

Power sources

Power sources

Whether you need to run your parts once a day or 24 hours a day, Enerpac has the power source to help you get the job done. Power sources range from air operated pumps to fully customizable electric motor driven units.

With a wide variety of accessories to choose from, Enerpac power units are easily the most versatile and reliable in the industry.







Technical support

Refer to the "Yellow Pages" of this catalog for:

- Safety instructions
- Basic hydraulic information
- Advanced hydraulic technology
- FMS (Flexible Machining Systems) technology
- Conversion charts and hydraulic symbols

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Turbo II air-hydraulic pumps *Application & selection*

Shown: PAMG-5402PB, PACG-3102PB, PATG-3102PB, PATG-5105PB



▶ Turbo II air-hydraulic pumps generate the hydraulic pressure you need, using the air pressure you have available. The air saver piston reduces air consumption and operating costs.

They are ideal for providing the power and speed desired in simple clamping circuits. Turbo II air-hydraulic pumps are best suited to medium and lower cycle applications. At only 75 dBA, these new Turbo II series help to keep noise level to a minimum.

Select the required output

3000 series

- Hydraulic-air ratio 45:1 (350 bar hydraulic pressure at 8 bar air pressure)
- Hydraulic pressure range 85 - 350 bar (range of 35 - 85 bar available with diminished stall/restart performance)
- Maximum hydraulic oil flow 3,0 l/min

5000 series

- Hydraulic-air ratio 60:1 (350 bar hydraulic pressure at only 5,5 bar air pressure)
- Hydraulic pressure range 120 - 350 bar (range of 48 - 120 bar available with diminished stall/restart performance)
- Maximum hydraulic oil flow 2,0 l/min

Quick and powerful hydraulic supply in an economical air-powered unit

- On-demand stall-restart operation maintains system pressure, providing clamp security
- External adjustable pressure relief valve (behind sight glass)
- Internal pressure relief valve provides overload protection
- Reduced noise level to 75 dBA reduces operator fatigue
- Operating air pressure: 1,7-8,6 bar – enables pump to start at low air pressure
- Reinforced heavy-duty lightweight reservoir for applications in tough environments
- 5 valve mounting options provide flexibility in setup and operation
- Composite air piston seal allows operation on completely dry air supply

Select the required operation

PATG series

- Momentary (air-inlet) treadle for operation of single acting cylinders
- Provides advance, hold and retract functions

PACG series

- Momentary or continuous air inlet treadle
- Remote valve is required to operate single-acting cylinders
- Pressure gauge included

PASG series

- Momentary or continuous air inlet treadle
- Suitable for mounting any single or double acting valve with a CETOP 03 mounting configuration

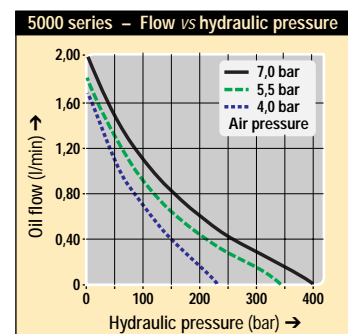
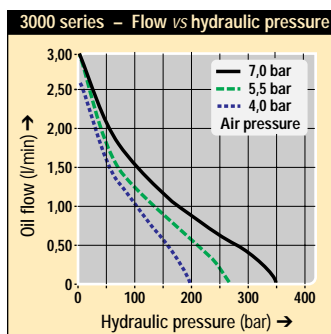
PAMG series

- Momentary or continuous air inlet treadle
- Manual 4-way, 3-position, tandem center valve for single or double acting operation

PARG series

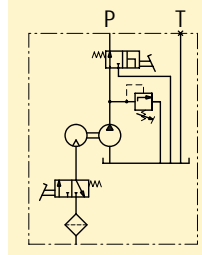
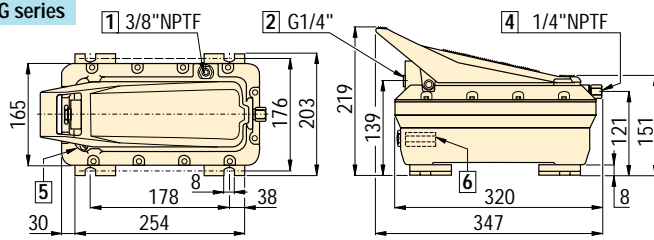
- Includes 4,5 m air pendant for remote control of single-acting cylinders
- Provides advance, hold and retract functions

Output Oil Flow versus pressure



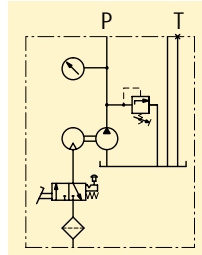
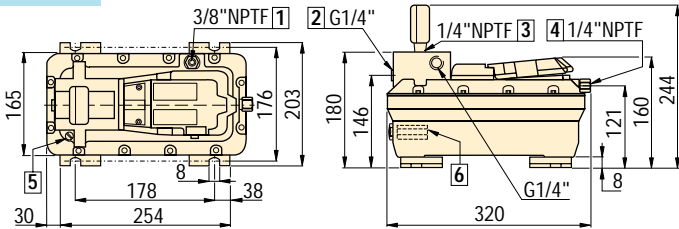


