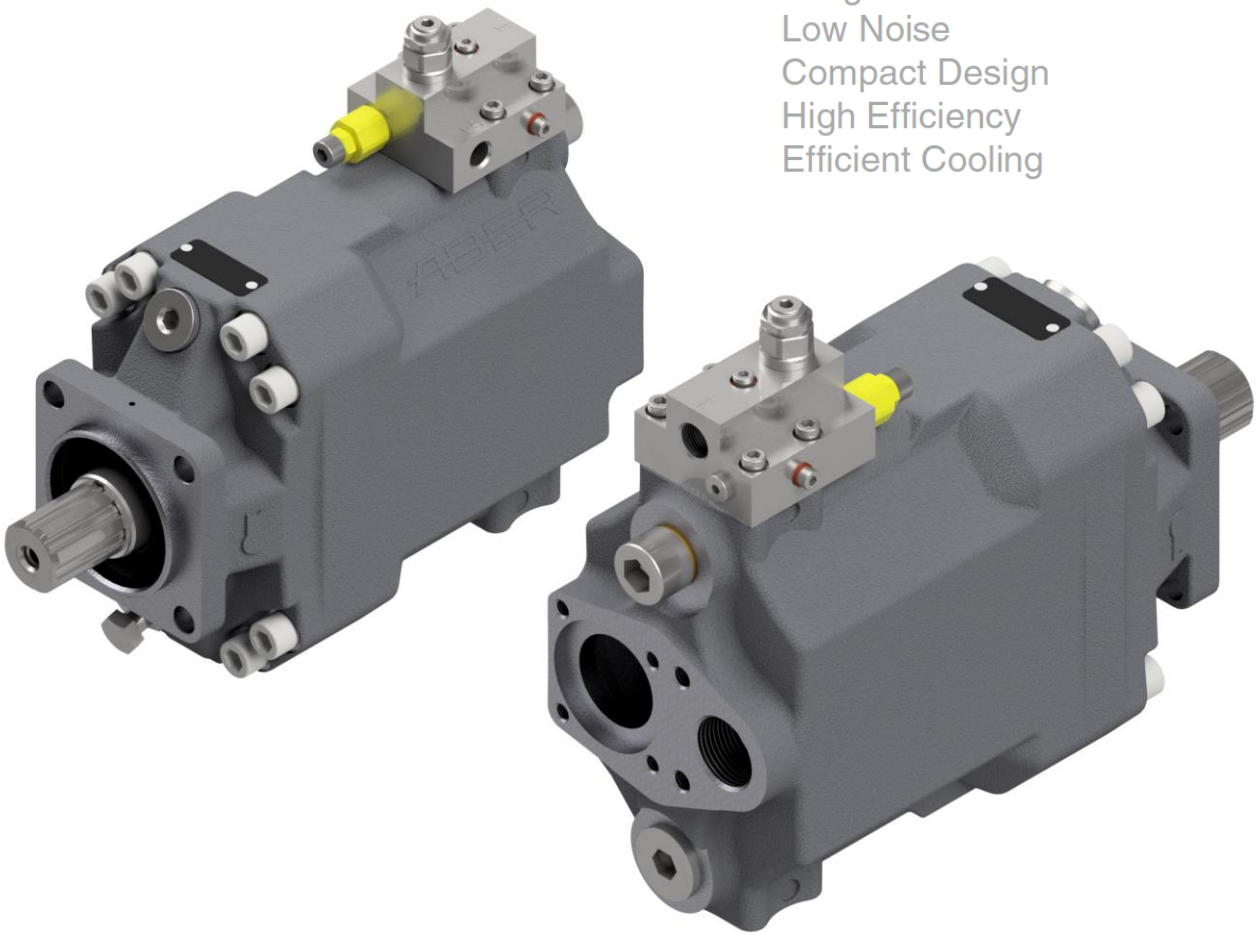
HYDRAULIC PISTON PUMPS
VDP | VARIABLE DISPLACEMENT PUMPS
VDPT | VARIABLE DISPLACEMENT PUMPS TANDEM
40cm³/rev. to 123cm³/rev.

Efficiency and robustness

VDP SERIES

- Adaptable pressure
- Fast Reaction
- Flow Reset
- High Pressure
- Long Service life
- Low Noise
- Compact Design
- High Efficiency
- Efficient Cooling



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General Information

VDP Series is a variable displacement axial piston pump designed to use in open circuits. They are available from 40 to 123 cm^3/rev. and with a nominal pressure of 410 bar. They can be assembled directly into the truck power take off (PTO).

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Ordering Code

VDP	125	R					
01	02	03	04	05	06	07	08

Series

		40	60	76	90	110	125	
01	Variable displacement pump, swash plate design, open circuit	●	●	●	●	●	●	VDP
	Variable displacement pump thru-shaft, swash plate design, open circuit	○	○	○	○	○	●	VDPT

Size

02	Displacement, $cm^3/rev.$	40	60	76	90	110	125	

Rotation sense

03	Viewed from drive shaft	Right (clockwise)	R
		Left (counterclockwise)	L

Mounting flange and drive Shaft		40	60	76	90	110	125	
04	ISO 7653-1985, type D direct coupling - Splined DIN 5462, B8x32x36	●	●	●	●	●	●	0
	SAE J744, C 2 holes - Splined SAEJ744, 14T 12/24 DP–SAE C	○	○	○	○	○	○	C2
	SAE J744, C 4 holes - Splined SAEJ744, 14T 12/24 DP–SAE C	●	●	●	●	●	●	C4
	ISO 3019, 4-h Ø125 - Splined DIN 5480, W30x2x14x9g	○	○	○	○	○	○	IW

Line ports		40	60	76	90	110	125	
05	ISO DIN 228, G threads (BSP)	●	●	●	●	●	●	0
	SAE J514	●	●	●	●	●	●	4

Controllers

06	Load-sensing controller with pressure limitation	0

Special Functions		40	60	76	90	110	125	
07	Without stroke limitation	●	●	●	●	●	●	0
	With stroke adjust (125 – 80 cm^3/rev)	○	○	○	●	●	●	Y

Seals		40	60	76	90	110	125	
08	NBR seals	●	●	●	●	●	●	0
	FKM Seals	●	●	●	●	●	●	V

● Available version ○ Available under request

Other combinations can be made, for more information please consult ABER.

