

VERTICAL SCOUT®

VERTICAL SEEKING ROTARY STEERABLE



TECHNICAL DATA SHEET

The Vertical Scout is a fully mechanical, vertical Rotary Steerable System. Its unique design ensures the system autonomously seeks verticality as soon as wellbore deviation is encountered, without the requirements of any surface commands.

Suitable for any vertical application where challenging drilling conditions exist, such as consolidated formations, highly dipped formations or salt zones, etc., the Vertical Scout will ensure a smooth vertical wellbore can be achieved while maximizing ROP.

The Vertical Scout consists of a non-rotating outer body and a rotating inner mandrel, which is coupled directly to the bit.

The control unit incorporates two sets of interlocked control pads, positioned on two separate planes orientated at 90° apart, along with an internal pendulum which acts as a biasing mechanism. The pressure drop across the bit enables the biasing unit to energize the necessary control pads to direct and hold the BHA vertical, as a result of the corrective lateral forces.



Control Unit

- Four points of contact
- Two sets of interlocked pads. As one pad extends, the opposing pad retracts.
- Control pads never go over-gauge. The interlocked mechanism ensures all 4 pads always remain on-gauge.
- The control pads have the ability to collapse within an under-gauge wellbore, with and without circulation.

BHA Configuration

- Can be used in rotary applications
- Can be used in motor assist applications
- Bit selection, along with stabilization size and placement can be optimized to maximize performance



