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PATENT PENDING

Quadra-Flow Pump

Quadra-Flow Selectable Displacement D Series Gear Pump

(Patent Pending)

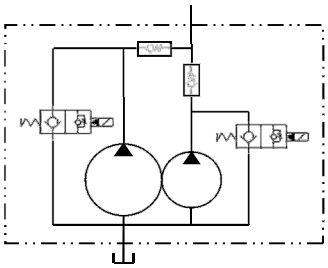
The Quadra-Flow Selectable Displacement gear pump offers the versatility and power savings of a piston pump with the reliability and economy of a gear pump.

The selectable displacement feature integrates an unloading circuit to match pump output flow to machine demand. As the need for flow decreases, the pump is unloaded, and excess flow is recirculated to the pump inlet at low pressure. This minimizes pump load and allows engine power to be redistributed to machine work functions.

With its rugged cast iron construction, the Quadra-Flow pump is ideal for applications requiring maximum performance and long life in severe operating conditions.

Design

The patent pending Quadra-Flow Selectable Displacement design integrates two on/off solenoid valves into a D Series tandem gear pump with a typical 3:1 or 2:1 displacement ratio.

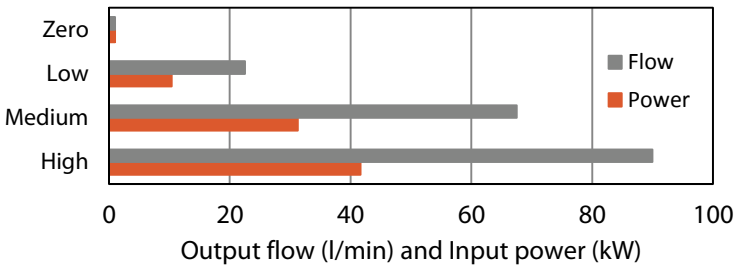


Operation

The selectable flow feature allows the user to select one of four flow levels.

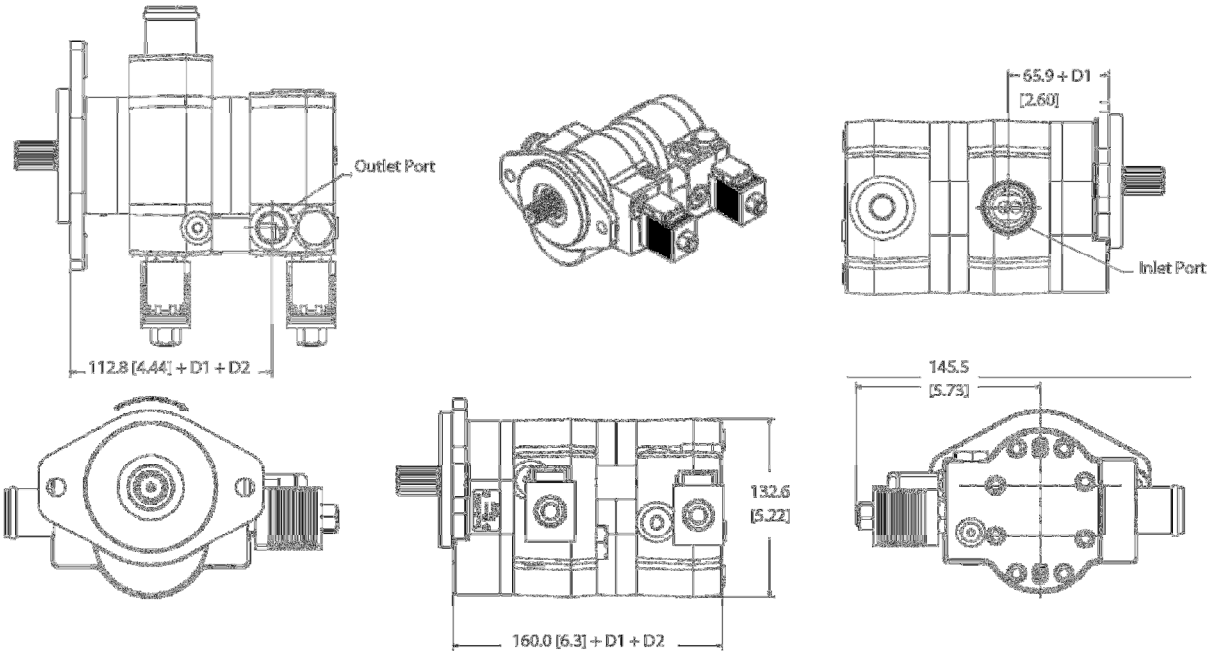
- High Flow – Both solenoid valves are closed combining the output flows from the two pumping sections into one common outlet.
- Medium Flow – The small gear pump section is unloaded by the solenoid valve and isolated from high pressure by the check valve. The excess flow recirculates back to inlet at low pressure. Only the large pumping section provides high pressure flow to the outlet port.
- Low Flow – Similar in operation as medium flow, except the large displacement pump is unloaded and the small gear section provides the system flow.
- Zero Flow – Both solenoid valves are actuated, unloading both pumping sections. All flow is internally recirculated at low pressure for maximum power savings.

