Rexroth
Bosch Group

AA11VO

High Pressure Variable Displacement Pump for Open Circuit Operation

The leading drive hydraulics



AA11VO – The Leading Drive Hydraulics. High pressure variable displacement pump for hydrostatic drives in industrial applications, open circuit operation.

The Leading Technology for Industrial Applications







Type	A11VO	A11VLO
Size	40...260	130...260
Type	A20VO	A20VLO
Size	60...130	130...260

Axial piston swashplate design

Series 1

Nominal pressure:
5100 PSI (350 bar)
(A20VO60: 250/315 bar)

Peak pressure:
5800 PSI (400 bar)

For more information see:
RE 92500 (A11V)
RE 93100 (A20V)



AA11VO – High pressure variable displacement pump for open circuit operation
The A11VO variable displacement pump is a high pressure pump and is used chiefly for exacting hydrostatic drives in mobile devices, machines and vehicles.

Versions of this pump, either as a combination pump with gear or axial piston pumps built onto the through drive, or as an A20VO double pump in back to back design, broaden the field of applications, while at the same time dispensing with the need for mechanical splitter boxes.

With the associated open and closed loop controls and the Rexroth fixed and variable displacement motors, as well as cylinders and other hydraulic and electronic components, the user is assured of the optimum pump matched exactly to his requirements—and all from one source.

With individually designed, user-optimized systems, Rexroth guarantees economical, reliable and powerful hydrostatic drives.

The Pioneering and Market-Oriented Design

A11VO High pressure variable displacement pump

- Axial piston swashplate design
- Open loop hydraulic circuit
- Self-priming or with tank pressurization
- Choice of charge pump (impeller)
- SAE suction and pressure port
- SAE mounting flange
- SAE diesel motor flange on request
- DIN and SAE splined shaft
- Direction of rotation clockwise or counter clockwise
- Extensive range of control
- Optional optical or electrical swivel angle indicator
- Through drive

Functional operation

- The flow is proportional to the drive speed and displacement, and is continuously variable
- As the swashplate swivels out the flow increases from zero to its maximum value
- The power can be adjusted externally, even during operation

Versions

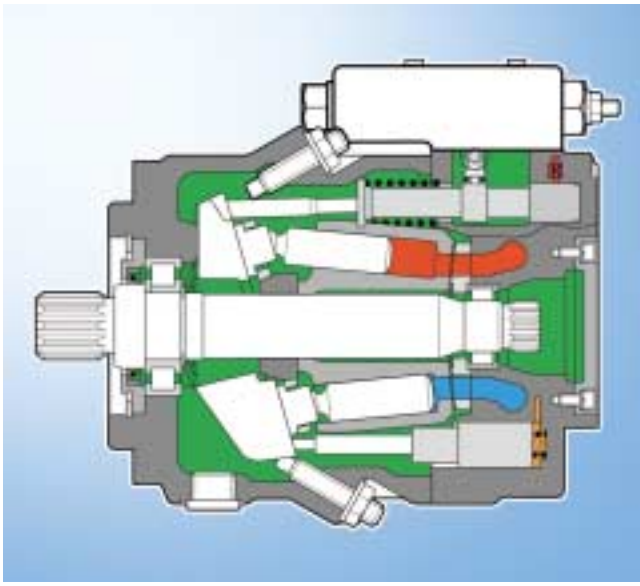
In addition to the standard version, a charge pump is preferred for the upper size range (Size 130...260). The installed "impeller" achieves even higher speeds and hence an improved performance.

Combination pump:

All A11V pumps have a thru-shaft and rear coverplate. Any thru-drive type can be added with the installation of a coupling/flange kit of the desired size up to the same size as the front pump. Splitter gear boxes can be eliminated.

Double pump A20VO (A20VLO):

Two rotary groups of the same nominal size are built together back to back to form one compact unit. The common suction port and two separate service ports means easier piping. The through drive offers provision for mounting a pilot oil pump or other gear or axial piston pumps.



Application areas (examples)

Within their power range these pumps are suitable for all hydrostatic drives in open circuit design.

Drives in offshore cranes and drilling equipment:

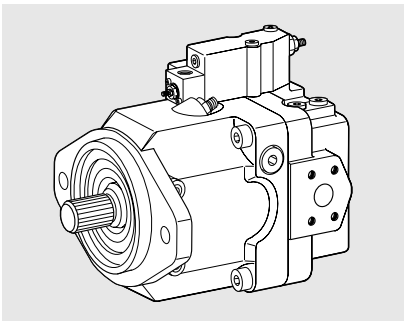
– Lifting gear (winches)
– Telescope
– Luffing gear
– Forward feed
– Clamping cylinder
– Drilling head

Presses:

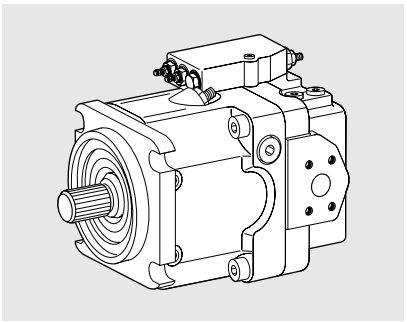
– Balers (cotton, hay, scrap, trash)
– Compactors
– Shears

Well servicing (on and offshore):

– Workover rigs
– Coil tubing injectors
– Cementing
– Nitrogen fracturing
– Blenders, etc.