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Technical Data

		40	60	76	90	110	125	T125
Displacement	$cm^3/rev.$	40.1	60.6	76.4	92.5	108.9	123.4	123.4
Nominal pressure	bar	410	410	410	410	410	410	410
Max intermittent pressure (1)	bar	460	460	460	460	460	460	460
Max. rotation speed (2)	rpm	3100	2600	2300	2100	2100	2100	2100
Min. rotation speed	rpm	500	500	500	500	500	500	500
Mass inertia torque (rotary group)	$kg.m^2$	0.009	0.009	0.009	0.010	0.010	0.010	0.010
Weight torque	Nm	34.99	35.02	35.03	39.09	39.09	39.09	61.27
Weight	kg	25.8	25.8	25.8	25.8	25.8	25.8	36
Recommended fluids		mineral oils type ISO HM or DIN 51524-2 HLP						
Recommended viscosity range		16 to 36 cSt (mm^2/s) at working temperature						
Limits viscosity range		10 to 400 cSt (mm^2/s)						
Start-up viscosity range, without load		400 to 1500 cSt (mm^2/s)						
Filtration requirements (3)		ISO 4406 19/17/14						
Ambient temperature		-40°C to +60°C						
Oil temperature		-25°C to +90°C						
Max. housing pressure		3 bar						
Min. inlet pressure		0.85 bar abs						

Data contained in this table are rounded, theoretical and without efficiency or tolerances.
(1) Max. 6 seconds per minute.
(2) These values are valid at an absolute pressure of 1 bar in suction port when operating with a mineral oil at a viscosity of 30 mm^2/s (cSt) and max swash plate angle.
(3) The first filter to be applied into the system must be replaced as soon as it reaches the 50 working hours; after the first replacement, it must be replaced along with the oil or when pressures out of the common are verified in the return.

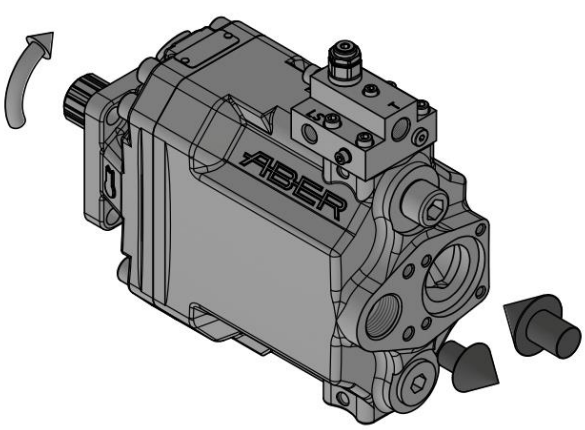
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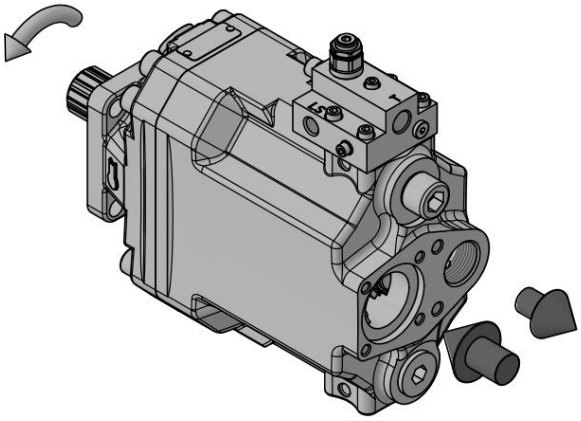
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Rotation Sense

VDP Rotation Sense

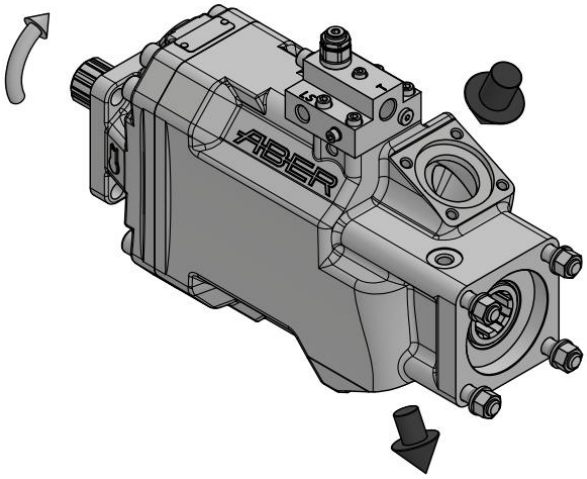


Left hand (CCW)

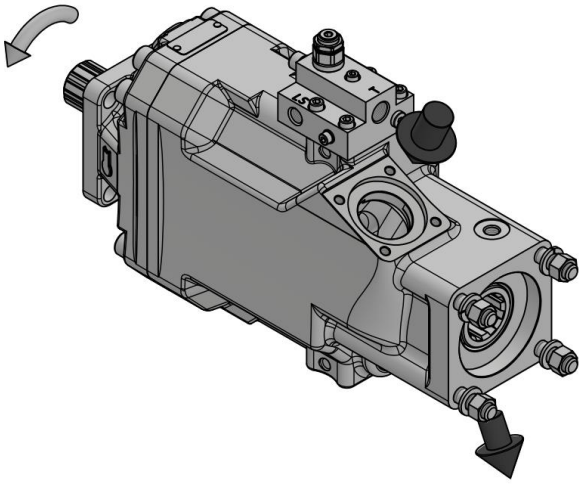


Right hand (CW)

VDPT Rotation Sense



Left hand (CCW)



Right hand (CW)

Rotation sense is defined viewed from drive shaft. Pumps must be ordered CCW or CW, and it can't be changed.

