

Eaton Excavator Drive Motor Cheat Sheet

► Provided by [Texas Final Drive](#)



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Why Eaton Final Drive Motors?



Addressing challenges:

- Higher mechanical and volumetric efficiency helps reduce power loss
- Improved design for higher start up torque and overall efficiency
- Optimum design ensures smooth start/accelerate and decelerate/stop
- Compact design with high power density
- Auto-shift from high-speed, low-torque to low-speed, high-torque at high travelling resistance
- High performance and reliability, high market acceptance with over half a million units in the field
- Compatible fit for most popular installation requirements in the market

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About Eaton

Eaton Corporation is a diversified power management company with **more than 100 years of experience** providing energy-efficient solutions that help our customers effectively manage *electrical, hydraulic and mechanical power*.

With sales in excess of \$16.0 billion, Eaton is a global technology leader in *electrical components, systems and services for power quality, distribution and control; hydraulics components, systems and services for industrial and mobile equipment; aerospace fuel, hydraulic and pneumatic systems for commercial and military use; and truck and automotive drivetrain and powertrain systems for performance, fuel economy and safety.*

Eaton has approximately 72,000 employees and sells products to customers in more than 150 countries.



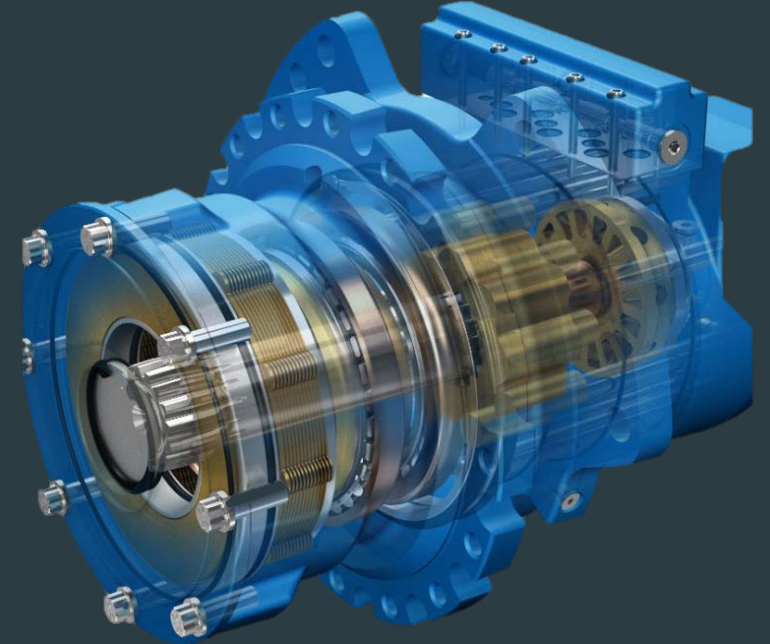
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Know Your Final Drive Motor

- Integrated gearbox with *2-speed axial piston motor*
- Rated pressure from 214 ~ 365 bar
- Displacement from 16cc ~ 274cc
- Suitable for 1.5 ton ~ 50 ton excavator/vehicle applications
- Integrated relief, counterbalance, and anti-cavitation valves
- Integrated fail-safe mechanical parking brake



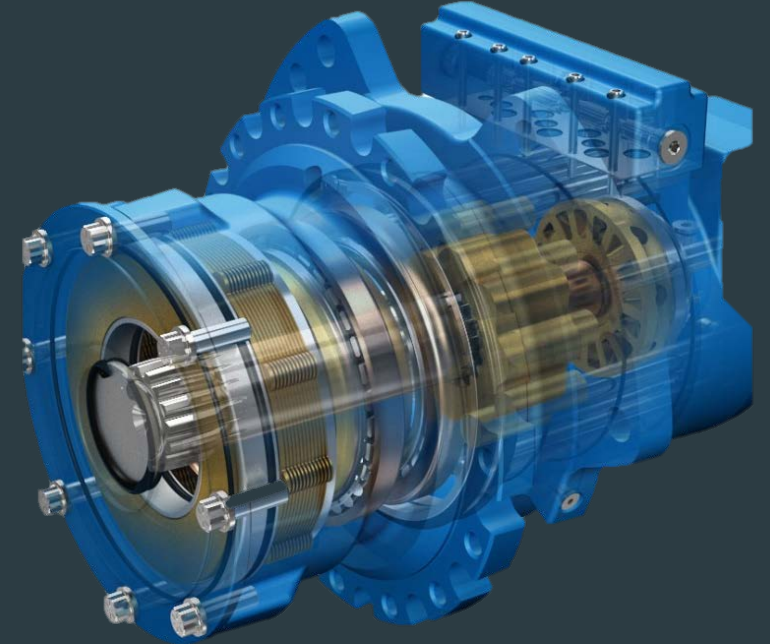
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Integrated Relief Valves

