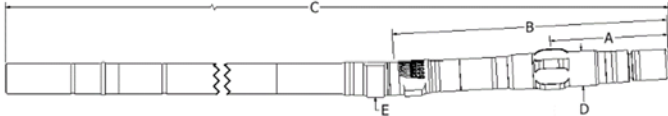


RVEN-50 : 7/8 Lobe 8.2 Stage

Dimensions

Bit to Stabilizer Center	A	11.1 in
Bit to Bend, ABH	B	52 in
Bit to Bend, Fixed	B	53 in
Bit to Top Sub	C	358 in
Body OD, Slick	D	5.0 in
Body OD, Stabilizer	D	5.7 in
Pad Radius, Fixed & ABH	E	2.75 in
Bottom Connection	3-1/2 REG Box 3-1/2 IF Pin XT39 NC35	
Top Connection	3-1/2 IF Box 4 FH Box	
Top Sub Float Bore	3-1/2 IF	

Recommended Operating Limits

Max WOB	29,000 lbf
Max Overpull, Backream	43,000 lbf
Max Overpull, Re-Run	137,000 lbf
Max Overpull, POOH	331,000 lbf

Performance Details
HP

Max Diff Pressure	1,930 psi
Max Torque	6,880 lbf-ft
Stall Torque	10,840 lbf-ft
Rotation	0.690 rev/gal
Flow Range	150-350 gpm
Speed Range	100-240 rpm

Predicted Build Rates (Adj.) – Degrees/100ft

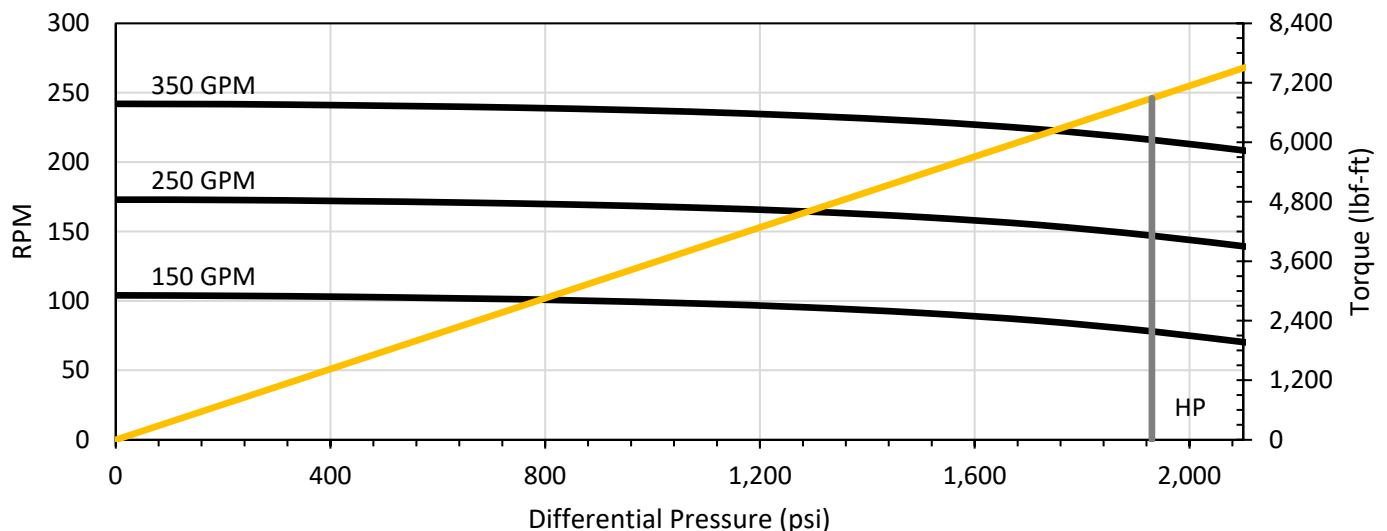
Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	6	6 1/4	6 3/4	6	6 1/4
0.39	1.3	-	-	1.5	1.6	1.9
0.78	3.9	3.1	1.5	3.9	3.8	4.1
1.15	6.3	5.5	3.9	6.3	6.0	6.2
1.50	8.6	7.8	6.2	8.6	8.0	8.3
1.83	10.7	10.0	8.4	10.7	10.0	10.2
2.12	12.6	11.9	10.3	12.6	11.9	11.8
2.38*	14.3	13.6	12.0	14.3	13.6	13.3
2.60*	15.8	15.0	13.4	15.8	15.0	14.6
2.77*	16.9	16.1	14.5	16.9	16.1	15.6
2.90*	17.7	17.0	15.4	17.7	17.0	16.3
2.97*	18.2	17.4	15.9	18.2	17.4	16.7
3.00*	18.4	17.6	16.1	18.4	17.6	16.9

*Bend Setting not recommended for Rotary Drilling

Predicted Build Rates (Fixed) – Degrees/100ft

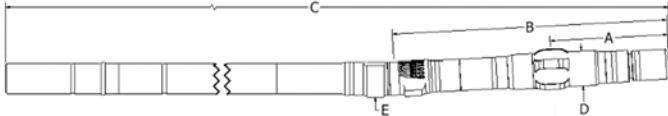
Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	6	6 1/4	6 3/4	6	6 1/4
0.78	3.9	3.1	1.6	3.9	3.8	4.1
1.15	6.3	5.5	4.0	6.3	6.0	6.2
1.50	8.6	7.8	6.3	8.6	8.0	8.2
1.75	10.2	9.5	7.9	10.2	9.5	9.7
1.83	10.8	10.0	8.4	10.8	10.0	10.1
2.00	11.9	11.1	9.6	11.9	11.1	11.1
2.12	12.7	11.9	10.3	12.7	11.9	11.8
2.25*	13.5	12.7	11.2	13.5	12.7	12.6
2.38*	14.4	13.6	12.0	14.4	13.6	13.3
2.50*	15.1	14.4	12.8	15.1	14.4	14.0

*Bend Setting not recommended for Rotary Drilling

Theoretical Performance Curve


Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-70 : 5/6 Lobe 8.6 Stage



Dimensions

Bit to Stabilizer Center	A	27 in
Bit to Bend, Fixed	B	48 in
Bit to Top Sub	C	397 in
Body OD, Slick	D	7.0 in
Body OD, Stabilizer	D	7.5 in
Pad Radius, Fixed	E	3.75 in
Bottom Connection	4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin	
Top Connection	4-1/2 IF Box 4-1/2 XH Box	
Top Sub Float Bore	4R	

Recommended Operating Limits

Max WOB	49,000 lbf
Max Overpull, Backream	71,000 lbf
Max Overpull, Re-Run	325,000 lbf
Max Overpull, POOH	630,000 lbf

Predicted Build Rates (Fixed) – Degrees/100ft

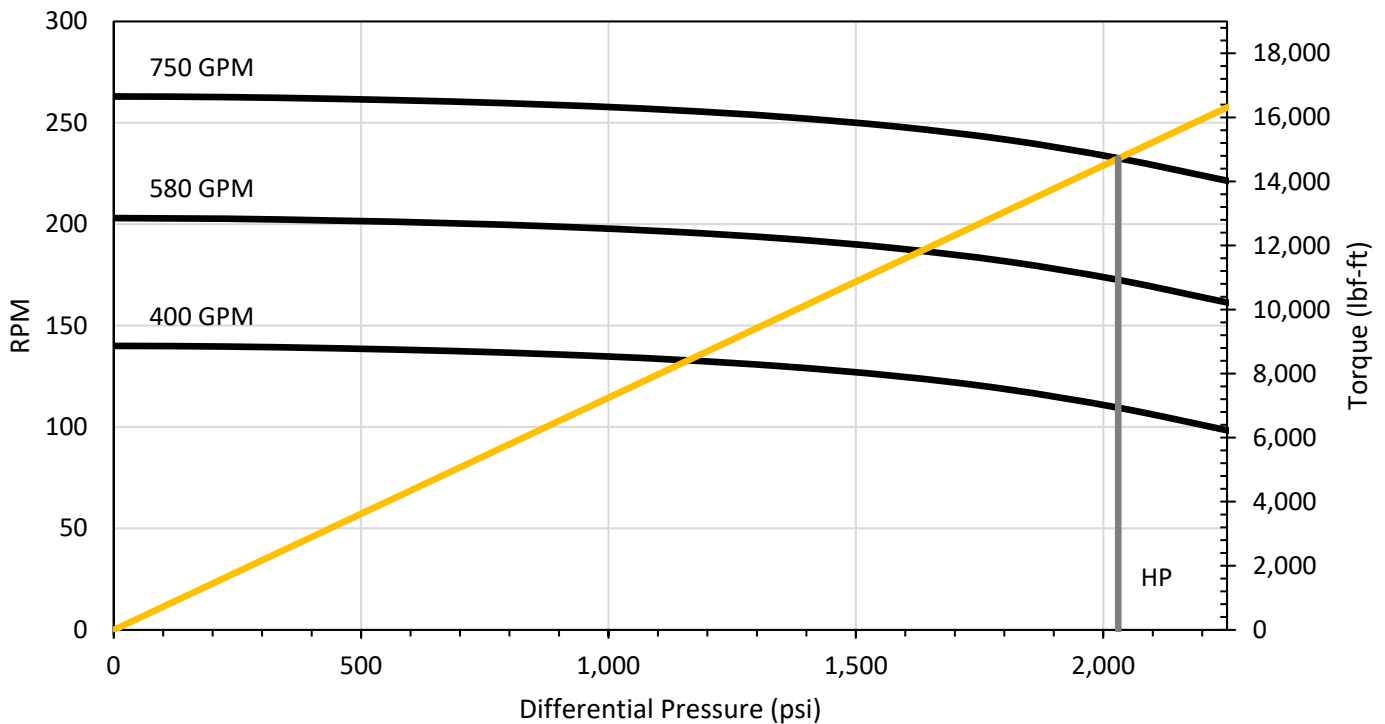
Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	8 1/2	8 3/4	9 7/8	8 1/2	8 3/4
0.78	2.0	1.3	1.8	4.4	4.5	5.0
1.15	4.2	3.5	0.3	6.4	6.5	7.1
1.50	6.2	5.5	2.4	8.4	8.5	9.0
1.75	7.7	7.0	3.9	9.7	9.9	10.4
1.83	8.2	7.5	4.3	10.2	10.3	10.8
2.00	9.2	8.5	5.3	11.1	11.2	11.7
2.12	9.9	9.2	6.0	11.8	11.9	12.4
2.25*	10.6	9.9	6.8	12.5	12.6	13.1
2.38*	11.4	10.7	7.5	13.2	13.3	13.8
2.50*	12.1	11.4	8.3	13.9	14.0	14.5

*Bend Setting not recommended for Rotary Drilling

Performance Details

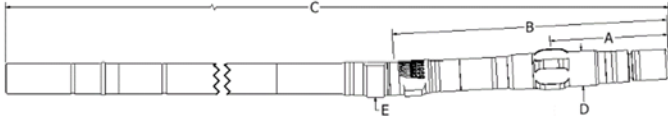
	HP
Max Diff Pressure	2,030 psi
Max Torque	14,660 lbf-ft
Stall Torque	23,080 lbf-ft
Rotation	0.350 rev/gal
Flow Range	400-750 gpm
Speed Range	140-260 rpm

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-70 : 5/6 Lobe 9.7 Stage



Dimensions

Bit to Stabilizer Center	A	27 in
Bit to Bend, Fixed	B	48 in
Bit to Top Sub	C	422 in
Body OD, Slick	D	7.0 in
Body OD, Stabilizer	D	7.5 in
Pad Radius, Fixed	E	3.75 in
Bottom Connection	4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin	
Top Connection	4-1/2 IF Box 4-1/2 XH Box	
Top Sub Float Bore	4R	

Recommended Operating Limits

Max WOB	49,000 lbf
Max Overpull, Backream	71,000 lbf
Max Overpull, Re-Run	325,000 lbf
Max Overpull, POOH	630,000 lbf