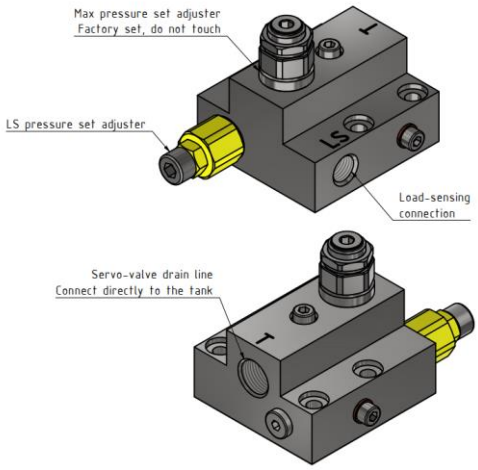
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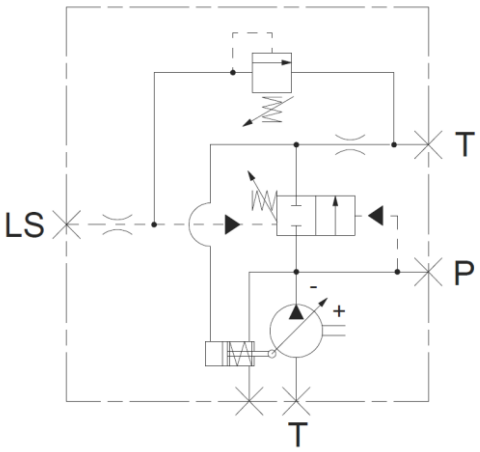
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Controller

Load-sensing controller with integrated pressure limitation and drain line. This command allows control of the required flow regardless of the pump working speed. The differential pressure between the load and the pump outlet is controlled by the LS set adjuster. The pressure limiter allows control of the maximum pressure. Drain line must be connected directly to the tank. This controller permits high fuel saving.





40 to 123 cm³/rev

	LS	*Pressure limitation*
Factory set (bar)	30	350
Range (bar)	30 to 80	30 to 410
1 Turn to adjuster screw (bar)	20	70

⚠ Incorrect pressure settings can overload components creating potential danger situations, please always monitor pressure gauge during setting operations.

Characteristic Diagrams

Diagram
Flow - Speed

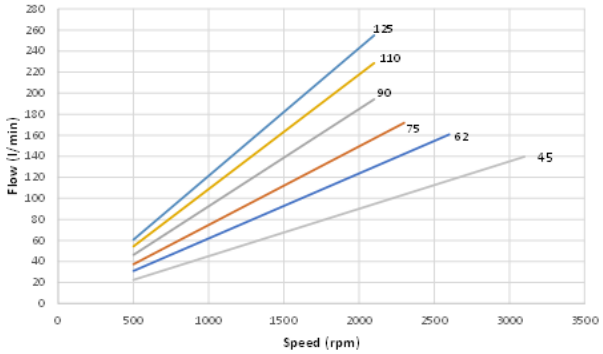
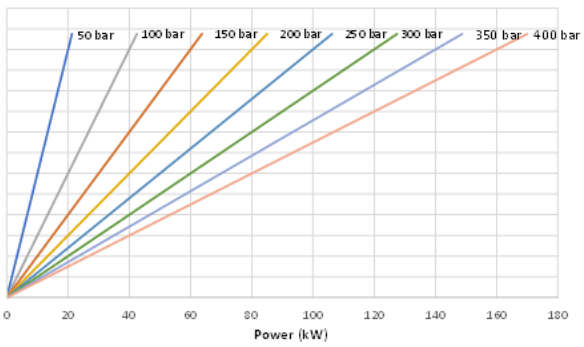


Diagram
Input Power - Flow – Pressure



These diagrams illustrates theoretical values when operating with max swash plate angle.