VERTICAL SCOUT®

SPECIFICATIONS



	5 inch	6-1/4 inch	7-1/8 inch	8 inch	9-5/8 inch	14 inch
Hole Size Range	6" - 6-3/4" 152 mm - 171 mm	7-7/8" / 200 mm	8-3/8" - 8 3/4" / 213 mm - 222 mm	9-7/8 - 11", / 251 mm - 279 mm	12-1/4" - 14-3/4" / 311 mm - 375 mm	17-1/2" to 28" / 445 mm, 711 mm
Maximum Control Housing OD (Activated)	6", 6-1/8" 6-1/4", 6-1/2", 6-3/4" 152 mm, 156 mm, 159 mm, 165 mm, 171 mm	7-7/8" / 200 mm	8-3/8", 8-1/2, 8-3/4" 213 mm, 216 mm, 222 mm	9-7/8", 10-5/8", 11" 251 mm, 270 mm, 279 mm	12-1/4", 14", 14-1/2", 14-3/4", 311 mm, 356 mm, 368 mm, 375 mm	17-1/2", 20", 26", 28", 445mm, 508 mm, 660 mm, 711 mm
Maximum Control Housing OD (Deactivated)	5.65", 5.77", 5.90", 6.15", 6.40", 143 mm, 147 mm, 150 mm, 156 mm, 163 mm	7.45" / 189 mm	7.95", 8.07", 8.32" / 202 mm, 205 mm, 211 mm	9.38", 10.10", 10.48" 238 mm, 257 mm, 266 mm	11.43", 13.18", 13.68", 13.93" 290 mm, 335 mm, 348 mm, 354 mm	16.27", 18.77", 24.28", 26.28" 413 mm, 477 mm, 617 mm, 668 mm
Inside Diameter (D)	1-1/8" / 29 mm	1-5/8" / 41 mm	1-7/8" / 48 mm	2" / 51 mm	2-3/4" / 70 mm	3" / 76 mm
Tool Length	17.6' / 5.36 m	19.8' / 6.04 m	20' / 6.10 m	20.7' / 6.3 m	19.9' / 6.07 m	21.7' / 6.61 m
Tool Weight	1,147 lbs / 520 kg	2,168 lbs / 983 kg	2,430 lbs / 1102 kg	3,546 lbs / 1608 kg	4,860 lbs / 2204 kg	8,750 lbs / 3969 kg
Upper Connection	3-1/2" Reg Box	4-1/2", XH Box, 4-1/2" IF Box, 4-1/2" Reg Pin		6-5/8" Reg Box or Pin	6-5/8" Reg Box or Pin 7-5/8" Reg Box or Pin	7-5/8" Reg Box or Pin
Bit Connections	3-1/2" Reg Box	4-1/2" Reg Box		6-5/8" Reg Box	6-5/8" Reg Box 7-5/8" Reg Box	7-5/8" Reg Box
General Data						
Optimal Pressure Drop Across Bit	500 - 550 psi / 3.45- 3.79 MPa					
Maximum Pressure Drop Across Bit	700 psi / 4.83 MPa		600 psi / 4.14 MPa		850 psi / 5.86 MPa	1,000 psi / 6.89 MPa
Minimum Piston Pad Force	2,525 lbf / 1123 daN	2,513 lbf / 1118 daN	3,181 lbf / 1415 daN	5,346 lbf / 2378 daN	6,637 lbf / 2952 daN	<20" HS 10,053 lbf / 4472 daN >20" HS 14,313 lbf / 6367 daN
Maximum Piston Pad Force	5,052 lbf / 2247 daN	4,396 lbf. / 1995 daN	5,566 lbf / 2476 daN	10,692 lbf / 4756 daN	14,103 lbf / 6273 daN	<20", HS 25, 120 lbf / 11 173 daN > 20" HS 35,785 lbf / 15 918 daN
Drilling Performance Data						
Maximum Weight-on-Bit	PDC Bit: 20,000 lbf / 8869 daN TC Bit: 27,000 lbf / 12 010 daN	PDC Bit: 28,000 lbf / 12 455 daN TC Bit: 45,000 lbf / 20 017 daN	PDC Bit: 32,000 lbf / 14 234 daN TC Bit: 50,000 lbf / 22 241 daN	PDC Bit: 37,000 lbf / 16 458 daN TC Bit: 55,000 lbf / 24 465 daN	PDC Bit: 42,000 lbf / 18 683 daN TC Bit: 60,000 lbf / 26 689 daN	PDC Bit: 75,000 lbf / 33 362 daN TC Bit: 75,000 lbf / 33 362 daN
Maximum RPM	Unlimited					
Maximum Operating Torque	10,000 ft/lb / 1356 daN.m	15,000 ft/lb / 2034 daN.m	16,000 lbf-ft / 2170 daN.m	32,000 lbf-ft / 4337 daN.m	35,000 lbf-ft / 4745 daN.m	50,000 lbf-ft / 6780 daN.m
Maximum Mass Flow Rate	4,000 lbm/min 1814 kg/min	6,000 lbm/min 2721 lbm/min	6,500 lbm/min 2721 lbm/min	12,000 lbm/min 5443 lg/min		15,000 lbm/min 6804 kg/
Flow Range	150 gpm - 400 gpm 568 lpm - 1515 lpm	300 gpm - 600 gpm 1136 lpm - 2270 lpm	350 gpm - 650 gpm 1325 lpm - 2461 lpm	600 gpm - 1,200 gpm 2271 lpm - 4542 lpm	500 gpm - 1,200 gpm 1893 lpm - 4542 lpm	700 gpm - 1,500 gpm 2650 lpm - 5678 lpm
Maximum Temperature	392°F / 200°C					
High-Temperature Option	450°F / 232°C					
Maximum Pressure	20,000 psi / 137.9 MPa					
Typical Pressure Loss Across Tool Using 10-ppg Mud	135 psi @ 250 gpm	130 psi @ 400 gpm	75 psi @ 600 gpm	75 psi @ 250 gpm	25 psi @ 900 gpm	15 psi @ 1,200 gpm
Maximum Sand Content	5% by volume					
Maximum Loss Control Material (Medium Nut Plug)	50 lbm/bbl / 143 kg/m ³					
Ultimate Loading						
Maximum Overpull Run	144,000 lbf / 64 054 daN	340,000 lbf / 151 240 daN	410,000 lbf / 182 377 daN	560,000 lbf / 249 100 daN	750,000 lbf / 333 617 daN	1,050,000 lbf / 467 063 daN
Absolute Overpull	360,000 lbf / 160 136 daN	850,000 lbf / 378 099 daN	980,000 lbf / 435 926 daN	1,325,000 lbf / 589 389 daN	1,760,000 lbf / 782 887 daN	2,600,000 lbf / 156 538 daN