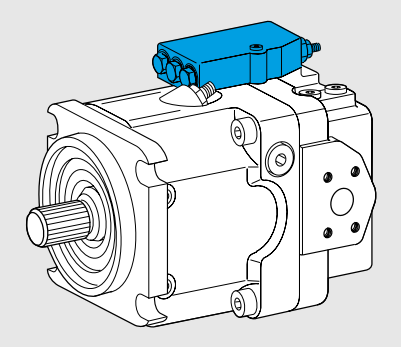


with 2-hole flange: Size 40 and 60



with 4-hole flange: Size 75…250

AA11VO Controls



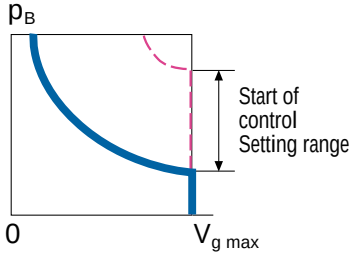
LR

Power control

The power control ensures that the displacement, dependent on the operating pressure, is controlled so that with fixed drive speed the pump will not exceed its pre-set drive power.

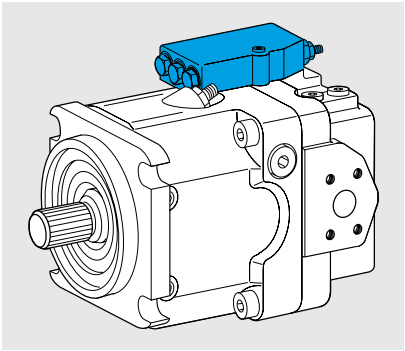
After reaching the pre-set pressure (start of control) the displacement decreases, inversely proportional to the pressure (operating pressure p_B • displacement V_g = constant).

Optimum use of power can be calculated and achieved by precise control according to the hyperbola characteristic.



Variation:

- Pressure cut-off, integrated or by remote control
- Stroke limitation, hydraulic or electrical
- Load sensing control
- Control of power setting
  - high pressure related
  - pilot pressure related (Load limiting control)



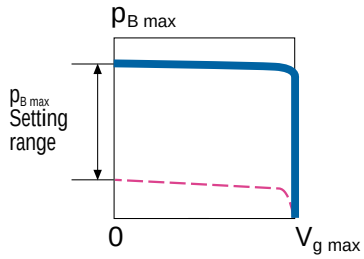
DR

Pressure control

With pressure control the operating pressure in a hydraulic system is kept constant within the control range in spite of a variable flow.

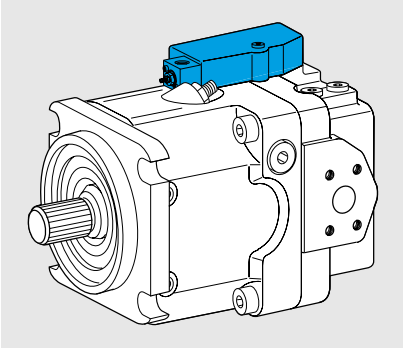
If the operating pressure reaches or exceeds the pre-set pressure command value, the pump will automatically swivel to a smaller displacement, the deviation is reduced.

The pump only delivers as much fluid as is required by the consumer.



Variation

- Pressure control by remote control
- Pressure control for parallel operation
- Load sensing control



HD

Hydraulic control,

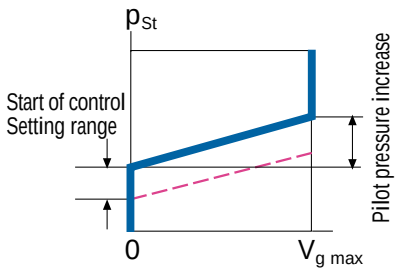
pilot pressure related

The displacement of the pump is steplessly adjusted in proportion to the applied pilot pressure.

Adjustment from $V_{g\ min}$ to $V_{g\ max}$

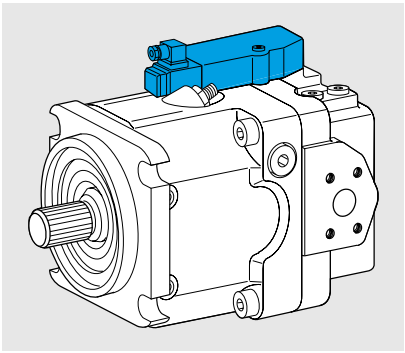
The pilot pressure for the start of control may be set and the pilot pressure increase may be selected ($V_{g\ min}$ to $V_{g\ max}$).

