TurboShear System

The NOV TurboShear™ System reduces the cost of mixing polymers and clays while improving mud properties. Shearing the polymers eliminates fish eyes and prevents polymer chaining (long strings), which cannot pass through shaker screens. Pre-hydrating clays Improves viscosity per pound of clay, reduces water loss and Improves filter cake. Additionally, the TurboShear System can be used to dissolve salt and mix oil-base fluids.

Adding clays directly to an active mud system does not result in mud properties equal to those achieved with pre-hydration in a high shear system. When clays are added to the active mud system, high shear cannot be applied to the clays since degradation of drill solids and barite will occur. Clay which has not been properly hydrated when added to an active mud system often continues to hydrate for several days, during which the viscosity level increases. Additional water to reduce viscosity may require disposing of excess mud, which increases costs. Hydrating clays and shearing polymers in a separate compartment, prior to introduction to the active mud system, ensures quality mud properties.

The TurboShear pump is available from spare parts to complete package systems. It comes in a belt-driven or diesel-driven package including a hopper, mud gun and transfer line orifice plate. A complete system, including skid, tanks and piping, is also available.

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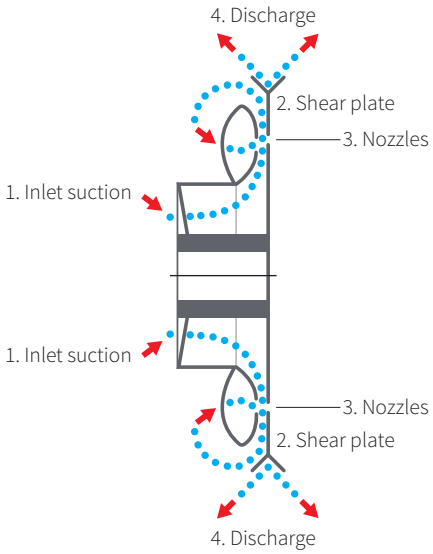
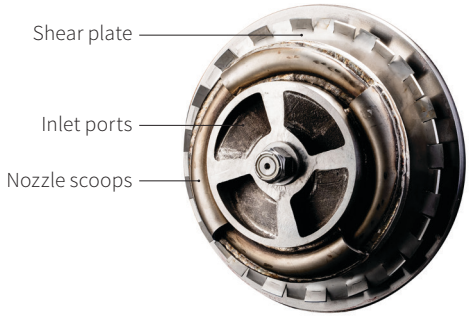
The NOV TurboShear System utilizes the following six methods of shearing:

1. Fluid enters the pump through the inlet ports and impacts the shear plate.
2. Fluid passes through the teeth of the shear plate, which is turning at 2,200 RPM.
3. Fifty percent of the fluid is re-circulated through the four nozzle scoops and is jetted through 44 nozzles against the shear plate and incoming fluid.
4. Liquid shear occurs at more than 5,000 feet per minute. The tip speed of the turbine is more than 7,000 feet per minute, causing a liquid shear to occur in addition to the mechanical shear.
5. Shearing occurs as the fluid is jetted into the hydration tank through the mud gun at more than 6,000 feet per minute.
6. The product is sheared between the fluid leaving the nozzle and the venturi throat of the hopper.





TurboShear System specifications

Available sizes	
Size	6x5 and 8x6

Standard equipment	
Equipment	TurboShear belt driven unit 6 in. hopper 3 in. mud gun Transfer line orifice plate

Equipment ratings	
HP	75 HP with 1.0 Sp.Gr.
Operating speed	2,200 RPM
Hopper nozzle	1½ in.
Hopper flow	375 GPM
Mud gun nozzle	1 in.
Mud gun flow	185 GPM
Fluid transfer rate	560 GPM

Dimensions and weight		
Electric pump package	**Approx. dimensions**	40¼ wide x 47½ high x 36 in. long
	Weight	2,050 lbs
Hopper	**Approx. dimensions**	28 wide x 41 high x 58½ in. long
	Weight	325 lbs
Mud gun	**Approx. dimensions**	7 in. long x 3½ in. dia.
	Weight	100 lbs