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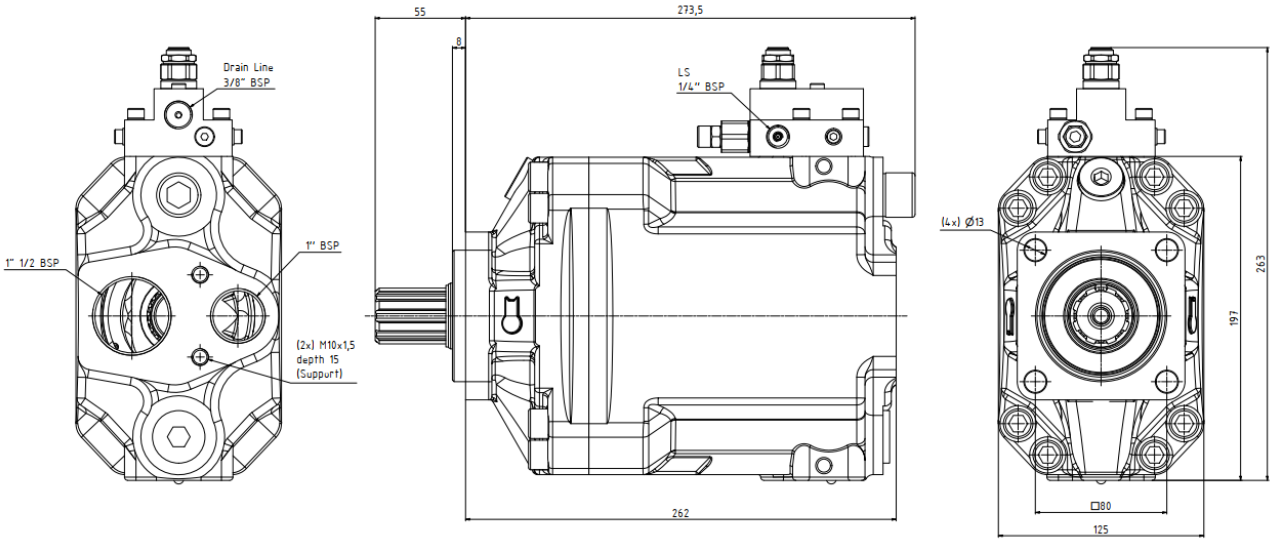
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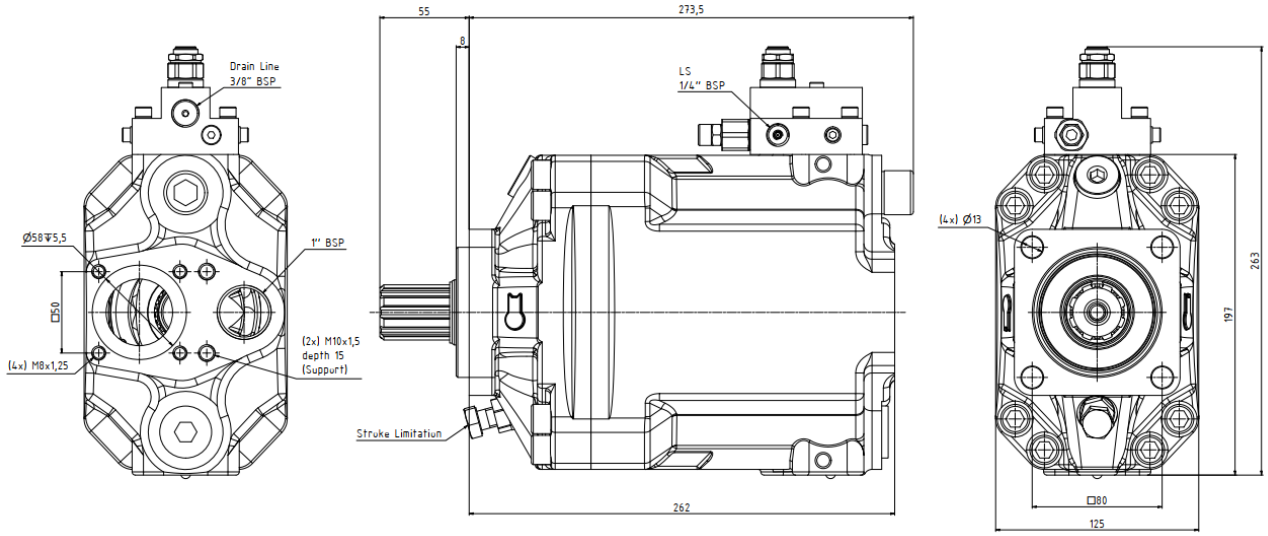
Dimensions

Standard version - Mounting flange ISO 7653-1985, type D direct coupling / Splined drive shaft DIN 5462, B8x32x36 / Line ports ISO DIN 228, G threads (BSP).
Dimensions in mm.

VDP 40 to 76



VDP 90 to 125



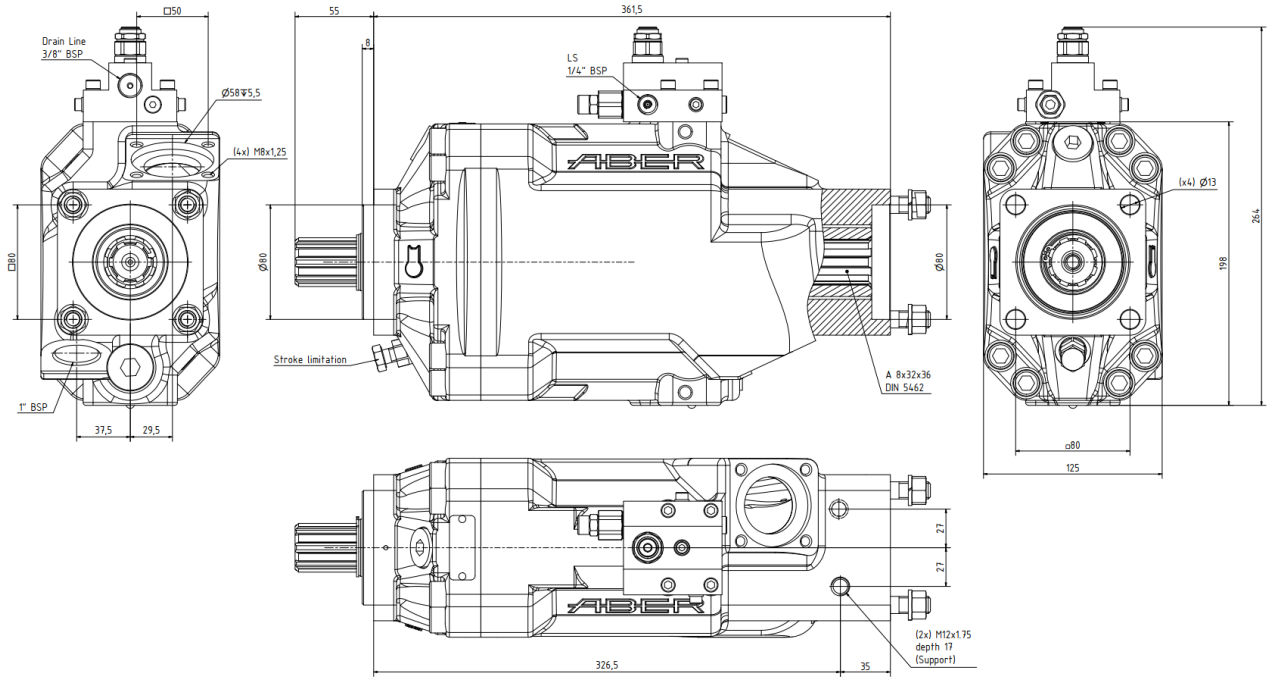
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VDPT 125