- **Integrated relief valves** have been incorporated into the final drive's system to prevent internal damage
- When the control valve ports A and B are blocked, there is no flow to the motor preventing any further *traction movement*
- However, the momentum of the excavator will cause the motor to continue to rotate
- This results in *over pressure in the downstream port*
- The relief valve discharges the rising port pressure from the *high pressure port* to the *low pressure port* of the motor



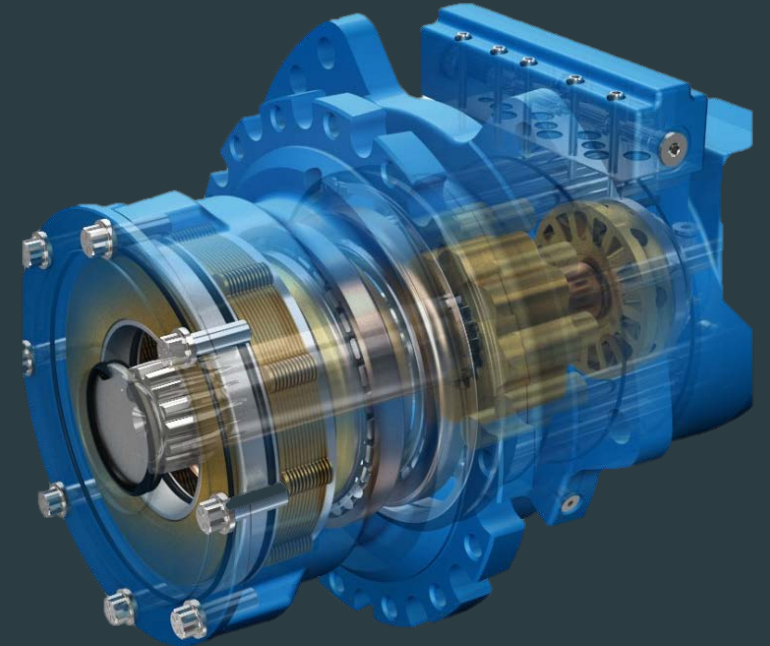
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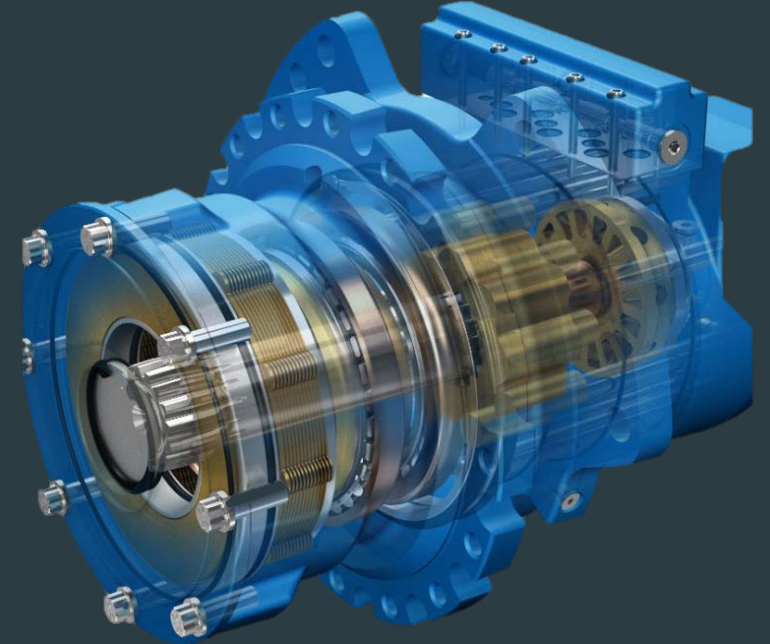
Counter Balance Valves

