



ELECTRO-HYDRAULIC SOLUTIONS

High Efficiency Pump Control for Hydraulic Power Unit
and other Industrial Applications



Variable Speed Hydraulic Pump Systems

Parker's global expertise in hydraulic pumps and electric motors are combined creating an optimized and high efficiency variable-speed hydraulic pump systems for industrial applications.

They consist of a Parker's high-voltage motor, directly coupled to a Parker hydraulic pump and driven by the a variable-speed drive in open-loop vector control (AC20) or closed loop control (AC30), the motor continuously adapts its torque and speed to real-time hydraulic demand.

Parker optionally employs different pump technology as vane pumps, gear pumps or axial piston pumps to better fit the applications.



AC20 Drive



AC30 Drive



NX8M Motor



GVM Motor



Bent Axis Piston Pump
F10, F11, F12



Vane Pump
T7



External Gear Pump
PGP

Benefits

- Very high efficiency
- Direct pump interface for compact, rigid alignment
- Optional Parker's maintenance-free spline connection
- Cost-effective open-loop vector control with AC20
- Low-noise operation through oil-immersion capability
- Up to 350 kW / 400 V compact power density
- Highly reliable components

Motor-Pump Combinations - NX8 with AC20 sensorless control

Front Face cooled 60°C

	Max continuous Pressure (bar)	Max intermittent Pressure (bar)	Max operating Speed (rpm)	Min Operating Speed (rpm)	Max flow (L/mn)
NX82KMAJ (18Nm 4000rpm) + AC20G-44-0230-BF					
F11	53 to 170	80 to 255	4000	400	24 to 76
T7AS	26 to 174	40 to 260	2300 to 3600	400 to 500	21 to 92
PGP511	31 to 173	47 to 282	2000 to 3500	500	21 to 66
NX84KMAD(26Nm 4000rpm) + AC20G-45-0440-BF					
F11	77 to 245	115.5 to 368	4000	400	24 to 76
T7AS	37 to 260	56 to 290	2300 to 3600	400 to 500	21 to 92
PGP511	45 to 250		2000 to 3500	500	21 to 66
NX86KMAD(34Nm 3050rpm) + AC20G-45-0440-BF					
F11	101 to 321	150 to 420	3050	305	18.3 to 58
T7AS	48 to 260	72 to 290	2300 to 3050	400 to 500	18 to 92
PGP511	59 to 250		2000 to 3050	500	18.3 to 66

Water cooled 25°C

	Max continuous Pressure (bar)	Max intermittent Pressure (bar)	Max operating Speed (rpm)	Min Operating Speed (rpm)	Max flow (L/mn)
NX82GMAJ (26Nm 4000rpm) + AC20G-44-0320-BF					
F11	77 to 245	115 to 367	4000	400	24 to 76
T7AS	37 to 260	56 to 290	2300 to 3600	400 to 500	21 to 92
PGP511	44 to 2500		2000 to 3500	500	21 to 66
NX84GMAF (48Nm 3700rpm) + AC20G-45-0440-BF					
F11	143 to 350	214 to 420	3700	370	22 to 70
T7AS	68 to 260	102 to 290	2300 to 3600	400 to 500	22 to 44
PGP511	83 to 250		2000 to 3500	500	21 to 66
NX86GMAD (72Nm 3300rpm) + AC20G-45-0750-BF					
F11	215 to 350	322 to 420	3300	330	20 to 63
T7AS	102 to 260	153 to 290	2300 to 3300	400 to 500	19 to 92
PGP511	124 to 250		2000 to 3300	500	20 to 66

Immersed in Oil
- ISO46 60°C

	Max continuous Pressure (bar)	Max intermittent Pressure (bar)	Max operating Speed (rpm)	Min Operating Speed (rpm)	Max flow (L/mn)
NX82KMAL (16.7Nm 4900rpm) + AC20G-44-0230-BF					
F11	50 to 158	75 to 237	4000	490	24 to 76
T7AS	24 to 161	36 to 242	2300 to 3600	490	21 to 92
PGP511	29 to 160	44 to 240	2000 to 3500	500	21 to 66
NX84KMAH (26.3 Nm 4200rpm) + AC20G-44-0320-BF					
F11	79 to 249	119 to 374	4000	420	24 to 76
T7AS	37 to 260	55 to 290	2300 to 3600	420	21 to 92
PGP511	45 to 250	68 to 375	2000 to 3500	500	21 to 66
NX86KMAD (40Nm 3050rpm) + AC20G-45-0380-BF					
F11	120 to 350	180 to 420	3050	305	18 to 58
T7AS	56 to 260	84 to 290	2300 to 3050	400 to 500	18 to 92
PGP511	69 to 250	104 to 375	2000 to 3050	500	18 to 66

Other NX8 and GVM motors are available , please consult your Parker representative

Variable Speed Drive

AC20 - Compact Drive 1.5 – 180 kW

AC20 compact dimensions house many features normally only associated with system drives, including sensorless vector mode for control of Permanent Magnet (PMAC) or AC induction motors, and IO expansion option cards. Safe Torque Off and onboard Ethernet that supports major industrial Ethernet protocols, including ProfiNet and ethernet IP, are standard.



