

Gear Pump & Valve Combinations For TRUCKS & TRAILERS

SERIES DS1/DS2 and CS1/CS2

Heavy and Medium duty Dump Trucks & Trailers
Rugged and Reliable

VGP
DP



DS1 / DS2

- 38 & 47 gpm @1800 rpm
- PTO Direct Mount or Twin shaft remote
- Pressures to 138 bar / 2500 psi
- Speeds to 2400 rpm
- Integral Valve for 2-line or 3-line system
- Air remote operators available
- Relief valve protects pump & cylinder
- 2 or 3 line options

CS1 / CS2

- 9.5, 21 & 29 gpm @1800 rpm
- PTO Direct Mount or Twin shaft remote
- Pressures to 138 bar / 2500 psi
- Speeds to 2400 rpm
- Integral Valve for 2-line or 3-line system
- Air remote operators available
- Relief valve protects pump & cylinder
- 2 or 3 line option

DUMP PUMPS

VELJAN Gear Dump pumps are designed to meet the needs of the dump truck industries. They are designed for heavy-duty Dump trucks & trailers. Available in both Remote mount (DS1/CS1) and Direct Mount (DS2/CS2) configurations, a variety of displacements and "Air Shift" capabilities. The dump pump, or pump and valve combination, has successfully provided hydraulic power for dump trucks and trailer dumps in every conceivable application.

Product Features

- Pump and cylinder protected in the "Raise" and "Neutral" position of the spool
- Manual shift, factory installed "OE" air, or "Add-on" air shifts each with full metering capabilities
- Remote and Direct mount models
- Built-in load check maintains dump body angle and is installed in the cylinder port for superior self-cleaning
- Relief Valve Screen to keep major contaminants out of the relief valve chamber
- Relief valves are factory set at 2000 psi.
- Pressures to 2500 psi / 170 bar.
- Speeds to 2400 rpm
- NPT & SAE ports are available
- Built-in direct acting relief valve set at factory
- Gears ground for highest efficiency and lowest noise
- Hard chrome spool with low leakage
- 100% factory tested
- High strength alloy steel gear and shaft set
- 2 line for intermittent duty or 3 line for continuous duty systems
- 2 extra long studs for easy installation of pump support bracket on direct mount
- Bronze, Pressure balanced wear plates maintain high pump efficiency throughout all operating ranges
- High grade fasteners
- Heavy duty Roller Bearing
- Reliable pumps and service

Relief valve protects the Pumps, Cylinder and driver in all positions of the spool: Raise, Hold, Neutral, and lower. The D and C series Dump pumps provide the reliable, rugged and trouble free controls for dump trucks and trailer applications in our industry. Gear shafts are supported by heavy duty roller bearings. Bronze pressure balanced thrust plates provide an effective seal for continuous high efficiency and add to the outstanding service life of the pump.

DUMP PUMP FEATURES AND CONSTRUCTION

Veljan pump/valve combination is the choice item of dump body industries. Built in relief valve with load check. One-piece drive shafts, hardened alloy steel gears supported on heavy duty roller bearings. 3 Piece Cast Iron Construction. Heavy duty Roller bearing style for long product life. Very high quality ground gears contribute for high volumetric efficiency and low noise. High pressure shaft seals and pressure balanced thrust plates provides an effective seal for continuous high efficiency and increases the service life of the pump. Optional Air or cable shifting. Totally interchangeable with others. PTO direct mount or Twin shaft remote mount. Pressures up to 2500 psi/170 bar. Speeds to 2400 rpm.

3 - LINE DUMP SYSTEM

A 3-line system includes a bottom port line to return oil from the cylinder directly to the reservoir instead of passing over the relief valve. A Sleeve must be installed in the pump's inlet to allow oil to circulate through the unit and return to tank when running in neutral.

The bottom port line is recommended when used for road building or stockpiling material because the 3-line pump allows faster down cycles. Lower operating temperatures and provides an easier method of filtering the hydraulic oil.

Large inlet port protect the pump from cavitation and internal coring passages to reduce back pressure in 3-line system which provides better bearing life and better cycle time.