Predicted Build Rates (Fixed) – Degrees/100ft

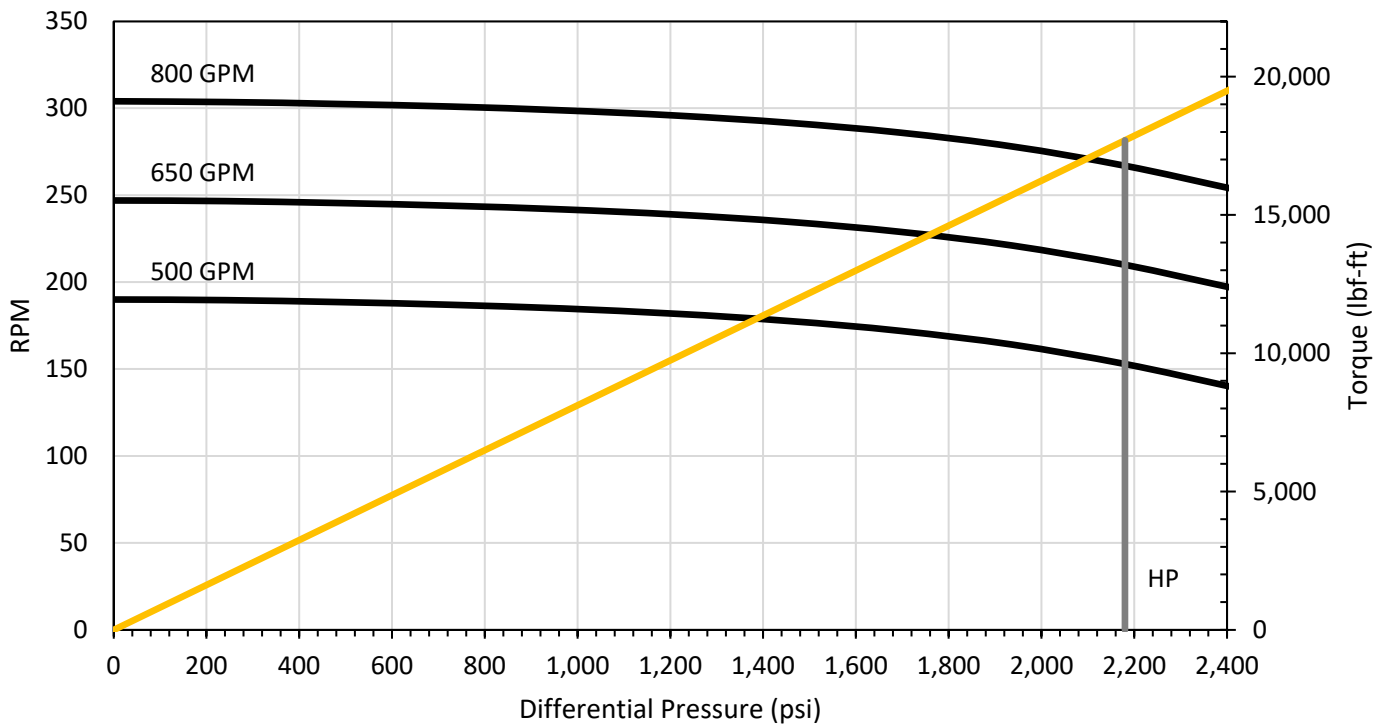
Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	8 1/2	8 3/4	9 7/8	8 1/2	8 3/4
0.78	1.9	1.2	1.7	4.1	4.2	4.7
1.15	3.9	3.3	0.3	6.0	6.1	6.6
1.50	5.9	5.2	2.2	7.9	8.0	8.4
1.75	7.2	6.6	3.6	9.2	9.3	9.7
1.83	7.7	7.0	4.1	9.6	9.7	10.2
2.00	8.6	8.0	5.0	10.5	10.6	11.0
2.12	9.3	8.6	5.7	11.1	11.2	11.7
2.25*	10.0	9.3	6.4	11.8	11.9	12.3
2.38*	10.7	10.1	7.1	12.5	12.6	13.0
2.50*	11.4	10.7	7.8	13.1	13.2	13.6

*Bend Setting not recommended for Rotary Drilling

Performance Details

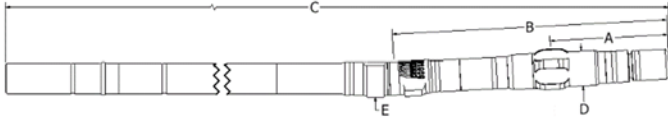
	HP
Max Diff Pressure	2,180 psi
Max Torque	17,770 lbf-ft
Stall Torque	26,550 lbf-ft
Rotation	0.380 rev/gal
Flow Range	500-800 gpm
Speed Range	190-300 rpm

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-70 : 7/8 Lobe 3.3 Stage



Dimensions

Bit to Stabilizer Center	A	27 in
Bit to Bend, Fixed	B	48 in
Bit to Top Sub	C	367 in
Body OD, Slick	D	7.0 in
Body OD, Stabilizer	D	7.5 in
Pad Radius, Fixed	E	3.75 in
Bottom Connection	4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin	
Top Connection	4-1/2 IF Box 4-1/2 XH Box	
Top Sub Float Bore	4R	

Recommended Operating Limits

Max WOB	49,000 lbf
Max Overpull, Backream	71,000 lbf
Max Overpull, Re-Run	325,000 lbf
Max Overpull, POOH	630,000 lbf

Predicted Build Rates (Fixed) – Degrees/100ft

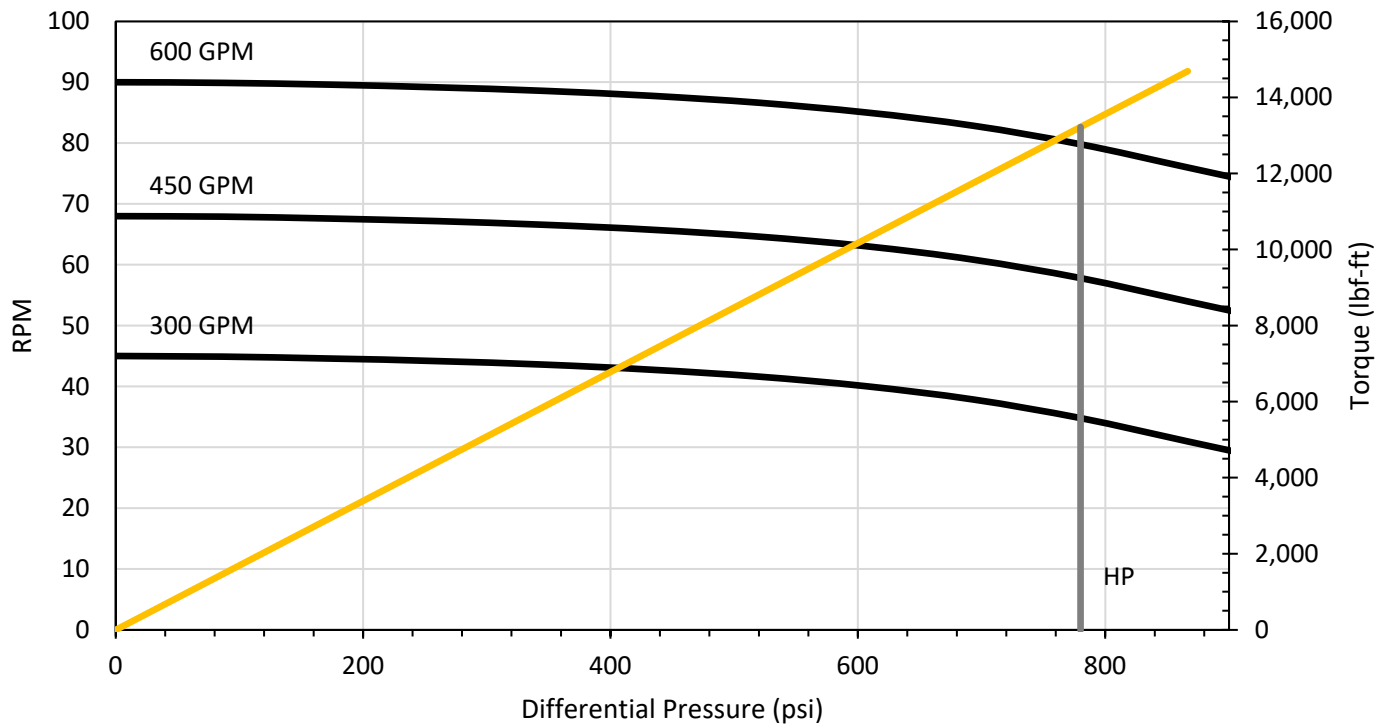
Bend Setting Deg	Slick Hole Size			Stabilized Hole Size		
	8 1/2	8 3/4	9 7/8	8 1/2	8 3/4	9 7/8
0.78	2.2	1.4	2.0	4.8	4.9	5.5
1.15	4.5	3.8	0.4	7.0	7.1	7.7
1.50	6.8	6.0	2.6	9.0	9.2	9.8
1.75	8.3	7.6	4.2	10.5	10.7	11.3
1.83	8.8	8.1	4.7	11.0	11.1	11.7
2.00	9.9	9.2	5.8	12.0	12.1	12.7
2.12	10.7	9.9	6.5	12.7	12.8	13.4
2.25*	11.5	10.7	7.3	13.5	13.6	14.2
2.38*	12.3	11.6	8.2	14.3	14.4	15.0
2.50*	13.1	12.3	8.9	15.0	15.1	15.7

*Bend Setting not recommended for Rotary Drilling

Performance Details

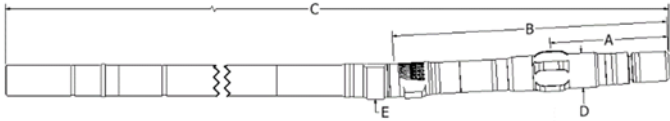
	HP
Max Diff Pressure	780 psi
Max Torque	13,150 lbf-ft
Stall Torque	20,710 lbf-ft
Rotation	0.150 rev/gal
Flow Range	300-600 gpm
Speed Range	50-90 rpm

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-70 : 7/8 Lobe 3.5 Stage



Dimensions

Bit to Stabilizer Center	A	27 in
Bit to Bend, Fixed	B	48 in
Bit to Top Sub	C	382 in
Body OD, Slick	D	7.0 in
Body OD, Stabilizer	D	7.5 in
Pad Radius, Fixed	E	3.75 in
Bottom Connection	4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin	
Top Connection	4-1/2 IF Box 4-1/2 XH Box	
Top Sub Float Bore	4R	

Recommended Operating Limits

Max WOB	49,000 lbf
Max Overpull, Backream	71,000 lbf
Max Overpull, Re-Run	325,000 lbf
Max Overpull, POOH	630,000 lbf

Predicted Build Rates (Fixed) – Degrees/100ft

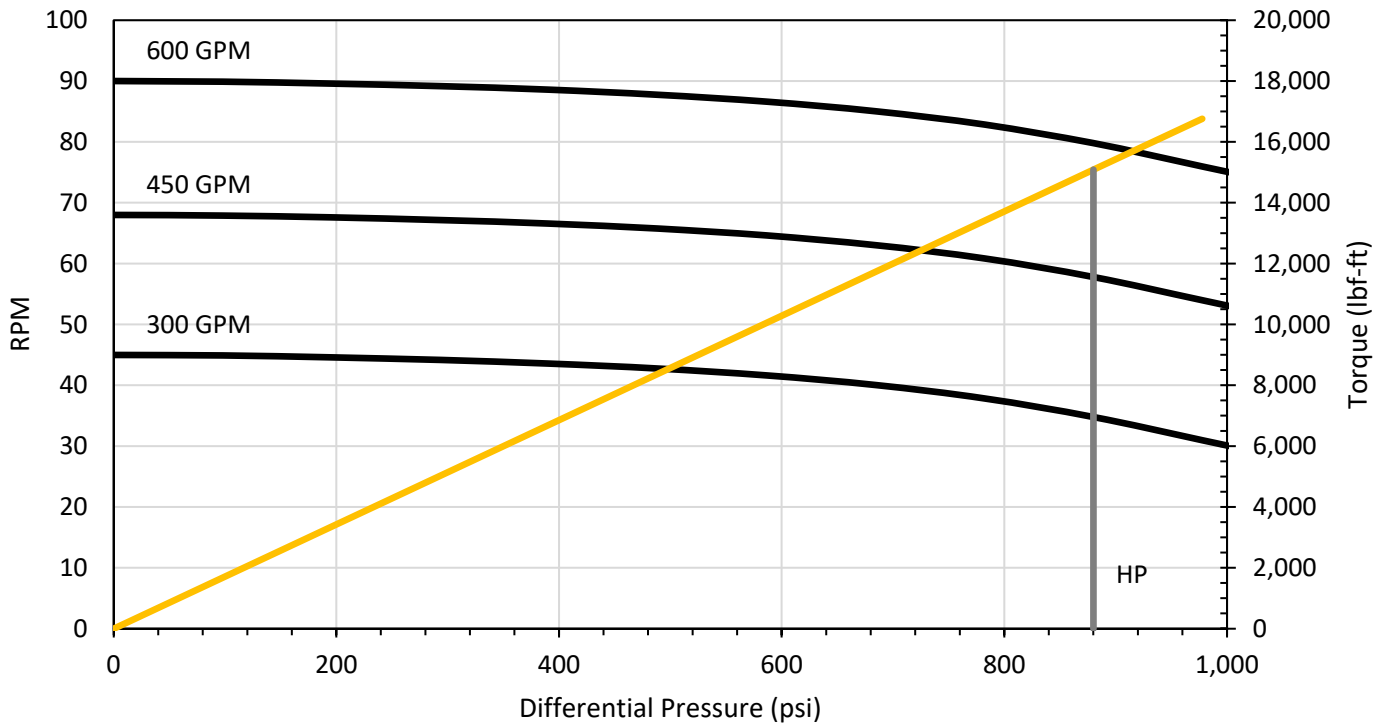
Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	8 1/2	8 3/4	9 7/8	8 1/2	8 3/4
0.78	2.1	1.4	1.9	4.6	4.7	5.2
1.15	4.4	3.6	0.4	6.7	6.8	7.4
1.50	6.5	5.8	2.5	8.7	8.8	9.4
1.75	8.0	7.3	4.0	10.1	10.2	10.8
1.83	8.5	7.8	4.5	10.6	10.7	11.2
2.00	9.5	8.8	5.5	11.5	11.7	12.2
2.12	10.3	9.5	6.3	12.2	12.4	12.9
2.25*	11.1	10.3	7.1	13.0	13.1	13.6
2.38*	11.8	11.1	7.8	13.7	13.8	14.4
2.50*	12.6	11.8	8.6	14.4	14.5	15.1