PATG series

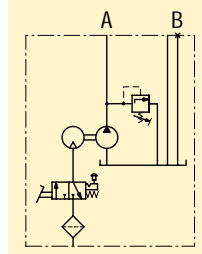
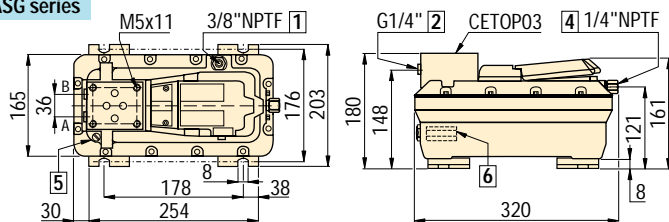


PACG series

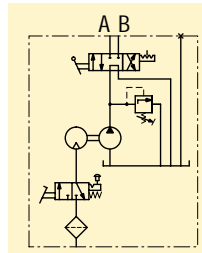
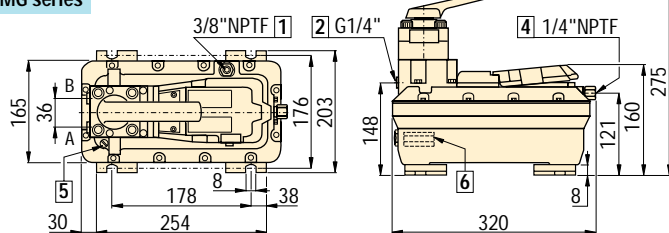
PACG series include pressure gauge G-2517L.



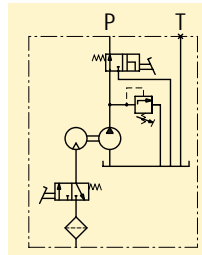
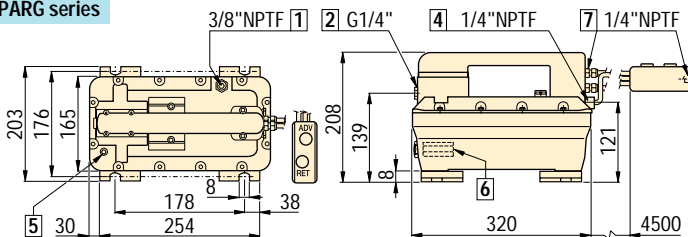
PASG series



PAMG series



PARG series



- 1 Auxiliary vent/tank fill port
- 2 Hydraulic output
- 3 Gauge mounting port
- 4 Swivel air input with filter
- 5 Filtered permanent tank vent
- 6 Adjustable pressure relief valve
- 7 Air pendant air input

Product Selection

Pump type	3000 series Model Number	Oil flow ¹⁾ 3000 series l/min	5000 series Model Number	Oil flow ¹⁾ 5000 series l/min	Max. hydraulic pressure bar	Reservoir size ²⁾ litres	Usable oil capacity ²⁾ litres		Air pressure range bar	Air consumption l/min	Weight kg
							hor. mount.	vert. mount.			
PATG	PATG-3102PB	3,0	PATG-5102PB	2,0	350	2,4	2,1	1,1	1,7-8,6	340	8,6
PACG	PACG-3002PB	3,0	PACG-5002PB	2,0	350	2,4	2,1	1,1	1,7-8,6	340	8,6
PASG	PASG-3002PB	3,0	PASG-5002PB	2,0	350	2,4	2,1	1,1	1,7-8,6	340	8,6
PAMG	PAMG-3402PB	3,0	PAMG-5402PB	2,0	350	2,4	2,1	1,1	1,7-8,6	340	11,3
PARG	PARG-3102PB	3,0	PARG-5102PB	2,0	350	2,4	2,1	1,1	1,7-8,6	340	10,5

¹⁾ At 0 bar hydraulic and 7 bar air pressure.

²⁾ Turbo II air-hydraulic pumps are also available with 5 litres reservoir. To order replace 2 in model number with 5.

- Oil Flow: 2,0-3,0 l/min
- Pressure: 85 - 350 bar
- Air: 340 l/min
- Reservoir: 2,4 - 5,0 litres

- E Bombas hidroneumáticas
- F Pompes hydro-pneumatiques
- D Lufthydraulische pumpen

Options

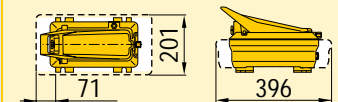
Large reservoir models



Enerpac Turbo air-hydraulic pumps are also available with large reservoir.

Usable oil capacity

Hor. mounted: 3,7 litres
Vert. mounted: 2,9 litres



To order your Turbo II with a large reservoir, replace 2 in the model number with 5.

Gauges and accessories

106 ▶



Regulator-filter-lubricator

97 ▶



Important

For high cycle applications electric pumps are recommended.

