

MOTOR HANDBOOK

mpact[®]
Downhole Motors

MS Directional.

MOTOR HANDBOOK

First Edition, April 2021

Version 2.1



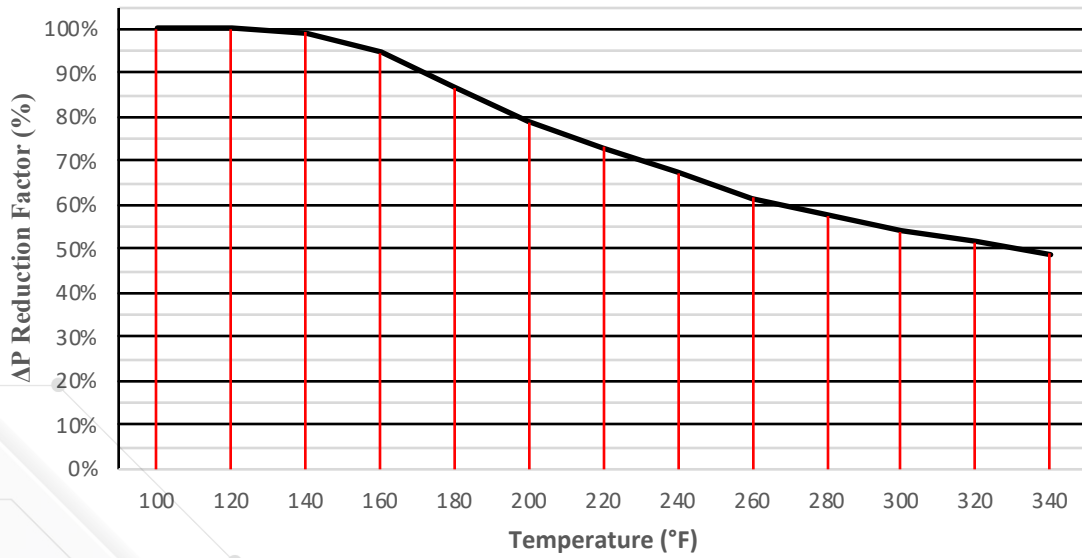
MS Directional is an affiliate company of  **PATTERSON-UTI**

The information in this handbook is subject to change without notice. It is intended to be an aid to the operator and is provided for information and illustration purposes.

MOTOR SELECTION		MOTOR PHYSICAL DATA			MOTOR PERFORMANCE DATA				HOLE SIZE	
OD (IN)	Model	Power Section			Flow Rate (gpm)	Operating Diff. (psi)	Maximum Diff. (psi)	Speed Range (RPM)	Torque (ft.-lbs.)	Bit Range (in)
		Lobes	Stages	Rev/Gal						
4 3/4	Conventional	5/6	8.3	1.02	100-300	1,040	1,750	100-300	3,968	6 - 6 3/4
	Conventional	7/8	3.1	0.31	100-275	390	910	31-85	7,033	
	Conventional	7/8	5.0	0.69	150-300	625	1,470	104-207	5,612	
5 & 5 x 5 5/8 Hybrid	Premium	6/7	8.0	0.84	150-350	1,200	2,065	120-280	5,897	6 - 6 3/4*
	Premium	6/7	8.8	0.68	150-400	1,200	2,240	102-272	7,979	
	Premium	6/7	11.7	0.89	150-350	1,200	2,905	134-312	7,658	
	Premium	7/8	4.0	0.30	250-400	800	1,190	75-120	9,371	
	Premium	7/8	7.0	0.49	150-400	1,200	1,824	73-194	9,837	
6 1/4	Conventional	7/8	4.8	0.36	150-400	900	1,365	50-130	8,500	7 7/8 - 8 3/4
6 1/2 x 6 1/4	Conventional	6/7	5.0	0.30	300-600	625	1,180	90-180	9,850	7 7/8 - 8 3/4
6 3/4	Conventional	4/5	7.0	0.50	300-600	875	1,260	149-300	5,571	7 7/8* - 8 3/4
	Conventional	6/7	5.0	0.31	300-600	625	1,260	93-186	9,762	
	Conventional	7/8	3.3	0.15	300-600	415	945	42-84	14,110	
	Conventional	7/8	6.4	0.28	300-600	1,000	1,820	83-166	14,360	
6 5/8	Premium	5/6	9.4	0.40	300-700	1,350	2,030	120-280	11,729	7 7/8 - 8 3/4
	Premium	5/6	8.4	0.35	350-700	1,250	1,785	123-245	11,771	
	Premium	7/8	6.9	0.25	300-700	1,050	1,960	75-175	19,010	
7 & 7 x 7 3/4 Hybrid	Premium	5/6	9.4	0.40	350-700	1,350	2,030	120-280	11,729	8 1/2 - 12 1/2
	Premium	5/6	8.4	0.35	350-700	1,250	1,785	123-245	11,771	
	Premium	7/8	6.9	0.25	300-700	1,050	1,960	75-175	19,010	
	Premium	8/9	4.3	0.15	400-700	650	1,400	60-105	22,828	
7 3/4 & 7 3/4 x 9 5/8 Hybrid	Conventional	4/5	5.3	0.26	400-950	665	945	70-230	8,371	9 7/8* - 12 1/2
	Conventional	6/7	4.0	0.18	300-900	850	1,015	70-150	13,820	
	Conventional	7/8	2.2	0.09	600-900	500	665	54-81	18,474	
8 x 7 3/4 & 8 x 9 5/8 Hybrid	Premium	7/8	5.9	0.16	400-900	750	1,390	60-140	21,870	9 7/8* - 17 1/2
	Premium	7/8	7.0	0.18	400-1100	1,600	2,135	72-198	28,408	12 1/4 - 17 1/2
8 3/4 x 9 5/8	Premium	8/9	4.0	0.09	600-1100	900	1,158	54-99	32,935	
	9 5/8	Conventional	6/7	5.0	0.13	600-1200	900	1,260	78-156	21,731

*Application Dependent

Differential Pressure Derating Guide



PHYSICAL DATA	
Bit Size Range (in)	6 - 6 3/4
Bit Box Connection	3 1/2 Reg.
Top Sub Connection	3 1/2 IF
Max Over Pull to Re-Run (lbs)	144,000
Max Pull to Yield (lbs)	344,000

PERFORMANCE DATA	
Flow Range (gpm)	100-300
Rev/Gal	1.02
Max Operating Differential (psi)	1,040
Max Differential (psi)	1,750
Max Torque (ft.-lbs)	3,968
Max Operating WOB (lbs)	20,000

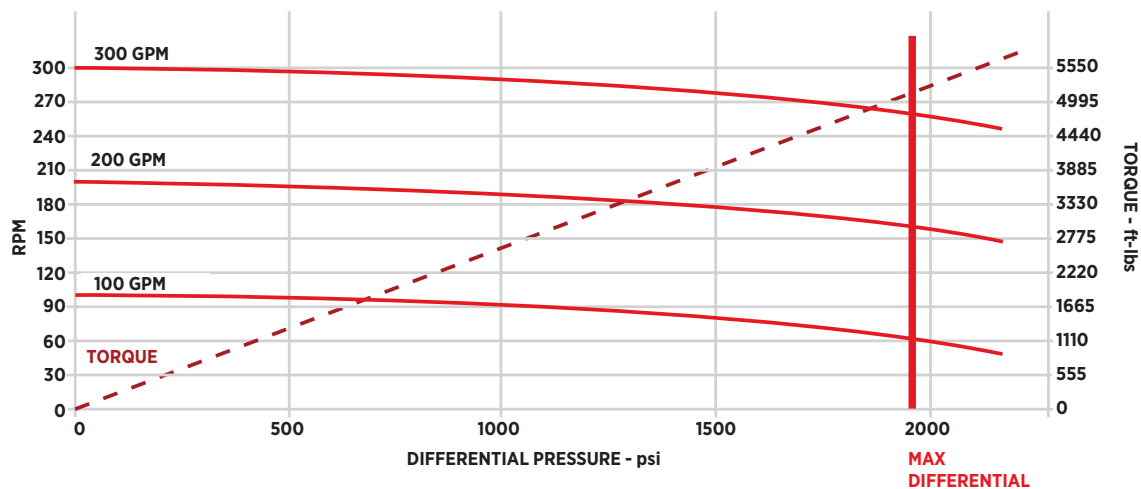
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED
	56	53.5

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<70
2.00° - 2.12°	<50
2.12° - 2.38°	<35
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	6 - 6 3/4
Bit Box Connection	3 1/2 Reg.
Top Sub Connection	3 1/2 IF
Max Over Pull to Re-Run (lbs)	144,000
Max Pull to Yield (lbs)	344,000

PERFORMANCE DATA	
Flow Range (gpm)	100-275
Rev/Gal	0.31
Max Operating Differential (psi)	390
Max Differential (psi)	910
Max Torque (ft.-lbs)	7,033
Max Operating WOB (lbs)	20,000

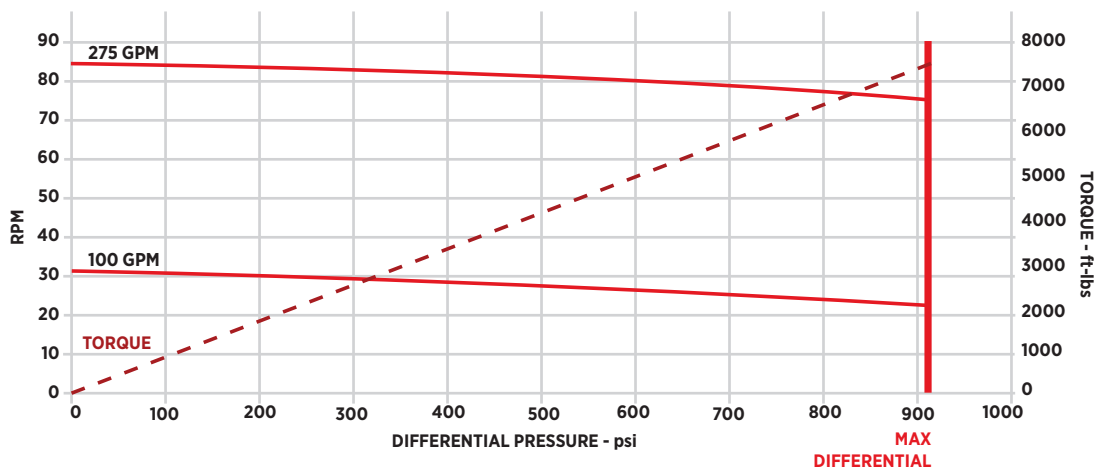
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Max Pull to Yield (lbs)	344,000

PERFORMANCE DATA	
Flow Range (gpm)	150-300
Rev/Gal	0.69
Max Operating Differential (psi)	625
Max Differential (psi)	1,470
Max Torque (ft.-lbs)	5,612
Max Operating WOB (lbs)	20,000