*Bend Setting not recommended for Rotary Drilling

Performance Details

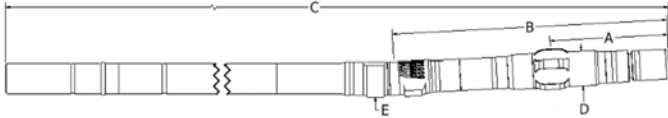
Performance Details	HP
Max Diff Pressure	880 psi
Max Torque	15,000 lbf-ft
Stall Torque	22,500 lbf-ft
Rotation	0.150 rev/gal
Flow Range	300-600 gpm
Speed Range	45-90 rpm

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-70 : 7/8 Lobe 5.0 Stage



Dimensions

Bit to Stabilizer Center	A	27 in
Bit to Bend, Fixed	B	48 in
Bit to Top Sub	C	367 in
Body OD, Slick	D	7.0 in
Body OD, Stabilizer	D	7.5 in
Pad Radius, Fixed	E	3.75 in
Bottom Connection		4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin
Top Connection		4-1/2 IF Box 4-1/2 XH Box
Top Sub Float Bore		4R

Recommended Operating Limits

Max WOB	49,000 lbf
Max Overpull, Backream	71,000 lbf
Max Overpull, Re-Run	325,000 lbf
Max Overpull, POOH	630,000 lbf

Predicted Build Rates (Fixed) – Degrees/100ft

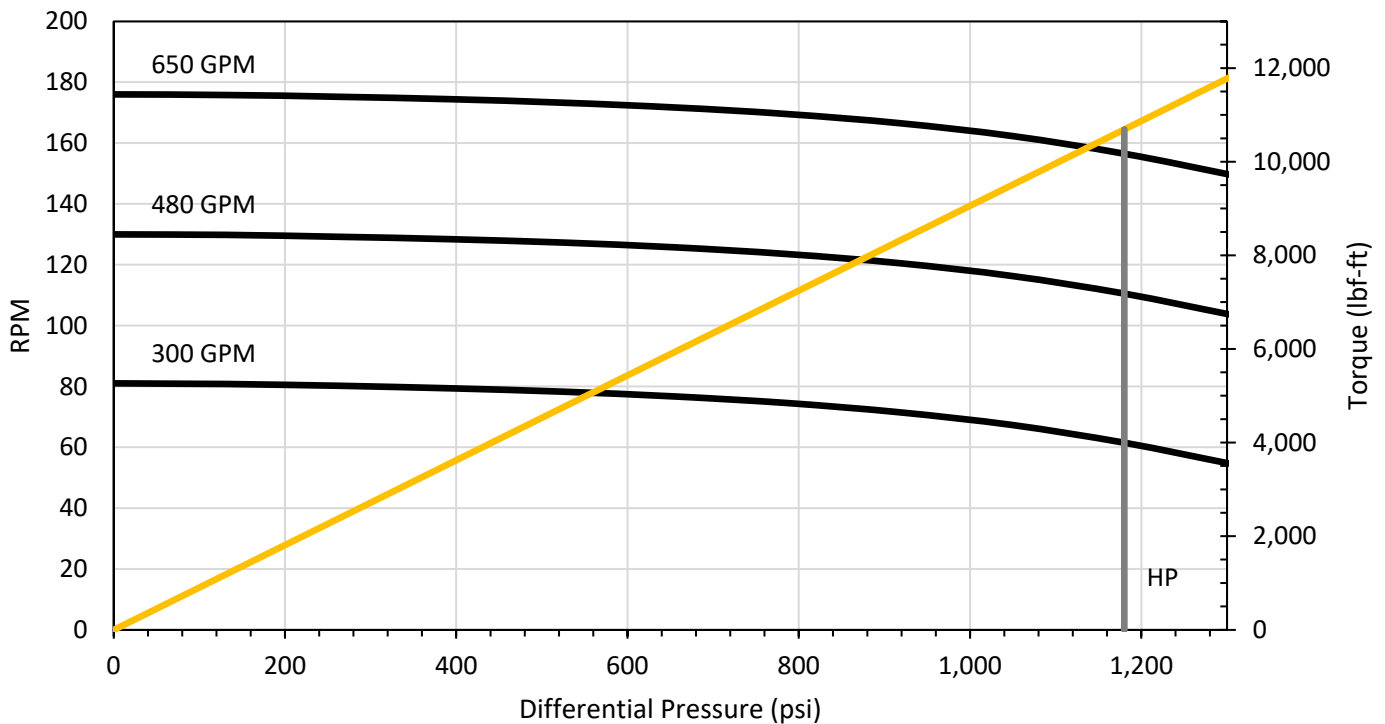
Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	8 1/2	8 3/4	9 7/8	8 1/2	8 3/4
0.78	2.6	1.7	2.2	5.6	5.8	6.6
1.15	5.3	4.4	0.5	8.1	8.3	9.1
1.50	7.9	7.0	3.1	10.5	10.6	11.4
1.75	9.7	8.8	4.9	12.1	12.3	13.1
1.83	10.3	9.4	5.5	12.7	12.9	13.7
2.00	11.5	10.6	6.7	13.8	14.0	14.8
2.12	12.4	11.5	7.6	14.6	14.8	15.6
2.25*	13.3	12.5	8.5	15.5	15.7	16.5
2.38*	14.3	13.4	9.5	16.4	16.6	17.4
2.50*	15.2	14.3	10.4	17.2	17.4	18.2

*Bend Setting not recommended for Rotary Drilling

Performance Details

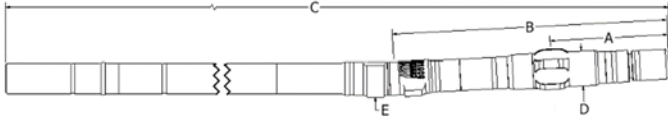
	HP
Max Diff Pressure	1,180 psi
Max Torque	10,650 lbf-ft
Stall Torque	16,770 lbf-ft
Rotation	0.270 rev/gal
Flow Range	300-650 gpm
Speed Range	80-180 rpm

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-70 : 7/8 Lobe 5.7 Stage



Dimensions

Bit to Stabilizer Center	A	27 in
Bit to Bend, Fixed	B	48 in
Bit to Top Sub	C	382 in
Body OD, Slick	D	7.0 in
Body OD, Stabilizer	D	7.5 in
Pad Radius, Fixed	E	3.75 in
Bottom Connection	4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin	
Top Connection	4-1/2 IF Box 4-1/2 XH Box	
Top Sub Float Bore	4R	

Recommended Operating Limits

Max WOB	49,000 lbf
Max Overpull, Backream	71,000 lbf
Max Overpull, Re-Run	325,000 lbf
Max Overpull, POOH	630,000 lbf

Predicted Build Rates (Fixed) – Degrees/100ft

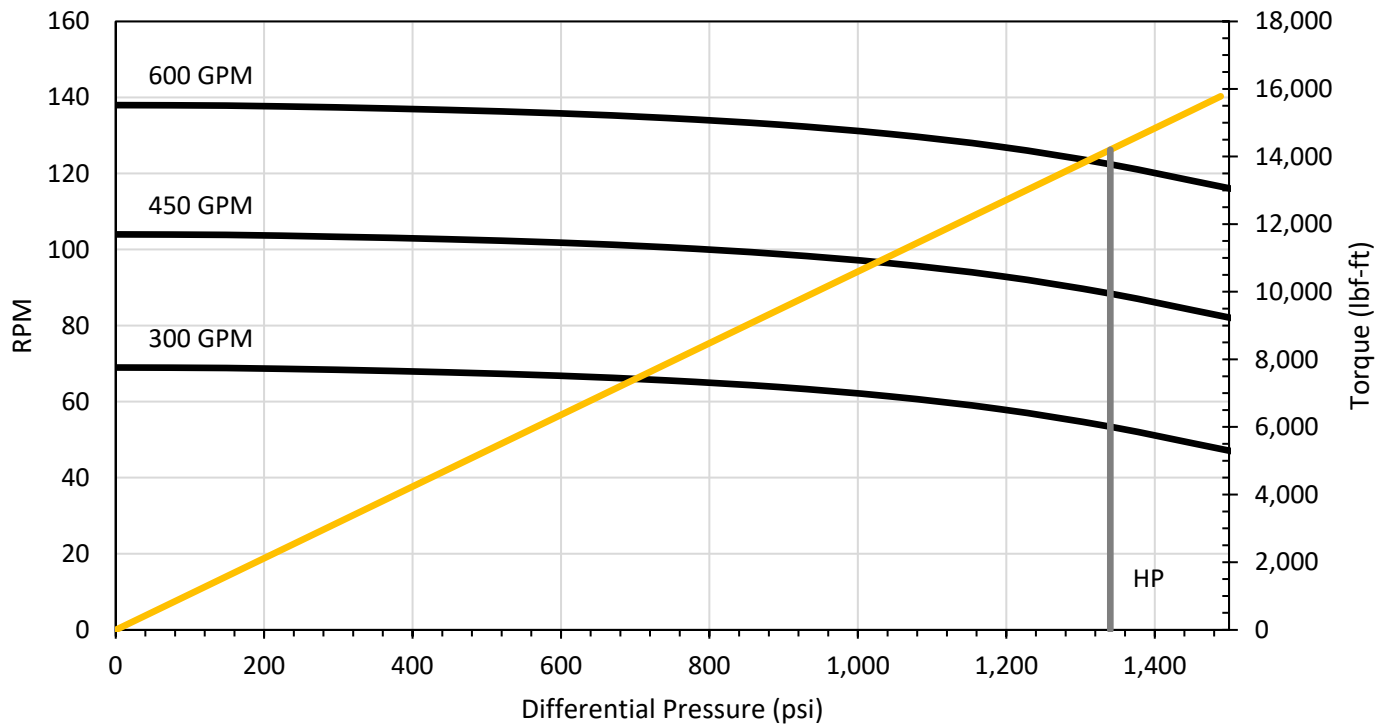
Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	8 1/2	8 3/4	9 7/8	8 1/2	8 3/4
0.78	2.1	1.4	1.9	4.6	4.7	5.2
1.15	4.4	3.6	0.4	6.7	6.8	7.4
1.50	6.5	5.8	2.5	8.7	8.8	9.4
1.75	8.0	7.3	4.0	10.1	10.2	10.8
1.83	8.5	7.8	4.5	10.6	10.7	11.2
2.00	9.5	8.8	5.5	11.5	11.7	12.2
2.12	10.3	9.5	6.3	12.2	12.4	12.9
2.25*	11.1	10.3	7.1	13.0	13.1	13.6
2.38*	11.8	11.1	7.8	13.7	13.8	14.4
2.50*	12.6	11.8	8.6	14.4	14.5	15.1

*Bend Setting not recommended for Rotary Drilling

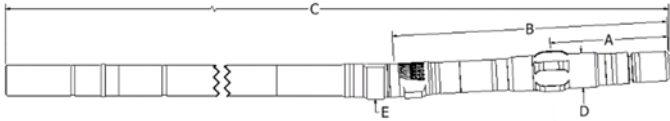
Performance Details

	HP
Max Diff Pressure	1,340 psi
Max Torque	14,200 lbf-ft
Stall Torque	22,370 lbf-ft
Rotation	0.230 rev/gal
Flow Range	300-600 gpm
Speed Range	70-140 rpm

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-70 : 7/8 Lobe 7.3 Stage

Dimensions

Bit to Stabilizer Center	A	27 in
Bit to Bend, Fixed	B	48 in
Bit to Top Sub	C	397 in
Body OD, Slick	D	7.0 in
Body OD, Stabilizer	D	7.5 in
Pad Radius, Fixed	E	3.75 in
Bottom Connection	4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin	
Top Connection	4-1/2 IF Box 4-1/2 XH Box	
Top Sub Float Bore	4R	

Recommended Operating Limits

Max WOB	49,000 lbf
Max Overpull, Backream	71,000 lbf
Max Overpull, Re-Run	325,000 lbf
Max Overpull, POOH	630,000 lbf