Shown: ZW5111SWE100



▶ Enerpac's workholding pump unit features an innovative range of zero leakage, poppet design, directional valves. With the modular valve design, various independent single-acting or double-acting circuits can be realized.

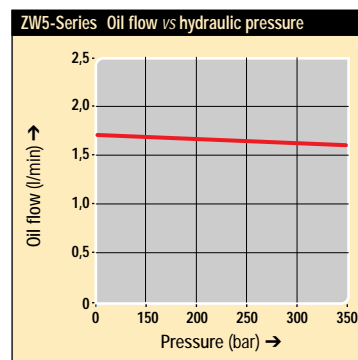
Application

These advanced workholding pumps, operating at maximum 350 bar hydraulic pressure, are highly suitable for production tooling applications – offering the optimum in terms of compact size for required oil flow and pressure rating and customization to your specific needs.

Enerpac electric pump used in conjunction with swing cylinders, work supports, directional valves, control valves and sequence valves can provide a complete clamping solution. The pressure switch allows the unit to be fully automated.

Customize to your needs

- Various models including electric controls and isolating valves
- Stackable to 8 VP-series valve stations high
- Customer adjustable relief valve
- Glycerine dampened pressure gauge G-2517L on pumps with VP-series valves
- 230/400 Volt - 50Hz - 1,1 kW Motor



Product selection

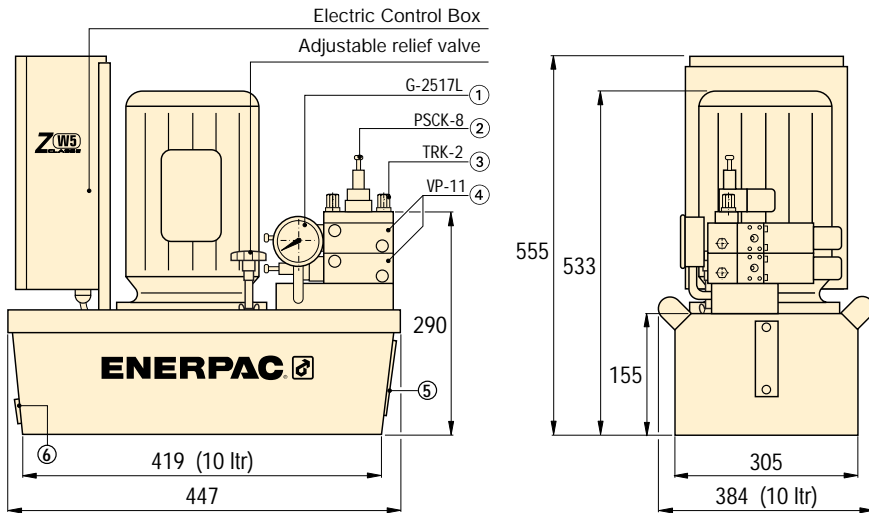
Oil Flow rate	Pressure Range	Voltage and current 50Hz V @ A	Usable oil capacity ²⁾ litres	Valve models included	Model number	kg
▼ With manifold for VP-series modular valves, no electric controls						
1,64	100-350	230 @ 3,3	10,0	–	ZW5VPSEE100	65
1,64	100-350	400 @ 1,9	10,0	–	ZW5VPSWE100	65
▼ With manifold for CETOP 03 valves, no electric controls						
1,64	100-350	230 @ 3,3	10,0	–	ZW5C03SEE100	65
1,64	100-350	400 @ 1,9	10,0	–	ZW5C03SWE100	65
▼ For 2x Single-Acting circuits						
1,64	100-350	230 @ 3,3	10,0	1x VP-41	ZW5141SEE100	77
1,64	100-350	400 @ 1,9	10,0	1x VP-41	ZW5141SWE100	77
▼ For 1x Double-Acting circuits + Isolating Valve¹⁾ for A-port						
1,64	100-350	230 @ 3,3	10,0	1x VP-11	ZW5111SEE100	77
1,64	100-350	400 @ 1,9	10,0	1x VP-11	ZW5111SWE100	77
▼ For 2x Double-Acting circuits + Isolating Valves¹⁾ for all A-ports						
1,64	100-350	230 @ 3,3	10,0	2x VP-11	ZW5211SEE100	80
1,64	100-350	400 @ 1,9	10,0	2x VP-11	ZW5211SWE100	80

¹⁾ Isolating Valve is Pressure Switch PSCK-8.

²⁾ ZW5-series pumps comes standard with 10 litres reservoir. (4, 8, 20 or 40 litres reservoir is optional).