RELIEF VALVE

Internal Relief Valve protects the driver, pump, and cylinder in all positions. In the raise position with the 3-line valve, the relief valve acts as a system relief to protect against overloading. In the hold position, it acts as a port relief protecting the cylinder from shock loads commonly encountered during loading. With the 3-line valve is in raise position, the relief valve protects the system against overloading. While in the hold position, it protects the cylinder from shocks loads. 2-line for intermittent duty only. 3-line for continuous or intermittent duty system.

All units Relief valves are factory set at 2000 psi / 138 bar. The spools in the can be operated through a lever/cable or an air shift.

AIR SHIFT

The Air shift kit consists of an air cylinder that mounts on the valve unit of a pump, a pneumatic control valve that mounts in the cab, 30' of air hose and all accessories. A minimum of 80 psi air pressure required, which can be taken off the brake system or on-board compressor.

All Dump units can be shifted from the cab by cable or by Air shift kit

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Gear Pump Ordering Code - DS1 / DS2

DS	1	L	3	2.75	AS	03	M	2
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Veljan Gear

DS - Series

Mounting

1 - Remote Mount
2 - Direct Mount - SAE B

Rotation

B - Bi-Rotation (Remote Only)

Rotation for Direct Mount Only

R - Clockwise
L - Counter Clockwise

2 or 3 Lines

2
3

Displacement

(cc/rev - in³/rev)

2.75 = 82.8 - 5.0

3.25 = 104.2 - 6.37

Relief Valve Setting

2 - 2000 PSI (factory set)

Mount Bracket (Optional)

M - DS1 Only

Shaft Type

03 - 7/8" 13 Tooth Splined (Direct Only)
04 - 1" Keyed shaft (Remote Only)

Air shift Control

AS - Air shift
MS - Manual shift

Gear Pump Ordering Code - CS1 / CS2

CS	1	R	2	2.75	AS	04	M	2
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Veljan Gear

CS - Series

Mounting

1 - Remote Mount
2 - Direct Mount - SAE B

Rotation

B - Bi-Rotation (Remote Only)

Rotation for Direct Mount Only

R - Clockwise
L - Counter Clockwise

2 or 3 Lines

2
3

Displacement (Housing width HW)

(cc/rev - in³/rev)

1.50 = 24.0 - 1.48

2.25 = 48.1 - 2.96

2.75 = 64.4 - 3.94

Relief Valve Setting

2 - 2000 PSI (factory set)

Mount Bracket (Optional)

M - CS1 Only

Shaft Type

03 - 7/8" 13 Tooth Splined (Direct Only)
04 - 1" Keyed shaft (Remote Only)

Air shift Control

AS - Air shift
MS - Manual shift

NOTES:

-All units are Supplied with factory-set 2000 psi relief valves.

-Intermittent duty cycles only.

DS1/DS2 - PUMP TECHNICAL SPECIFICATIONS

SERIES - CODE	DS1 / DS2 - 2.75	DS1 / DS2 - 3.25
Displacement (cc/rev - in ³ /rev)	82.8 - 5.0	104.2 - 6.37
Flow at 1800rpm.(gpm/lpm)	38.5 / 146	47.5 / 180
Max.Pressure Cont.(psi/bar)	2500 / 172	2000 / 138
Maximum Speed (RPM)	2400	2400
Minimum Speed (RPM)	800	800
Inlet Port (N.P.T)	1 1/4"	1 1/4"
Cylinder Port (N.P.T)	1"	1"
Tank/Return Port (N.P.T)	1"	1"
Weight (kgs/lbs) - DS1	29.0 / 64	30.5 / 67
Weight (kgs/lbs) - DS2	30.5 / 67	31.7 / 70

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CS101/CS102 - PUMP TECHNICAL SPECIFICATIONS

SERIES - CODE	CS1/CS2 - 1.50	CS1/CS2 - 2.25	CS1/CS2 - 2.75
Displacement (cc/rev - in ³ /rev)	24.0 - 1.48	48.1 - 2.96	64.4 - 3.94
Flow at 1800 rpm (gpm/lpm)	9.7 / 37	21 / 79.5	29 / 110
Max.Pressure Cont.(psi/bar)	2500 / 172	2500 / 172	2500 / 172
Maximum Speed (RPM)	2400	2400	2400
Minimum Speed (RPM)	800	800	800
Inlet Port (N.P.T)	1 1/4"	1 1/4"	1 1/4"
Cylinder Port (N.P.T)	3/4"	3/4"	3/4"
Tank/Return Port (N.P.T)	3/4"	3/4"	3/4"
Weight (kgs/lbs) - CS1	14.5 / 32	16.7 / 37	17.2 / 38
Weight (kgs/lbs) - CS2	16.7 / 37	18.0 / 40	19.0 / 42