In the unpressurized condition the pump remains set at its maximum displacement volume. When the operating pressure reaches ≥20 bar the pump swivels to $V_{g\ min}$ (start of control).



Variation

- Pressure cut-off integrated or by remote control, fixed setting
- Pressure cut-off by remote control



EP

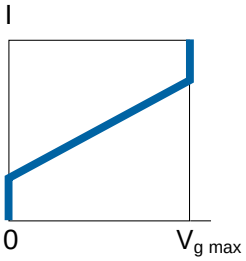
Electrical control with proportional solenoid

The stepless and programmable setting of the displacement is effected by means of a proportional solenoid.

Adjustment from $V_{g\ min}$ to $V_{g\ max}$

The adjustment is proportional to the electric current (mA).

In the unpressurized condition the pump remains set at its maximum displacement volume. When the operating pressure reaches ≥ 20 bar the pump swivels to $V_{g\ min}$ (start of control).



Variation

- Pressure cut-off integrated or by remote control, fixed setting
- Pressure cut-off by remote control



Combination pump A11VO130 + A11VO60



Variable displacement double pump A20VO
Back to back design

Technical Data

Type				A11VO (without charge pump)							A11VLO		
Size				40	60	75	95	130*	190*	260	130	190	260
Displacement		$V_{g\,max}$	in^3 (cm^3)	2.56 (42)	3.56 (58.3)	4.52 (74)	5.72 (93.8)	7.93 (130)	11.76 (192.7)	15.86 (260)	7.93 (130)	11.76 (192.7)	15.86 (260)
Speed [1]	at $V_{g\,max}$	n_{max}	rpm	3000	2700	2550	2350	2100	2100	1800	2500	2500	2300
Flow	at n_{max}	$q_{V\,max}$	GPM (L/min)	33 (126)	41 (157)	50 (188)	58 (220)	72 (273)	107 (405)	124 (468)	86 (325)	127 (482)	158 (598)
Power Δp = 5100 PSI (350 bar)		P_{max}	HP (kW)	95 (71)	123 (92)	148 (110)	173 (129)	218 (159)	316 (236)	366 (273)	255 (190)	377 (281)	467 (348)
Torque Δp = 5100 PSI (350 bar)		T_{max}	lb-ft (Nm)	173 (234)	239 (324)	304 (412)	385 (522)	533 (723)	791 (1073)	1067 (1447)	533 (723)	791 (1073)	1067 (1447)
Weight (approx.)		m	lbs (kg)	60 (27)	79 (36)	99 (45)	117 (53)	145 (66)		278 (126)	152 (69)		287 (130)

*Special sizes 145 and 210 available on request.

Type				A20VO (without charge pump)				A20VLO		
Size				60	75	95	130	130	190	260
Displacement per rotary group		$V_{g\,max}$	in^3 (cm^3)	3.56 (60)	4.52 (74)	5.72 (93.8)	7.93 (130)	7.93 (130)	11.76 (192.7)	15.86 (260)
Speed 1)	at $V_{g\,max}$	n_{max}	rpm	2700	2550	2350	2100	2500	2500	2300
Flow	at n_{max}	$q_{V\,max}$	GPM (L/min)	2x43 (2x162)	2x50 (2x188)	2x58 (2x220)	2x72 (2x273)	2x86 (2x325)	2x127 (2x482)	2x158 (2x598)
Power Δp = 5100 PSI (350 bar)		P_{max}	HP (kW)	180 [2] (134)	295 (220)	346 (258)	426 (318)	510 (380)	751 (560)	933 (696)
Torque Δp = 5100 PSI (350 bar)		T_{max}	kb-ft (Nm)	352 [2] (477)	608 (824)	770 (1044)	1067 (1446)	1067 (1446)	1582 (2145)	2135 (2894)
Weight (approx.)		m	lbs. (kg)							

Innovative Microcontroller Technology

The MC microcontroller is the basic component of an electronics system for the programmable control of variable displacement pumps and motors.

Rexroth has developed special user-specific software for programming this system.

For example the following software

GLB Electronic load limiting control for excavators

FZA Electronic drive control for tracked vehicles

FGR Electronic drive control for wheel loaders, fork-lift trucks and community vehicles

The software is stored in the EPROM and is supplied as an integral part of the microcontroller.

Ask further for the software specific to your application, either readily available or to be custom produced, and also the most suitable microcontroller and other electronics components.

For more information see
MC . . . . . RE 95050



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RA 98 210/02.03

Printed in the United States