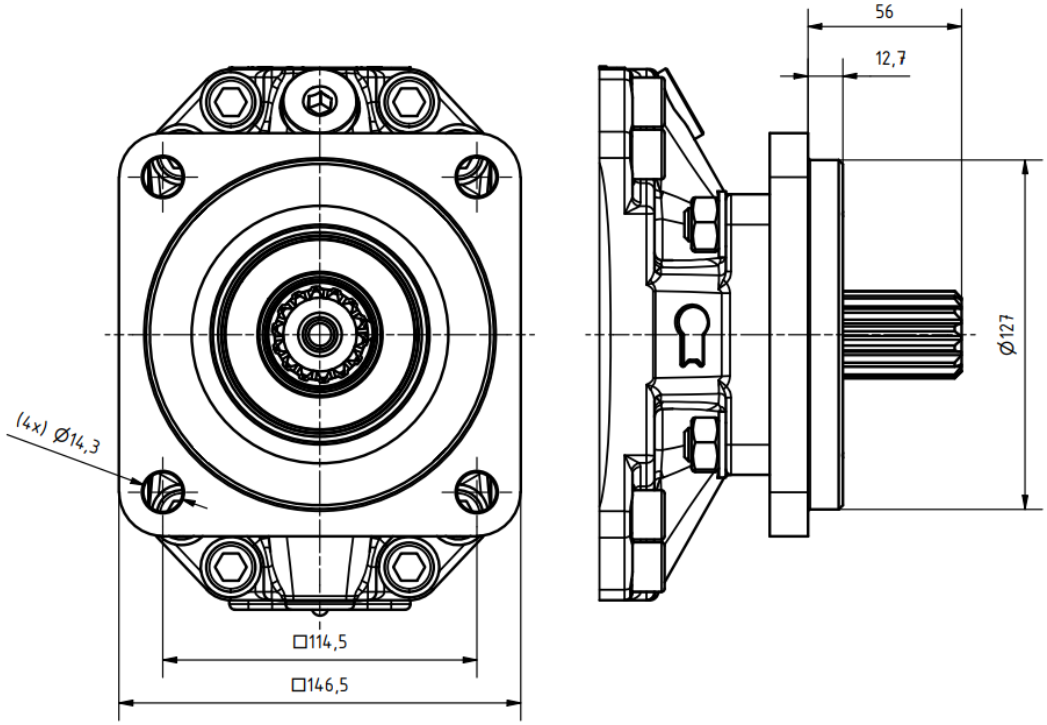
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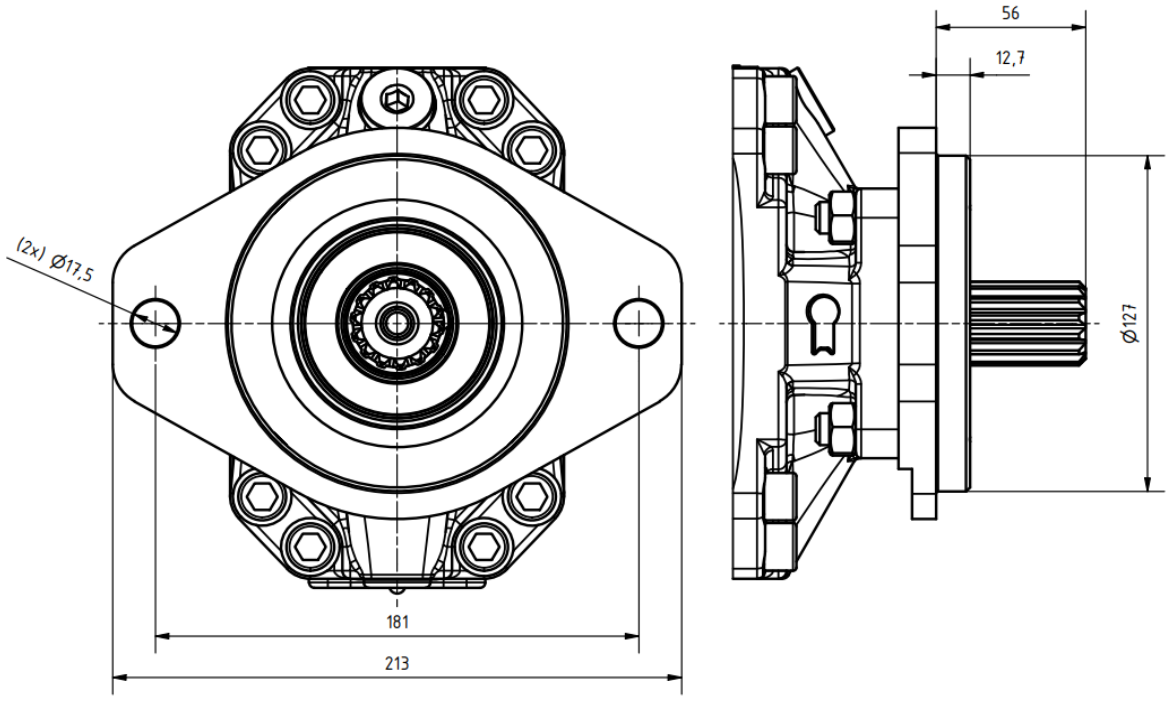
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Mounting Flanges and Drive Shaft Options