ZW5-series Shown: ZW5211SEE100 with standard 10 litres reservoir

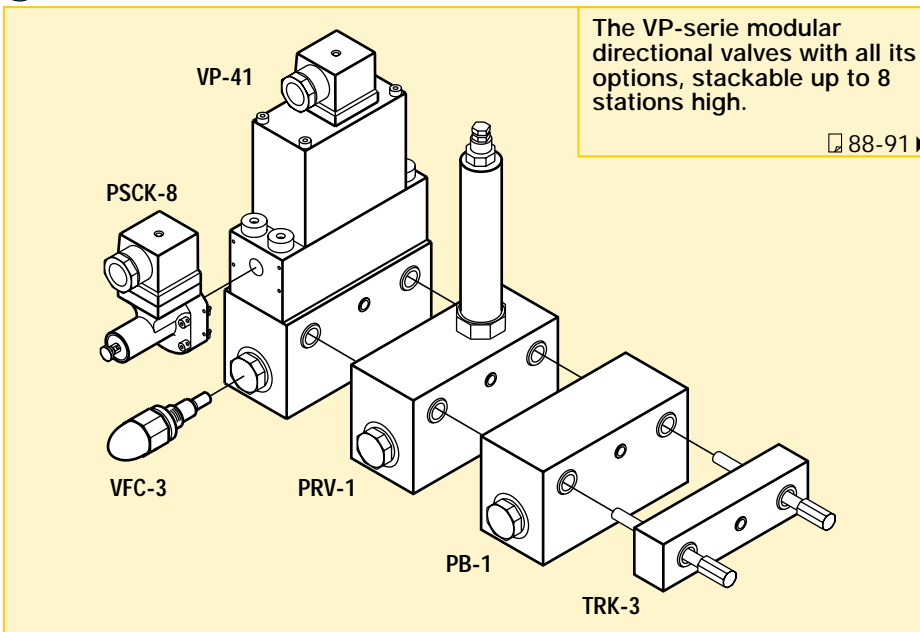


- ① Pressure gauge
- ② Pressure switch
- ③ Tie Rod Kit
- ④ Directional valve
- ⑤ Oil level glass
- ⑥ Oil drain

Product specifications

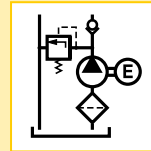
Pump series	Voltage	Phase	Continuous operation at 350 bar	Motor capacity	Motor speed	Motor protection class	Sound Level
	Volt			kW	RPM		dBA
ZW5....	230	1	50%	1,1	1390	IP54	75
ZW5.....	400	3	50%	1,1	1390	IP54	75

Valve options



Flow:	1,64 l/min
Pressure:	100-350 bar
Motor:	1,1 kW
Reservoir:	4 -40 litres

- Ⓔ Bombas eléctricas
- Ⓕ Centrale hydraulique
- Ⓖ Modulare Spannumpme



Options

VP-series, modular valves ▢ 88 ▸

VFC-3 Inline Flow control valve ▢ 89 ▸

Pressure switches ▢ 89 ▸

Hoses and couplers ▢ 108 ▸

High pressure filters ▢ 109 ▸

Fittings ▢ 110 ▸

Important

Oil should be replaced every 500 working hours or 4 times a year whichever comes first to ensure long life.

Output flow rate should be matched to hydraulic components used in the system.

Shown: ZW5111SWE100



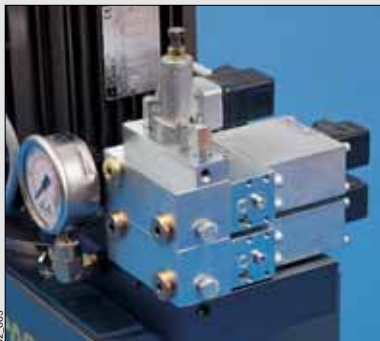
▶ ZW5 series

These advanced workholding pumps, operating at maximum 350 bar hydraulic pressure, are highly suitable for production tooling applications – offering the optimum in terms of compact size for required oil flow and pressure rating and customization to your specific needs.

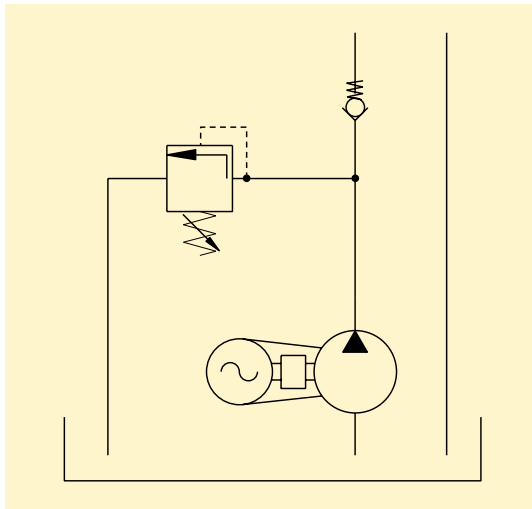
Application

Enerpac electric pump used in conjunction with swing cylinders, work supports, directional valves, control valves and sequence valves can provide a complete clamping solution. The pressure switch allows the unit to be fully automated.

- Enerpac VP-series valves stackbuilt on ZW5211SWE100. The pressure switch PSCK-8 is mounted directly onto the endplate of Tie Rod Kit TRK-2.



