

Automotive TechTips

TIMKEN
Where You Turn

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TechTips were created to help with installation and maintenance of Timken automotive products. To provide you more information and keep you up-to-date on the latest industry developments TechTips is expanding our scope to keep you better prepared to perform your job. For more information regarding Timken automotive products and services, visit www.timken.com/aftermarket or contact your local Timken distributor.

USING FORMED HUB TECHNOLOGY FOR BOTH DRIVEN AND NON-DRIVEN WHEEL ENDS



At Timken, our automotive product specialists have been receiving many questions regarding the use of formed hubs on both driven and non-driven versions of the same application. Traditionally, manufacturers have relied on the bearing companies to design separate hub unit bearings for the non-driven (Fig. 1) and driven (Fig. 2) versions of the same application. The driven version of the hub unit bearing would have a spline cut in the inside diameter to accept the drive axle shaft and the non-driven version would use either a solid hub or dead spindle design. The dead spindle design requires the use of additional



Fig. 1

Example of a traditional non-driven hub unit bearing with a solid hub (no spline) design.



Fig. 2

Example of a traditional driven hub unit bearing with a spline cut in the inside diameter of the hub to accept the drive axle shaft. This hub does not have a formed end therefore the hub unit bearing relies on the tension of the drive axle shaft to hold the assembly together.

components such as nuts, spacers, and washers. Timken's Formed Hub technology (Fig. 3) allows the same hub unit bearing to be used on driven and non-driven wheels, replacing the solid hub or conventional non-driven dead spindle design. Some automobile manufacturers have started using the same Formed Hub on the front and rear of the vehicle which has allowed them to commonize components and reduce costs.

We often see installers question why the hub unit bearing on a non-driven wheel has a spline cut in the

inside diameter to accept the drive axle shaft. We explain to the installer that these part numbers came from the factory this way and others were converted to a Formed Hub in the aftermarket. Designs converted for the aftermarket have been tested and validated per the OEM specifications for both driven and non-driven wheel ends. The Formed Hub part numbers are installed the exact same way as the solid hub or non-driven dead spindle design they are replacing. Even though the spline is not necessary for a non-driven application it allows us the chance to commonize components

for simplicity and cost savings.

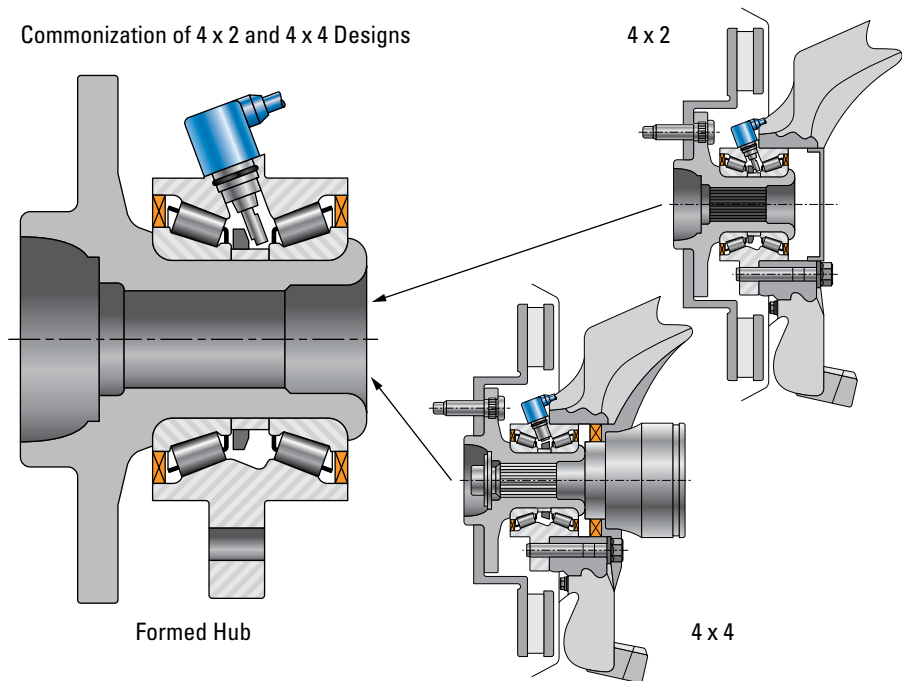
From a performance standpoint, the Formed Hub will improve performance by holding the bearing setting more consistently. Unlike a traditional thread and nut design on a non-driven wheel, there is no chance for the nut to loosen and back off. The resulting system stiffness reduces rotor runout and increases brake system life. And as a self-contained, tamper-proof module, the Formed Hub is designed to be good for the life of the vehicle.



Fig. 3

*Example of a Formed Hub that uses the **formed end** (arrow pointed to this area) instead of the tension of the drive axle shaft to hold the assembly together. The Formed Hub can be used on both driven and non-driven versions of the same application.*

Commonization of 4 x 2 and 4 x 4 Designs



⚠ WARNING Failure to observe the following warnings could create a risk of serious injury.

Proper maintenance and handling procedures are critical. Always follow installation instructions and maintain proper lubrication.

This information is not intended to substitute for the specific recommendations of your equipment suppliers. Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.

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