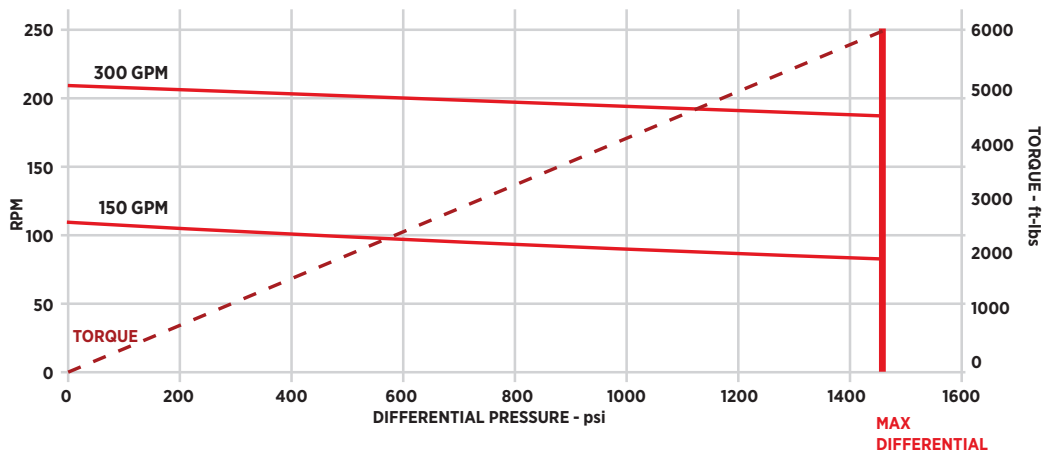
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PHYSICAL DATA	
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Bit Box Connection	3 1/2 Reg.
Top Sub Connection	3 1/2 IF
Max Over Pull to Re-Run (lbs)	195,000
Max Pull to Yield (lbs)	427,000

PERFORMANCE DATA	
Flow Range (gpm)	150-350
Rev/Gal	0.79
Max Operating Differential (psi)	1,200
Max Differential (psi)	1,880
Max Torque (ft.-lbs)	6,110
Max Operating WOB (lbs)	25,000

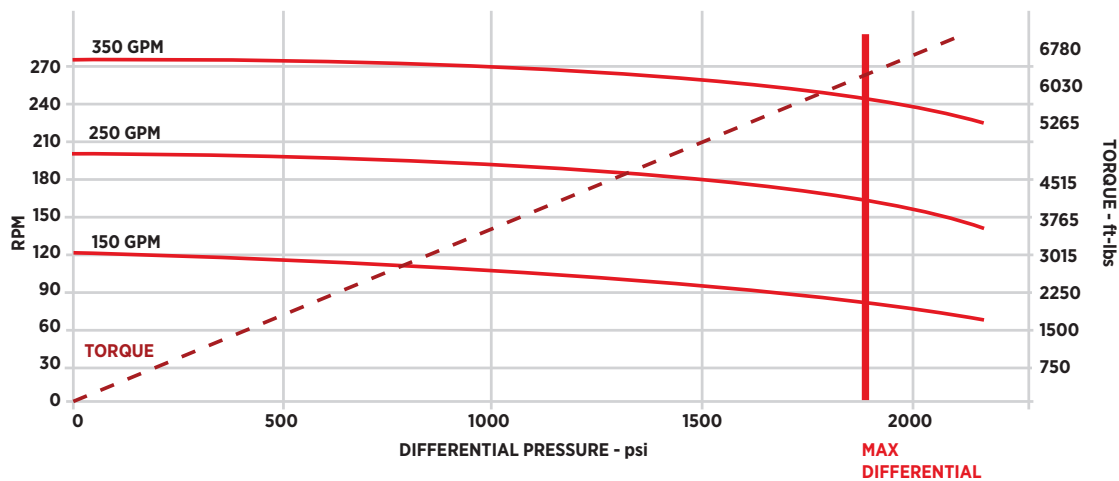
DIMENSIONAL DATA

Bit to Bend (in)	FIXED SHORT	FIXED STANDARD
	45.5	50.5

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PERFORMANCE DATA	
Flow Range (gpm)	150-400
Rev/Gal	0.68
Max Operating Differential (psi)	1,200
Max Differential (psi)	2,240
Max Torque (ft.-lbs)	7,979
Max Operating WOB (lbs)	25,000

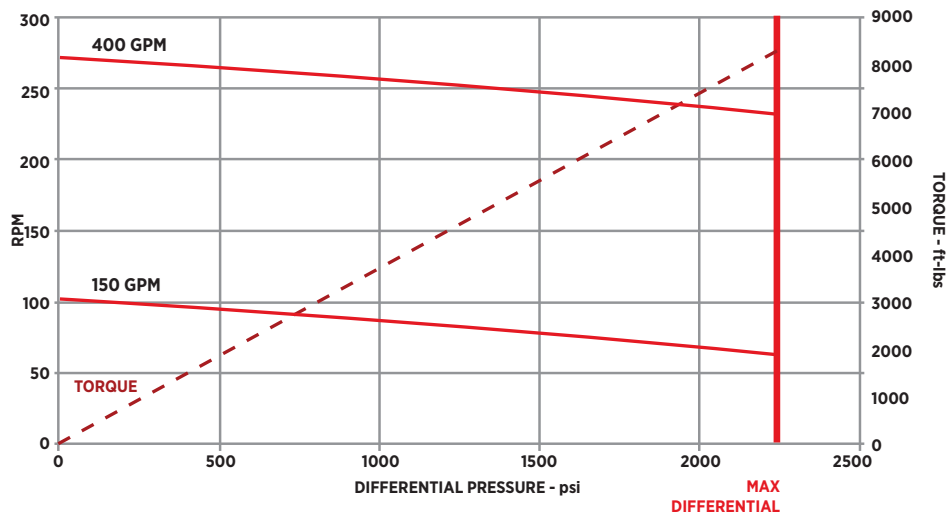
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Max Pull to Yield (lbs)	427,000

PERFORMANCE DATA	
Flow Range (gpm)	150-350
Rev/Gal	0.89
Max Operating Differential (psi)	1,200
Max Differential (psi)	2,905
Max Torque (ft.-lbs)	7,658
Max Operating WOB (lbs)	25,000

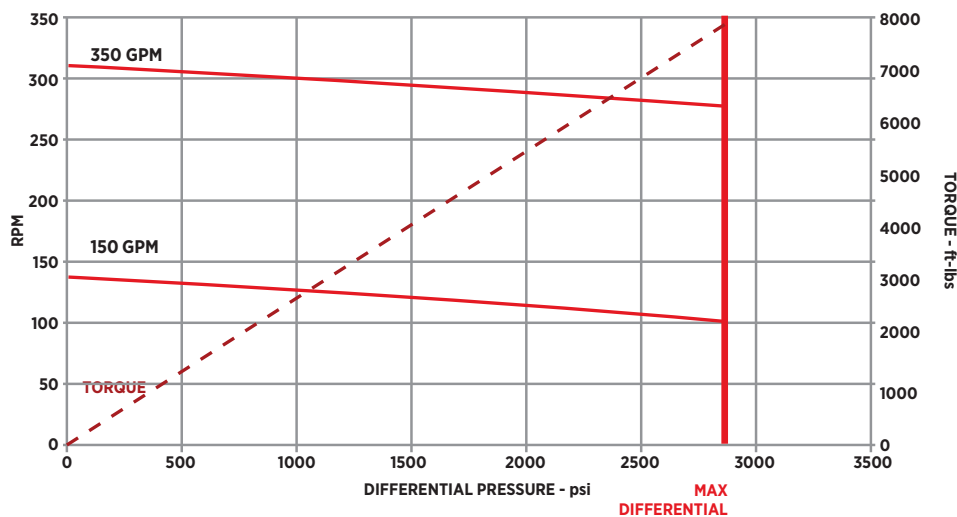
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PERFORMANCE DATA	
Flow Range (gpm)	250-400
Rev/Gal	0.30
Max Operating Differential (psi)	800
Max Differential (psi)	1,190
Max Torque (ft.-lbs)	9,371
Max Operating WOB (lbs)	25,000

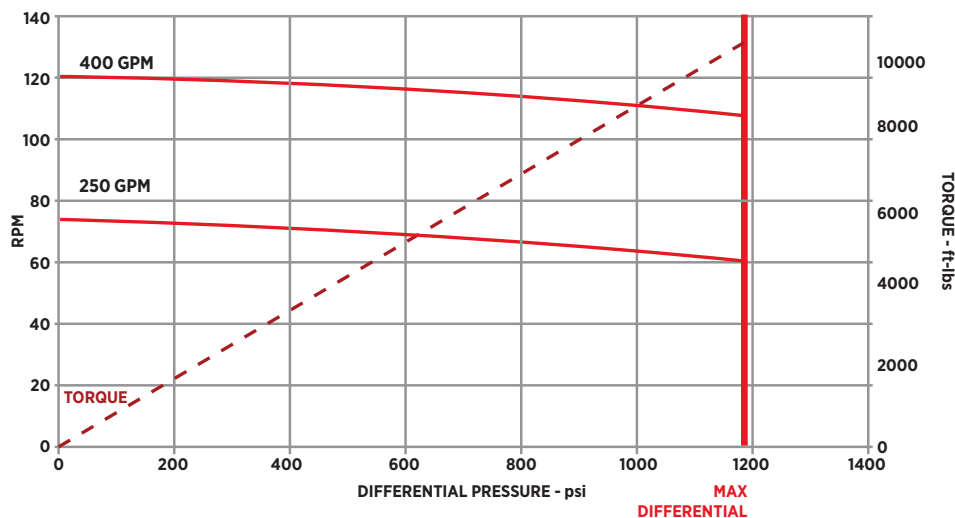
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PERFORMANCE DATA	
Flow Range (gpm)	150-400
Rev/Gal	0.49
Max Operating Differential (psi)	1,200
Max Differential (psi)	1,824
Max Torque (ft.-lbs)	9,837
Max Operating WOB (lbs)	25,000

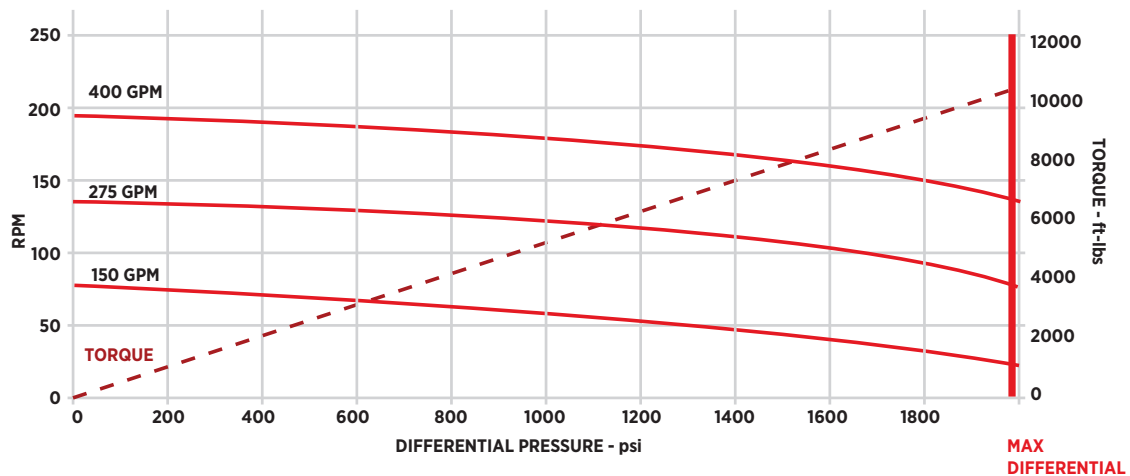
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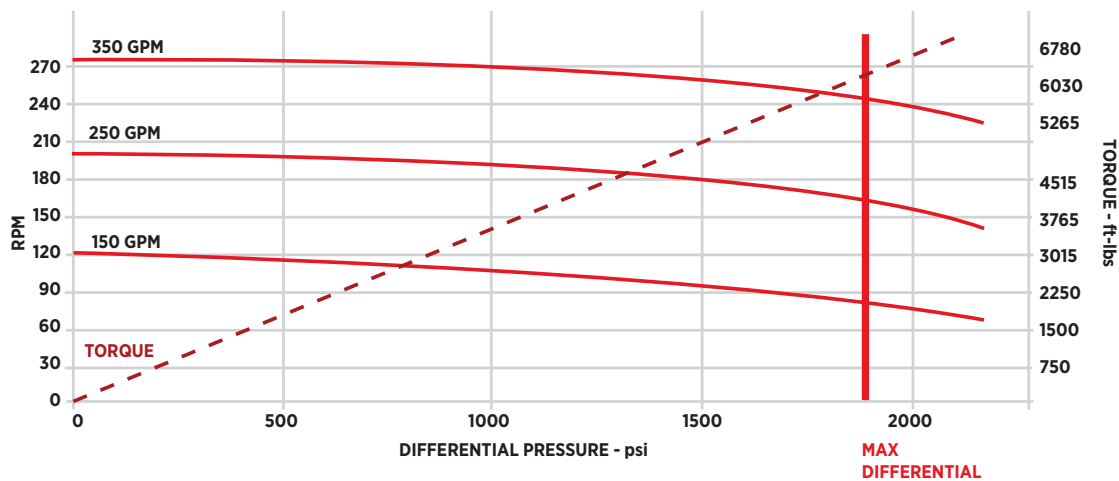
DIMENSIONAL DATA