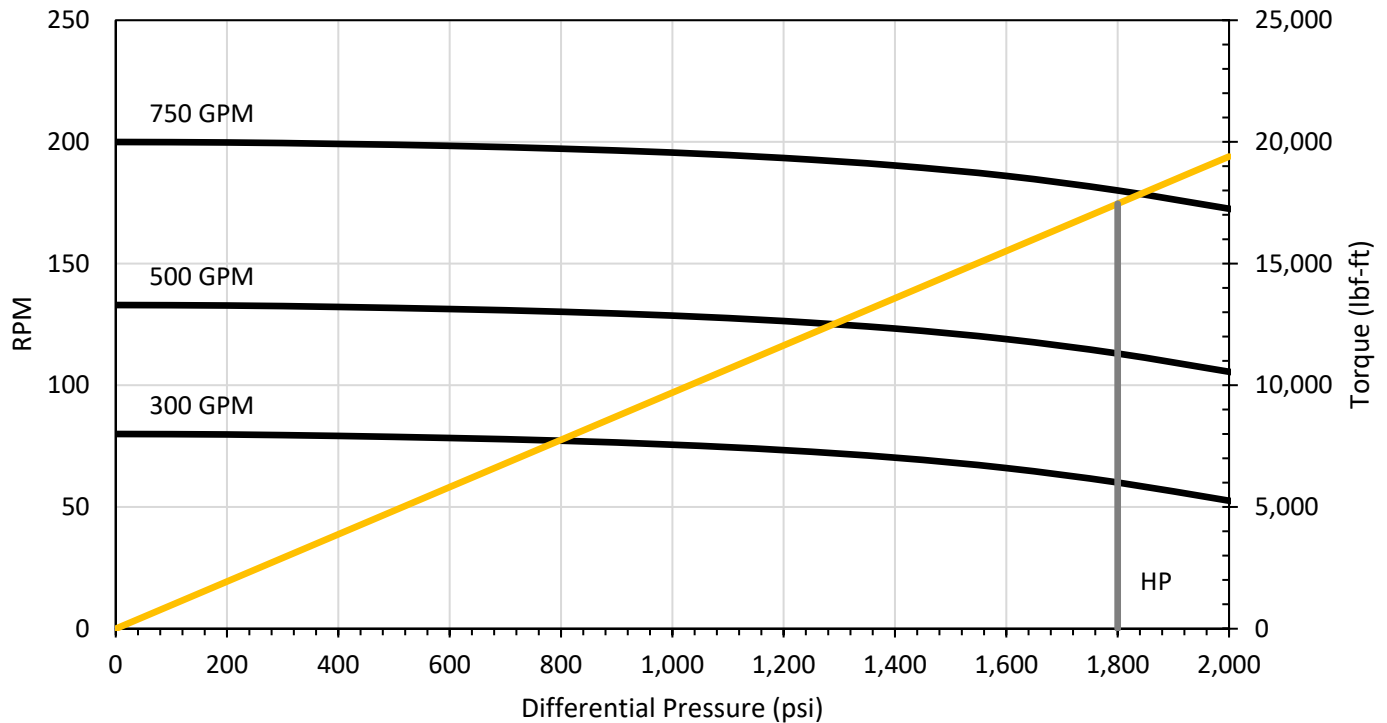
Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	8 1/2	8 3/4	9 7/8	8 1/2	8 3/4
0.78	2.0	1.3	1.8	4.4	4.5	5.0
1.15	4.2	3.5	0.3	6.4	6.5	7.1
1.50	6.2	5.5	2.4	8.4	8.5	9.0
1.75	7.7	7.0	3.9	9.7	9.9	10.4
1.83	8.2	7.5	4.3	10.2	10.3	10.8
2.00	9.2	8.5	5.3	11.1	11.2	11.7
2.12	9.9	9.2	6.0	11.8	11.9	12.4
2.25*	10.6	9.9	6.8	12.5	12.6	13.1
2.38*	11.4	10.7	7.5	13.2	13.3	13.8
2.50*	12.1	11.4	8.3	13.9	14.0	14.5

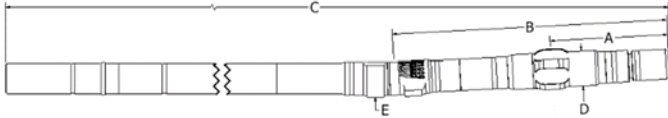
*Bend Setting not recommended for Rotary Drilling

Performance Details

Performance Details	HP
Max Diff Pressure	1,800 psi
Max Torque	17,500 lbf-ft
Stall Torque	26,250 lbf-ft
Rotation	0.266 rev/gal
Flow Range	300-750 gpm
Speed Range	80-200 rpm

Theoretical Performance Curve


Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-70 : 7/8 Lobe 8.5 Stage

Dimensions

Bit to Stabilizer Center	A	27 in
Bit to Bend, Fixed	B	48 in
Bit to Top Sub	C	422 in
Body OD, Slick	D	7.0 in
Body OD, Stabilizer	D	7.5 in
Pad Radius, Fixed	E	3.75 in
Bottom Connection	4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin	
Top Connection	4-1/2 IF Box 4-1/2 XH Box	
Top Sub Float Bore	4R	

Recommended Operating Limits

Max WOB	49,000 lbf
Max Overpull, Backream	71,000 lbf
Max Overpull, Re-Run	325,000 lbf
Max Overpull, POOH	630,000 lbf

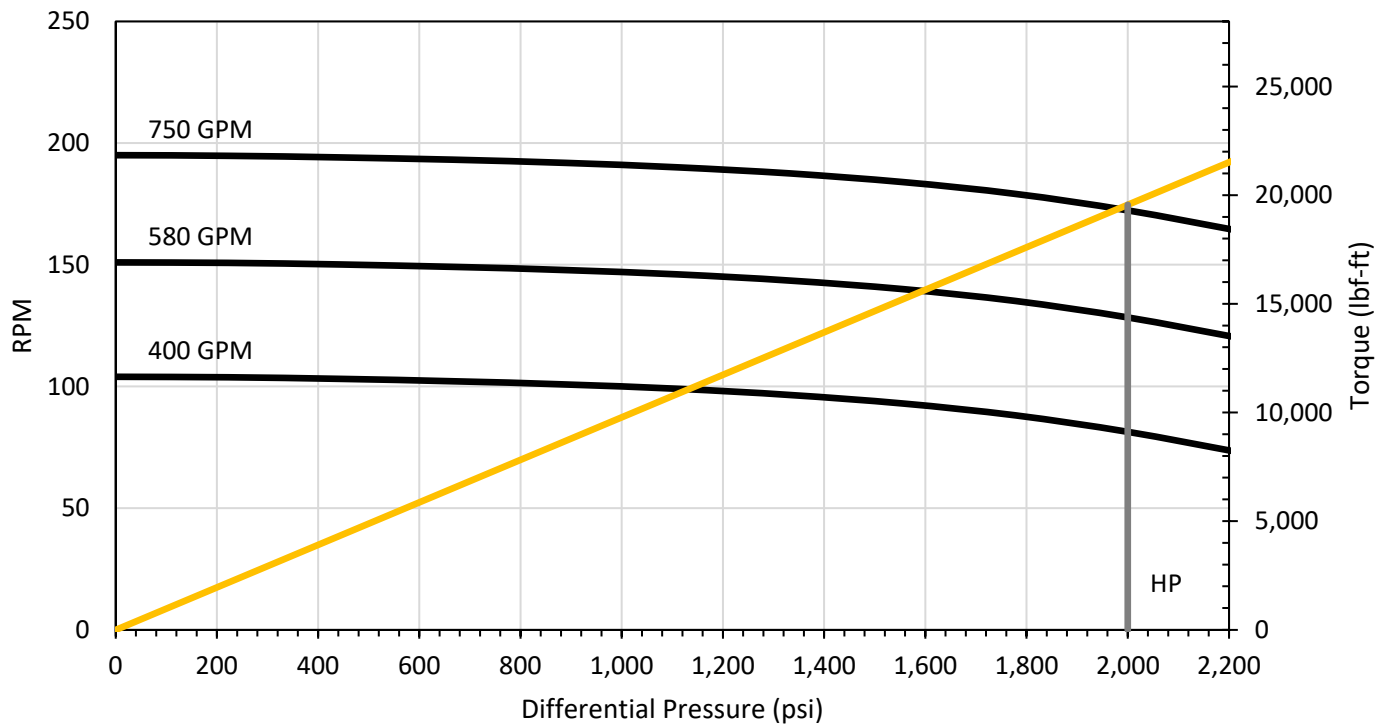
Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	8 1/2	8 3/4	9 7/8	8 1/2	8 3/4
0.78	1.9	1.2	1.7	4.1	4.2	4.7
1.15	3.9	3.3	0.3	6.0	6.1	6.6
1.50	5.9	5.2	2.2	7.9	8.0	8.4
1.75	7.2	6.6	3.6	9.2	9.3	9.7
1.83	7.7	7.0	4.1	9.6	9.7	10.2
2.00	8.6	8.0	5.0	10.5	10.6	11.0
2.12	9.3	8.6	5.7	11.1	11.2	11.7
2.25*	10.0	9.3	6.4	11.8	11.9	12.3
2.38*	10.7	10.1	7.1	12.5	12.6	13.0
2.50*	11.4	10.7	7.8	13.1	13.2	13.6

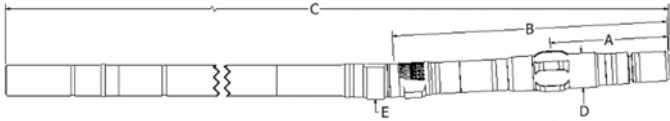
*Bend Setting not recommended for Rotary Drilling

Performance Details

	HP
Max Diff Pressure	2,000 psi
Max Torque	19,540 lbf-ft
Stall Torque	30,770 lbf-ft
Rotation	0.260 rev/gal
Flow Range	400-750 gpm
Speed Range	100-200 rpm

Theoretical Performance Curve


Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-86 : 4/5 Lobe 6.0 Stage

Dimensions

Bit to Stabilizer Center	A	NA in
Bit to Bend, Fixed	B	76 in
Bit to Top Sub	C	432 in
Body OD, Slick	D	8.62 in
Pad Radius, Fixed	E	4.25 in
Bottom Connection		4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin
Top Connection		4-1/2 IF Box 4-1/2 XH Box
Top Sub Float Bore		4R

Recommended Operating Limits

Max WOB	158,000 lbf
Max Overpull, Backream	228,000 lbf
Max Overpull, Re-Run	286,000 lbf
Max Overpull, POOH	847,000 lbf

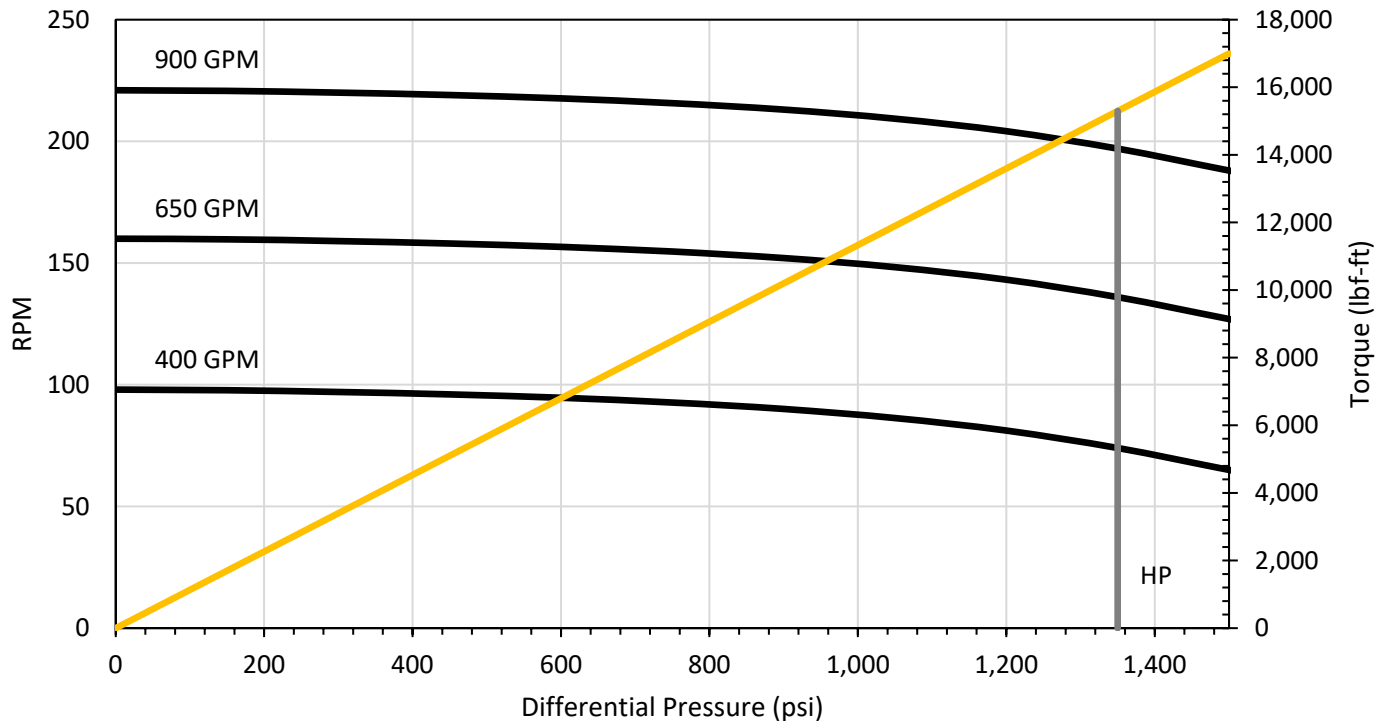
Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	9 7/8	10 5/8	12 1/4	9 7/8	10 5/8
0.78	2.1	0.8	1.9	3.6	3.9	4.5
1.15	4.1	2.8	0.1	5.3	5.6	6.2
1.50	6.0	4.7	1.9	6.9	7.2	7.8
1.75	7.3	6.0	3.3	8.1	8.4	9.0
1.83	7.7	6.5	3.7	8.4	8.7	9.3
2.00	8.6	7.4	4.6	9.2	9.5	10.1
2.12	9.3	8.0	5.3	9.8	10.0	10.6
2.25*	10.0	8.7	6.0	10.4	10.6	11.2
2.38*	10.7	9.4	6.7	11.0	11.2	11.8
2.50*	11.3	10.1	7.3	11.5	11.8	12.4

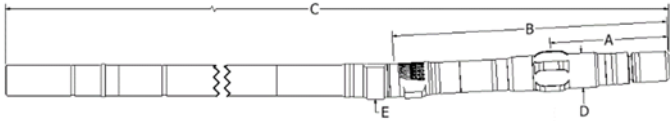
*Bend Setting not recommended for Rotary Drilling

Performance Details

Performance Details	HP
Max Diff Pressure	1,350 psi
Max Torque	15,300 lbf-ft
Stall Torque	22,950 lbf-ft
Rotation	0.246 rev/gal
Flow Range	400-900 gpm
Speed Range	98-221 rpm