ISO 3019-1 127-4 SAE C4 FLANGE & SAE C 14T 12/24DP SHAFT



ISO 3019-1 127-4 SAE C2 FLANGE & SAE C 14T 12/24DP SHAFT

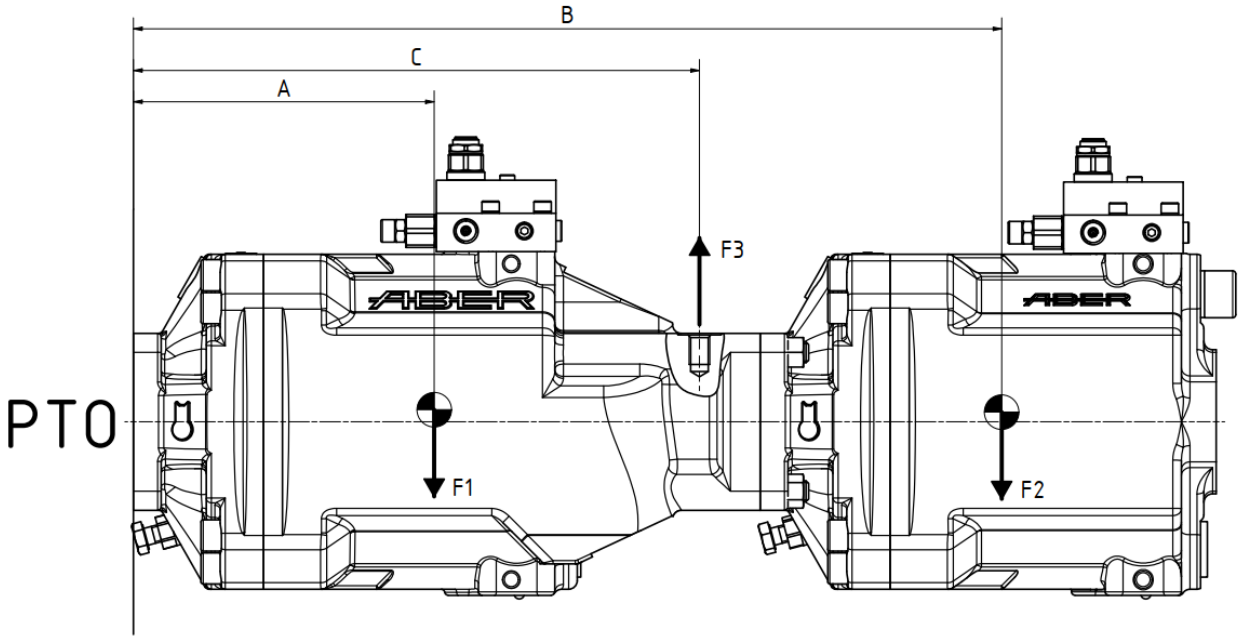


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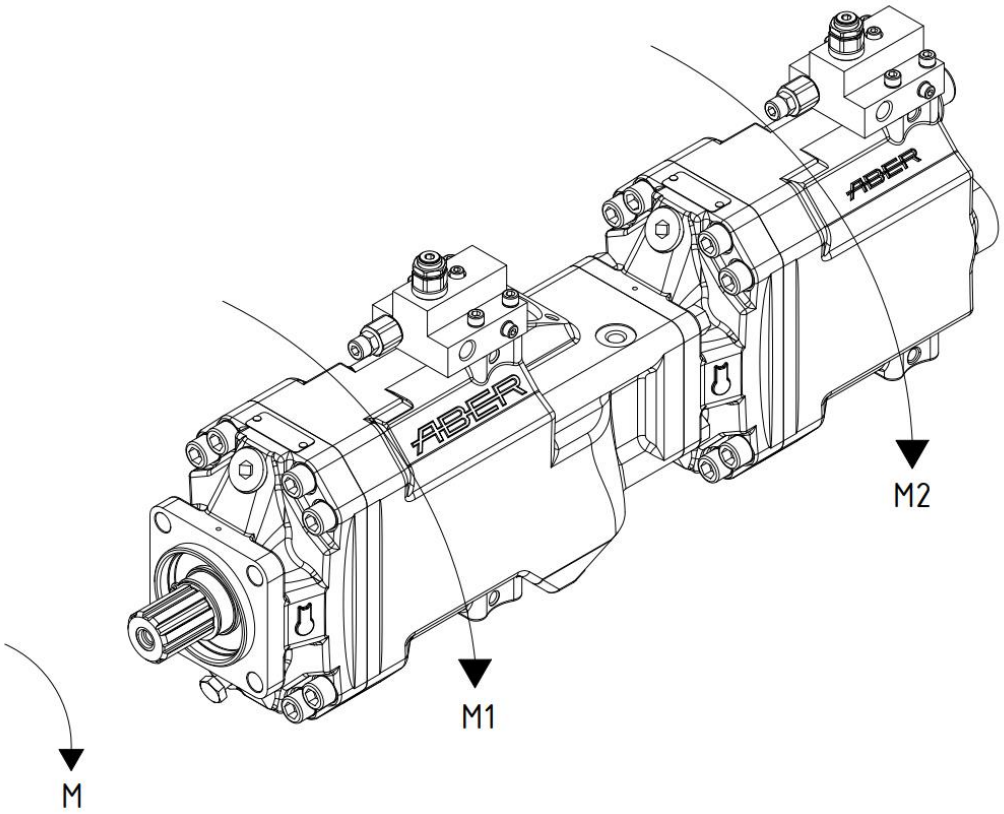
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VDP Tandem Aplications



