

DRILL LIKE A BEAR



POWER
YOU CAN TRUST



BUILT FOR
EXTREME DEPTHS



ENGINEERED FOR
PERFORMANCE



PROVEN IN THE MOST
DEMANDING CONDITIONS



BUILT DEEP. BUILT STRONG.

Technical Data Sheet Mud Motors

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Subsidiary Companies



PDM is new universal hydraulic downhole motors used for:

- drilling of oil and gas wells with 5 1/2 - 23" bits.
- well reconstruction by sidetracking with rock bits, PDC bits, including bicentric ones.
- well workover operations.

An adjustable bent sub is placed between bearing section and power section. The adjustment range is between 0° and 2° or between 0° and 3° .

Bearing section has axial multi-row rolling bearing and radial hard alloy bearings.

Specifications (Imperial)

	PDM475	PDM700
Housing OD (in)	4 3/4	6 3/4
Power section lobe configuration	7/8	7/8
Stages	3.8	5.7
Specific rotation, (rev/gal)	0.51	0.23
PDM length, ft	22	31
Power section Length, ft	15	21
Bearing Length, to the KOP, ft	4	6
Diameter of bits used, inch	5 1/2 - 7	8 3/8 - 9 7/8
Connecting thread to drill pipes	NC 38	5 1/2 FH
Connecting thread to bits	3 1/2 Reg	4 1/2 Reg
Maximum density of drilling mud, ppg	16	16
Allowed axial compressive load, lbs	26455	55115
Allowed axial tensile load, lbs	97003	156528
Weight, lbs	989	3047
Maximum permissible torque on housing parts, ft-lb	8113	27289
Working fluid flow rate, gpm	159 - 317	317 - 713
Rotation speed in idle mode, rpm	150 - 256	75 - 150
Rotation speed at maximum differential pressure drop, rpm	130 - 238	40 - 116
Rotation speed in max. power, rpm	95 - 190	35 - 100
Torque at maximum power, ft*lbs	3466 - 4572	11874 - 13054
Torque at maximum permissible differential drop, ft*lbs	2212	10030
Maximum permissible pressure drop across the motor, psi	870	870
Pressure drop at maximum power, psi	1305 - 1856	1044
Power, hp	114	152 - 304



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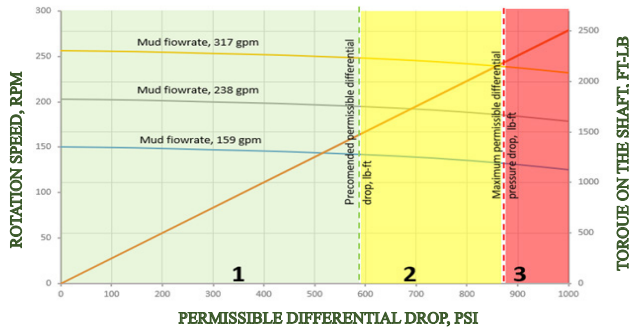
Bearing section has axial multi-row rolling bearing and radial hard alloy bearings.

Specifications (Imperial)

	PDM825	PDM962
Housing OD (in)	8 1/4	9 7/16
Power section lobe configuration	7/8	5/6
Stages	4	5
Specific rotation, (rev/gal)	0.16	0.15
PDM length, ft	27	31
Power section Length, ft	17	18
Bearing Length, to the KOP, ft	7	8
Diameter of bits used, inch	9 7/8 - 19 5/16	11 1/4 - 23
Connecting thread to drill pipes	6 5/8 Reg	6 5/8 Reg
Connecting thread to bits	6 5/8 Reg	6 5/8 FH
Maximum density of drilling mud, ppg	16	16
Allowed axial compressive load, lbs	88185	88185
Allowed axial tensile load, lbs	286600	352700
Weight, lbs	3743	5405
Maximum permissible torque on housing parts, ft-lb	33190	42778
Working fluid flow rate, gpm	475 - 1030	634 - 1110
Rotation speed in idle mode, rpm	80 - 160	95 - 163
Rotation speed at maximum differential pressure drop, rpm	35 - 115	65 - 130
Rotation speed in max. power, rpm	5 - 85	60 - 105
Torque at maximum power, ft*lbs	14013 - 16226	16816
Torque at maximum permissible differential drop, ft*lbs	13128	14455
Maximum permissible pressure drop across the motor, psi	870	870
Pressure drop at maximum power, psi	1015 - 1189	1174