Theoretical Performance Curve


Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-86 : 7/8 Lobe 2.5 Stage

Dimensions

Bit to Stabilizer Center	A	NA in
Bit to Bend, Fixed	B	76 in
Bit to Top Sub	C	426 in
Body OD, Slick	D	8.62 in
Pad Radius, Fixed	E	4.25 in
Bottom Connection		4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin
Top Connection		4-1/2 IF Box 4-1/2 XH Box
Top Sub Float Bore		4R

Recommended Operating Limits

Max WOB	158,000 lbf
Max Overpull, Backream	228,000 lbf
Max Overpull, Re-Run	286,000 lbf
Max Overpull, POOH	847,000 lbf

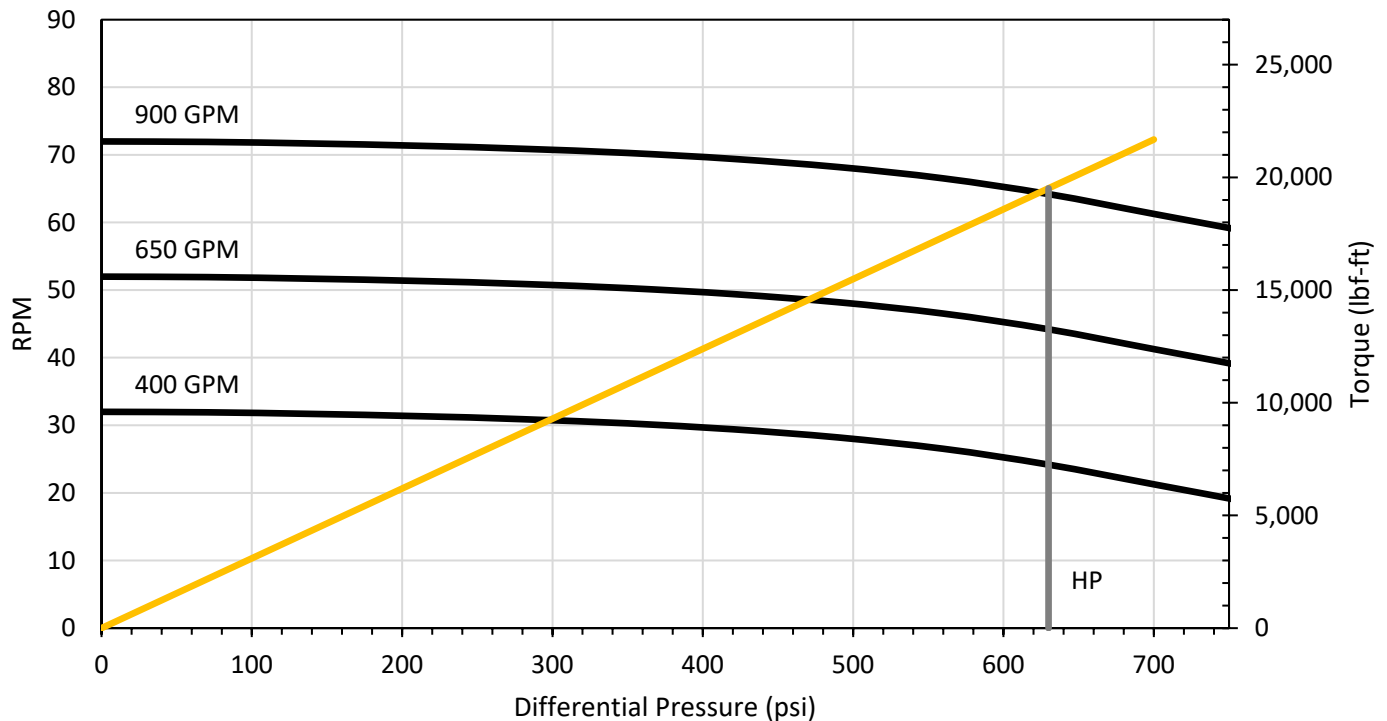
Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	9 7/8	10 5/8	12 1/4	9 7/8	10 5/8
0.78	2.1	0.8	2.0	3.7	3.9	4.6
1.15	4.1	2.8	0.1	5.4	5.7	6.3
1.50	6.0	4.7	2.0	7.0	7.3	7.9
1.75	7.4	6.1	3.3	8.2	8.5	9.1
1.83	7.8	6.5	3.8	8.5	8.8	9.4
2.00	8.8	7.5	4.7	9.3	9.6	10.2
2.12	9.4	8.1	5.3	9.9	10.2	10.8
2.25*	10.1	8.8	6.0	10.5	10.8	11.4
2.38*	10.8	9.5	6.8	11.1	11.4	12.0
2.50*	11.5	10.2	7.4	11.7	11.9	12.6

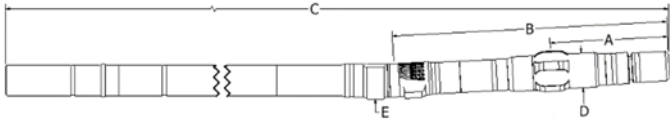
*Bend Setting not recommended for Rotary Drilling

Performance Details

	HP
Max Diff Pressure	630 psi
Max Torque	19,360 lbf-ft
Stall Torque	29,040 lbf-ft
Rotation	0.080 rev/gal
Flow Range	400-900 gpm
Speed Range	32-72 rpm

Theoretical Performance Curve


Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-86 : 7/8 Lobe 3.4 Stage

Dimensions

Bit to Stabilizer Center	A	NA in
Bit to Bend, Fixed	B	76 in
Bit to Top Sub	C	472 in
Body OD, Slick	D	8.62 in
Pad Radius, Fixed	E	4.25 in
Bottom Connection	4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin	
Top Connection	4-1/2 IF Box 4-1/2 XH Box	
Top Sub Float Bore	4R	

Recommended Operating Limits

Max WOB	158,000 lbf
Max Overpull, Backream	228,000 lbf
Max Overpull, Re-Run	286,000 lbf
Max Overpull, POOH	847,000 lbf

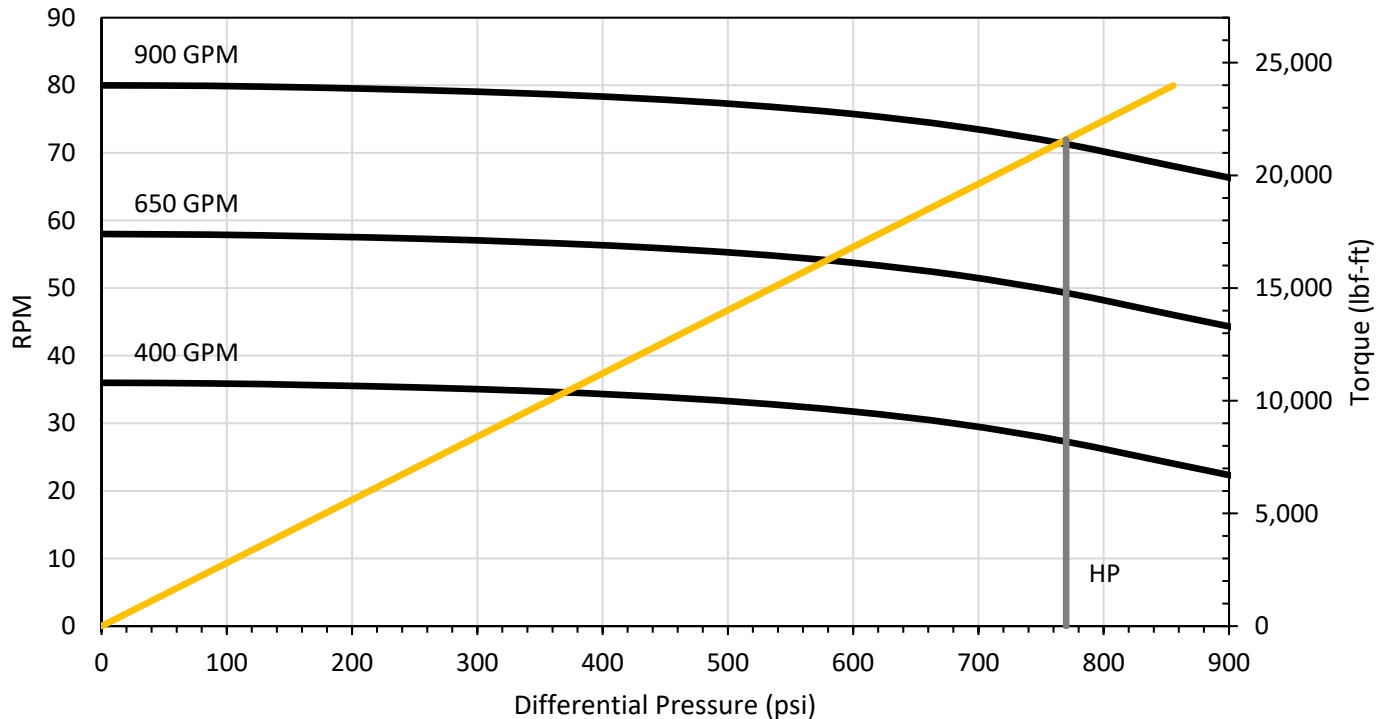
Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	9 7/8	10 5/8	12 1/4	9 7/8	10 5/8
0.78	1.9	0.7	1.8	3.3	3.5	4.0
1.15	3.7	2.6	0.0	4.9	5.1	5.6
1.50	5.4	4.3	1.8	6.4	6.6	7.1
1.75	6.7	5.5	3.0	7.5	7.7	8.2
1.83	7.1	5.9	3.4	7.8	8.0	8.5
2.00	7.9	6.7	4.2	8.5	8.8	9.3
2.12	8.5	7.3	4.8	9.0	9.3	9.8
2.25*	9.1	8.0	5.5	9.6	9.8	10.3
2.38*	9.8	8.6	6.1	10.2	10.4	10.9
2.50*	10.4	9.2	6.7	10.7	10.9	11.4

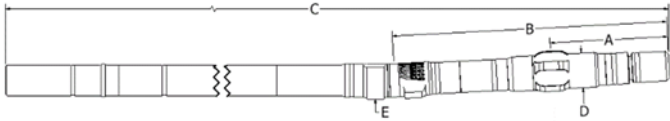
*Bend Setting not recommended for Rotary Drilling

Performance Details

Performance Details	HP
Max Diff Pressure	770 psi
Max Torque	21,450 lbf-ft
Stall Torque	32,180 lbf-ft
Rotation	0.089 rev/gal
Flow Range	400-900 gpm
Speed Range	36-80 rpm

Theoretical Performance Curve


Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-86 : 7/8 Lobe 5.9 Stage

Dimensions

Bit to Stabilizer Center	A	NA in
Bit to Bend, Fixed	B	76 in
Bit to Top Sub	C	472 in
Body OD, Slick	D	8.62 in
Pad Radius, Fixed	E	4.25 in
Bottom Connection		4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin
Top Connection		4-1/2 IF Box 4-1/2 XH Box
Top Sub Float Bore		4R

Recommended Operating Limits

Max WOB	158,000 lbf
Max Overpull, Backream	228,000 lbf
Max Overpull, Re-Run	286,000 lbf
Max Overpull, POOH	847,000 lbf

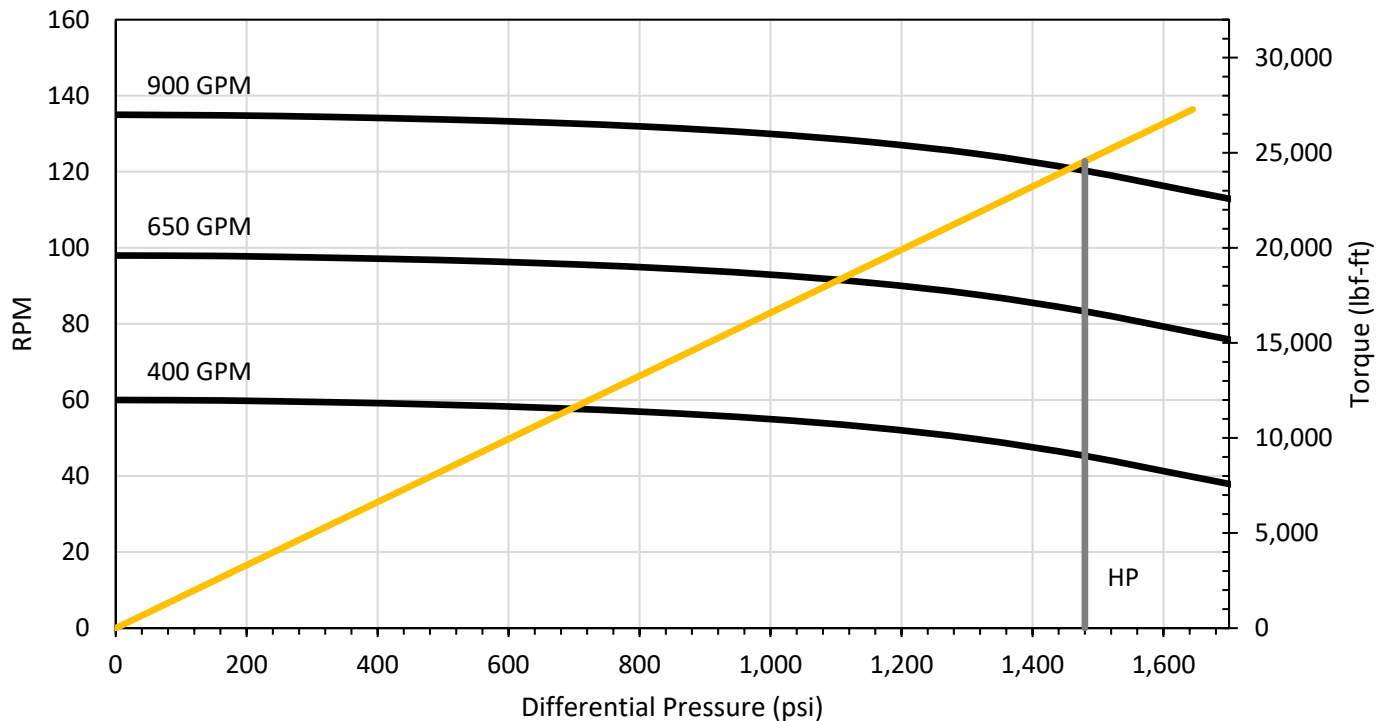
Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	9 7/8	10 5/8	12 1/4	9 7/8	10 5/8
0.78	1.9	0.7	1.8	3.3	3.5	4.0
1.15	3.7	2.6	0.0	4.9	5.1	5.6
1.50	5.4	4.3	1.8	6.4	6.6	7.1
1.75	6.7	5.5	3.0	7.5	7.7	8.2
1.83	7.1	5.9	3.4	7.8	8.0	8.5
2.00	7.9	6.7	4.2	8.5	8.8	9.3
2.12	8.5	7.3	4.8	9.0	9.3	9.8
2.25*	9.1	8.0	5.5	9.6	9.8	10.3
2.38*	9.8	8.6	6.1	10.2	10.4	10.9
2.50*	10.4	9.2	6.7	10.7	10.9	11.4

