicator runout (TIR) and that the hub face is square to the center of rotation to within 0.004 TIR (Figure 2). Refer to any specific requirements or standards for maximum allowable value.
5. Check the distance between shaft ends (DBSE) taking into account, where applicable, any axial movement that may occur in operation (i.e., magnetic center location, etc.). The final operating distance must equal that shown on the assembly drawing.

**NOTE:** When equipment can not be moved to obtain the correct DBSE, axial adjustments are possible by overhanging hubs (see Step 3). If hub adjustments are made, the mating face-to-face dimension (taking into account any axial movement that may occur in operation) must equal the overall free length of the transmission unit (Figure 3). These adjustments can be made while installing the transmission unit assembly and moving the hubs to meet the respective flanges. Ensure the set screws are tightened after making any adjustments.

### Alignment

Align the center lines of the driving and driven machine shafts as follows:

1. Move the equipment into position.
2. Check for any soft foot. Correct before commencing alignment.
3. With one machine firmly bolted down, set the DBSE to equal the transmission unit length (as shown in Figure 1).

**IMPORTANT** Transmission unit length should be measured with the membranes in the neutral position with the compression screws loose. Align the shaft center lines both horizontally and vertically, ideally using the shafts. However, if access prohibits this then align using the hub bosses or flanges. John Crane recommends the reverse periphery method for accurate alignment. This can be done using dial gauges or with a laser shaft alignment kit. Further details on recommended laser alignment vendors are available from John Crane on request. Recheck the DBSE after the shafts have been aligned.

**IMPORTANT** The misalignment tolerances quoted in literature and on drawings allow for dynamic conditions and variations. For the best service from the coupling, John Crane recommends that installed misalignment is no more than 10% of the maximum allowable misalignment, allowance being made for any anticipated movements which will occur during operation (e.g., thermal movements on hot pumps).

FIGURE 2

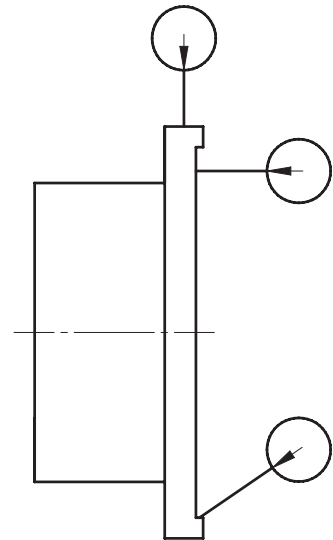
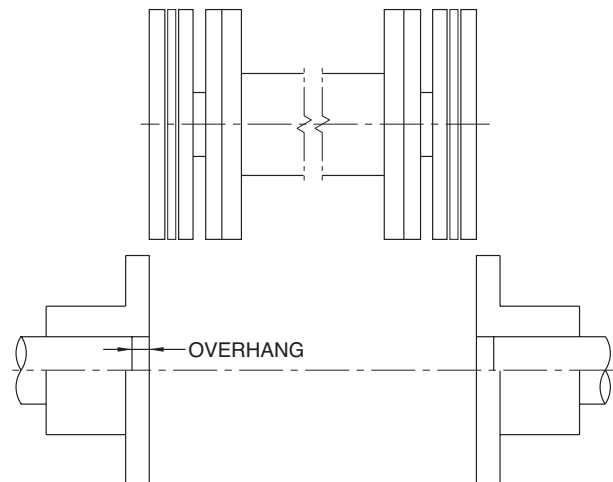


FIGURE 3



## COMPOSITE SPACER COUPLINGS

Installation Instructions

**Installing transmission unit**

1. The transmission unit consists of two membrane units, a spacer tube and spacer bolts. This transmission unit can be installed as an assembly or as individual components. The following procedure is written for installation as an assembly.

**NOTE:** If installing as components, ensure the membrane unit is oriented correctly (see Figure 1). Tightening torque of adaptor bolt for all coupling sizes is 30 lb-ft.

2. Identify the driving and driven end of the spacer tube (if suitably marked).
3. Check that all pilots and recesses are free of burrs. Compress each membrane unit assembly with the aid of pry tools in the hub slots provided and fit the transmission unit assembly between the hubs until the pilots 'snap' into location. If possible, moving one of the hubs along the shaft will make positioning the transmission unit easier. The hub can then be repositioned flush with the mating membrane unit flange. Ensure the set screws are tightened whenever repositioning the hub.
4. Insert the hub bolts at each end and tighten to the torque values listed in Table 1.
5. With the coupling bolted in position, check that the "as-fitted" concentricities correspond with those achieved during alignment.

**TABLE 1**

Size	Hub Bolt Torque (lb.ft)
30	16
60, 100, 200	30
450	70

**Tightening torques**

The bolts are supplied with a nylon self-locking patch.

Patch removal will result in loosening of bolts and potential coupling failure.

**Removal of Transmission Unit**

Remove the hub bolts from each end of coupling. Using a pry tool in the hub slots, compress each membrane unit assembly by until the transmission can be removed from between the hubs. If necessary, move one of the hubs along the shaft and 'crack' the pilot fit with the pry tool and hub slots.

**Maintenance and Inspection**

- Under normal operating conditions, no servicing or maintenance should be necessary. Periodically, the bolts should be checked for tightness and the spacer tube checked for any visible signs of distress. If the hubs or shafts have been disturbed for any reason, alignment must be checked.
- In the event of failure, it is essential that the true cause of failure is found and corrected before a new unit is put into service. The most likely faults will be excessive misalignment, extreme overload or a combination of both. Membrane units are replaced as complete assemblies.
- It is recommended that all self-locking fasteners be replaced after 10 usages.



**All rotating power transmission products are potentially dangerous. They should be used according to the manufacturer's recommendations and appropriate safety standards. It is the responsibility of the user to comply with any such standards.**



# ZMH

## COMPOSITE SPACER COUPLINGS

Installation Instructions



North America	Europe	Latin America	Middle East & Africa	Asia Pacific
United States of America	United Kingdom	Brazil	United Arab Emirates	Singapore
Tel: 1-847-967-2400	Tel: 44-1753-224000	Tel: 55-11-3371-2500	Tel: 971-481-27800	Tel: 65-6518-1800
Fax: 1-847-967-3915	Fax: 44-1753-224224	Fax: 55-11-3371-2599	Fax: 971-488-62830	Fax: 65-6518-1803

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