

Axial Piston Variable Displacement Model AA4VG

Model AA4VG

Closed circuit

Sizes 28 . . . 250

Series 3

Nominal pressure 5800 PSI

Peak pressure 6500 PSI

- Variable displacement axial piston pump of swashplate design for hydrostatic closed circuit transmissions
- Flow is proportional to drive speed and displacement and is infinitely variable
- Output flow increases with swivel angle from 0 to its maximum value
- Swivelling the pump over cente smoothly changes the direction of flow
- Availability of a highly adaptable range of control and regulating devices



- The pump is equipped with two pressure relief valves on the high pressure ports to protect the hydrostatic transmission (pump and motor) from overloads

Ordering Code

Axial piston unit

Variable swashplate design,
nominal pressure 5800 psi

Operation

Pump in closed circuits = G

Size	28	40	56	71	
Displ. V_g max	in ³ /rev	1.71	2.44	3.42	4.33
	(cm ³ /rev)	(28)	(40)	(56)	(71)
		90	125	180	250
	in ³ /rev	5.49	7.63	10.98	15.25
	(cm ³ /rev)	(90)	(125)	(180)	(250)

Control device

Hydraulic control, pilot pressure related = HD1

Hydraulic control, mechanical servo = HW

Electrical control with proportional solenoid = EP

Hydraulic control, speed related = DA

Hydraulic control, direct operated = DG

Electrical two-pos. control w/ switching sol. = EZ

without control module = NV

Solenoid voltage (only for EP, EZ or DA)

U = 12 VDC = 1

U = 24 VDC = 2

Pressure cut-off

with pressure cut-off (standard) = D

Neutral position switch (only for HW)

without neutral position switch (no code)

with neutral position switch = L

Mechanical stroke limiter

without mechanical stroke limiter (no code)

with mechanical stroke limiter, external adj. = M

Ports X₃, X₄ for positioning pressure

without ports X₃, X₄ (no code)

with ports X₃, X₄ = T

DA control valve (find codes in Rexroth catalog)

AA4V	G		/	3	2	-	N
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See
Bosch
Rexroth
catalog
RA 92 003
for
remaining
codes
Seals
N = NBR

Direction of rotation
viewed on shaft end
R = clockwise
L = counter-clockwise

Series

32 = Series 3, Index 2

Series 10, Size 18 . . . 63

Nominal pressure 4350 psi (300 bar)

Peak pressure 5100 psi (350 bar)

Closed circuit

Features

- Variable axial piston pump of swashplate design for hydrostatic closed circuit transmission
- Flow is proportional to drive speed and displacement and is infinitely variable
- Output flow increases with the swivel angle of the swashplate from 0 to its maximum value
- Flow direction changes smoothly when the swashplate is moved through the neutral position
- A wide range of highly adaptable control devices is available for different control and regulating functions
- The pump is equipped with two pressure relief valves on the high pressure ports to protect the hydrostatic transmission (pump and motor) from overload
- The pressure relief valves also function as boost valves
- The integrated boost pump acts as a feed and control oil pump
- The maximum boost pressure is limited by a built-in boost pressure relief valve



Technical Data

Table of values (theoretical values, without efficiencies and tolerances; values rounded)

Size			18	28	45	63	
Displacement - variable pump	$V_{g\max}$	in ³	1.10	1.71	2.81	3.84	
	boost pump (at $p = 290$ psi / 20 bar)	V_{gSp}	0.34	0.37	0.53	0.91	
Speed - maximum at $V_{g\max}$	$n_{\max\ cont.}$	rpm	4000	3900	3300	3000	
	limited maximum ¹⁾	$n_{\max\ limited}$	4850	4200	3550	3250	
	intermittent maximum ²⁾	$n_{\max\ interm.}$	5200	4500	3800	3500	
	minimum	n_{\min}	500	500	500	500	
Flow at $n_{\max\ cont.}$ and $V_{g\max}$	$q_{v\max}$	gpm	19	28.8	40.2	49.9	
Power ³⁾ at $n_{\max\ cont.}$ and $V_{g\max}$	$\Delta p = 4350$ psi	P_{\max}	hp	48.3	73.2	101.8	126.7
	$\Delta p = 1450$ psi	T	lb-ft	63.5	99	162	222
Torque ³⁾ at $V_{g\max}$	$\Delta p = 4350$ psi	T_{\max}	lb-ft	63.5	99	162	222
	$\Delta p = 1450$ psi	T	lb-ft	14.6	32.9	54	74
Rotary stiffness	shaft end S	c	lb-ft/rad	14960	23707	39388	57802
	shaft end T	c	lb-ft/rad	–	–	54435	68127
Moment of inertia for rotary group	J_{GR}	lb-ft ²	0.0221	0.0403	0.0738	0.1252	
Angular acceleration, max. ⁴⁾	α	rad/s ²	6800	5500	4000	3300	
Filling capacity	V	gal	0.12	0.17	0.20	0.29	
Weight approx. (without through drive)	m	lbs	31(40) ⁵⁾	55	60	86	

1) Restricted maximum speed: – at half corner power (e.g. at $V_{g\max}$ and $p_N/2$)

2) Intermittent maximum speed: – at high idle speed
– at overspeed: $\Delta p = 1000 \dots 2200$ psi and $V_{g\max}$
– at reversing peaks: $\Delta p < 4350$ psi and $t < 0.1$ s.

3) Without boost pump

4) – The area of validity is situated between the minimum required and maximum permissible speed.
It applies for external stimuli (e.g. engine 2-8 times rotary frequency, cardan shaft twice the rotary frequency).
– The limit value applies for a single pump only.
– The load capacity of the connection parts has to be considered.

5) 31 lbs: MD control, 40 lbs: HD control

