

MISSION PRODUCTS

FLUID END EXPENDABLES

WHITE LIGHTNING™ BONDED PISTON

The White Lightning bonded piston is manufactured from a highly engineered elastomeric compound that provides high resistance to water, oil, and synthetic based drilling fluids. The compound provides superior resistance to tear, abrasion, and extrusion and is capable of operating in fluid temperatures up to 230°F (110°C).

BLUE LIGHTNING™ PISTON

Designed for operating in all drilling environments, the Blue Lightning piston is a super premium bonded polyurethane piston. It is manufactured from an engineered elastomeric compound that delivers excellent resistance to tear, abrasion and extrusion while maintaining high mechanical properties. The Blue Lightning piston is capable of operating in fluid temperatures up to 200°F (93°C).

SLIP SEAL BULLITT™ PISTON

Built to deliver an economical solution for harsh drilling environments, the Slip Seal Bullitt piston is a multi-durometer, solid bonded urethane piston. The design of the piston promises ease of assembly when loading into the liner due to the smooth engagement of the piston into the liner bore. It offers increased resistance to synthetic and oil based drilling fluids and is capable of operating in fluid temperatures of up to 225°F (107°C).

GREEN DUO PISTON

The Green Duo piston is a bonded dual durometer piston that is highly resistant to abrasion and tear. The bonded construction resists extrusion under pressure and restricts movement to reduce the build-up of heat. Green Duo pistons are recommended for systems with oil or synthetic based mud. It is also recommended for water based muds when weights are 11 lb/gal or over. As in all urethane pistons, the backflush requirement is recommended at 14 gal/min or greater for each piston.

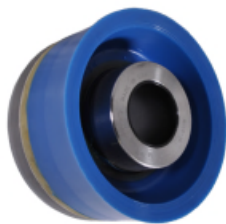
Excellent	Blue
Very Good	Green
Good	Yellow
Poor/Not Recommended	Red

Piston Application

Features	Blue Lightning	Bonded White Lightning	Green Duo	Slip Seal Bullitt
Abrasion Resistance	Blue	Blue	Blue	Blue
Tear Resistance	Blue	Blue	Blue	Blue
Resistance Oil	Green	Green	Green	Green
Chemical Resistance	Green	Green	Green	Green
Resistance to Synthetic Oil	Green	Green	Green	Green
Temperature Resistance	Blue	Blue	Yellow	Blue
Extrusion Resistance	Blue	Green	Green	Green
Use in Oil Base Muds	Blue	Blue	Blue	Blue
Use in Synthetic Base Muds	Blue	Blue	Green	Green
Use in Water Based Mud >#10	Yellow	Yellow	Yellow	Yellow
Use in Water Based Mud <#10	Red	Red	Red	Red
Use in Water Based Mud >#11	Green	Green	Green	Green
Use in Water Based Mud <#11	Red	Red	Red	Red
Use in Clear Water	Red	Red	Red	Red
Use in Salt Water	Red	Red	Red	Red
Use in Low Solids	Blue	Blue	Blue	Blue
Use in Moderate Solids	Blue	Blue	Blue	Green
Use in High Solids	Green	Green	Yellow	Yellow
Linear Wear Characteristics	Blue	Blue	Blue	Green
Use in Ceramic Liners	Blue	Blue	Blue	Blue
Maximum Temperature (Flow Line) (°F)	200	230	180	225



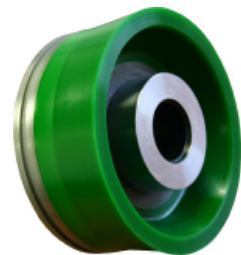
White Lightning Bonded Piston



Blue Lightning Piston



Slip Seal Bullitt Piston



Green Duo Piston