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	N/A	47.5

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PERFORMANCE DATA	
Flow Range (gpm)	150-400
Rev/Gal	0.68
Max Operating Differential (psi)	1,200
Max Differential (psi)	2,240
Max Torque (ft.-lbs)	7,979
Max Operating WOB (lbs)	45,000

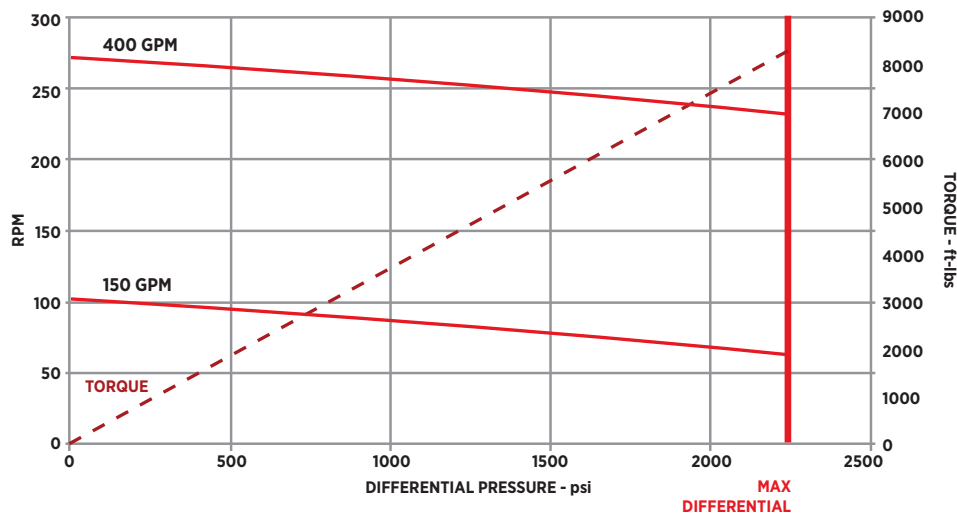
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PERFORMANCE DATA	
Flow Range (gpm)	150-350
Rev/Gal	0.89
Max Operating Differential (psi)	1,200
Max Differential (psi)	2,905
Max Torque (ft.-lbs)	7,658
Max Operating WOB (lbs)	45,000

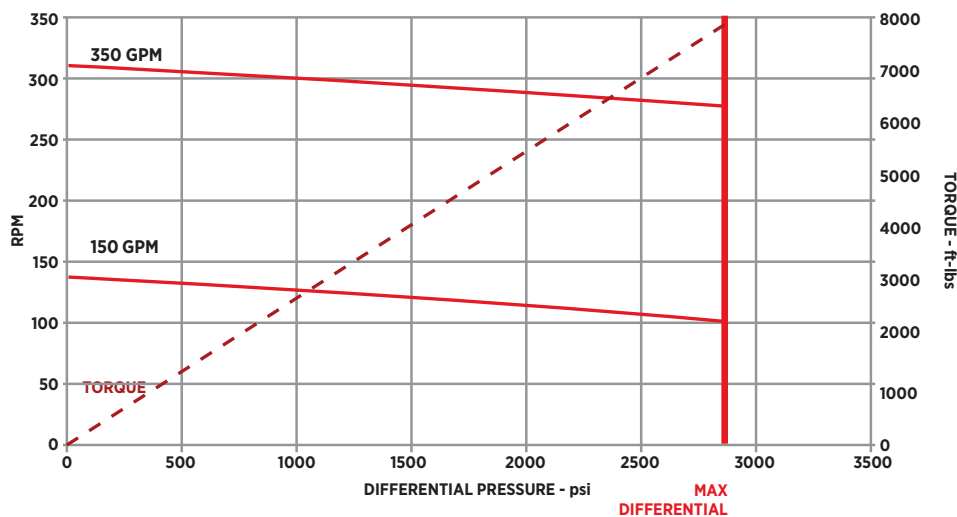
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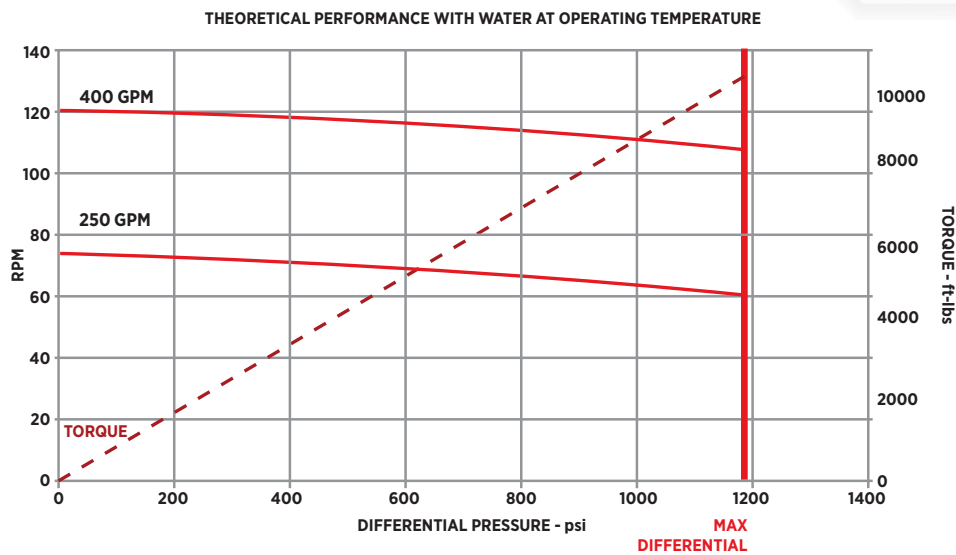


PHYSICAL DATA	
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Bit Box Connection	3 1/2 Reg.
Top Sub Connection	3 1/2 IF
Max Over Pull to Re-Run (lbs)	195,000
Max Pull to Yield (lbs)	427,000

PERFORMANCE DATA	
Flow Range (gpm)	250-400
Rev/Gal	0.30
Max Operating Differential (psi)	800
Max Differential (psi)	1,190
Max Torque (ft.-lbs)	9,371
Max Operating WOB (lbs)	45,000

DIMENSIONAL DATA		
Bit to Bend (in)	ADJUSTABLE	FIXED
	N/A	47.5

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE	
Bend Angle	RPM
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PERFORMANCE DATA	
Flow Range (gpm)	150-400
Rev/Gal	0.49
Max Operating Differential (psi)	1,200
Max Differential (psi)	1,824
Max Torque (ft.-lbs)	9,837
Max Operating WOB (lbs)	45,000

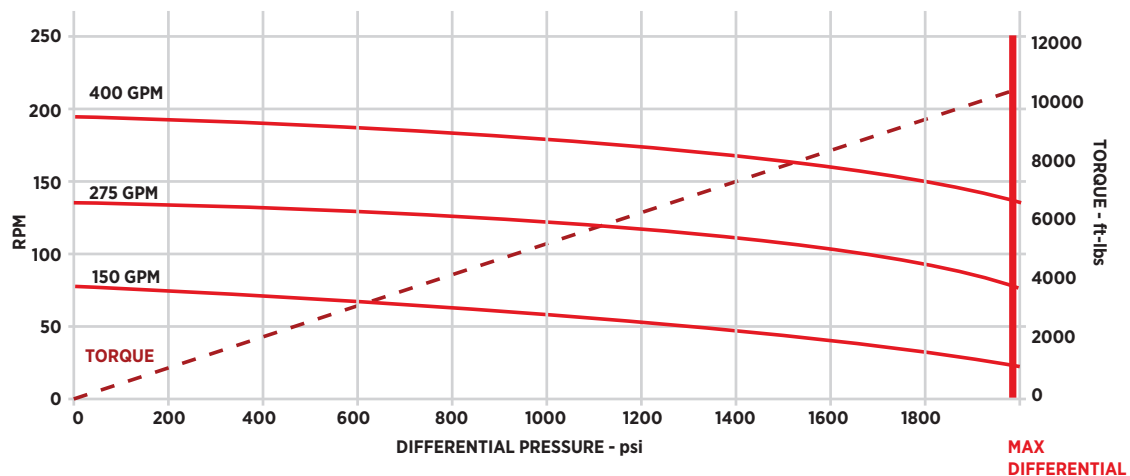
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THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	7 7/8 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 XH
Max Over Pull to Re-Run (lbs)	285,000
Max Pull to Yield (lbs)	703,000

PERFORMANCE DATA	
Flow Range (gpm)	150-400
Rev/Gal	0.36
Max Operating Differential (psi)	900
Max Differential (psi)	1,365
Max Torque (ft.-lbs)	8,500
Max Operating WOB (lbs)	30,000

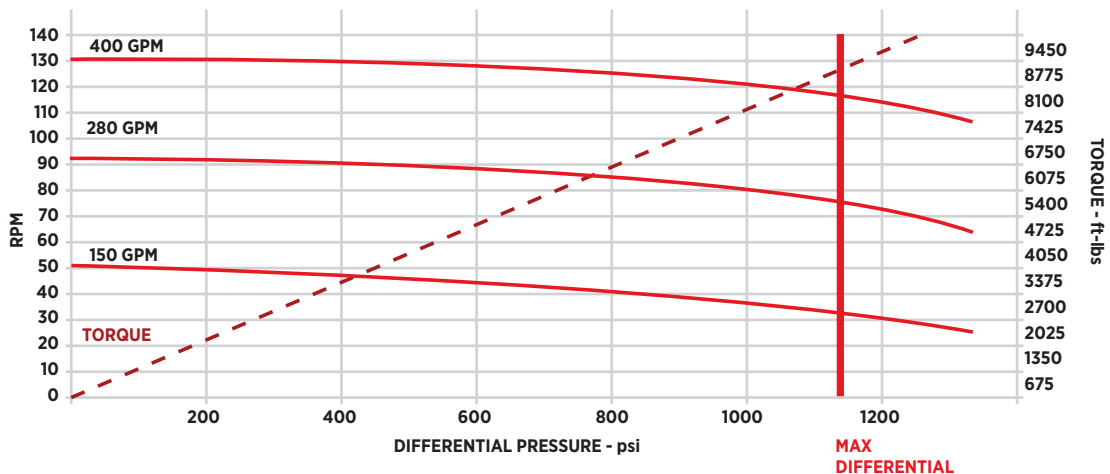
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED
	67.5	61