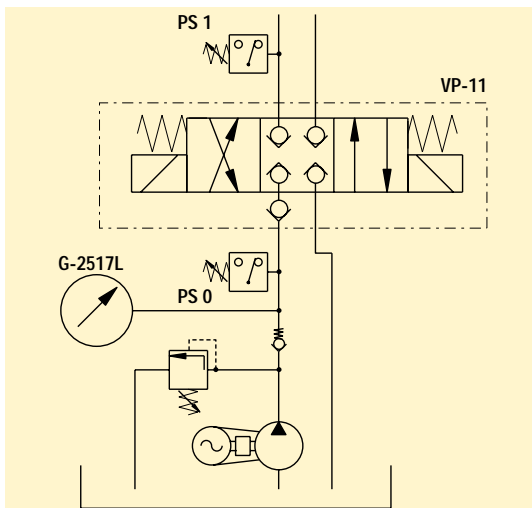
ZW5VPSEE100 with manifold for VP-series or CETOP 03 valves, without electric controls and gauge



Basic pumps

Customize to your needs with the Enerpac VP-series valves and options or choose your own CETOP 03 valve.

ZW5111SEE100 For 1x Double-Acting circuit and Isolating Valve for A-port



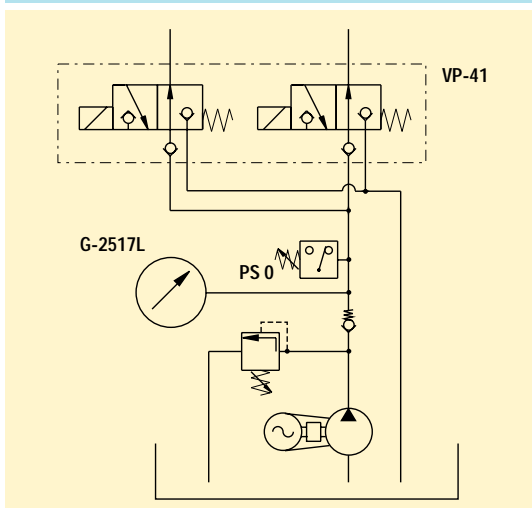
Isolating valves

For applications where clamping pressure has to be maintained, isolating valves are an economic and safe solution.

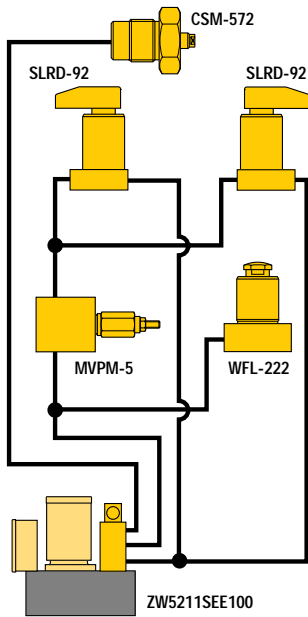
The pressure switch (PS 1) switches in the hydraulic line to the cylinder actuates the valve with a closed center position and isolates the circuit when the preset pressure has been reached. In case of pressure drop the switch opens the valve to compensate.

For some particular applications, i.e. when a workpiece has to be positioned and clamped with different forces, you can set different isolating valve pressures for the independent circuits.

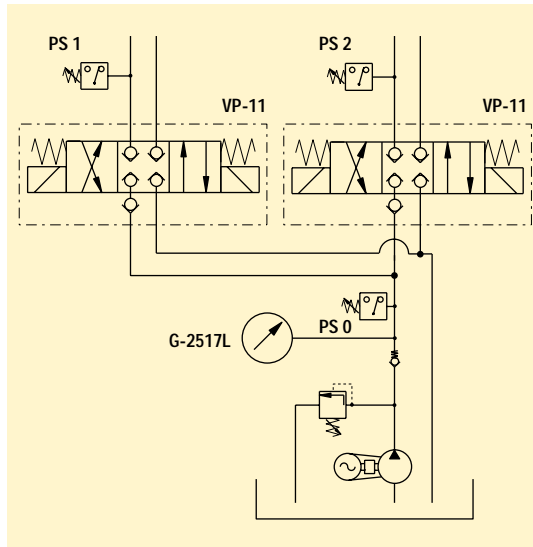
ZW5141SEE100 For 2x Single-Acting circuits



Pressure switch (PS 0) switches the motor off at maximum pressure; in case of pressure drop due to activating circuits, the motor restarts.

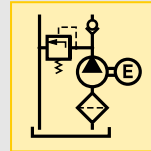


ZW5211SEE100 for 2x Double-Acting circuit and Isolating Valve for all A-ports



Flow:	1,64 l/min
Pressure:	100-350 bar
Motor:	1,1 kW
Reservoir:	4-40 litres

- (E)** Bombas eléctricas
- (F)** Centrale hydraulique
- (D)** Modulare Spannpumpe