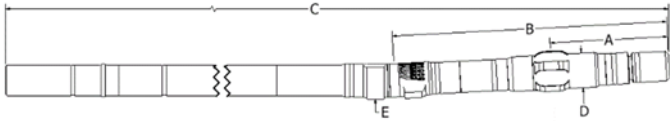
*Bend Setting not recommended for Rotary Drilling

Performance Details

Performance Details	HP
Max Diff Pressure	1,480 psi
Max Torque	24,470 lbf-ft
Stall Torque	36,700 lbf-ft
Rotation	0.150 rev/gal
Flow Range	400-900 gpm
Speed Range	60-135 rpm

Theoretical Performance Curve


Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-86 : 9/10 Lobe 3.0 Stage

Dimensions

Bit to Stabilizer Center	A	NA in
Bit to Bend, Fixed	B	76 in
Bit to Top Sub	C	406 in
Body OD, Slick	D	8.62 in
Pad Radius, Fixed	E	4.25 in
Bottom Connection	4-1/2 REG Box 6-5/8 REG Box 4-1/2 IF Pin	
Top Connection	4-1/2 IF Box 4-1/2 XH Box	
Top Sub Float Bore	4R	

Recommended Operating Limits

Max WOB	158,000 lbf
Max Overpull, Backream	228,000 lbf
Max Overpull, Re-Run	286,000 lbf
Max Overpull, POOH	847,000 lbf

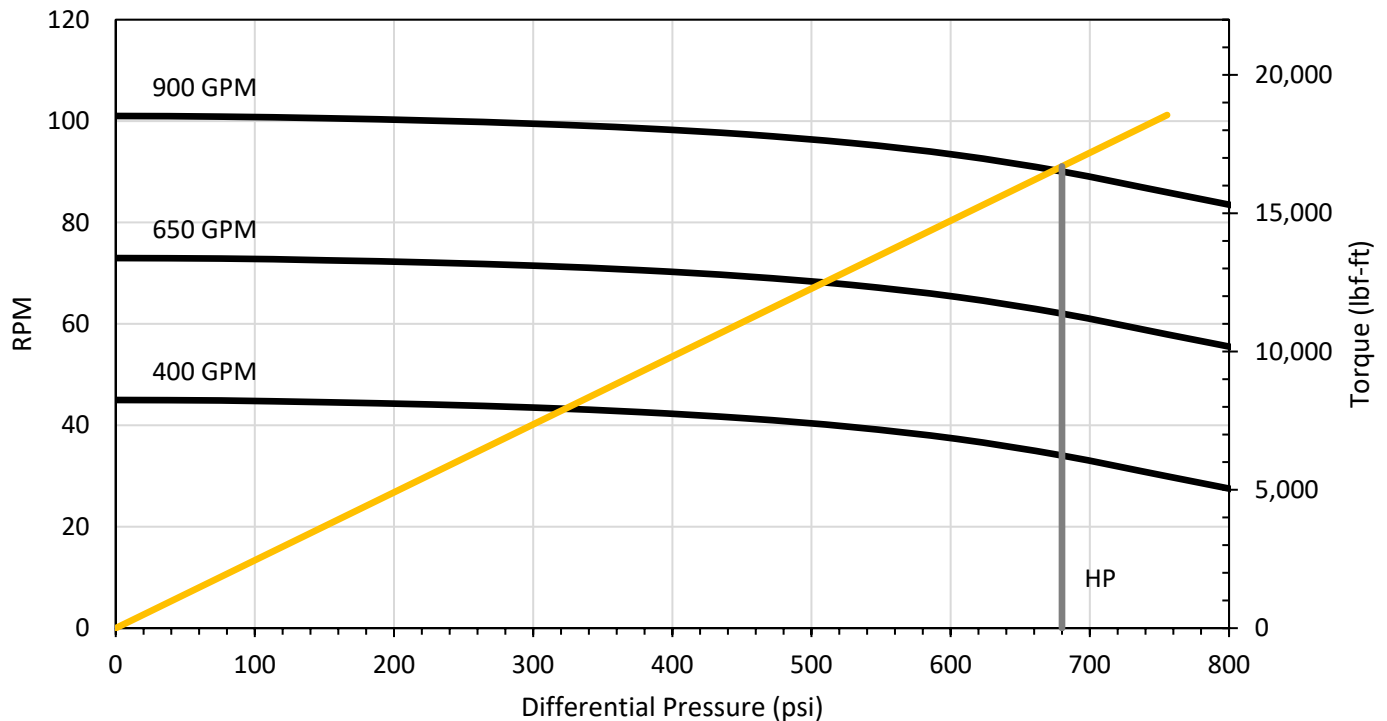
Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	9 7/8	10 5/8	12 1/4	9 7/8	10 5/8
0.78	2.2	0.9	2.0	3.8	4.2	4.8
1.15	4.3	3.0	0.1	5.6	5.9	6.6
1.50	6.3	5.0	2.1	7.3	7.6	8.3
1.75	7.8	6.4	3.5	8.5	8.8	9.5
1.83	8.2	6.9	4.0	8.9	9.2	9.9
2.00	9.2	7.8	4.9	9.7	10.0	10.7
2.12	9.9	8.5	5.6	10.3	10.6	11.3
2.25*	10.6	9.3	6.3	10.9	11.2	11.9
2.38*	11.4	10.0	7.1	11.6	11.9	12.6
2.50*	12.0	10.7	7.8	12.1	12.5	13.1

*Bend Setting not recommended for Rotary Drilling

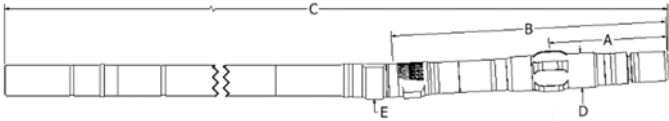
Performance Details

Performance Details	HP
Max Diff Pressure	680 psi
Max Torque	16,580 lbf-ft
Stall Torque	24,860 lbf-ft
Rotation	0.112 rev/gal
Flow Range	400-900 gpm
Speed Range	45-101 rpm

Theoretical Performance Curve


Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-96 : 5/6 Lobe 4.0 Stage



Dimensions

Bit to Stabilizer Center	A	50 in
Bit to Bend, ABH	B	89.5 in
Bit to Bend, Fixed	B	79.7 in
Bit to Top Sub	C	377 in
Body OD, Slick	D	9.62 in
Body OD, Stabilizer	D	10.75 in
Pad Radius, ABH	E	5.2 in
Pad Radius, Fixed	E	5.1 in
Bottom Connection	6-5/8 REG Box 7-5/8 REG Box	
Top Connection	6-5/8 REG Box	
Top Sub Float Bore	6R	

Recommended Operating Limits

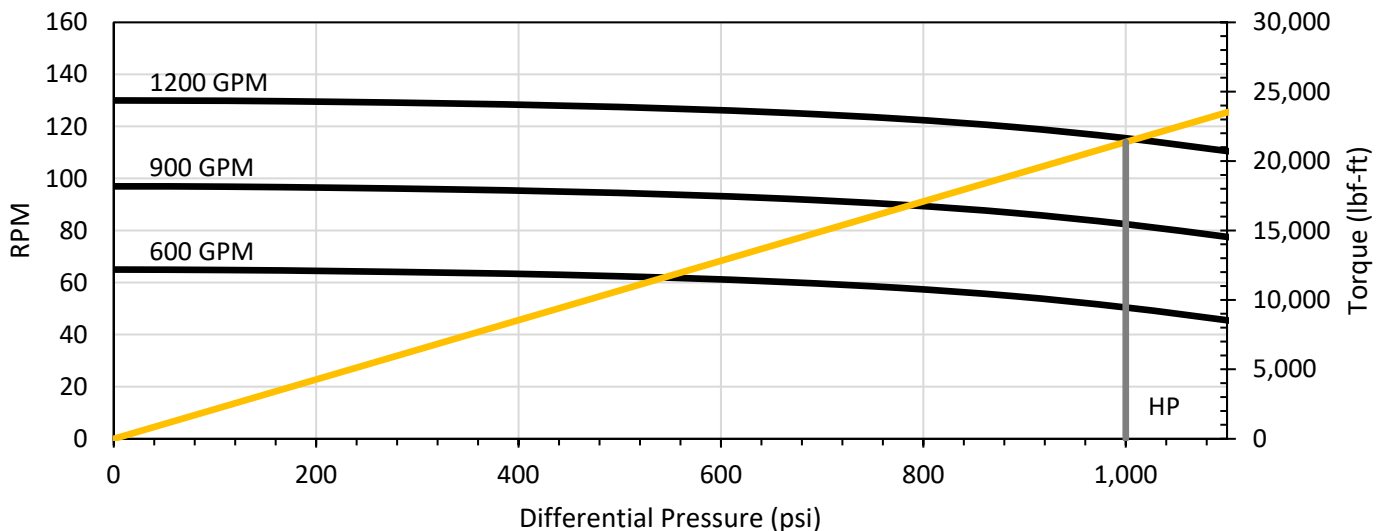
Max WOB	90,000 lbf
Max Overpull, Backream	130,000 lbf
Max Overpull, Re-Run	553,000 lbf
Max Overpull, POOH	1,210,000 lbf

Performance Details

HP

Max Diff Pressure	1,000 psi
Max Torque	21,370 lbf-ft
Stall Torque	32,060 lbf-ft
Rotation	0.108 rev/gal
Flow Range	600-1200 gpm
Speed Range	65-130 rpm

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

Predicted Build Rates (Adj.) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	12 1/4	14 3/4	17 1/2	12 1/4	14 3/4	17 1/2
Deg						
0.39	0.2	4.3	8.7	3.1	4.4	5.9
0.78	2.2	1.9	6.3	5.2	6.5	8.0
1.15	4.4	0.4	4.1	7.2	8.5	9.9
1.50	6.5	2.5	2.0	9.0	10.4	11.8
1.83	8.5	4.5	0.0	10.8	12.1	13.6
2.12	10.3	6.3	1.8	12.3	13.7	15.1
2.38*	11.9	7.8	3.4	13.7	15.0	16.5
2.60*	13.2	9.2	4.7	14.9	16.2	17.7
2.77*	14.3	10.2	5.8	15.8	17.1	18.6
2.90*	15.0	11.0	6.5	16.5	17.8	19.3
2.97*	15.5	11.4	7.0	16.9	18.2	19.6
3.00*	15.7	11.6	7.2	17.0	18.3	19.8

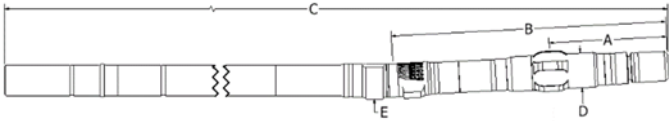
*Bend Setting not recommended for Rotary Drilling

Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	12 1/4	14 3/4	17 1/2	12 1/4	14 3/4	17 1/2
Deg						
0.78	1.3	3.2	8.1	5.3	6.7	8.1
1.15	3.5	0.9	5.8	7.4	8.7	10.2
1.50	5.6	1.2	3.7	9.3	10.6	12.1
1.75	7.2	2.7	2.2	10.7	12.0	13.5
1.83	7.7	3.2	1.7	11.1	12.4	13.9
2.00	8.7	4.2	0.7	12.1	13.4	14.8
2.12	9.4	5.0	0.1	12.7	14.0	15.5
2.25*	10.2	5.8	0.9	13.4	14.8	16.2
2.38*	11.0	6.5	1.6	14.1	15.5	16.9
2.50*	11.7	7.3	2.4	14.8	16.1	17.6

*Bend Setting not recommended for Rotary Drilling

RVEN-96 : 5/6 Lobe 5.0 Stage



Dimensions

Bit to Stabilizer Center	A	50 in
Bit to Bend, ABH	B	89.5 in
Bit to Bend, Fixed	B	79.7 in
Bit to Top Sub	C	379 in
Body OD, Slick	D	9.62 in
Body OD, Stabilizer	D	10.75 in
Pad Radius, ABH	E	5.2 in
Pad Radius, Fixed	E	5.1 in
Bottom Connection	6-5/8 REG Box 7-5/8 REG Box	
Top Connection	6-5/8 REG Box	
Top Sub Float Bore	6R	