PDM 4 3/4.NGT.7/8

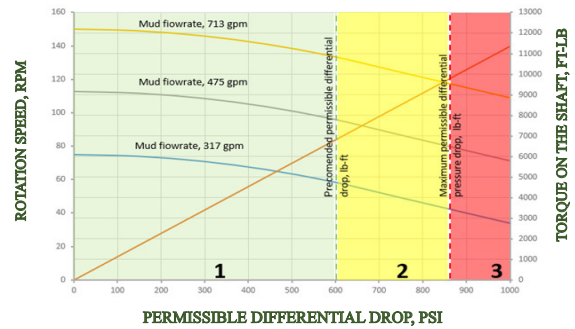


Area No.1 - recommended differential drop operating range

Area No.2 - range of operation differential drop of the PDM with increased power, but decrease in the service life of the power section

Area No.3 - PDM braking with catastrothic wear of the power section. Operation in the mood is **PROHIBITED**

PDM 7.NGT.7/8

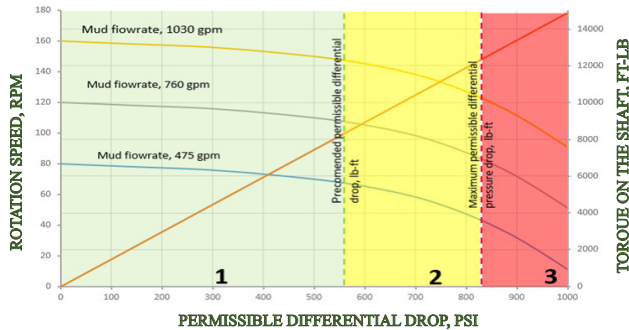


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PDM 8 1/4.NGT.7/8

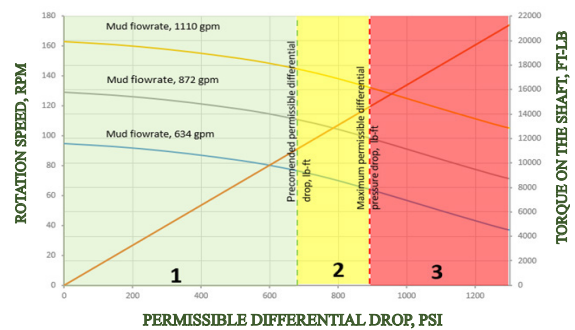


Area No.1 - recommended differential drop operating range

Area No.2 - range of operation differential drop of the PDM with increased power, but decrease in the service life of the power section

Area No.3 - PDM braking with catastrothic wear of the power section. Operation in the mood is **PROHIBITED**

PDM 9 5/8.NGT.5/6



Area No.1 - recommended differential drop operating range

Area No.2 - range of operation differential drop of the PDM with increased power, but decrease in the service life of the power section

Area No.3 - PDM braking with catastrothic wear of the power section. Operation in the mood is **PROHIBITED**



Max Deg. Build Against Bent Housing Degrees

PDM 4 3/4"

Spindle axis bent angle adjustment controller	Dogleg severity, degrees/33ft		
	Bit diameter, in		
	5 5/8	6	7
0,27 °	-	-	-
0,5 °	0,5	-	-
0,77 °	1,2	0,7	0,1
1,0 °	1,9	1,4	0,8
1,22 °	2,5	2	1,4
1,42 °	3,1	2,6	2
1,58 °	3,6	3,1	2,5
1,73 °	4	3,5	2,9
1,85 °	4,3	3,9	3,2
1,93 °	4,6	4,1	3,5
1,98 °	4,7	4,2	3,6
2,0 °	4,8	4,3	3,7

Recalculation of the severity parameter for a different length of the drill string section or the bit diameter with sufficient practical accuracy is carried out by solving an arithmetic proportion.

* - the data are given without taking into account the BHA design, rock properties, drilling modes, calculated geometrically and are for reference purposes only

When a bypass valve and other rigid BHA components are installed directly above the PDM, the dogleg severity is reduced by approximately 0.5–1.0 degrees/10 m. At the same time, the greater the angle of installation of the controller, the shorter the drill string section and the smaller the diameter of the wellbore, the more the dogleg severity from the installation of such BHA elements is reduced.

When a slotted filter with a relatively «flexible» body is installed directly above the PDM, no adjustment is made for the reduction in dogleg severity.