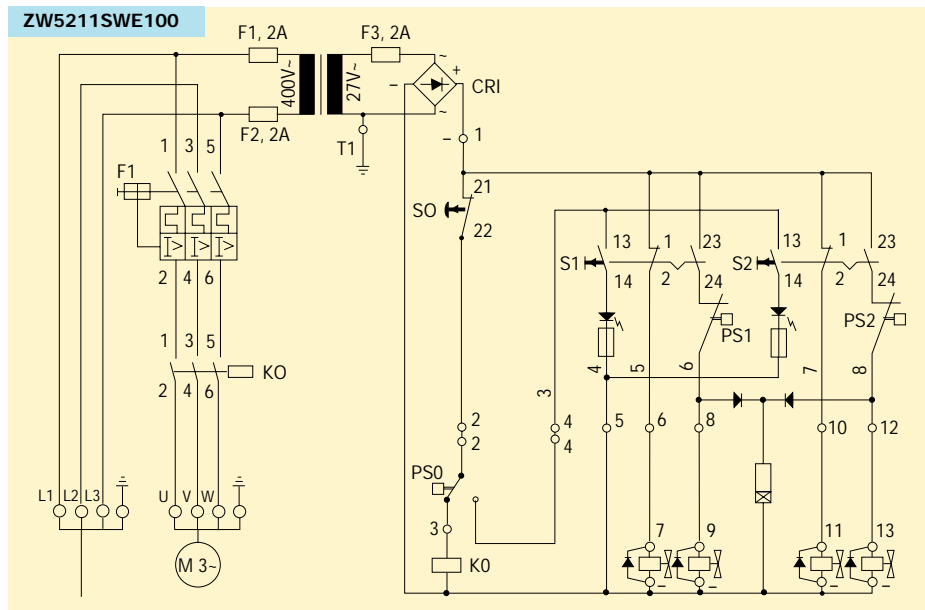


Application example

Building the right workholding system for a specific production tooling requirement is best achieved by observing the Basic System Set-up in our "Yellow Pages" (□ 113 ▶).

Electric Scheme

Shown the electric scheme of the ZW5211SWE100 (400 volt) for two double-acting circuits and isolating valves (pressure switches) in both A-lines.



Options

Sequence valves □ 92 ▶

Flow control valves □ 96 ▶

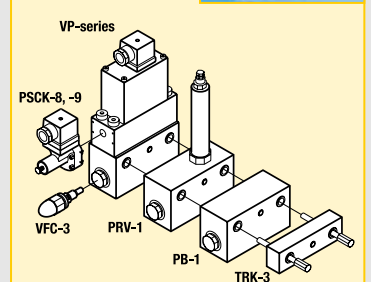
Hoses and couplers □ 108 ▶

High pressure filters □ 109 ▶

Hydraulic oil □ 109 ▶

Fittings □ 110 ▶

VP-series Valve options □ 88-91 ▶



Power sources

Valves

System components

Yellow pages

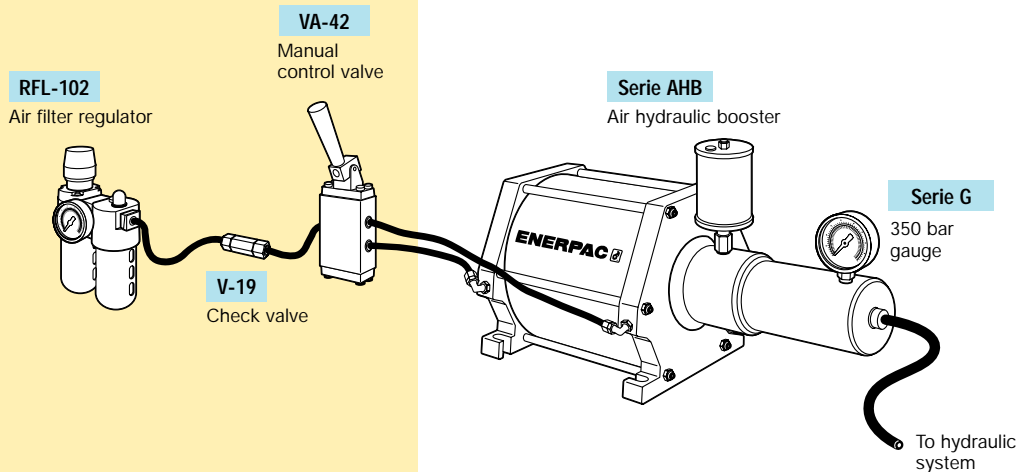
Air hydraulic boosters *Application & selection*

Shown: AHB-46, B-5003, B-3006



▶ AHB and B series boosters

Large effective area of air piston allows compressed air to generate high output hydraulic pressure.



■ In an automated clamping set-up with both hydraulic and pneumatic components, AHB series boosters are used as a power source for the hydraulic system.