$$\sum M = F1xA + F2xB + \ldots - F3xC \leq 50N.m$$



$$Mmáx = 900Nm \geq M1 + M2 + \ldots$$

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Pump Selection

To ensure that the PTO will not be overloaded, and gets the correct flow requirements with the speed of the engine chosen, it is important to use a pump with the right capacity. Pump capacity (D), expressed in cm^3/rev., can be calculated using the following formula:

$$D = \frac{Q \times 1000}{N \times Z}$$

D-Pump displacement [cm^3/rev.]
Q-Flow required [l/min]
N-Motor speed
Z-Engine to PTO ratio

In order to not overload the PTO's mechanical units, it is important to calculate the torque and power consumed by the pumps. Torque and power are calculated with the following expressions:

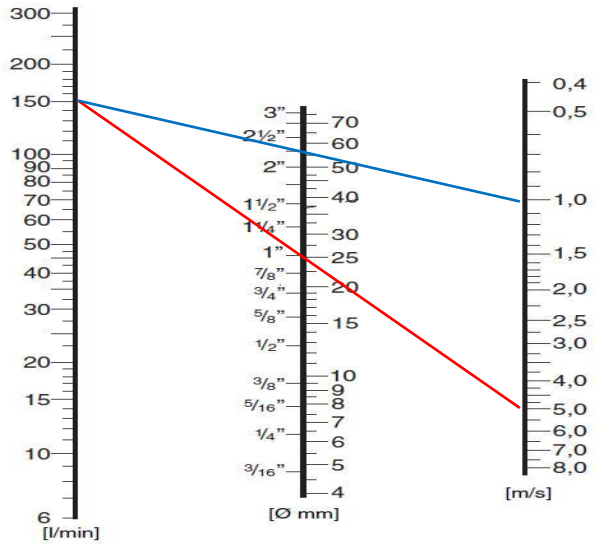
$$M = \frac{D \times Pb}{63} \qquad P = \frac{D \times N \times Z \times Pb}{600 \times 0{,}95 \times 1000}$$

M-Torque [Nm]
Pb-Pressure [bar]
P-Power [kW]
N-Motor speed [rpm]
Z-PTO ratio
0,95-Pump efficiency (can change from one pump to another)

If the calculated load exceeds the maximum allowed for the PTO, a different combination should be selected.

Hose Selection

In order to avoid intense heat generation and cavitation phenomenon that causes noise and deterioration of the pump, ABER recommends the following speeds and dimensions of the hoses. Inlet pressure range must be always respected. LS line should be 10% of the pressure line. Drain line depends from the internal pump pressure it must be at least 15mm. All the hoses must be selected according the pressures.



Admission line
0,5…1 m/s

Return line
2…3 m/s

Pressure line
P = 0...50 bar - 3,5 m/s
P = 50…100 bar - 3,5…4,5 m/s
P = 100…150 bar - 4,5…5 m/s
P = 150...200 bar - 5…5,5 m/s
P = 200…300 bar - 5,5…6 m/s

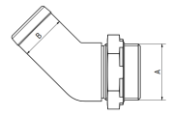
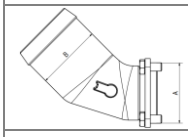
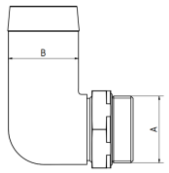
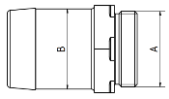
The recommended speeds and dimensions specified may not be enough when the temperatures are too low, the tank is below the level of the pump, the inlet hose is long or there are many valves and fittings in the inlet hosing. In these cases we recommend increasing the diameter of the hoses and reducing the pump rotation speed.

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Recommended admission connector for rotations up to 1500rpm

	Reference	A	B (in)	VDP40	VDP60	VDP76	VDP90	VDP110	VDP125	VDPT125
	**A45112112**	1'' 1/2 BSP	1'' 1/2	•						
	A45112200	1'' 1/2 BSP	2''		•	•				
	A45112212	1'' 1/2 BSP	2'' 1/2							
	**A45058212**	Ø58	2'' 1/2				•	•		
	A45058300	Ø58	3''						•	•
	**A90112112**	1'' 1/2 BSP	1'' 1/2	•						
	A90112200	1'' 1/2 BSP	2''		•	•				
	**AD112112**	1'' 1/2 BSP	1'' 1/2	•						
	AD112200	1'' 1/2 BSP	2''		•	•				
	AD112212	1'' 1/2 BSP	2'' 1/2							

[4] Consult nomogram for select admission connector size.
[5] For more informations please consult admission connector technical sheets.

Instructions to adjust the displacement of the VDP/VDPT – Y Version

Kindly follow the below steps:

1) Loosen the adjustment nut.