Technical Characteristics

Power Supply	380 ... 480 VAC $\pm 10\%$ Three Phase
Input Frequency	50/60 Hz $\pm 10\%$
Power Range	1.5... 180 kW Heavy Duty (HD)
Overload	150% for 60 sec.
Output Frequency	0.5 - 590 Hz
Safe Torque Off (STO)	SIL2, PLd
Operating Temperature	0...40 °C (derate possible up to 45°C)*

* Without communications option fitted



AC30 - Standard Drive 0.75 - 400 kW

The AC30 variable speed drive has been designed to provide users with exceptional levels of motor control, from simple open-loop pumps to closed-loop applications. Working with the five principles of Flexibility, Simplicity, Reliability, Connectivity and Capability our engineers have created a product focussed on making the benefits of quality motor control available to every business.

Technical Characteristics

Power Supply	380 ... 480 VAC $\pm 10\%$ Three Phase
Input Frequency	50/60 Hz $\pm 10\%$
Power Range	0.75...400 kW Heavy Duty (HD)
Overload	150% for 60 sec.
Output Frequency	0.5 - 590 Hz
Safe Torque Off (STO)	PLe Cat 3 and SIL3
Operating Temperature	0...40 °C (derate possible up to 50°C)



Common Features

- Graphical key pad
- Integrated web server
- Sensorless vector control (AC20)
- Closed loop control with resolver (AC30)
- Safety Torque Off (STO)
- Software tool for configuration, commissioning, optimisation, programming and maintenance
- Fieldbus communication with open standards
 - CANopen
 - PROFIBUS
 - PROFINET
 - EtherCAT
 - Ethernet IP
 - RS485 / Modbus RTU

CANopen

PROFIBUS

PROFINET

EtherCAT

EtherNet/IP

Modbus



Permanent Magnet AC Motor

The high torque density and high efficiency of Parker Permanent Magnet AC (PMAC) motors combined with Parker frequency drives provide a solution to easily electrify hydraulic pumps in hydraulic power unit applications. Specifically designed for electro-hydraulic pump applications. Their easy implementation allows for direct pump assembly without any mounting interface, facilitating seamless integration.

NX8M Low Power Motor

Features

- Easy mechanical mounting with fixing locations on all 4 sides
- Membrane breather vent to minimise internal condensation
- Direct SAE A, SAE B and ISO 3019/2 pump mounting interface
- Natural convection cooling or liquid cooling with cold plate as an option (water or oil)
- Oil immersion capability enhancing pump performances and minimizing noise levels
- To be used with motor connectors:
 - Power: Amphenol ePower Lite ELP3A04
 - Feedback: TE HDSCS 12



Speed range	up to 8000 min ⁻¹
Peak power	99 kW
Operating temperature range	-20°C to +60°C
Protection	IP67
Thermal protection	PT1000
Cooling	Natural convection, cold plate or immersed in oil

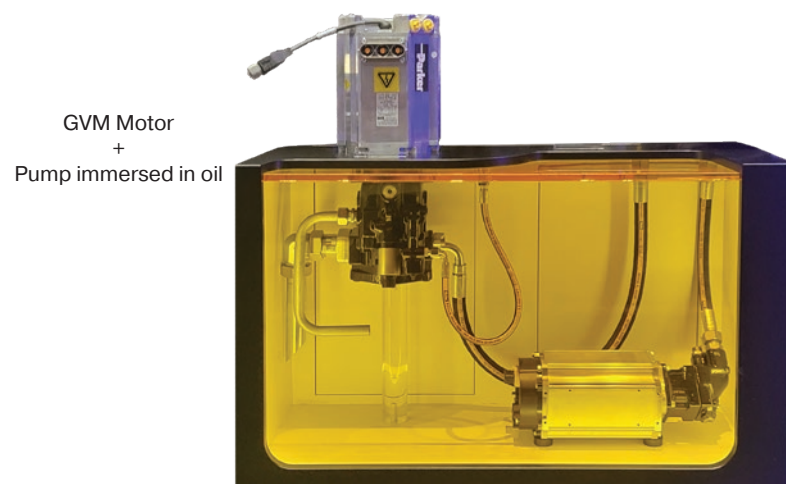
GVM Motor Series

Features

- Easy mechanical mounting with fixing locations on 3 sides
- Membrane breather vent to minimise internal condensation
- High efficiency
- High power density
- Direct SAE A, SAE B and SAE C pump mounting interface (depending on size)



Power range	up to 350 kW (continuous)
Torque range	up to 2300 Nm (peak)
Speed range	up to 8000 min ⁻¹
Protection	IP67 as standard IP6K9K on request
Thermal protection	2 x PT1000
Cooling	liquid cooled: -40...+120 °C natural convection: -40...+65 °C



GVM Motor
+
Pump immersed in oil

NX8M Motor-pump combination
immersed in oil

Bent Axis Piston Pump

Parker's highly efficient Bent Axis Pumps, consist of a unique spherical piston, providing outstanding thermal shock resistance. Our Bent Axis Pumps' well proven gear synchronization and double tapered bearing concept, result in a robust and reliable pump for the most demanding applications. Finally, our Bent Axis pumps are flexible and applicable for both open and closed loop systems.