Model Features :

DS1 / CS1

- 2 or 3 line system
- Remote valve Actuation
- Either direction of rotation
- 1.0" diameter keyed shaft

DS2/ Cs2

- 2 or 3 line system
- Remote valve Actuation
- Factory set of rotation
- SAE "B" Splined Shaft (13 Teeth, 16/32 pitch)

Flow and Power data at 2500 psi (172 bar) for 2.75 and 2000 psi (138 bar) for 3.25

Speed RPM	DS1/DS2 - 2.75 at 172 bar				DS1/DS2 - 3.25 at 138 bar			
	Flow		Power		Flow		Power	
	LPM	GPM	HP	KW	LPM	GPM	HP	KW
900	68	18.0	36	27	85	22.5	35	26
1200	93	24.5	47	35	116	30.6	47	35
1500	117	31.0	56	42	147	38.8	57	43
1800	146	38.5	68	51	180	47.5	68	51
2100	165	43.6	79	59	206	54.4	80	60
2400	190	50.0	90	67	238	62.8	91	68

Flow and Power data at 2500 psi (172 bar)

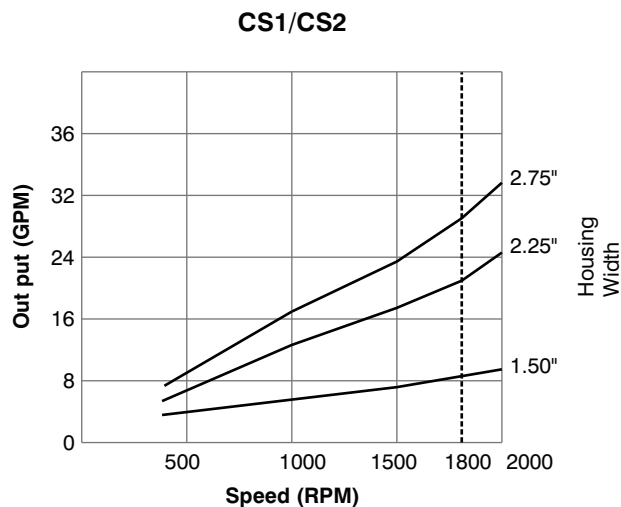
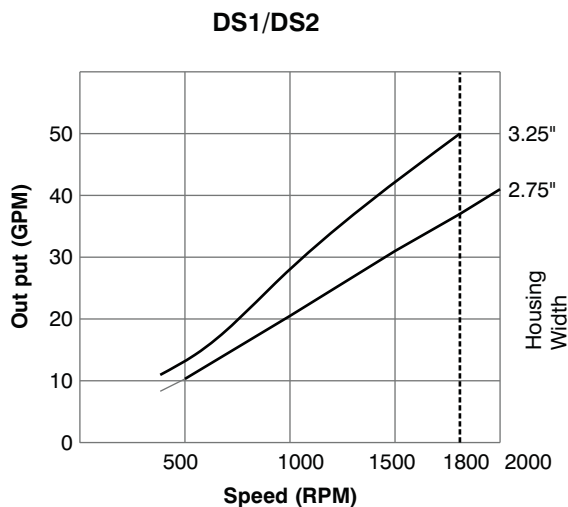
Speed RPM	CS1/CS2 - 1.5 at 172 bar				CS1/CS2 - 2.25 at 172 bar				CS1/CS2 - 2.75 at 150 bar			
	Flow		Power		Flow		Power		Flow		Power	
	LPM	GPM	HP	KW	LPM	GPM	HP	KW	LPM	GPM	HP	KW
900	16.5	4.4	11	8	38	10.0	20	15	51	13.5	25	19
1200	24.2	6.5	14	11	53	14.0	26	20	70	18.5	33	25
1500	31.5	8.3	17	13	66	17.5	33	24	89	23.5	42	31
1800	37.0	9.7	21	15	79.5	21.0	39	29	110	29.0	50	37
2100	45.5	12.2	24	18	94.5	25.0	45	34	129	34.0	58	43
2400	52.6	13.8	27	20	110	29.0	51	38	148	39.0	66	49