2)

a) to decrease the displacement, tighten the bolt in a cw rotation; [6]

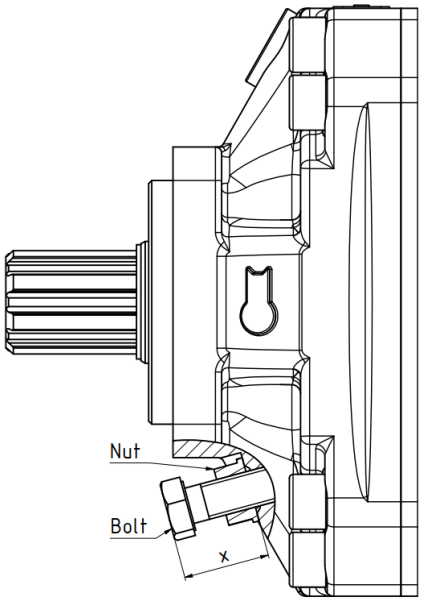
NOTE — The minimum displacement is approximately 80 cm³/rev.

b) to increase the displacement, loosen the bolt in a ccw rotation. [6]

⚠ When loosening the bolt, the length "x" should not exceed 30mm.

3) With the use of tools, tighten the adjusting nut until it is secured, and in the process keep the bolt in the same position.

4) If the displacement is not what is required, please repeat the above steps



[6] Per each rotation on the bolt, displacement will adjust approximately 10,5 cm³/rev.

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Recommendations Before Start up

- Avoid pump installation above the minimum tank oil level.
- Check PTO direction of rotation. The direction of rotation of the pump must be according to the PTO rotation. Rotation sense is defined viewed from drive shaft. Pumps must be ordered CCW or CW, and it can't be changed.
- Grease spline shaft with solid lubricant before installation. Connect the pump to the PTO (apply 80Nm torque in the tightening nuts). High efforts or shocks are not recommended during the installation. The pump must be connected without making use of any type of tool that forces its assembly. In driving gear application and couplings use circlips and/ or washers with one M10 screw and locking fluid (70Nm). During the installation always leave the inlet port in a higher or equal level than outlet port. This increases the pump life.
- Remove all protection covers from the threaded holes (inlet/outlet/drain line/load-sensing). Apply the inlet and outlet fittings into the pump (query the tightening information from the fittings manufacturer). Connect the outlet and the inlet pipes to the accessories (always respect recommended hoses)
- Before start-up, the housing must be filled with the same hydraulic fluid used in the system. Re-fit drain plug and torque to 50Nm. Never run the pump dry.
- Use Heat Control Valve (HCV20) in hydraulic systems where the pump works continuously for long periods of time, for example engine PTO.

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Faults / Causes / Remedies

Faults	Causes	Remedies
No oil flow	1.Empty tank 2.Closed valve in inlet hose 3.Air in inlet hose 4.Wrong sense of rotation 5.Reversed hoses 6.No input power 7.Pump damaged	1.Fill tank with recommended fluid 2.Open valve 3.Put tank above the pump level 4.Change rotation sense 5.Reverse hoses 6.Replace power source or other damaged equipment 7.Replace pump
Equipment works with irregular movements	1.Air in housing 2.Air leakage in inlet hose 3.Low oil level 4.Pump damaged	1.Fill housing with recommended fluid 2.Repair air leakage 3.Fill tank with recommended fluid 4. Replace pump
Pump is noisy	1.Small diameter hose 2.Restriction in inlet hose 3.Very thick oil 4.Air in inlet hose 5.Pump damaged	1.Replace inlet hose for other with a larger diameter 2.Remove restrictions 3.Replace for an recommended fluid 4.Put tank above the pump level, check air pressure in the tank 5.Replace pump
Oil is too hot	1.Low oil level 2.Small tank 3.Dirty oil 4.Relief valve improperly set 5.Relief valve stuck in open position 6.Very thick oil 7.Too much flow	1.Fill tank with recommended fluid 2.Replace for a bigger tank 3.Replace oil and filter 4.Adjust for equipment specifications or replace if necessary 5.Clean and re-set for equipment specifications 6.Replace for an recommended fluid 7.Reduce speed or replace for a smaller displacement pump
Equipment works very slow compared with the usual	1.Relief valve improperly set 2.Relief valve stuck in open position 3. LS pressure setting 4.Pump damaged	1.Adjust for equipment specifications or replace if necessary 2.Clean and re-set for equipment specifications 3.Change load sense (LS) factory setting. Tight LS pressure set adjuster 4.Replace pump
Oil leakage	1.From inlet/outlet lines 2.From below the nameplate 3.From body sections	1.Tighten fittings and hoses, or replace if necessary 2.Stop the system immediately to determine the cause of the leak and correct the problem source 3.Tighten bolts for specified torque, or replace damaged o'ring or body



When the pump is working, never touch or pull hoses or intermediate shaft when applied. When intermediate shaft is applied take into account that parts can be ejected.
The application of the pumps must follow all the instructions hereby mentioned in order to assure the safety of all personal working with the equipment including its surroundings, assure a long life to the product and preserve the warranty of the brand. All applications that do not follow the hereby instruction are solely the users responsibility. If there should happen any malfunctioning, it is strictly forbidden the disassembly of the product except if it is being made by a qualified technician of the brand or if there is a special authorization to do that. If this specification should not be followed, all warranties might be lost.

ABER is constantly engaged in improving its products and, therefore, reserves itself the right to modify without any further notice the characteristics shown

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ABER HAS A QUALITY MANAGEMENT SYSTEM CERTIFIED ACCORDING TO THE STANDARD ISO 9001 BY APCER