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<100
1.83° - 2.00°	<70
2.00° - 2.12°	<50
2.12° - 2.38°	<35
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	7 7/8 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 XH
Max Over Pull to Re-Run (lbs)	285,000
Max Pull to Yield (lbs)	703,000

PERFORMANCE DATA	
Flow Range (gpm)	300-600
Rev/Gal	0.30
Max Operating Differential (psi)	625
Max Differential (psi)	1,180
Max Torque (ft.-lbs)	9,850
Max Operating WOB (lbs)	30,000

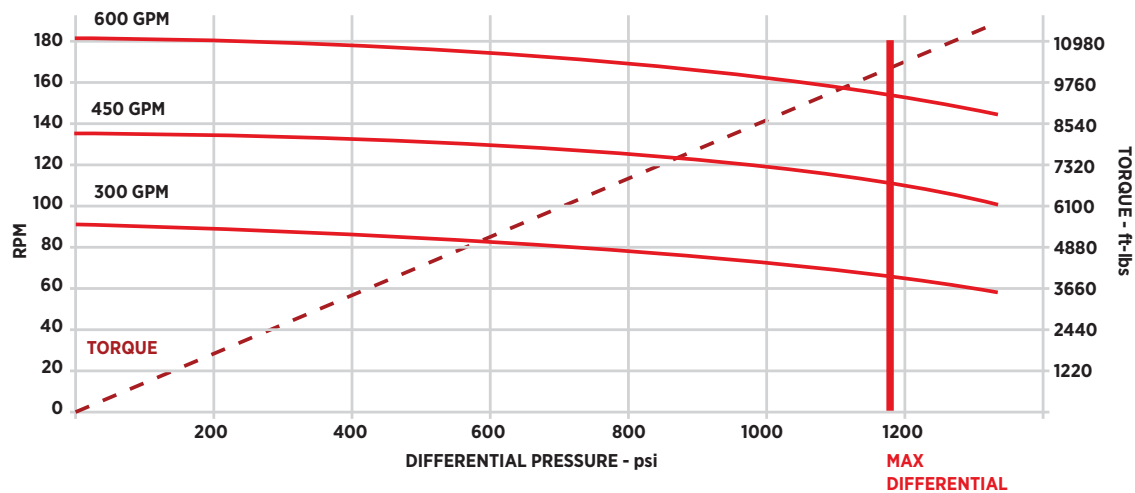
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THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	*7 7/8 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	245,000
Max Pull to Yield (lbs)	649,000

*Application Dependent

PERFORMANCE DATA	
Flow Range (gpm)	300-600
Rev/Gal	0.50
Max Operating Differential (psi)	875
Max Differential (psi)	1,260
Max Torque (ft.-lbs)	5,571
Max Operating WOB (lbs)	40,000

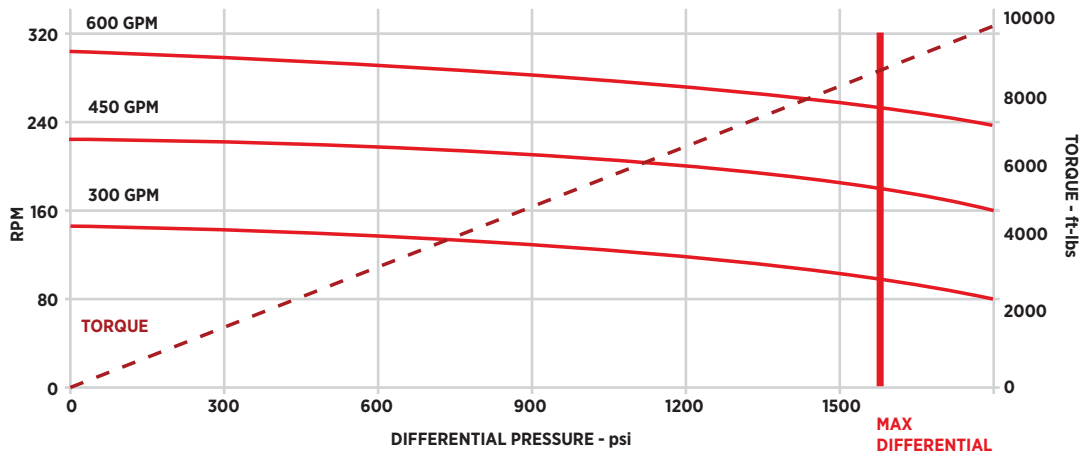
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD	FIXED SHORT
	66	58	50.5

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Bend Angle	RPM
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PERFORMANCE DATA	
Flow Range (gpm)	300-600
Rev/Gal	0.31
Max Operating Differential (psi)	625
Max Differential (psi)	1,260
Max Torque (ft.-lbs)	9,762
Max Operating WOB (lbs)	40,000

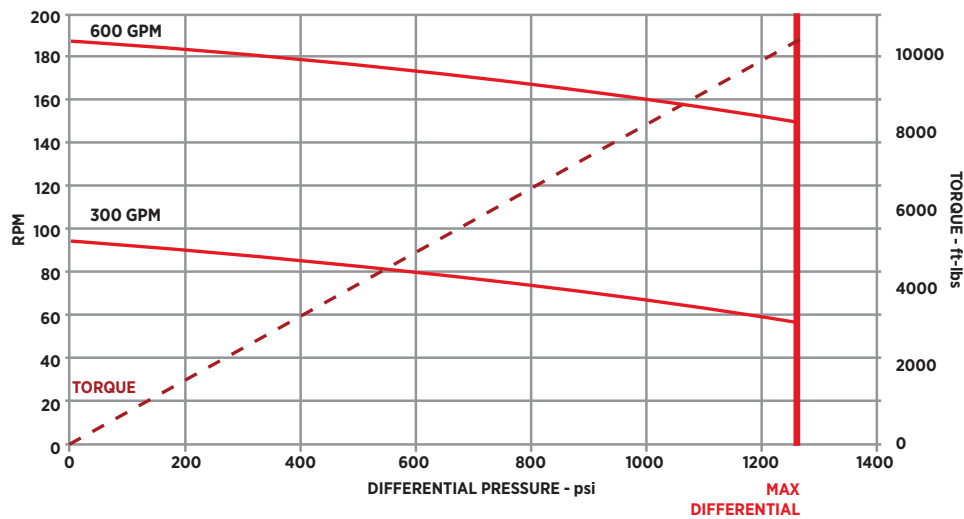
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*Application Dependent

PERFORMANCE DATA	
Flow Range (gpm)	300-600
Rev/Gal	0.15
Max Operating Differential (psi)	415
Max Differential (psi)	945
Max Torque (ft.-lbs)	14,110
Max Operating WOB (lbs)	40,000

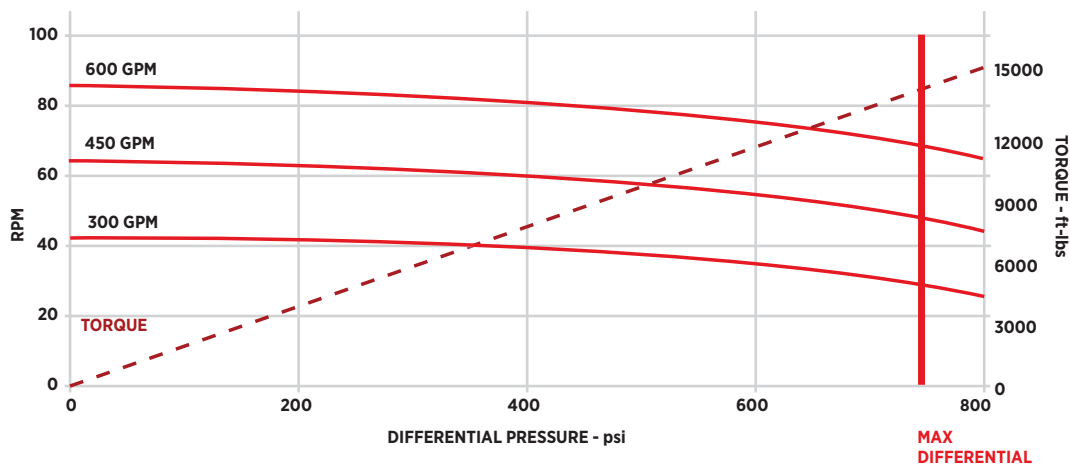
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD	FIXED SHORT
	66	58	50.5

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<100
1.83° - 2.00°	<70
2.00° - 2.12°	<50
2.12° - 2.38°	<35
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	*7 7/8 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	245,000
Max Pull to Yield (lbs)	649,000

*Application Dependent

PERFORMANCE DATA	
Flow Range (gpm)	300-600
Rev/Gal	0.28
Max Operating Differential (psi)	1,000
Max Differential (psi)	1,820
Max Torque (ft.-lbs)	14,360
Max Operating WOB (lbs)	40,000

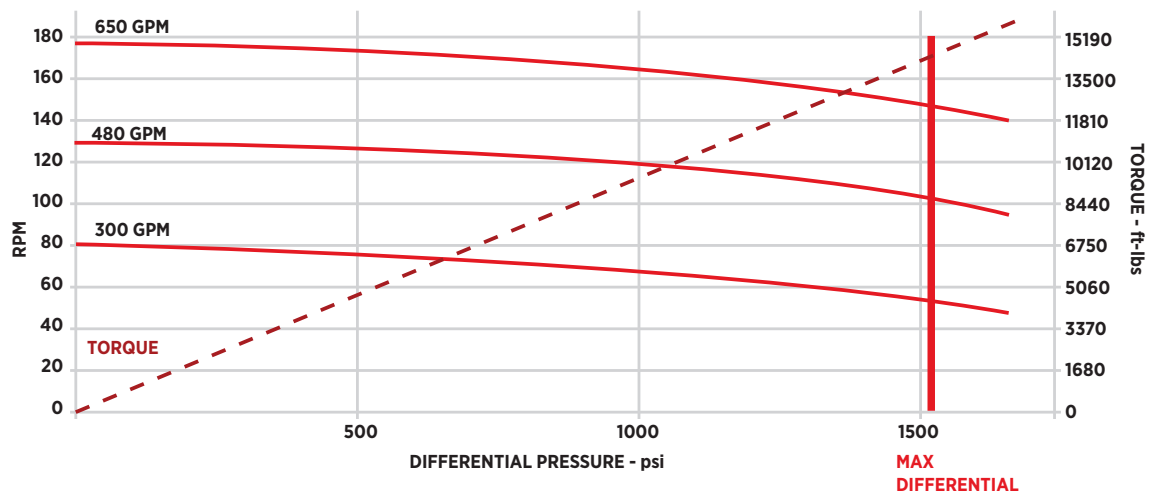
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD	FIXED SHORT
	66	58	50.5

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<100
1.83° - 2.00°	<70
2.00° - 2.12°	<50
2.12° - 2.38°	<35
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	7 7/8 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	240,000
Max Pull to Yield (lbs)	685,000

PERFORMANCE DATA	
Flow Range (gpm)	300-700
Rev/Gal	0.40
Max Operating Differential (psi)	1,350
Max Differential (psi)	2,030
Max Torque (ft.-lbs)	11,729
Max Operating WOB (lbs)	55,000