PUMP PERFORMANCE GRAPH

Oil reservoir temperature - 120° F

Viscosity - 150 SUS at 100° F

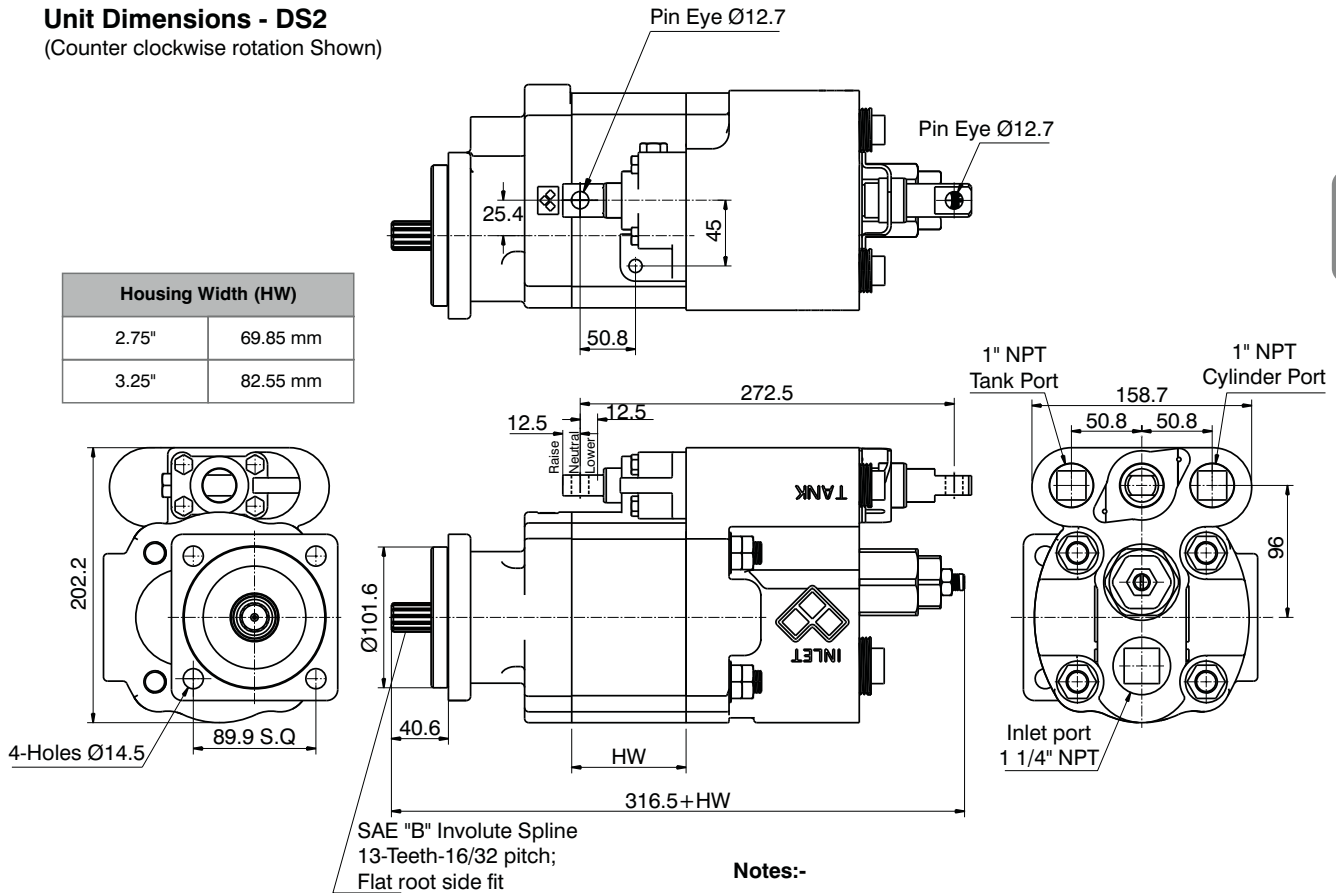
Pump Output at 2000 psi



Unit Dimensions - DS2

(Counter clockwise rotation Shown)

Housing Width (HW)	
2.75"	69.85 mm
3.25"	82.55 mm



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Notes:-

- Maximum inlet vacuum is 5"Hg (0.17 bar)
- Maximum oil temperature 93.50C
- Return line (Bottom Line) must be below oil level at all times
- Never use Teflon tapes on pipe ports
- Use SAE - 100R4 hose on pump Inlet.