Quadra-Flow Selectable Displacment vs. Input Power



Flow and power calculated for 29 +10cc pump at 2500 rpm and 250 bar

Dimensions and Ratings



Ratings	Unit	7	10	11	13	14	17	19	21	23	25	29	32	36	38	41	45
Displacement	cm^3/rev	7.0	9.5	10.8	12.6	14.3	17.0	19.0	20.5	22.5	25.4	29.0	31.8	36.1	38.0	41.0	45.1
	in^3/rev	0.43	0.58	0.66	0.77	0.87	1.04	1.16	1.25	1.37	1.55	1.77	1.94	2.20	2.32	2.50	2.75
Rated Pressure	bar	276	276	276	276	276	276	276	276	276	276	276	276	241	228	207	190
	psi	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	3500	3300	3000	2750
Peak Pressure	bar	303	303	303	303	303	303	303	303	303	303	303	303	265	250	228	209
	psi	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400	3850	3630	3300	3025
Maximum Speed	min^{-1} (rpm)	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3200	3000	2750	2750	2500	2500
Theoretical flow at max speed	l/min	24	32	37	43	49	58	65	70	77	86	93	95	99	105	103	113
	US gal/min	6	9	10	11	13	15	17	18	20	23	24	25	26	28	27	30
Dimension D1 and D2	mm	7.1	9.7	10.9	12.7	14.4	17.0	19.1	20.6	22.5	25.4	29.0	31.8	36.1	38.1	41.0	45.2
	in	0.28	0.38	0.43	0.50	0.57	0.67	0.75	0.81	0.88	1.00	1.14	1.25	1.42	1.50	1.61	1.78

Parameters

Mounting	SAE A and SAE B two bolt
Shafts	Splined - 11T, 13T and 15T Straight key - 19, 22, 25mm (3/4, 7/8, 1 inch) Taper - 1:4, 1:5, 1:8
Ports	SAE O-ring boss, SAE split flange, beaded tube inlets, BSPP, metric ports
Operating Temperature	-30°C [-20°F] minimum cold start 104°C [220°F] normal operating 113°C [235°F] peak intermittent
Fluid Viscosity	10 mm^2/sec (cSt) [60 SUS] minimum 1600 mm2/sec (cSt) [7500 SUS] maximum
Solenoid Valve	12 or 24VDC, Deutsch DT or Metri-pack

Features

The Quadra-Flow Selectable Displacement Pump utilizes the rugged design features of the D Series product line including:

- High strength, cast iron construction for maximum efficiency, contamination resistance and long life in severe duty cycle applications.
- Heavy duty bearings, Viton seals, and advanced pressure-balanced load plates for optimal performance even in high temperature and low viscosity conditions.
- Integrated valves reduce leak points and total installed cost by eliminating hoses, fittings and minimizing installation time.

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