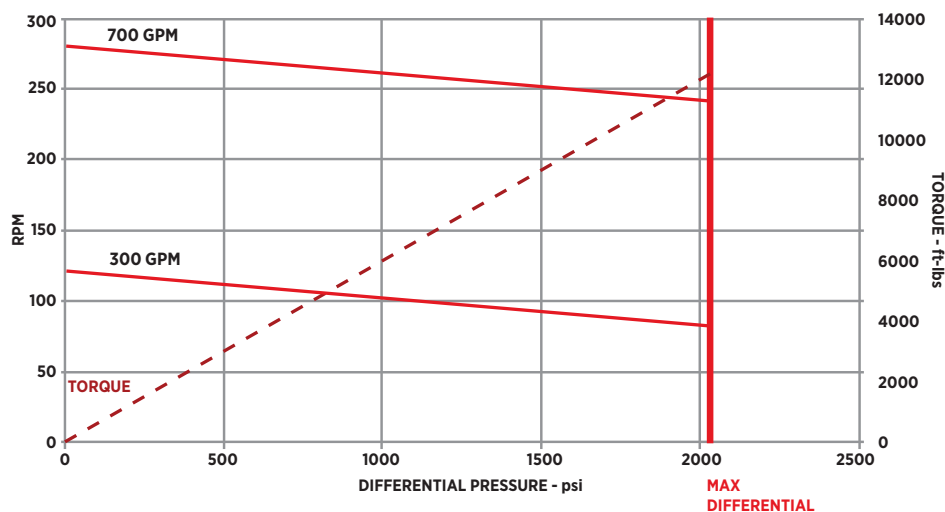
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED
	N/A	51.0

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<100
1.83° - 2.00°	<70
2.00° - 2.12°	<50
2.12° - 2.38°	<35
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	7 7/8 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	240,000
Max Pull to Yield (lbs)	685,000

PERFORMANCE DATA	
Flow Range (gpm)	300-700
Rev/Gal	0.35
Max Operating Differential (psi)	1,250
Max Differential (psi)	1,785
Max Torque (ft.-lbs)	11,771
Max Operating WOB (lbs)	55,000

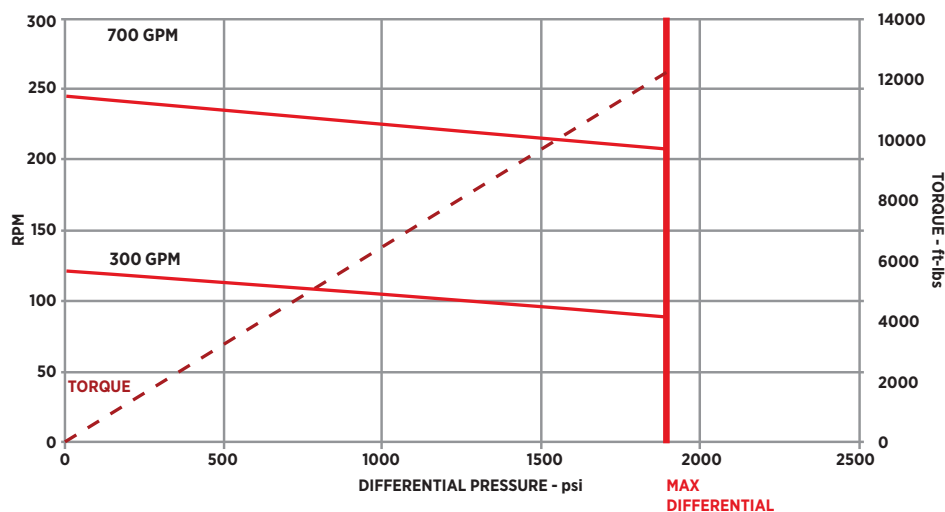
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED
	N/A	51.0

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<100
1.83° - 2.00°	<70
2.00° - 2.12°	<50
2.12° - 2.38°	<35
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	7 7/8 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	240,000
Max Pull to Yield (lbs)	685,000

PERFORMANCE DATA	
Flow Range (gpm)	300-700
Rev/Gal	0.25
Max Operating Differential (psi)	1,050
Max Differential (psi)	1,960
Max Torque (ft.-lbs)	19,010
Max Operating WOB (lbs)	55,000

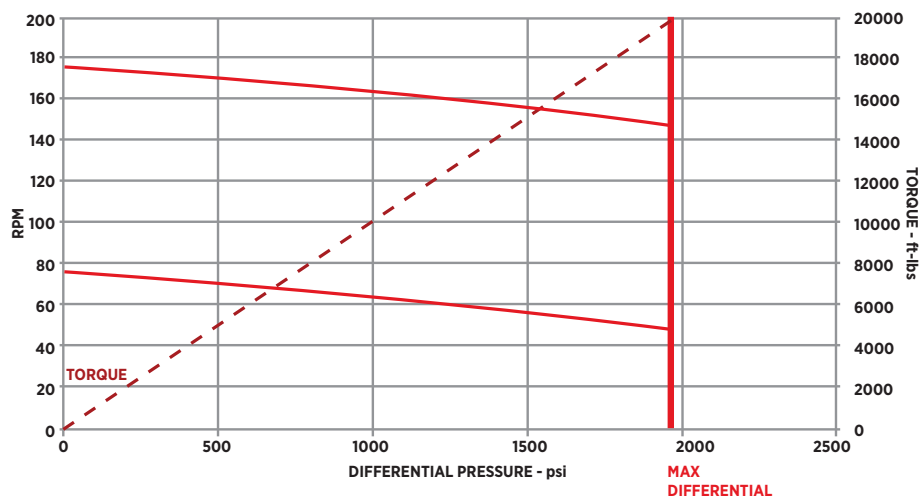
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED
	N/A	51.0

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<100
1.83° - 2.00°	<70
2.00° - 2.12°	<50
2.12° - 2.38°	<35
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	8 1/2 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	181,000
Max Pull to Yield (lbs)	536,000

PERFORMANCE DATA	
Flow Range (gpm)	300-700
Rev/Gal	0.40
Max Operating Differential (psi)	1,350
Max Differential (psi)	2,030
Max Torque (ft.-lbs)	11,729
Max Operating WOB (lbs)	55,000

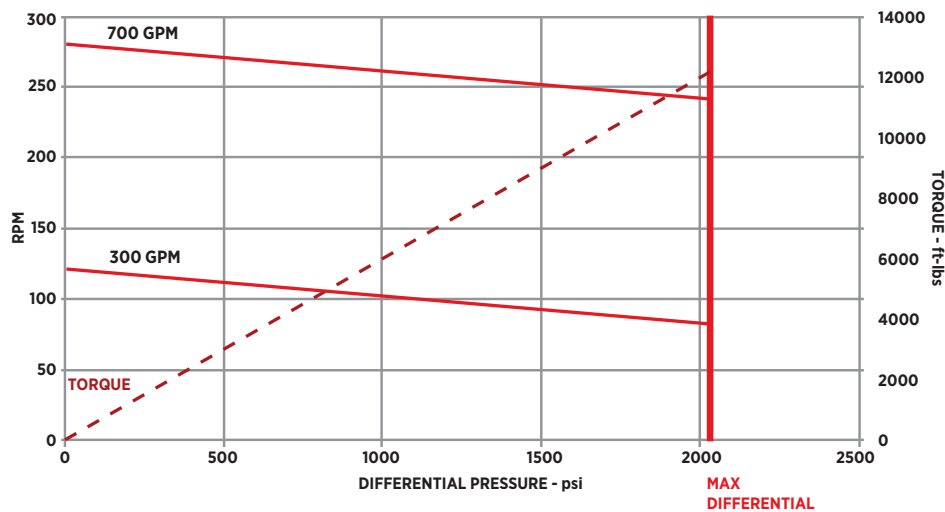
DIMENSIONAL DATA

Bit to Bend (in)	FIXED STANDARD	FIXED SHORT
	58.5	52.5

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	8 1/2 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	181,000
Max Pull to Yield (lbs)	536,000

PERFORMANCE DATA	
Flow Range (gpm)	300-700
Rev/Gal	0.35
Max Operating Differential (psi)	1,250
Max Differential (psi)	1,785
Max Torque (ft.-lbs)	11,771
Max Operating WOB (lbs)	55,000

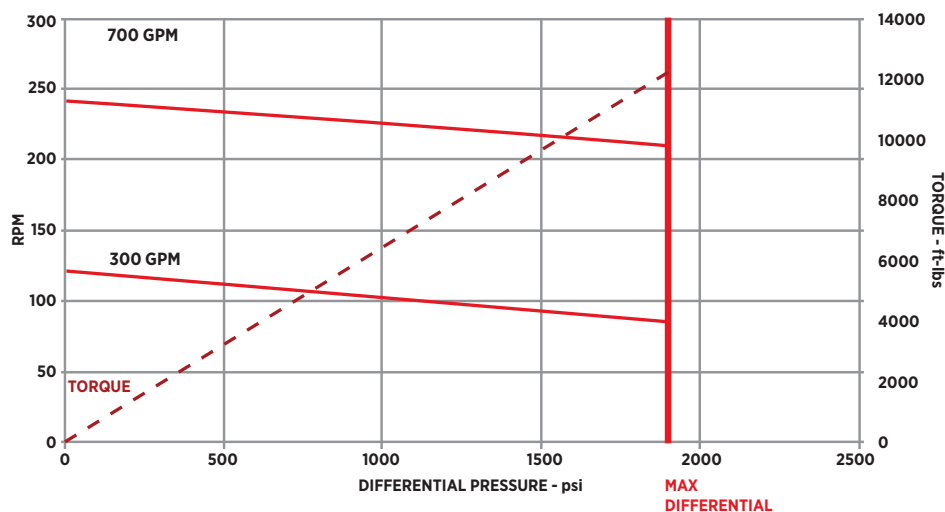
DIMENSIONAL DATA

Bit to Bend (in)	FIXED STANDARD	FIXED SHORT
	58.5	52.5

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	8 1/2 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	181,000
Max Pull to Yield (lbs)	536,000

PERFORMANCE DATA	
Flow Range (gpm)	300-700
Rev/Gal	0.25
Max Operating Differential (psi)	1,050
Max Differential (psi)	1,960
Max Torque (ft.-lbs)	19,010
Max Operating WOB (lbs)	55,000

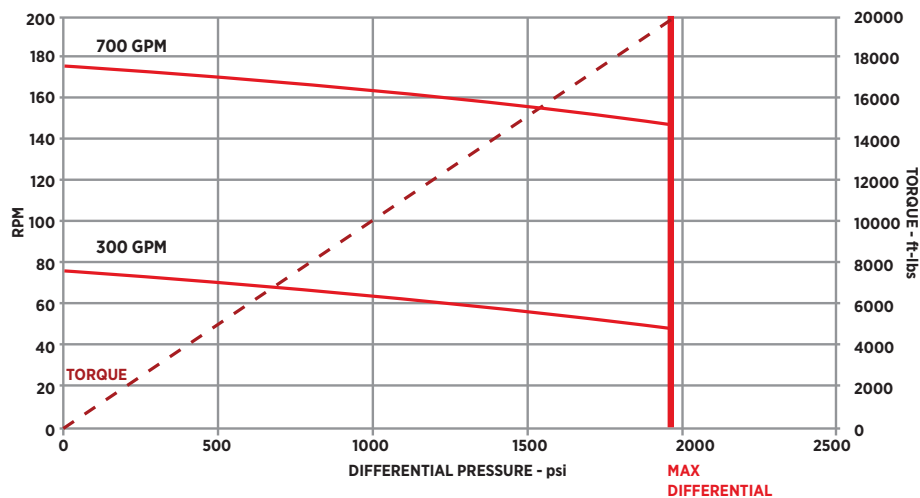
DIMENSIONAL DATA

Bit to Bend (in)	FIXED STANDARD	FIXED SHORT
	58.5	N/A

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	8 1/2 - 8 3/4
Bit Box Connection	4 1/2 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	181,000
Max Pull to Yield (lbs)	536,000

