FLOWRISE
OIL TOOLS



PMM DRIVEHEAD | 7.5 kW to 150 kW

Direct Drive System for PC Pump Operations

FLOWRISE OIL TOOLS | TECHNICAL SPECIFICATION BROCHURE

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1. OPERATIONAL OVERVIEW

The Flowrise FR Driveheads series are the highest class of high-torque, low-speed synchronous top driveheads engineered exclusively for Progressing Cavity Pump (PCP) systems and artificial lift optimization. By utilizing an advanced Interior Permanent Magnet (IPM) mount architecture, the system establishes a highly efficient, direct mechanical interface with the polished rod string. This rugged design entirely eliminates traditional mechanical high-wear liabilities, including industrial drive belts, sheaves, external gearboxes, and high-maintenance hydraulic or mechanical braking assemblies.

The Direct Drive Permanent Magnet Motor for PCPs (DDPM) is a custom-designed, safe, and reliable top drive system that directly drives the polish rod, eliminating belts, pulleys, and gear reducers. By reducing mechanical components, it lowers failure rates and maintenance costs while improving efficiency, stability, safety, noise reduction, and footprint. The DDPM-PCP operates across an ultra-low speed range (1–500 RPM) while continuously delivering rated torque required by the downhole PCP.

2. TECHNICAL DATA

			25 - 500 rpm				25 - 400 rpm				
Model ID	HP	kW	Torque (ft-lb)	Torque (N·m)	Amps @380V	Amps @480V	Torque (ft-lb)	Torque (N·m)	Amps @380V	Amps @480V	Axial Load (T)
FR-200	200	150	2113	2825	248.2	205.0	2642	3581	248.8	205.5	10 - 23
FR-175	175	132	1860	2521	219.1	181.0	2325	3152	219.7	181.5	
FR-150	150	110	1550	2101	184.0	152.0	1937	2626	183.5	151.6	
FR-125	125	90	1268	1719	150.8	124.6	1585	2149	151.3	125	
FR-100	100	75	1057	1433	126.1	104.2	1321	1791	126.6	104.6	
FR-75	75	55	775	1051	92.8	76.7	969	1313	93.2	77	
FR-60	60	45	634	860	76.3	69.0	792	1074	76.6	63.3	
FR-50	50	37	521	707	62.9	52.0	652	883	63.3	52.3	
FR-40	40	30	423	573	51.2	42.3	528	716	51.4	42.5	
FR-30	30	22	310	420	38.0	31.4	387	525	38.1	31.6	
FR-25	25	18.5	261	353	32.1	26.5	326	442	32.2	26.6	
FR-20	20	15	211	287	26.0	21.5	264	358	26.1	21.6	
FR-15	15	11	155	210	19.1	18.8	194	263	19.2	15.9	
FR-10	10	7.5	106	143	13.2	10.9	132	179	13.3	11	

Note: All FR motors allow for 1.5 times the rated torque for 60 seconds

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Model ID	HP	kW	rpm	Torque (ft-lb)	Torque (N·m)	Amps @380V	Amps @480V	Axial Load (T)
FR-75	75	55	300	1292	1751.0	94.1	77.7	10 - 23
FR-75	75	55	350	1108	1501.0	94.2	77.8	
FR-50	50	37	350	745	1010.0	64.0	52.9	
FR-40	40	30	350	604	819.0	52.3	43.2	
FR-66	66	50	330	1068	1447.0	85.8	70.9	
FR-25	25	18.5	350	373	505.0	32.7	27	

Parameter	Specification
Rated Power Range	10 hp to 200 hp / 7.5 kW to 150 kW
Rated Voltage Options	380 V to 1140 V
Insulation Class	H (180°C / 356°F)
Ingress Protection	IP 55
Cooling Method	IC 410 (Natural Cooling)
Duty	S1
Service Factor	1.00
Ambient Temperature	-40°C to +55°C / -40°F to +131°F
Slip Ratio	Zero
Noise Level	≤ 80 dB
Polish Rod Size	1-1/4", 1-1/2"
Well Head Connection Option	API Flange (2.875", 4.625", 5.125"), GOST Flange
	API Thread (2.875", 3.5"), EUE, GOST Thread
Certification Option	c-CSAus, IEC Ex, ATEX

3. HSE & Smart Backspin Governance

- **Active & Passive Electromagnetic Braking (APEB):** PCP completions store massive elastic potential energy within the rod string during active operation. The Flowrise drivehead integrates an independent, maintenance-free electromagnetic braking grid that operates autonomously with or without surface grid power. Upon an unexpected shutdown, the system captures dynamic kinetic energy and safely governs reverse spin velocity, protecting local personnel and surface equipment.

- **HSE Exposure Minimization:** The complete elimination of external pulleys, high-speed belts, and hydraulic fluids effectively neutralizes mechanical entanglement hazards and fluid spill liabilities, keeping operational wellsite noise thresholds below 80 dB.

- **Catch-on-the-Fly Optimization:** The intellectual control loop allows the drivehead to execute safe restarts even while in a mid-backspin cycle, significantly reducing downhole settlement and minimizing overall well downtime.

- **On-the-Fly Field Servicing:** Engineered to support routine updates and field lubrication changes to the driving seals and internal bearings dynamically without requiring an operational well shutdown, preserving your flow schedules on time and on budget.

4. Field Performance & Wellsite Operational Benefits

- **Enhanced Asset Infrastructure Utilization:** Operating with an exceptional power factor (consistently above 0.96), the motor reduces total line current withdrawal. This minimizes the total power demand on local generation infrastructure, allowing more wells to run simultaneously on existing field grids.

- 1**.5x Peak Break-Away Startup Horizon:** Delivers an uncompromised continuous startup break-away threshold up to 150% of nominal rated torque. This provides the necessary power to seamlessly break static inertia, lift heavy crude columns, or clear settled sand columns from absolute standstill without experiencing localized overheating or causing automatic VFD trip shutdowns.

- **Active Solid Cleaning Out (ASCO)**: The mechanical engineering design safely permits a speed overdrive of up to 1.2x rated velocity for 30 continuous minutes. This operational mode allows field crews to safely execute automated high-velocity de-debris fluid flushes to clear downhole solids prior to returning to nominal production schedules.