Recommended Operating Limits

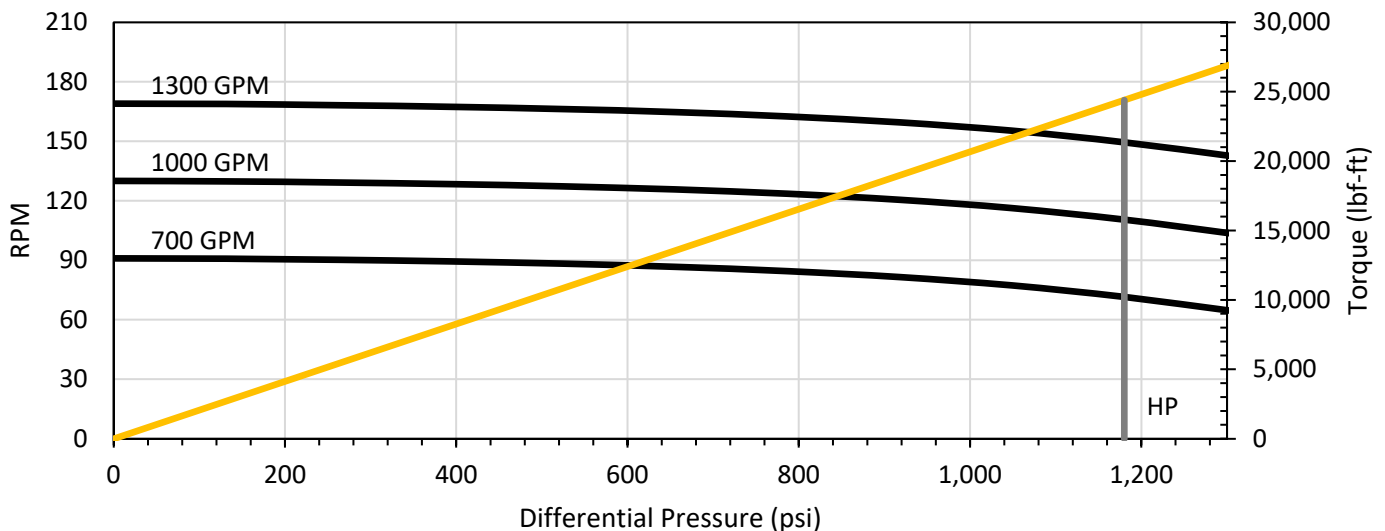
Max WOB	90,000 lbf
Max Overpull, Backream	130,000 lbf
Max Overpull, Re-Run	553,000 lbf
Max Overpull, POOH	1,210,000 lbf

Performance Details

HP

Max Diff Pressure	1,180 psi
Max Torque	24,290 lbf-ft
Stall Torque	38,260 lbf-ft
Rotation	0.130 rev/gal
Flow Range	700-1300 gpm
Speed Range	90-170 rpm

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

Predicted Build Rates (Adj.) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	12 1/4	14 3/4	17 1/2	12 1/4	14 3/4
0.39	0.2	4.3	8.7	3.1	4.4	5.9
0.78	2.2	1.9	6.3	5.2	6.5	8.0
1.15	4.4	0.4	4.1	7.2	8.5	9.9
1.50	6.5	2.5	2.0	9.0	10.4	11.8
1.83	8.5	4.5	0.0	10.8	12.1	13.6
2.12	10.3	6.3	1.8	12.3	13.7	15.1
2.38*	11.9	7.8	3.4	13.7	15.0	16.5
2.60*	13.2	9.2	4.7	14.9	16.2	17.7
2.77*	14.3	10.2	5.8	15.8	17.1	18.6
2.90*	15.0	11.0	6.5	16.5	17.8	19.3
2.97*	15.5	11.4	7.0	16.9	18.2	19.6
3.00*	15.7	11.6	7.2	17.0	18.3	19.8

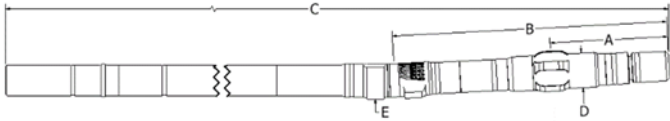
*Bend Setting not recommended for Rotary Drilling

Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	12 1/4	14 3/4	17 1/2	12 1/4	14 3/4
0.78	1.3	3.2	8.1	5.3	6.7	8.1
1.15	3.5	0.9	5.8	7.4	8.7	10.2
1.50	5.6	1.2	3.7	9.3	10.6	12.1
1.75	7.2	2.7	2.2	10.7	12.0	13.5
1.83	7.7	3.2	1.7	11.1	12.4	13.9
2.00	8.7	4.2	0.7	12.1	13.4	14.8
2.12	9.4	5.0	0.1	12.7	14.0	15.5
2.25*	10.2	5.8	0.9	13.4	14.8	16.2
2.38*	11.0	6.5	1.6	14.1	15.5	16.9
2.50*	11.7	7.3	2.4	14.8	16.1	17.6

*Bend Setting not recommended for Rotary Drilling

RVEN-96 : 7/8 Lobe 3.9 Stage



Dimensions

Bit to Stabilizer Center	A	50 in
Bit to Bend, ABH	B	89.5 in
Bit to Bend, Fixed	B	79.7 in
Bit to Top Sub	C	446 in
Body OD, Slick	D	9.62 in
Body OD, Stabilizer	D	10.75 in
Pad Radius, ABH	E	5.2 in
Pad Radius, Fixed	E	5.1 in
Bottom Connection	6-5/8 REG Box 7-5/8 REG Box	
Top Connection	6-5/8 REG Box	
Top Sub Float Bore	6R	

Recommended Operating Limits

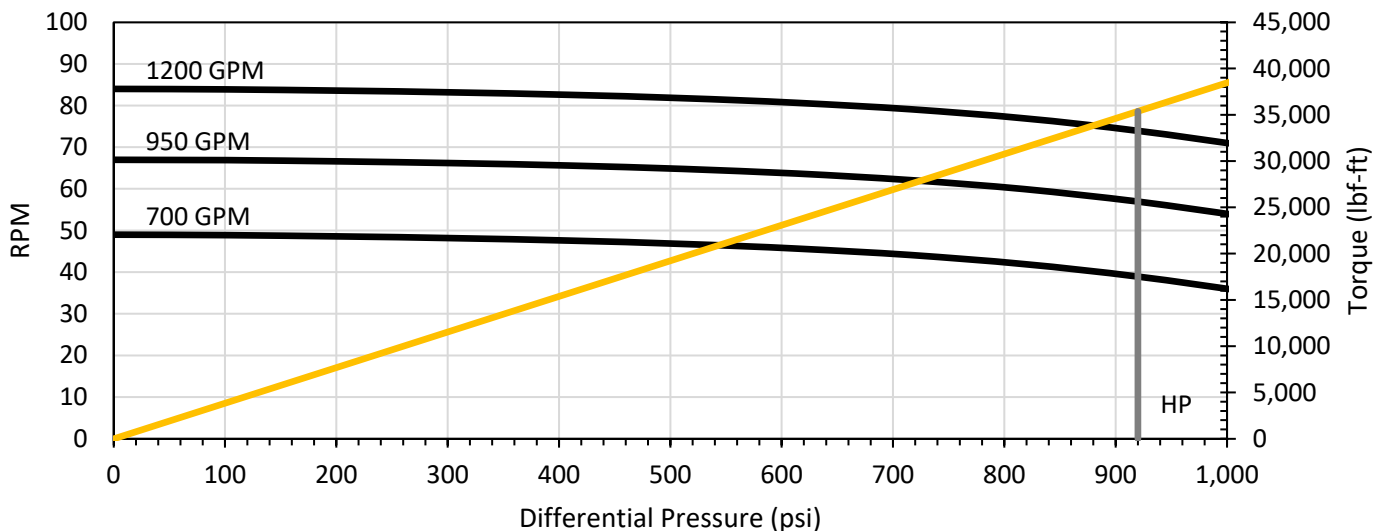
Max WOB	90,000 lbf
Max Overpull, Backream	130,000 lbf
Max Overpull, Re-Run	553,000 lbf
Max Overpull, POOH	1,210,000 lbf

Performance Details

HP

Max Diff Pressure	920 psi
Max Torque	35,250 lbf-ft
Stall Torque	55,520 lbf-ft
Rotation	0.070 rev/gal
Flow Range	700-1200 gpm
Speed Range	50-80 rpm

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

Predicted Build Rates (Adj.) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	12 1/4	14 3/4	17 1/2	12 1/4	14 3/4
0.39	0.3	3.7	7.5	2.5	3.4	4.4
0.78	1.8	1.7	5.5	4.3	5.2	6.2
1.15	3.7	0.2	3.6	6.0	6.9	8.0
1.50	5.5	2.0	1.7	7.6	8.6	9.6
1.83	7.2	3.7	0.0	9.2	10.1	11.1
2.12	8.7	5.2	1.5	10.5	11.4	12.5
2.38*	10.0	6.6	2.8	11.7	12.6	13.7
2.60*	11.2	7.7	3.9	12.7	13.7	14.7
2.77*	12.0	8.6	4.8	13.5	14.4	15.5
2.90*	12.7	9.3	5.5	14.1	15.1	16.1
2.97*	13.1	9.6	5.8	14.4	15.4	16.4
3.00*	13.2	9.8	6.0	14.6	15.5	16.5

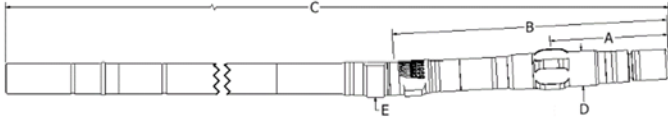
*Bend Setting not recommended for Rotary Drilling

Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	12 1/4	14 3/4	17 1/2	12 1/4	14 3/4
0.78	1.0	2.8	6.9	4.4	5.3	6.3
1.15	2.9	0.8	5.0	6.1	7.1	8.1
1.50	4.7	1.0	3.2	7.8	8.7	9.8
1.75	6.0	2.3	1.9	9.0	9.9	11.0
1.83	6.4	2.7	1.5	9.4	10.3	11.3
2.00	7.3	3.5	0.6	10.2	11.1	12.2
2.12	7.9	4.2	0.0	10.8	11.7	12.7
2.25*	8.6	4.8	0.7	11.4	12.3	13.3
2.38*	9.3	5.5	1.3	12.0	12.9	14.0
2.50*	9.9	6.1	2.0	12.6	13.5	14.5

*Bend Setting not recommended for Rotary Drilling

RVEN-50 : 7/8 Lobe 2.6 Stage



Dimensions

Bit to Stabilizer Center	A	11.1 in
Bit to Bend, ABH	B	52 in
Bit to Bend, Fixed	B	53 in
Bit to Top Sub	C	338 in
Body OD, Slick	D	5.0 in
Body OD, Stabilizer	D	5.7 in
Pad Radius, Fixed & ABH	E	2.75 in
Bottom Connection	3-1/2 REG Box 3-1/2 IF Pin XT39 NC35	
Top Connection	3-1/2 IF Box 4 FH Box	
Top Sub Float Bore	3-1/2 IF	

Recommended Operating Limits

Max WOB	29,000 lbf
Max Overpull, Backream	43,000 lbf
Max Overpull, Re-Run	137,000 lbf
Max Overpull, POOH	331,000 lbf

Performance Details

HP

Max Diff Pressure	620 psi
Max Torque	5,770 lbf-ft
Stall Torque	9,090 lbf-ft
Rotation	0.260 rev/gal
Flow Range	150-300 gpm
Speed Range	40-80 rpm

Predicted Build Rates (Adj.) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	6	6 1/4	6 3/4	6	6 1/4
0.39	1.4	-	-	1.6	1.7	2.0
0.78	4.1	3.3	1.6	4.1	4.1	4.4
1.15	6.7	5.9	4.2	6.7	6.3	6.6
1.50	9.1	8.3	6.6	9.1	8.4	8.7
1.83	11.4	10.6	8.9	11.4	10.6	10.7
2.12	13.4	12.6	10.9	13.4	12.6	12.5
2.38*	15.2	14.4	12.7	15.2	14.4	14.1
2.60*	16.7	15.9	14.3	16.7	15.9	15.4
2.77*	17.9	17.1	15.4	17.9	17.1	16.4
2.90*	18.8	18.0	16.3	18.8	18.0	17.2
2.97*	19.3	18.5	16.8	19.3	18.5	17.6
3.00*	19.5	18.7	17.0	19.5	18.7	17.8