PERFORMANCE DATA	
Flow Range (gpm)	400-700
Rev/Gal	0.15
Max Operating Differential (psi)	650
Max Differential (psi)	1,400
Max Torque (ft.-lbs)	22,828
Max Operating WOB (lbs)	55,000

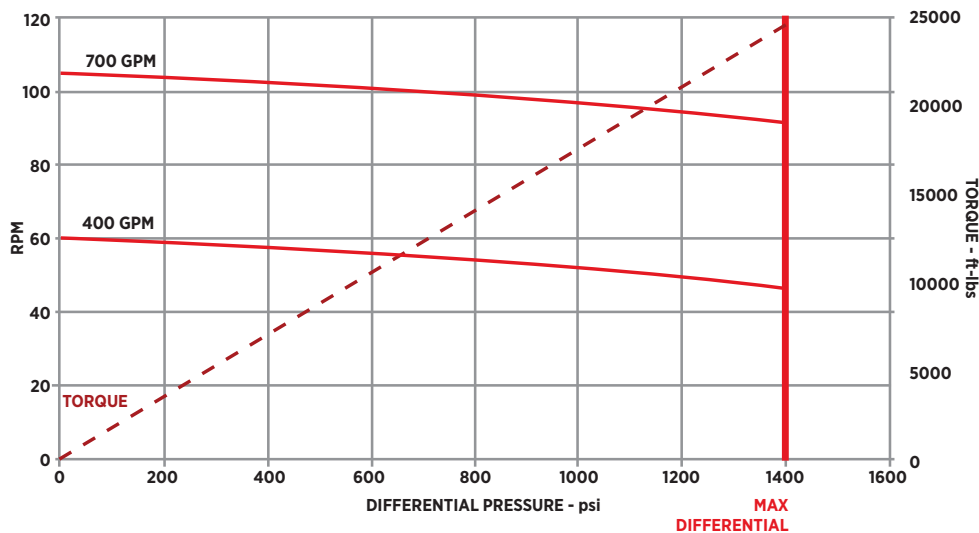
DIMENSIONAL DATA

Bit to Bend (in)	FIXED STANDARD	FIXED SHORT
	58.5	N/A

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	9 7/8 - 12 1/2
Bit Box Connection	6 5/8 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	181,000
Max Pull to Yield (lbs)	536,000

PERFORMANCE DATA	
Flow Range (gpm)	300-700
Rev/Gal	0.40
Max Operating Differential (psi)	1,350
Max Differential (psi)	2,030
Max Torque (ft.-lbs)	11,729
Max Operating WOB (lbs)	60,000

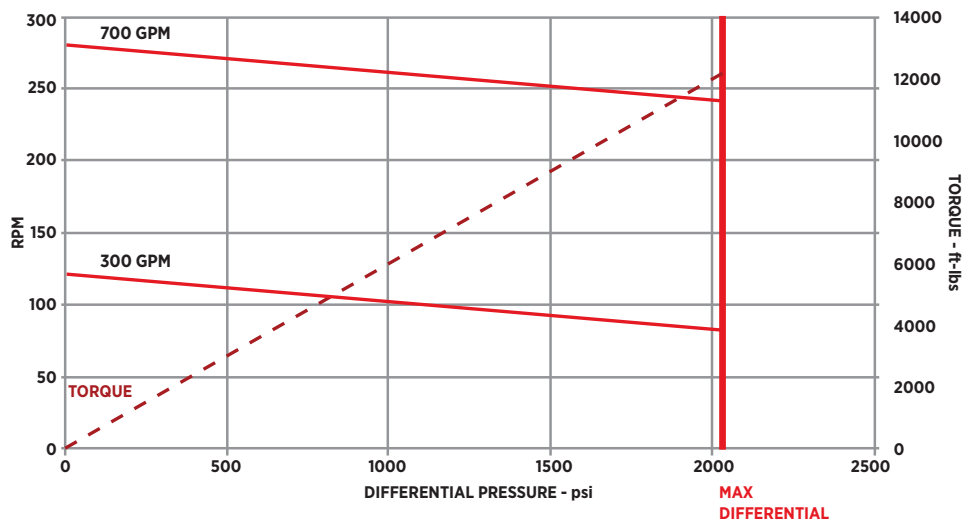
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	83	73

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	9 7/8 - 12 1/2
Bit Box Connection	6 5/8 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	181,000
Max Pull to Yield (lbs)	536,000

PERFORMANCE DATA	
Flow Range (gpm)	300-700
Rev/Gal	0.25
Max Operating Differential (psi)	1,350
Max Differential (psi)	1,960
Max Torque (ft.-lbs)	19,010
Max Operating WOB (lbs)	60,000

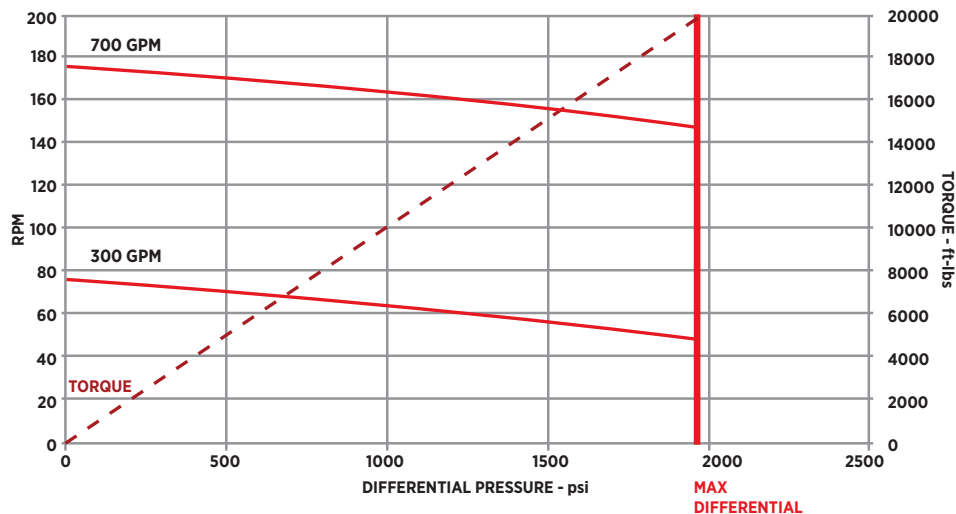
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	83	73

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	9 7/8 - 12 1/2
Bit Box Connection	6 5/8 Reg.
Top Sub Connection	4 1/2 IF
Max Over Pull to Re-Run (lbs)	181,000
Max Pull to Yield (lbs)	536,000

PERFORMANCE DATA	
Flow Range (gpm)	400-700
Rev/Gal	0.15
Max Operating Differential (psi)	1,000
Max Differential (psi)	1,400
Max Torque (ft.-lbs)	22,828
Max Operating WOB (lbs)	60,000

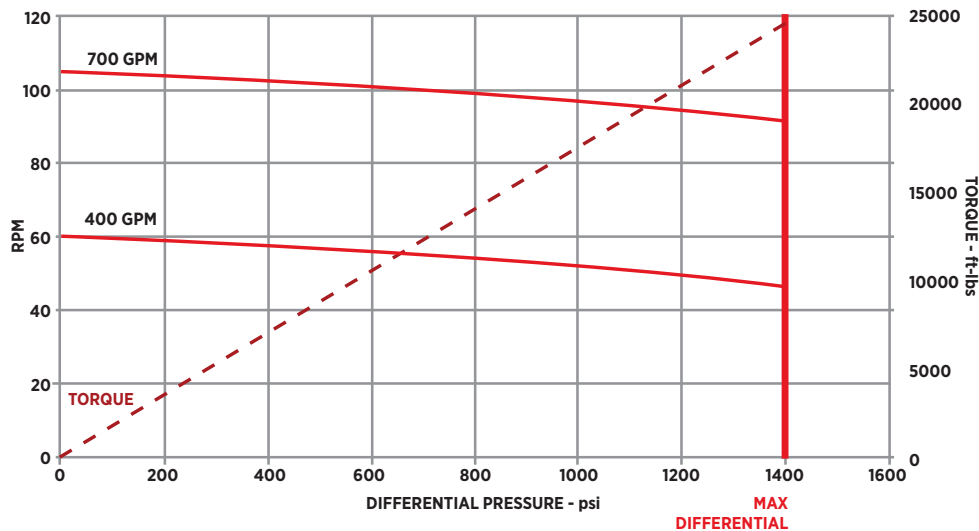
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	83	73

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<35
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	9 7/8 - 12 1/2
Bit Box Connection	6 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	303,000
Max Pull to Yield (lbs)	777,000

PERFORMANCE DATA	
Flow Range (gpm)	400-900
Rev/Gal	0.26
Max Operating Differential (psi)	665
Max Differential (psi)	945
Max Torque (ft.-lbs)	8,371
Max Operating WOB (lbs)	60,000

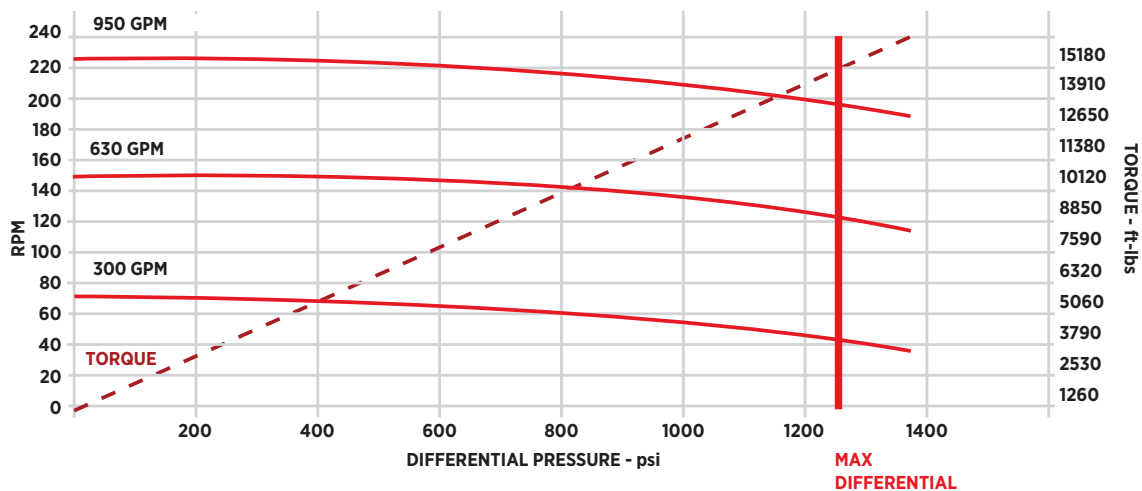
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	83	73

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	9 7/8 - 12 1/2
Bit Box Connection	6 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	303,000
Max Pull to Yield (lbs)	777,000

PERFORMANCE DATA	
Flow Range (gpm)	300-900
Rev/Gal	0.18
Max Operating Differential (psi)	850
Max Differential (psi)	1,015
Max Torque (ft.-lbs)	13,820
Max Operating WOB (lbs)	60,000