For high production applications

- High speed operation
- Extended service life
- Constant hydraulic output
- Large oil delivery per stroke allows quick filling of cylinders for clamping or punching

AHB series Boosters

- Fiberglass wound air chamber eliminates possibility of rust due to moisture in air system
- Designed for fully automated production applications
- Double-acting, high speed operation of air piston

B series Boosters

- One-shot spring return
- Aluminium construction
- Built-in stroke sensor for automatic cycle operation
30 VDC switch closes 25 mm before end of full air piston stroke
- Internal self-bleeding
Automatically purges air from system when booster piston is at highest point in circuit

Swing cylinders
Work supports

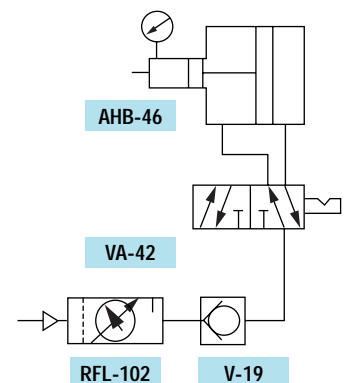
Linear cylinders

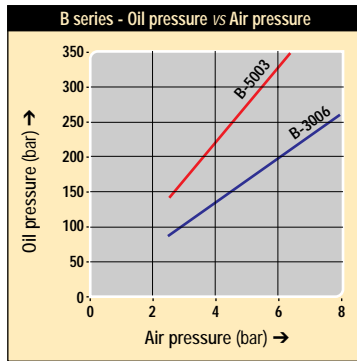
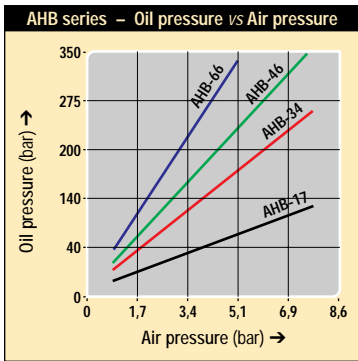
Power sources



i Hydraulic system schematics

Complete power systems eliminate guesswork of selecting valves and other system components. Plug in your 1 to 8 bar shop air line and connect your hydraulic components for a total system.





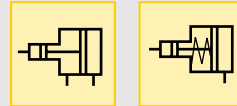
Ratio: 1:16 - 1:64

Pressure: 110 - 350 bar

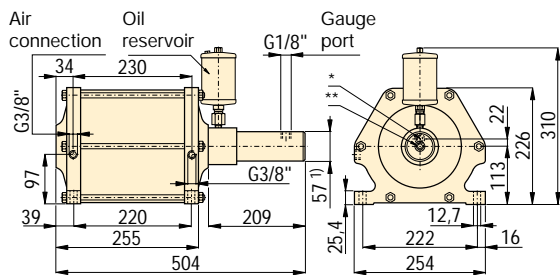
Oil flow: 60-295 cm³/stroke

Air: 27-64,1 dm³/cycle

- (E)** Multiplicadores
- (F)** Multiplificateurs
- (D)** Druckübersetzer

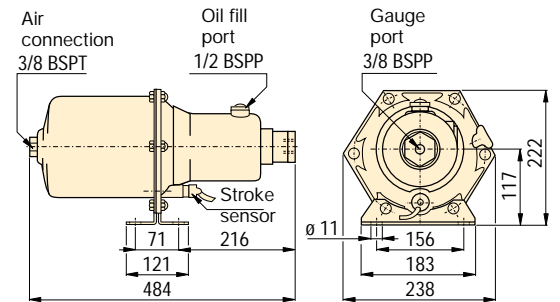


AHB series





- ¹⁾ Ø 71,9 mm for model AHB-17
- * Oil connection (G1/4") for model AHB-17
- ** Oil connection (G1/4") for model AHB-34, -46, -66
- *** Adaptor to 3/8" NPT air connection is included.


B series



Options

Air valves  [97](#)

HF-series Hydraulic oil  [108](#)


Fittings  [110](#)

Important

Boosters can provide high oil flow rates based on the volume of incoming air. Do not exceed the flow rate requirements of the components being used.

For vertical mounting of booster, an elbow fitting is recommended for the oil reservoir.

Product selection

Oil pressure bar	Oil volume per stroke cm ³	Air to oil pressure ratio	Model number	Air consumption per cycle ¹⁾ dm ³ at 6 bar air	Air piston diameter mm	Hydraulic piston diameter mm	Hydraulic stroke mm	Air operating pressure bar		
										at 5 bar air pressure
▼ AHB series										
83	110	295,0	1:16	AHB-17	62,6	203	51	145	1-8	18,8
175	235	139,3	1:34	AHB-34	63,6	203	35	145	1-8	16,8
240	315	100,0	1:46	AHB-46	63,9	203	30	145	1-8	16,4
330	-	73,7	1:64	AHB-66	64,1	203	25	145	1-5	16,0
▼ B series										
155	210	101,6	1:30	B-3006	27	180	31	132	3-9	14,0
260	350	60,6	1:50	B-5003	27	180	24	132	3-9	14,0

¹⁾ One cycle = advance + retract stroke.
Note: Seal material: Buna-N, Polyurethane.

Power sources
Valves
System components
Yellow pages

Oil/oil intensifiers

Shown: PID-402



Swing cylinders
Work supports

Linear cylinders

Power sources

► PID series

When hydraulic pressure from an existing power source is limited, Enerpac oil-to-oil intensifiers serve to increase output pressure to satisfy the required application.

■ PID-Series intensifier utilizes low pressure machine hydraulics to power clamping cylinders.



