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1835 Wallace Avenue
Saint Charles, Illinois 60174

TMX Workholding's Engineered Solutions Line Highlighted in Development of 12-Jaw Power Chuck

(July, 2015) Recently TMX Workholding undertook a new project as part of their custom Engineered Solutions product line addressing an agriculture manufacturer's need for specialized workholding. The 12-jaw power chuck was designed with three specific goals in mind; reduce part deformation caused by clamping forces, reduce the set-up time required to change over from one part to another and combine both of these benefits in a product that was sealed for use on a vertical lathe.

The part to be manufactured called for a very thin wall, which is why maintaining part geometry (i.e. roundness) was a key factor in the custom chuck design. Because of this the engineers at TMX Workholding came up with the unusual looking 12-Jaw design. The 12 jaws allow for 24 points of contact with the machined part, meaning less deformation of the work piece caused by the localized clamping forces seen in a typical 3-jaw chuck. In addition to the 24 points of contact, the jaws were designed with carbide grippers to help get a better bite into the forging. This additional grip from the carbide grippers allows lower hydraulic cylinder pressures to be used while maintaining the proper gripping torque.

Another key factor calling for a customized solution from TMX Workholding was a reduction in setup time for the customer. The manufacturer needed to turn a diverse family of thin-walled rings that historically required several hours to change from one size ring to another. To address this TMX engineers employed long jaw stroke in tandem with stepped jaws that allow the customer to grip 5-7 different part diameters with the same set of jaws. This eliminated the need to remove and replace jaws each time they changed part diameters.

To address chip and swarf contamination commonly an issue with Vertical Lathe applications, TMX Engineers incorporated wiper seals along all sliding jaw surfaces, sealed chuck adapters with integrated coolant channels to help eliminate coolant while rotating and sealing collars on the drawbar used to connect the hydraulic cylinder with the back of the chuck. Sealing a chuck reduces maintenance costs by limiting the frequency of disassembly, cleaning and general chuck maintenance. The sealed chuck design also minimized the amount of chip swarf contamination on the chuck's sliding surfaces, thus lengthening chuck life expectancy.

The challenge of addressing these and other workholding related customer needs is the backbone of the Engineered Solutions group at TMX Workholding. This project has been yet another success for TMX Workholding and more importantly the customer.

About TMX Workholding:

TMX Workholding Solutions is a business unit of Toolmex Industrial Solutions. Founded in 1973, Toolmex has over forty years' experience in providing engineered industrial equipment, tools and machinery. Each of Toolmex business units, including Toolmex Lathes, Elektrim Motors, TMX Workholding Solutions and TMX Cutting Tools, are recognized industry leaders throughout North American and Latin American markets. Toolmex global headquarters are located in Natick, Massachusetts with regional facilities in Schaumburg and Saint Charles, Illinois.

CONTACT:

Jim McSpadden - Marketing Specialist TMX Workholding
Phone: 847-524-1074 x119
Email: jim.mcspadden@toolmex.com

Shawn Luschei - Vice President TMX Workholding
Phone: 847-524-1074 x198
Email: shawn.luschei@toolmex.com