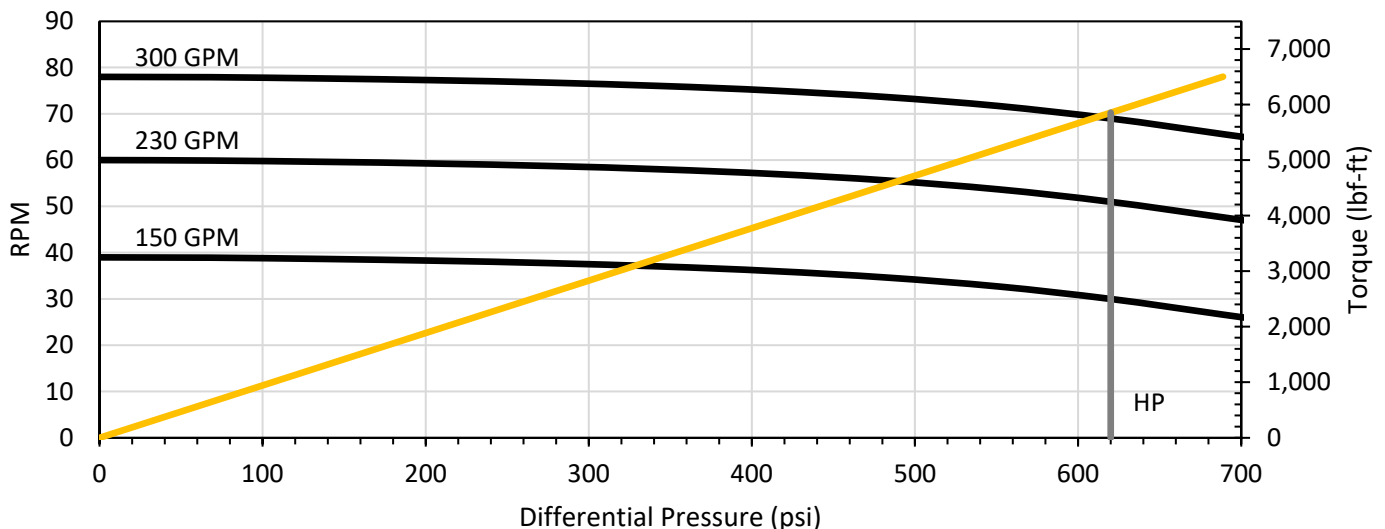
*Bend Setting not recommended for Rotary Drilling

Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	6	6 1/4	6 3/4	6	6 1/4
0.78	4.1	3.3	1.7	4.1	4.1	4.4
1.15	6.7	5.9	4.3	6.7	6.3	6.6
1.50	9.1	8.3	6.7	9.1	8.4	8.7
1.75	10.9	10.1	8.4	10.9	10.1	10.2
1.83	11.4	10.6	9.0	11.4	10.6	10.7
2.00	12.6	11.8	10.2	12.6	11.8	11.7
2.12	13.4	12.6	11.0	13.4	12.6	12.5
2.25*	14.3	13.5	11.9	14.3	13.5	13.2
2.38*	15.2	14.4	12.8	15.2	14.4	14.0
2.50*	16.1	15.3	13.6	16.1	15.3	14.8

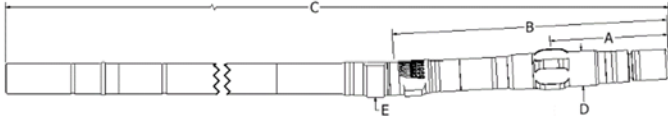
*Bend Setting not recommended for Rotary Drilling

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-50 : 7/8 Lobe 4.5 Stage



Dimensions

Bit to Stabilizer Center	A	11.1 in
Bit to Bend, ABH	B	52 in
Bit to Bend, Fixed	B	53 in
Bit to Top Sub	C	338 in
Body OD, Slick	D	5.0 in
Body OD, Stabilizer	D	5.7 in
Pad Radius, Fixed & ABH	E	2.75 in
Bottom Connection	3-1/2 REG Box 3-1/2 IF Pin XT39 NC35	
Top Connection	3-1/2 IF Box 4 FH Box	
Top Sub Float Bore	3-1/2 IF	

Recommended Operating Limits

Max WOB	29,000 lbf
Max Overpull, Backream	43,000 lbf
Max Overpull, Re-Run	137,000 lbf
Max Overpull, POOH	331,000 lbf

Performance Details

HP

Max Diff Pressure	1,060 psi
Max Torque	5,490 lbf-ft
Stall Torque	8,640 lbf-ft
Rotation	0.460 rev/gal
Flow Range	150-300 gpm
Speed Range	70-140 rpm

Predicted Build Rates (Adj.) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	6	6 1/4	6 3/4	6	6 1/4
0.39	1.4	-	-	1.6	1.7	2.0
0.78	4.1	3.3	1.6	4.1	4.1	4.4
1.15	6.7	5.9	4.2	6.7	6.3	6.6
1.50	9.1	8.3	6.6	9.1	8.4	8.7
1.83	11.4	10.6	8.9	11.4	10.6	10.7
2.12	13.4	12.6	10.9	13.4	12.6	12.5
2.38*	15.2	14.4	12.7	15.2	14.4	14.1
2.60*	16.7	15.9	14.3	16.7	15.9	15.4
2.77*	17.9	17.1	15.4	17.9	17.1	16.4
2.90*	18.8	18.0	16.3	18.8	18.0	17.2
2.97*	19.3	18.5	16.8	19.3	18.5	17.6
3.00*	19.5	18.7	17.0	19.5	18.7	17.8

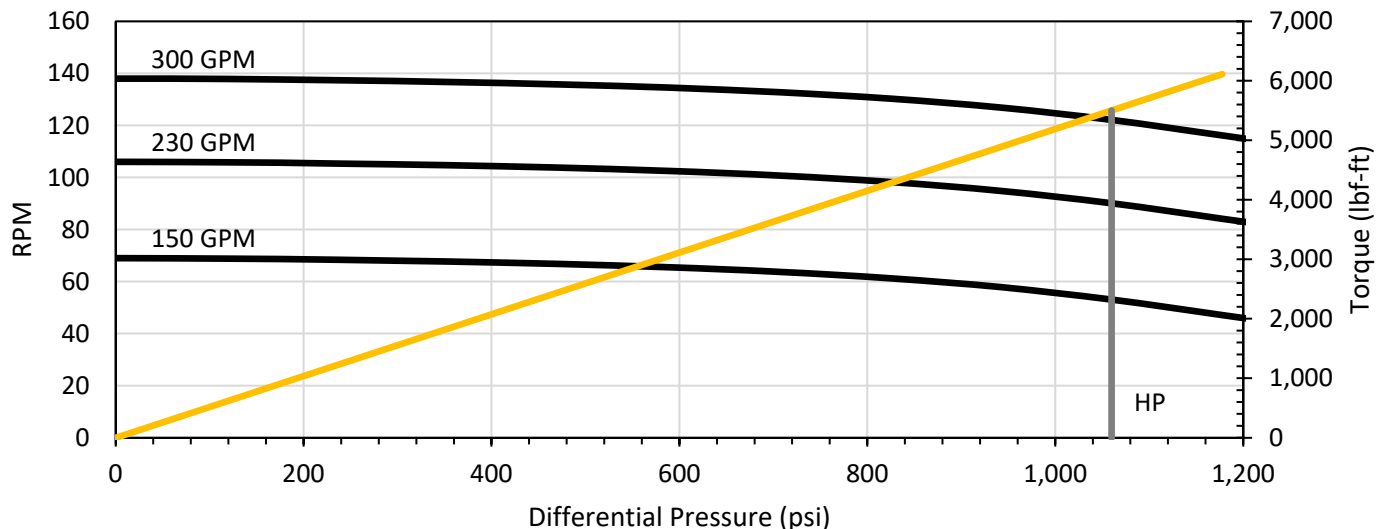
*Bend Setting not recommended for Rotary Drilling

Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	6	6 1/4	6 3/4	6	6 1/4
0.78	4.1	3.3	1.7	4.1	4.1	4.4
1.15	6.7	5.9	4.3	6.7	6.3	6.6
1.50	9.1	8.3	6.7	9.1	8.4	8.7
1.75	10.9	10.1	8.4	10.9	10.1	10.2
1.83	11.4	10.6	9.0	11.4	10.6	10.7
2.00	12.6	11.8	10.2	12.6	11.8	11.7
2.12	13.4	12.6	11.0	13.4	12.6	12.5
2.25*	14.3	13.5	11.9	14.3	13.5	13.2
2.38*	15.2	14.4	12.8	15.2	14.4	14.0
2.50*	16.1	15.3	13.6	16.1	15.3	14.8

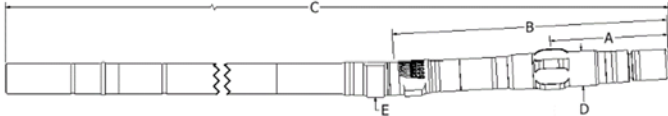
*Bend Setting not recommended for Rotary Drilling

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.

RVEN-50 : 7/8 Lobe 5.7 Stage



Dimensions

Bit to Stabilizer Center	A	11.1 in
Bit to Bend, ABH	B	52 in
Bit to Bend, Fixed	B	53 in
Bit to Top Sub	C	358 in
Body OD, Slick	D	5.0 in
Body OD, Stabilizer	D	5.7 in
Pad Radius, Fixed & ABH	E	2.75 in
Bottom Connection	3-1/2 REG Box 3-1/2 IF Pin XT39 NC35	
Top Connection	3-1/2 IF Box 4 FH Box	
Top Sub Float Bore	3-1/2 IF	

Recommended Operating Limits

Max WOB	29,000 lbf
Max Overpull, Backream	43,000 lbf
Max Overpull, Re-Run	137,000 lbf
Max Overpull, POOH	331,000 lbf

Performance Details

HP

Max Diff Pressure	1,340 psi
Max Torque	6,350 lbf-ft
Stall Torque	10,000 lbf-ft
Rotation	0.520 rev/gal
Flow Range	150-300 gpm
Speed Range	80-150 rpm

Predicted Build Rates (Adj.) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	6	6 1/4	6 3/4	6	6 1/4
0.39	1.3	-	-	1.5	1.6	1.9
0.78	3.9	3.1	1.5	3.9	3.8	4.1
1.15	6.3	5.5	3.9	6.3	6.0	6.2
1.50	8.6	7.8	6.2	8.6	8.0	8.3
1.83	10.7	10.0	8.4	10.7	10.0	10.2
2.12	12.6	11.9	10.3	12.6	11.9	11.8
2.38*	14.3	13.6	12.0	14.3	13.6	13.3
2.60*	15.8	15.0	13.4	15.8	15.0	14.6
2.77*	16.9	16.1	14.5	16.9	16.1	15.6
2.90*	17.7	17.0	15.4	17.7	17.0	16.3
2.97*	18.2	17.4	15.9	18.2	17.4	16.7
3.00*	18.4	17.6	16.1	18.4	17.6	16.9

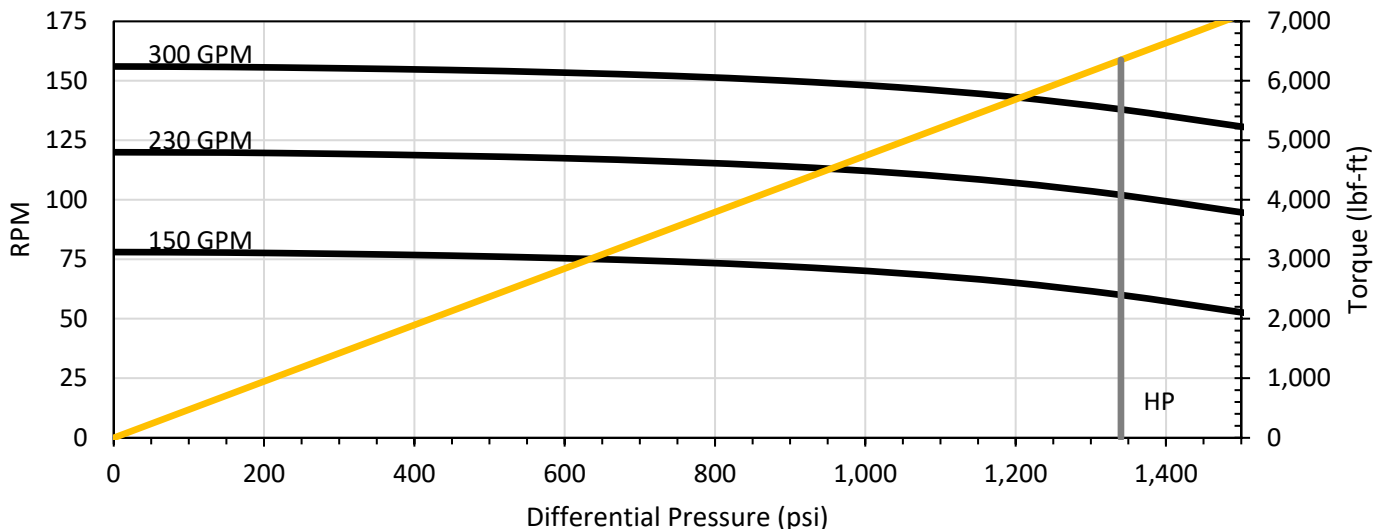
*Bend Setting not recommended for Rotary Drilling

Predicted Build Rates (Fixed) – Degrees/100ft

Bend Setting	Slick Hole Size			Stabilized Hole Size		
	Deg	6	6 1/4	6 3/4	6	6 1/4
0.78	3.9	3.1	1.6	3.9	3.8	4.1
1.15	6.3	5.5	4.0	6.3	6.0	6.2
1.50	8.6	7.8	6.3	8.6	8.0	8.2
1.75	10.2	9.5	7.9	10.2	9.5	9.7
1.83	10.8	10.0	8.4	10.8	10.0	10.1
2.00	11.9	11.1	9.6	11.9	11.1	11.1
2.12	12.7	11.9	10.3	12.7	11.9	11.8
2.25*	13.5	12.7	11.2	13.5	12.7	12.6
2.38*	14.4	13.6	12.0	14.4	13.6	13.3
2.50*	15.1	14.4	12.8	15.1	14.4	14.0

*Bend Setting not recommended for Rotary Drilling

Theoretical Performance Curve



Performance curves based on testing at 70°F. Actual field performance may vary with field operation conditions.