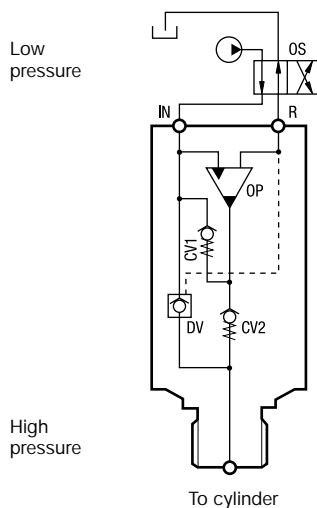
High flow units intensify low inlet oil pressure to high outlet pressure

- Internal bypass valving enables high output flow rates
- Wide range of intensification ratios allows for adapting to various operating pressure requirements
- Compact and self-contained design allows for ease of installation
- Includes dump valve, eliminates the need for an external pilot check valve
- Select fit of all internal components provides long operating life

🔍 Intensifier principle

- When oil is supplied to the inlet (IN) port it flows freely past the check valves (CV) and the dump valve to the cylinder and advances it.
- As the inlet pressure increases the oscillating pump (OP) automatically increases the outlet pressure by the chosen intensification.
- Once the maximum pressure is reached, the pump frequency lowers and balances at the maximum pressure.
- Free flow from the cylinder to tank occurs when the directional control valve is switched to supply the R-port.
- A 10 micron filtration is essential in the supply circuit to ensure trouble free operation (see options).

PID series



🛒 Product selection

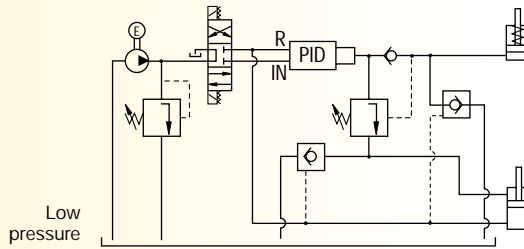
Maximum output pressure	Pressure intensification ratio	Maximum input flow	Maximum output flow	Model number	Inlet pressure range	🏋️
bar		l/min	l/min	with dump valve	min. - max. bar	kg
640	1 : 3,2	15,0	2,5	PID-322	20 - 200	1,2
700	1 : 4,0	14,0	2,0	PID-402	20 - 175	1,2
700	1 : 5,0	14,0	1,6	PID-502	20 - 140	1,2
700	1 : 6,6	13,0	1,3	PID-662	20 - 106	1,2



i System set-up information

With dump valve (PID models)

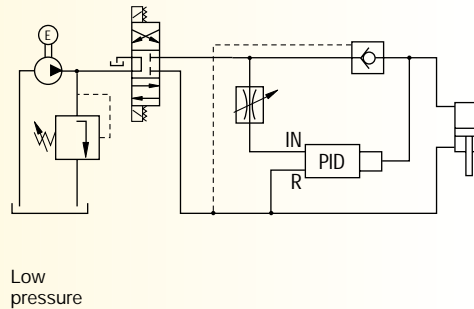
The intensifier with the dump valve is used to achieve high pressure on the advance side of a double-acting cylinder.



With external dump valve

In a circulating system where the pump's oil flow is higher than the maximum inlet oil flow of the intensifier, an external check valve and flow control valve reduces the pump's oil flow.

This application can be set up when machines are equipped with low pressure hydraulics but the pressure to clamp the workpiece must be higher.



Ratio: 1 : 3,2 - 1 : 6,6


Flow: 1,3 - 2,5 l/min


Pressure: 65 - 700 bar


- E** Multiplicadores
- F** Multiplicateurs
- D** Öl-Öl Druckübersetzer



i Options

FL-series, High pressure filters  [109](#)

Directional valves  [88](#)

FZ-series Fittings  [110](#)

PID models with dump valve provide an economical means of relieving pressure from the system.

Can be panel mounted into machine (M24x1,5 thread).

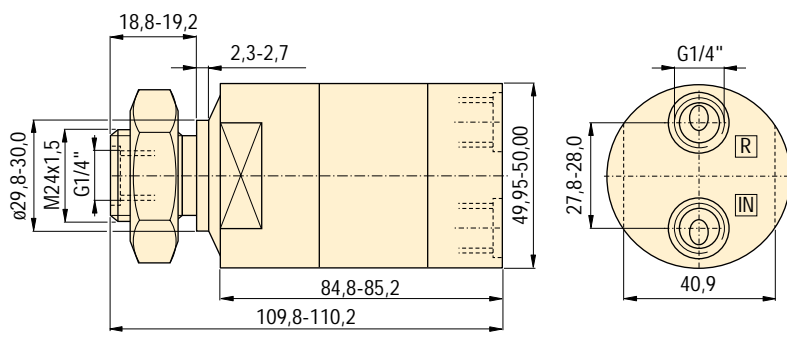
! Important

Do not exceed maximum allowable inlet pressure.

10 micron inlet filtration is essential to ensure trouble-free operation.

A Product dimensions in mm []

PID Serie



Power sources
Valves
System components
Yellow pages