



Half Pitch Screws are More Efficient on an Incline

**Plant Location**  
**Frac Sand OEM**  
United States of America

## Close Tolerance Screws for Frac Sand Blender Trucks

### General Description of the Application

The fracking industry as we know it took off in the 1990s, leading to new equipment designs to support the latest drilling technologies. One piece of equipment that is used in hydraulic fracturing is commonly known as a blender truck, which mixes various components such as frac sand or proppant, specialty chemicals, gels and water and pumps them into the well. Frac sand primarily consists of high purity sandstone that is screened to exact size. Multiple screws with a hopper are mounted on the back of the blender truck to allow for the frac sand or proppant to be loaded into the blend tank. The blended mixture of "fracking fluid" is injected into a wellbore to create cracks, and hold them open, in the deep rock formations through which natural gas/petroleum will flow more freely.

The frac sand or proppant must be accurately metered into the process. Manufacturing quality is a necessity for these screws, as they rotate at speeds between 200 to 400-RPM at a 45-degree angle. As the industry leader in quality screw conveyor manufacturing, KWS provides screws to several OEMs in the US that design and build blender trucks and other equipment for the oil industry.

### Design Parameters of Application

**Product Type:** Frac Sand, Proppant and Dry Additives

**Material Density:** 50 to 60 Lbs. per Cubic Foot

**Capacity:** 18,000 Cubic Feet per Hour

**Duty:** 24 Hours per Day, 7 Days per Week

### Advantages Provided by KWS

KWS equipment is held to the highest quality standards before it is approved for shipment. As an ISO 9001-2015 certified company, every process is strictly monitored to ensure the Customer receives unmatched Service and Quality. Since the screws operate in a high-speed application, any manufacturing imperfection can result in a mechanical failure. KWS straightens every screw to within 0.015-inches Total Indicated Runout (TIR) in a lathe prior to shipment.

Frac sand and proppant are abrasive and will wear down the frac blender screws over time. In order to extend the life of the screws, KWS welds a band of hardsurfacing on the carrying face of the flights and outer edge. Hardsurfacing is a hardened metal that resists abrasion. If the screw wears down too quickly, conveying capacity and accuracy is reduced. After the screw flights are hardsurfaced, they are then ground to a specific outside diameter (OD) tolerance. If the OD is over tolerance, the screw flights could contact the inside of the screw conveyor housing and lead to failure.

Currently, two different screws are manufactured by KWS. Both screws are hardsurfaced and manufactured to close tolerances. One screw design utilizes half pitch flights and the other uses full pitch flights. Pitch is the measurement between the tips of each flight. Full pitch refers to a screw with a pitch dimension that is equal to the OD of the screw. For example, a 12-inch full pitch screw has a 12-inch OD with a 12-inch pitch. Half pitch refers to a screw with a pitch measurement that is ½ of the OD of the screw. For example, a 12-inch ½ pitch screw has a 12-inch OD with a 6-inch pitch. Decreasing the pitch decreases the volume between flights, which is conveyed with each revolution. Shorter pitch screws perform better in inclined applications.



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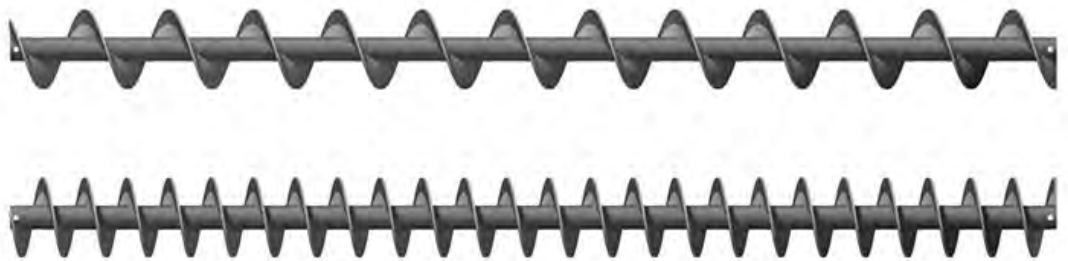
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### Testimonial

"The close clearance screws provided by KWS have increased conveying efficiency and decreased our labor costs. We appreciate your attention to detail!"

- Purchasing Manager, Frac Blender OEM



Comparison of Full and Half Pitch Screws



KWS Screws are Located inside the Tubular Housings on the Right Side of Blender Truck



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Welder Applies Weld-On Hardsurfacing Material to Flights



Hardsurfacing Reduces Abrasion on Flights