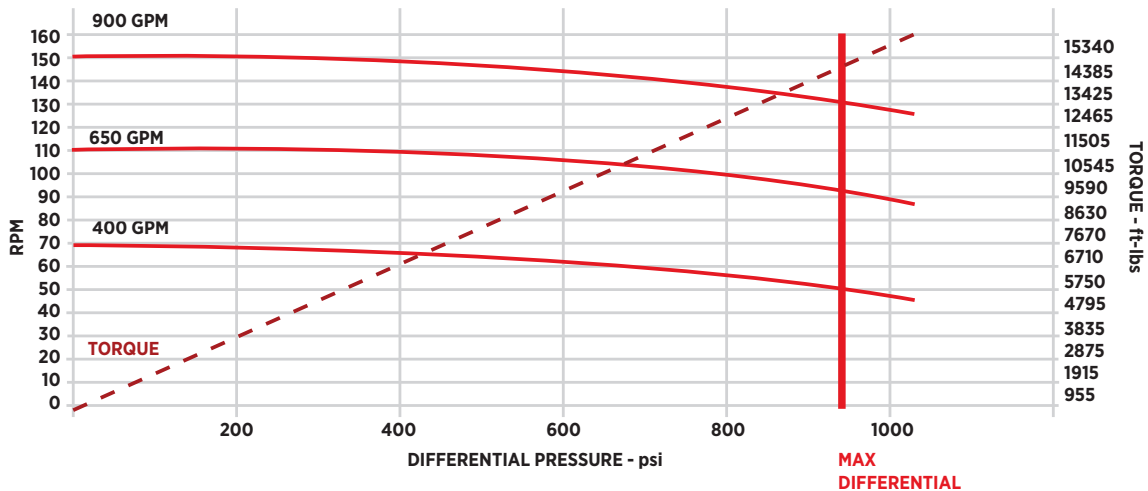
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	83	73

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	9 7/8 - 12 1/2
Bit Box Connection	6 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	303,000
Max Pull to Yield (lbs)	777,000

PERFORMANCE DATA	
Flow Range (gpm)	600-900
Rev/Gal	0.09
Max Operating Differential (psi)	500
Max Differential (psi)	665
Max Torque (ft.-lbs)	18,474
Max Operating WOB (lbs)	60,000

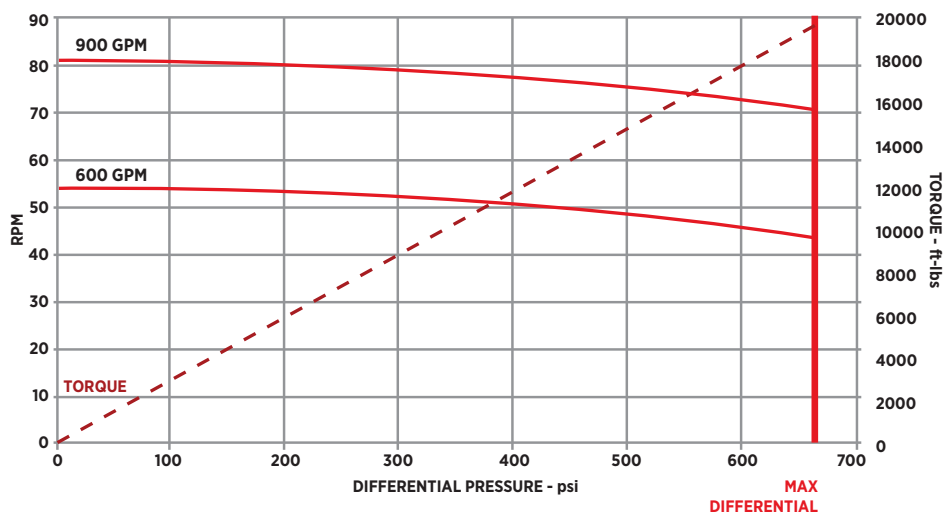
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	83	73

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	9 7/8 - 12 1/2
Bit Box Connection	6 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	303,000
Max Pull to Yield (lbs)	777,000

PERFORMANCE DATA	
Flow Range (gpm)	400-900
Rev/Gal	0.16
Max Operating Differential (psi)	750
Max Differential (psi)	1,390
Max Torque (ft.-lbs)	21,870
Max Operating WOB (lbs)	60,000

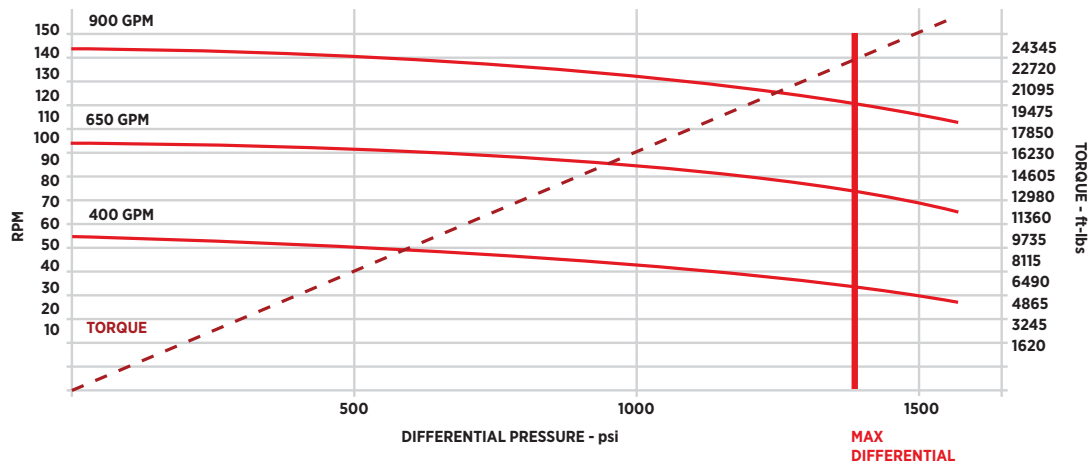
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	83	73

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	12 1/4 - 17 1/2
Bit Box Connection	6 5/8 Reg. 7 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	303,000
Max Pull to Yield (lbs)	777,000

PERFORMANCE DATA	
Flow Range (gpm)	300-950
Rev/Gal	0.24
Max Operating Differential (psi)	665
Max Differential (psi)	1,250
Max Torque (ft.-lbs)	8,371
Max Operating WOB (lbs)	70,000

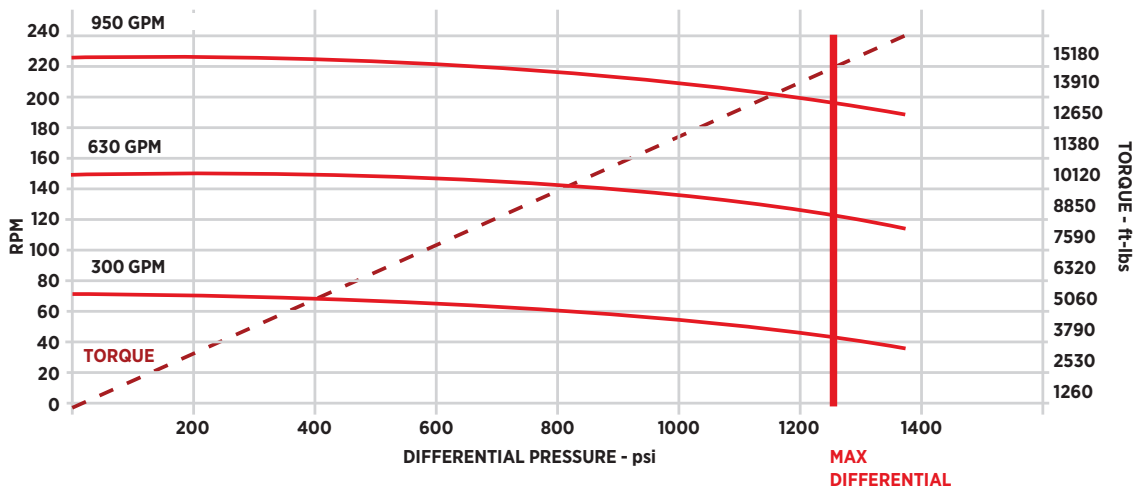
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	86	N/A

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	12 1/4 - 17 1/2
Bit Box Connection	6 5/8 Reg. 7 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	303,000
Max Pull to Yield (lbs)	777,000

PERFORMANCE DATA	
Flow Range (gpm)	400-900
Rev/Gal	0.17
Max Operating Differential (psi)	850
Max Differential (psi)	940
Max Torque (ft.-lbs)	13,820
Max Operating WOB (lbs)	70,000

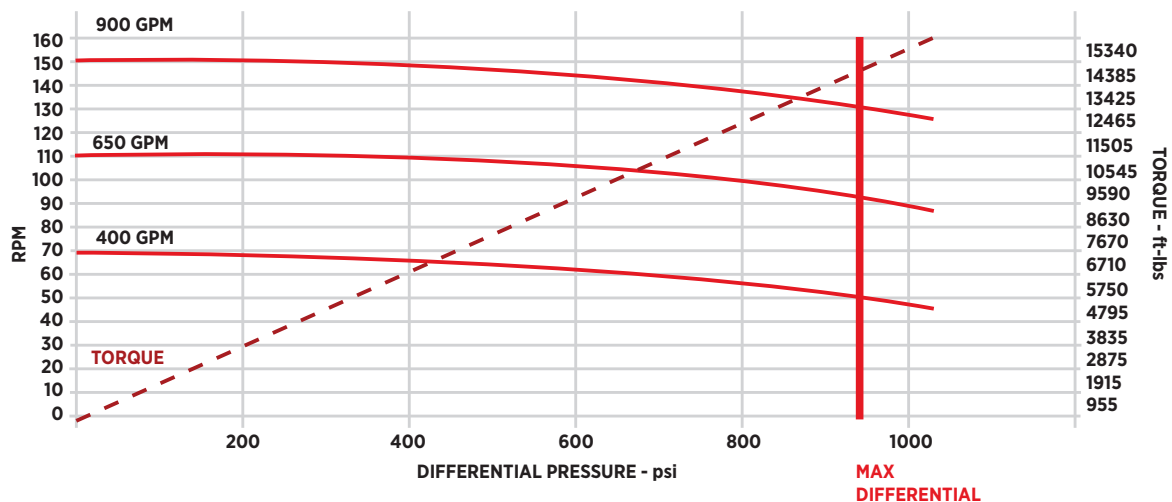
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	86	N/A

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	12 1/4 - 17 1/2
Bit Box Connection	6 5/8 Reg. 7 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	303,000
Max Pull to Yield (lbs)	777,000

PERFORMANCE DATA	
Flow Range (gpm)	600-900
Rev/Gal	0.09
Max Operating Differential (psi)	500
Max Differential (psi)	665
Max Torque (ft.-lbs)	18,474
Max Operating WOB (lbs)	70,000

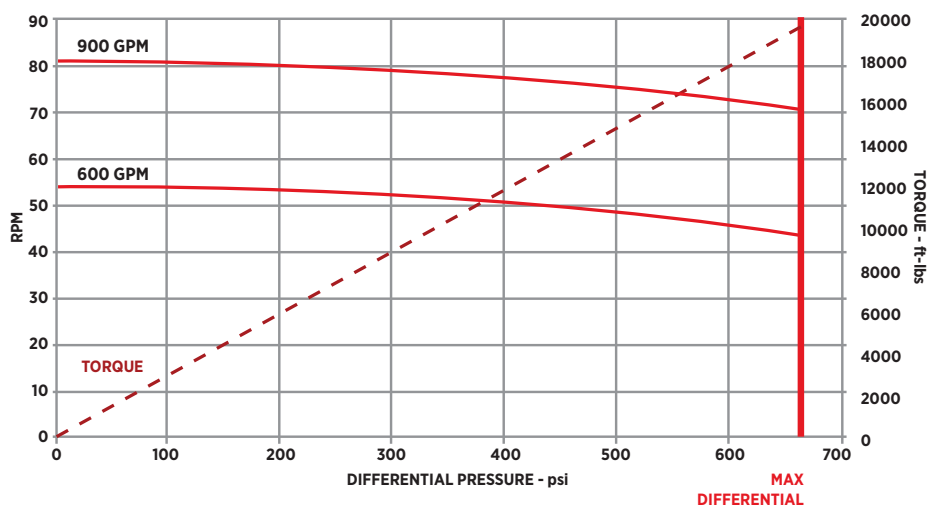
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	86	N/A