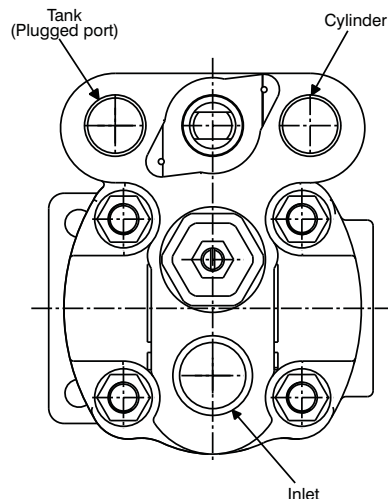
DUMP PUMPS SAFETY PRECAUTIONS

1. Install a device to lock the operating lever in neutral position---absence of a safety interlocking device may result in
 - a) Allow the dump bed to raise suddenly (Safety hazard)
 - b) The vehicle may lose control over its movement and position resulting in a fatal accident.
2. Before working under Dump bed when it is in raised position, provide a proper block underneath to prevent the bed lowering down accidentally due to any reason and cause injury to the people working.
3. Before moving the truck from one place to another, first disengage the PTO. This prevents from accidents due to unexpected raise of the dump bed while in motion. When this happens, the truck may lose control over its movement that may cause injury to the person and the equipment.
4. Provide a neutral stop for the applications that use a pullout cable. This device shall enable the pullout cable, to move the spool of the valve from the raise to neutral position only. It is necessary that a spring be provided (since due to shocks in the system may move the spool) in the pull out cable assembly to prevent unintentional movement of the spool. Failure to provide this device may result in the breakage of the neutral stop device causing injury. It is preferred to enclose the cable in full directly, in the line of the cable.
5. In general provide three lines one each, for inlet, the cylinder and the other for the return line to the tank, in every hydraulic sub circuits for continuous operation. A sleeve shall be provided to allow the inlet pressure line oil to flow through the unit and return to the tank, when running in neutral. This will facilitate in reducing the heat and thus lower the operating temperature and also enables to provide a return line filter in the circuit. However ensure that the return line is lower than the oil level in the tank. You may restrict two line set up only for intermittent use only.

Installation and Operation

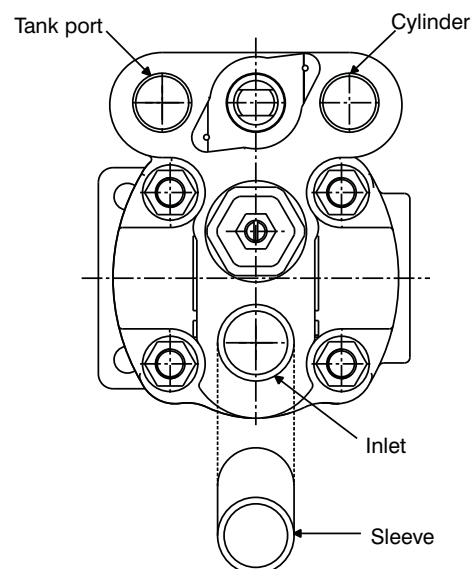
Two line Installation

- One line to the Cylinder
- One line to the reservoir
- Tank port on the pump is Plugged
- For Intermittent operation only
- **Spool in Neutral Position** : Oil recirculates internally
- **Spool in Raise Position** : Oil is routed through cylinder port to raise the Cylinder
- **Spool in Lower Position** : Oil flow from the cylinder is routed through the relief valve to return to tank



Three line Installation

- One line to the Cylinder
- Two line to the reservoir
 - a. One line to the supply line of the reservoir
 - b. One line to the return line of the reservoir
- Service is installed in the inlet port of the pump
- For Continuous or Intermittent Operation:
- **Spool in Neutral Position** : Oil circulates through the Inlet of the pump and return to tank
- **Spool in Raise Position** : - Oil is routed through cylinder port to raise the Cylinder
- **Spool in Lower Position** : - Oil flow from the cylinder, through the bottom port and return to tank.



Flow path in DS1/DS2 pump valve units

(Single acting valve explanation)