Max Deg. Build Against Bent Housing Degrees

PDM 7"

Spindle axis bent angle adjustment controller	Dogleg severity, degrees/33ft		
	Bit diameter, in		
	8 ½	8 11/16	9 5/8
0,22 °	-	-	-
0,42 °	0,3	0,2	-
0,62 °	0,7	0,6	-
0,82 °	1,1	1,0	0,3
1 °	1,5	1,4	0,7
1,18 °	1,9	1,7	1,1
1,33 °	2,2	2,0	1,4
1,48 °	2,5	2,4	1,7
1,62 °	2,8	2,6	2,0
1,73 °	3,0	2,9	2,2
1,83 °	3,2	3,1	2,4
1,9 °	3,3	3,2	2,6
2,0 °	3,5	3,4	2,8

Recalculation of the severity parameter for a different length of the drill string section or the bit diameter with sufficient practical accuracy is carried out by solving an arithmetic proportion.

* - the data are given without taking into account the BHA design, rock properties, drilling modes, calculated geometrically and are for reference purposes only

When a bypass valve and other rigid BHA components are installed directly above the PDM, the dogleg severity is reduced by approximately 0.5–1.0 degrees/10 m. At the same time, the greater the angle of installation of the controller, the shorter the drill string section and the smaller the diameter of the wellbore, the more the dogleg severity from the installation of such BHA elements is reduced.

When a slotted filter with a relatively «flexible» body is installed directly above the PDM, no adjustment is made for the reduction in dogleg severity.



Max Deg. Build Against Bent Housing Degrees

PDM 8 1/4"

Spindle axis bent angle adjustment controller	Dogleg severity, degrees/33ft		
	Bit diameter, in		
	9 7/8	11 5/8	14 3/4
0,22 °	0,7	-	-
0,42 °	1,1	-	-
0,62 °	1,6	0,4	-
0,82 °	2,1	0,8	-
1 °	2,5	1,3	-
1,18 °	2,9	1,7	-
1,33 °	3,3	2,0	0,1
1,48 °	3,6	2,4	0,4
1,62 °	4,0	2,7	0,7
1,73 °	4,2	3,0	1,0
1,83 °	4,5	3,2	1,2
1,9 °	4,6	3,4	1,4
2,0 °	4,9	3,6	1,6

Recalculation of the severity parameter for a different length of the drill string section or the bit diameter with sufficient practical accuracy is carried out by solving an arithmetic proportion.

* - the data are given without taking into account the BHA design, rock properties, drilling modes, calculated geometrically and are for reference purposes only

When a bypass valve and other rigid BHA components are installed directly above the PDM, the dogleg severity is reduced by approximately 0.5–1.0 degrees/10 m. At the same time, the greater the angle of installation of the controller, the shorter the drill string section and the smaller the diameter of the wellbore, the more the dogleg severity from the installation of such BHA elements is reduced.

When a slotted filter with a relatively «flexible» body is installed directly above the PDM, no adjustment is made for the reduction in dogleg severity.



Max Deg. Build Against Bent Housing Degrees

PDM 9 5/8"

Spindle axis bent angle adjustment controller	Dogleg severity, degrees/33ft			Dogleg severity, degrees/33ft		
	Bit diameter, in			Bit diameter, in		
	11 5/8	12 ¼	15 ½	11 5/8	12 ¼	15 ½
0,22 °	-	-	-	-	-	-
0,42 °	-	-	-	-	-	-
0,62 °	0,4	0,1	-	0,3	0,1	-
0,82 °	0,8	0,5	-	0,7	0,4	-
1 °	1,2	0,9	-	1,1	0,8	-
1,18 °	1,5	1,2	-	1,5	1,2	-
1,33 °	1,8	1,5	-	1,7	1,5	-
1,48 °	2,2	1,8	0,2	2,0	1,7	0,2
1,62 °	2,4	2,1	0,5	2,3	2,0	0,5
1,73 °	2,7	2,4	0,7	2,5	2,2	0,7
1,83 °	2,9	2,6	1,0	2,7	2,4	0,9
1,9 °	3,0	2,7	1,1	2,9	2,6	1,0
2,0 °	3,2	2,9	1,3	3,1	2,8	1,2

Recalculation of the severity parameter for a different length of the drill string section or the bit diameter with sufficient practical accuracy is carried out by solving an arithmetic proportion.

* - the data are given without taking into account the BHA design, rock properties, drilling modes, calculated geometrically and are for reference purposes only

When a bypass valve and other rigid BHA components are installed directly above the PDM, the dogleg severity is reduced by approximately 0.5–1.0 degrees/10 m. At the same time, the greater the angle of installation of the controller, the shorter the drill string section and the smaller the diameter of the wellbore, the more the dogleg severity from the installation of such BHA elements is reduced.

When a slotted filter with a relatively «flexible» body is installed directly above the PDM, no adjustment is made for the reduction in dogleg severity.