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



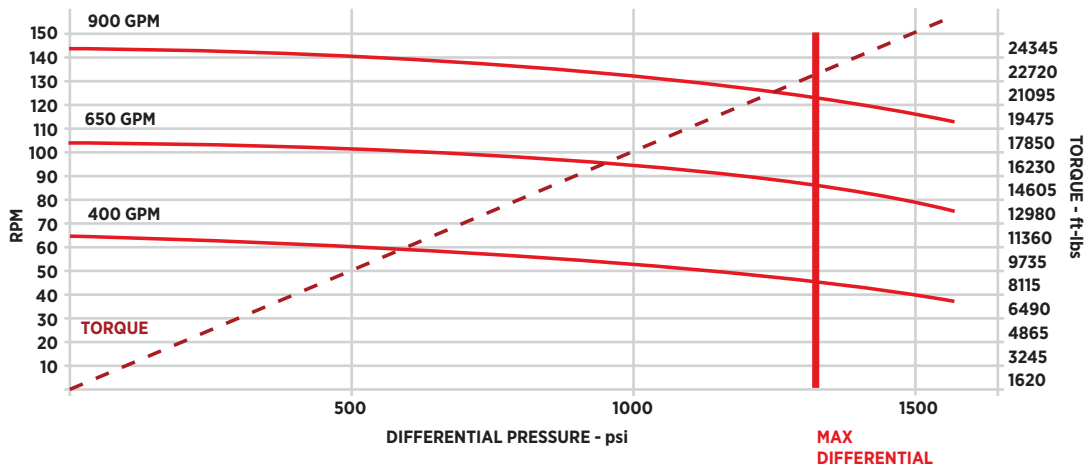
PHYSICAL DATA	
Bit Size Range (in)	12 1/4 - 17 1/2
Bit Box Connection	6 5/8 Reg. 7 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	303,000
Max Pull to Yield (lbs)	777,000

PERFORMANCE DATA	
Flow Range (gpm)	400-900
Rev/Gal	0.16
Max Operating Differential (psi)	750
Max Differential (psi)	1,390
Max Torque (ft.-lbs)	21,870
Max Operating WOB (lbs)	70,000

DIMENSIONAL DATA		
Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	86	N/A

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE	
Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	12 1/4 - 17 1/2
Bit Box Connection	6 5/8 Reg. 7 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	465,000
Max Pull to Yield (lbs)	1,072,000

PERFORMANCE DATA	
Flow Range (gpm)	400-1100
Rev/Gal	0.18
Max Operating Differential (psi)	1,600
Max Differential (psi)	2,135
Max Torque (ft.-lbs)	28,408
Max Operating WOB (lbs)	70,000

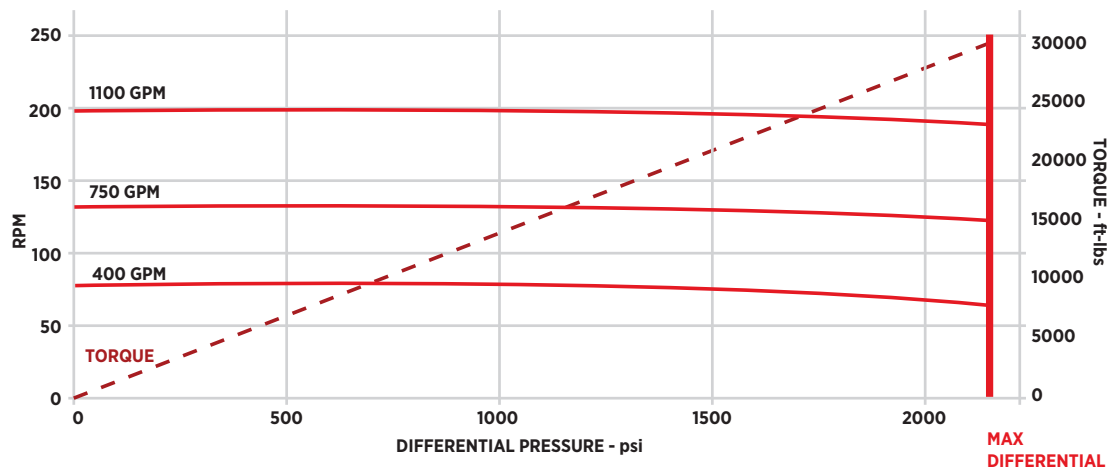
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	86	N/A

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	12 1/4 - 17 1/2
Bit Box Connection	6 5/8 Reg. 7 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	465,000
Max Pull to Yield (lbs)	1,072,000

PERFORMANCE DATA	
Flow Range (gpm)	600-1100
Rev/Gal	0.09
Max Operating Differential (psi)	900
Max Differential (psi)	1,158
Max Torque (ft.-lbs)	32,935
Max Operating WOB (lbs)	70,000

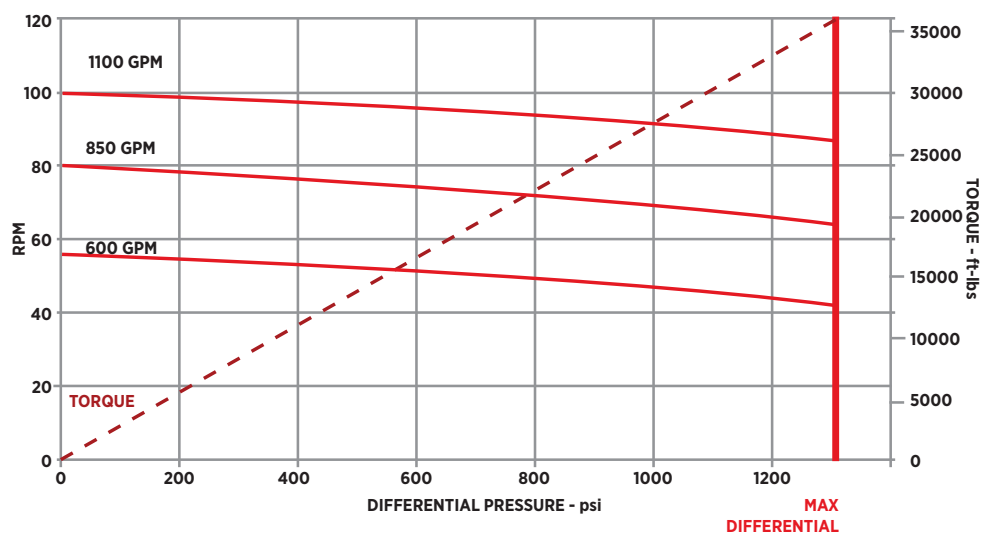
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	86	N/A

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



PHYSICAL DATA	
Bit Size Range (in)	12 1/4 - 17 1/2
Bit Box Connection	6 5/8 Reg. 7 5/8 Reg.
Top Sub Connection	6 5/8 Reg.
Max Over Pull to Re-Run (lbs)	523,000
Max Pull to Yield (lbs)	1,294,000

PERFORMANCE DATA	
Flow Range (gpm)	600-1200
Rev/Gal	0.13
Max Operating Differential (psi)	900
Max Differential (psi)	1,260
Max Torque (ft.-lbs)	21,731
Max Operating WOB (lbs)	70,000

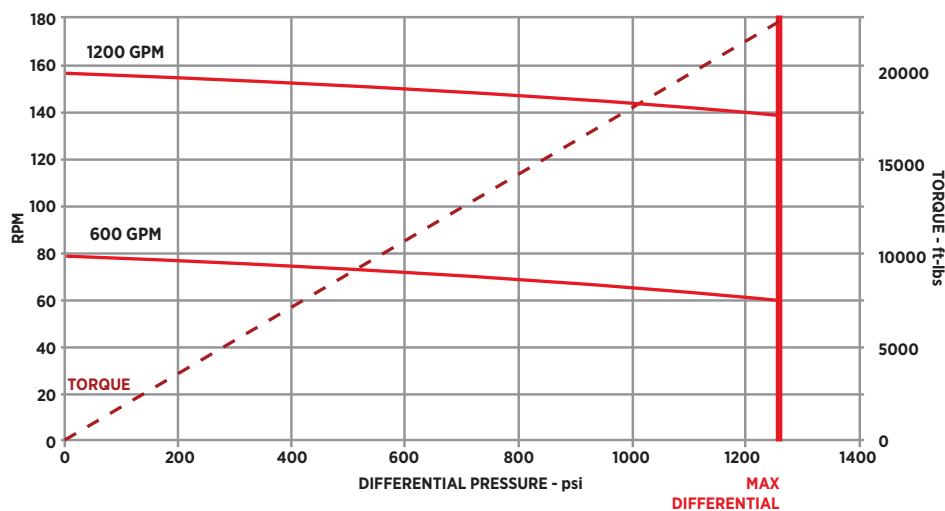
DIMENSIONAL DATA

Bit to Bend (in)	ADJUSTABLE	FIXED STANDARD
	86	N/A

RECOMMENDED MAXIMUM ROTARY BY BEND ANGLE

Bend Angle	RPM
<1.83°	<85
1.83° - 2.00°	<60
2.00° - 2.12°	<50
2.12° - 2.38°	<30
>2.38°	Not Recommended

THEORETICAL PERFORMANCE WITH WATER AT OPERATING TEMPERATURE



MODEL OFFERING

mpact[®]
Downhole Motors

MS *Directional.*



5-5/8 LOWER END

MPACT V+ THE VERY BEST DRILLING PERFORMANCE

MS Directional developed the Mpack V+ (5-5/8" lower end motor) for our customers that need maximum drilling performance for 6-3/4" hole applications. The 5-5/8" lower end is the result of years of development, taking the very best of all components and combining them into one optimized high-performance lower end.

FEATURES AND BENEFITS:



12,500+ FT-LBS
TORQUE RATING



500 GPM



45,000 WOB



PROPRIETARY
TRANSMISSION

Mpack's proprietary enlarged two-piece transmission design provides a torque capacity far exceeding that of any power section available on the market today, which allows our customer to utilize the full potential of any power section RELIABLY.



7-3/8 LOWER END



MPACT VII+ QUALITY THAT DOESN'T QUIT

Mpact's VII+ series is no ordinary lower end. The 7-3/8 lower end utilizes a rugged field-proven design to provide our customers with maximum drilling performance and a sense of comfort knowing they are running the most reliable motor on the market.

FEATURES AND BENEFITS:



23,000+ FT-LBS
TORQUE RATING



700 GPM



55,000 WOB



PROPRIETARY
TRANSMISSION

This enlarged two-piece transmission allows customers to fully utilize the power output of the power section and reliably transfer that power to the drill bit. The result is increased ROP and fewer trips, which means less time spent on well and overall less cost to the Operator.



3335 Pollok Drive
Conroe, TX 77303

936.442.2500
sales@msdir.com
msdir.com