- The final drive motors also include **counter balance valves**
- When the excavator descends on a slope, the counter balance valves provide traveling velocity control
- After the machine stops on a slope, they will then provide slip prevention



Parking Brake Design

- The **parking brake valve** is incorporated into the system to (1) provide controlled operation and (2) reduce wear
- The **traction parking brake** itself consists of multiple wet friction plates
- The brake is *applied* via a spring force and *removed* by the motor's operating pressure



Know Your Final Drive Motor

Typical Applications

- Excavator and mini excavator
- Crawler crane
- Winch
- Combine harvester
- Windrow turning
- Rotary drilling
- Horizontal directional drilling
- Paver
- Asphalt milling
- Special crawler vehicle



Motor Specs (International Units)

	<i>Units</i>	K-D18	TRB31	TRB35	TRB39	TRB44	TRB49
Fixed Motor Displacement	cm^3/rev	180	310	350	390	440	490
Variable Motor Displacement	cm^3/rev	-	155	175	195	220	245
Maximum Output Torque	$N\cdot m$	470	1,020	1,148	1,279	1,443	1,607
Maximum Pressure	MPa	16.7	20.6	20.6	20.6	20.6	20.6
Maximum Flow	L/min	10	20	20	20	20	20
Maximum Case Pressure, Variable	MPa	-	0.5	0.5	0.5	0.5	0.5
Maximum Case Pressure, Fixed	MPa	2	2	2	2	2	2
2-Speed Pilot Pressure	MPa	-	1.4	1.4	1.4	1.4	1.4
Weight	kg	13.5	22	22.5	23	23.5	24

Motor Specs (English Units)

	<i>Units</i>	K-D18	TRB31	TRB35	TRB39	TRB44	TRB49
Fixed Motor Displacement	<i>in³/rev</i>	11.0	18.9	21.4	23.8	26.9	29.9
Variable Motor Displacement	<i>in³/rev</i>	-	9.5	10.7	11.9	13.4	15.0
Maximum Output Torque	<i>ft-lbs</i>	347	752	847	943	1064	1185
Maximum Pressure	<i>psi</i>	2,422	2,988	2,988	2,988	2,988	2,988
Maximum Flow	<i>gal/min</i>	2.64	5.28	5.28	5.28	5.28	5.28
Maximum Case Pressure, Variable	<i>psi</i>	-	72.5	72.5	72.5	72.5	72.5
Maximum Case Pressure, Fixed	<i>psi</i>	290	290	290	290	290	290
2-Speed Pilot Pressure	<i>psi</i>	-	203	203	203	203	203
Weight	<i>lb</i>	29.77	48.51	49.61	50.72	51.82	52.92

Application Matrix

Products	Final Drive Motor
Construction Segment	
Crawler excavator	•
Mini excavator (<6 ton)	•
Wheeled excavator	
Crawler crane	•
Windrow turner	•
Rotary drilling	•
Horizontal directional drilling	•
Paver	•
Asphalt milling	•
Special crawler vehicle	•
Concrete pump	
Backhoe loader	
Wheel loader	
Agriculture Segment	
Combine harvester	•



Final Drive Motor Technical Data

Operation Temperature Rating	-4°F to 203°F
Oil Recommendations	Gear oil: 80W-90 Hydraulic oil: VG-46
Oil Cleanliness Minimum Requirements	NAS 9 or ISO 4406 (20/18/15)
Case Pressure	2 bar maximum



Suggested Models based on Excavator Tonnage

	Eaton Drive Motor Model						
	K-D18	TRBF31	TRBV31	TRBV35	TRBV39	TRBV44	TRBV49
0.5 ton							
0.8 ton							
1.0 ton							
1.5 ton							
1.7 ton							

Who do I contact for more information?

For Business and Customer Support

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