

FEATURE

- Closed loop directional control
- Capability to engage/disengage via downlink
- Automatically adjusts steering percentage
- Nudges can increase/decrease inclination by 0.5 deg
- Can be combined with azimuthal bias
- Up to 50% left and right
- +/- 12.5% increments

STEERING

- Steering setting is downlinked from surface
- The entire string rotates while steering in the desired direction
- Full 3D steering capability to gravity or magnetic orientation
- Both Inclination and Azimuth can be controlled while drilling via downlink

POWERDRIVE MAIN ASSEMBLIES

- Powerdrive has two main assemblies:
Bias Unit (BU): Converts hydraulic pressure drop across the bit nozzles and flow restrictor (if used) into mechanical energy for steering the well path.
Control Unit (CU): Provides directional platform from which the Bias Unit is controlled allowing the tool to steer in desired direction. Linked with the Bias Unit through a mechanical coupling.

PACESETTER ROTARY STEERABLE SYSTEM SPECIFICATIONS

The Powerdrive Orbit tool is Pacesetter's Rotary Steerable System. It is a robust tool with improved control in harsh environments. It allows for higher mud weights, larger flow ranges, aggressive mud and improves debris removal. The Powerdrive Orbit gives more control during stick/slip situations, better control during jamming and it improves overall reliability. Using a Rotary Steerable System reduces drilling time by minimizing wiper trips and increasing hole quality, allowing for improved and faster completions.



SPECIFICATIONS	ORBIT 475	ORBIT 675
Nominal OD (API)	4.75 in	6.75 in
Hole Size	5¼ in to 6¾ in	8.5 in to 8¾ in
Overall Length	13.5 ft	13.5 ft
Max. Collar Dogleg	30°/100 ft [30° m] sliding 10°/100 ft [10°30 m] sliding	16°/100 ft [16°/30 m] sliding 8°/100 ft [8°/30 m] rotating
Build Rate	0° - 8°/100 ft	0° - 8°/100 ft
Max. Operating Torque [†]	4,000 ft. lbf [5,420 N.m]	16,000 ft. lbf [21,700 N.m]
Max. Operating Load	340,000 Lbf [1,500,000 N]	1,100,000 lbf [4,900,000 N]
Max. Weight on Bit	50,000 lbf [223,000 N]	65,000 lbf [290,000 N]
Weight of Assembly in Air	584 lbs	1276 lbs
Max. Lost Circulation Material	35 lbm/bbl medium nut plug	50lbm/bbl medium nut plug
Flow Range [‡]	170-330 galUS/min [645-1,259 L/min]	250-950 galUS/min [946-3,590 L/min]
Lateral Vibrations	Shock level 3 (50-gn threshold), 30-min limit	Shock level 3 (50-gn threshold), 30-min limit
Stick/Slip	± 100% mean rotational speed, 30-min limit	±100% mean rotational speed, 30-min limit
Max Rotational Pressure	350 rpm	350 rpm
Max. Temperature [§]	302 degF [150 degC]	302 degF [150 degC]
Max. Hydrostatic Pressure	20,000 psi [138 MPa]	20,000 psi [138 MPa]
Pressure Drop Across Tool	Density (in lbm/galUS) x Flow ² (in galUS/min) 14,500.00	Density (in lbm/galUS) x Flow ² (in galUS/min) 56,000.00
Mud Sand Content	1% by volume	1% by volume
ROTARY CONNECTIONS		
Collar Upper Connection	3½ IF Box	4½ IF box
Bit Box	3½ Reg	4½ Reg
SENSORS		
Bit Box to Gamma Ray	5.86 ft [1.79 m]	6.40 ft [1.95 m]
Bit Box to Inclination	6.73 ft [2.05 m]	7.27 ft [2.21 m]
Bit Box to Azimuth	8.83 ft [2.69 m]	9.37 ft [2.85 m]
Inclination Accuracy	0.11 (at sigma level)	0.11 (at sigma level)
Azimuth Accuracy	1.8 at 90° inclination (at 1 sigma level)	1.8 at 90° inclination (at 1 sigma level)
Gamma Ray Accuracy, Azimuthal 4-Quadrant	±5% (30-s averaging window)	±5% (30-s averaging window)
Shock Detector Threshold, Radial	50 gn ± 5gn (±500 gn max, peak)	50 gn ± 5gn (±500 gn max, peak)