Benefits

- Highest overall efficiency
- Widest temperature range
- Highest pressure rating
- Highest speed capability
- Great durability
- High power to weight ratio
- Zero speed capability
- High starting torque
- Energy recovery capability

Product Series	F11
Displacement range(cc/rev)	6 to 19
Interface	SAE B 2 bolts
Power (KW)	15,75 to 49
Torque (Nm)	37 to 117
Q (L/mn)	24 to 76
Continuous pressure(bar)	350
Max operating speed(rpm)	4000



Vane Pump

A fixed displacement pump, such as the Parker Vane Pump -T7 Series, has been designed specifically for variable speed drives and offers high speed capabilities. For the required flow, the T7 Series is a low-cost option. In addition, our T7 Series vane pumps offer stable performance, all while providing a low noise option. As a result, these pumps are an ideal, quiet solution for modern electro-hydraulic operated systems.

Benefits

- Very low noise levels
- High overall efficiency
- Wide usable speed range
- Long service life
- High pressure capability
- Stable performance over time
- Low inertia technology / high dynamic response
- Versatility and compactness

Product Series	T7AS
Displacement range(cc/rev)	5.8 to 40
Interface	SAE A 2 bolts
Power (KW)	10 to 41
Torque (Nm)	27 to 169
Q (L/mn)	21 to 92
Continuous pressure(bar)	240 to 275
Max operating speed(rpm)	3600 to 2300



External Gear Pump

The keys to success in the hydraulics world are reliability, efficiency, and performance and our external gear pump delivers these benefits as one of the most important and cost-effective components in any hydraulic system. The external gear pump that has been tasked with pressurizing fluids to convert the energy into motion for decades and is an indispensable part of the hydraulic system.

Benefits

- Lowest cost
- High efficiency
- Reliability
- Simple construction
- Compact size
- Easy maintenance
- High availability

Product Series	PGP511
Displacement range(cc/rev)	6 to 33
Interface	SAE A 2 bolts
Power (KW)	9,7 to 19
Torque (Nm)	26 to 90
Q (L/mn)	21 to 66
Continuous pressure(bar)	155 to 250
Max operating speed(rpm)	3500 to 2000

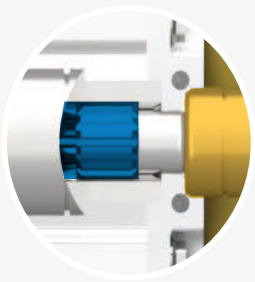
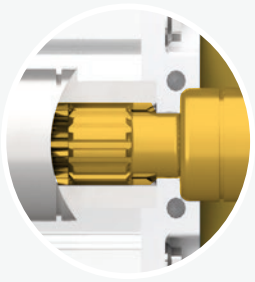
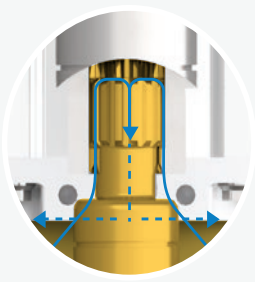


Spline Lubrication Technologies for Pumps

With the direct connection approach, we are moving away from the traditional methods of connecting the electric motor to the hydraulic pump and adopting a direct male-to-female spline connection.

There are three primary lubrication types. The ultimate selection will depend on the application's needs. Despite its many advantages, this method consists of direct metal-to-metal contact, so choosing the right lubrication is key to long-term performance and shaft life.

Refer to the chart below for a complete overview of each spline lubrication.

Greased Spline	Wet Spline	Parker's Maintenance-Free Spline (Patented)*
 A greased lube closed connection	DESCRIPTION  Oil-bath lubed open spline connection	* Please contact Parker  Oil flow created to actively lubricate the spline connection
MOUNTING  Horizontal & Vertical	 Horizontal	 Horizontal & Vertical

Complementary Products

Cooler



The Parker air oil cooler series offers a reliable cooling system, ensuring your powerpack maintains ideal temperatures for maximum efficiency.

Control Valves



High responsive Parker valves: fast, precise valve control designed to meet the most dynamic hydraulic demands.

Accumulator



Parker's accumulator series offers a reliable and efficient solution for storing energy under pressure.

