

# VALVE RANGE





# POCLAIN HYDRAULICS

## SOLUTIONS FOR THE MOST DEMANDING MARKETS

Poclain hydraulics specializes in the design, manufacturing and marketing of hydrostatic transmissions.

Our internationally recognized expertise allows us to expand on highly diversified markets such as the construction, agricultural, public works, material handling, industrial, environment and on-road markets. Poclain hydraulics' development is driven by our innovative spirit and our ability to anticipate the needs of a wide range of cutting edge applications.

- > Construction
- > Agricultural
- > Mining
- > Forestry
- > Environment
- > Material handling
- > Industry
- > Marine
- > On-Road
- > Etc





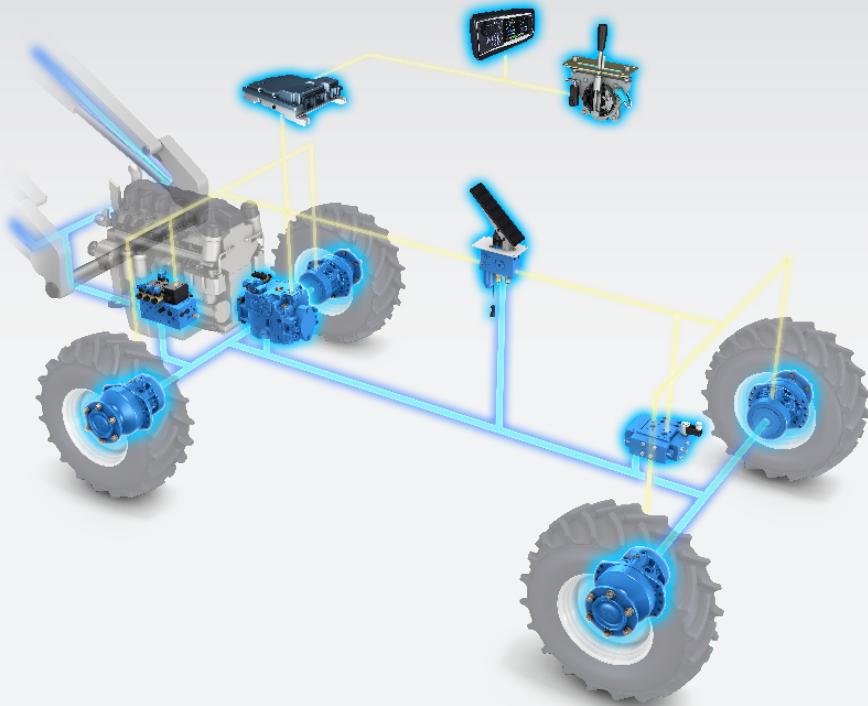
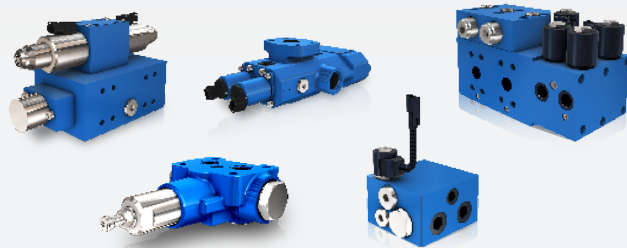
# Hydraulic Valves for open and closed loops

## DESIGNED FOR HYDROSTATIC TRANSMISSIONS

**POWER  
TRANSMISSION  
VALVES**

- Anti-Skidding Valves
- Flow Dividers
- Freewheeling Valves
- Exchanges Valves
- Selector Valves
- Pressure Reducers

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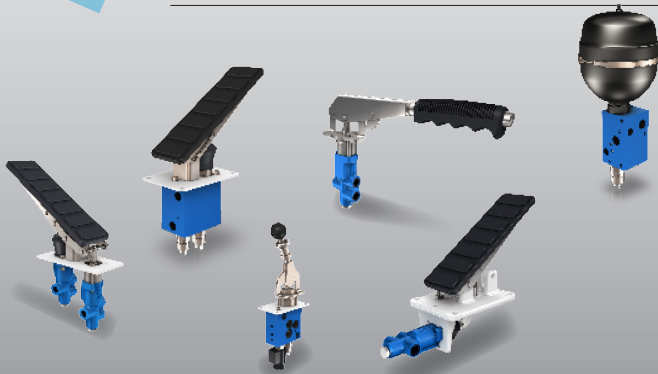


## VARIOUS BRAKING FUNCTIONS

**VB  
VFR**

- Emergency and Parking Brake Valves
- Service Brake Valves
- Accumulator Charging Valves
- Service Brake and Accumulator Charging Valves
- Service Brake and Inching Valves
- Parking, Service Brake and Accumulator charging Valves
- Steering Assist Brake Valves
- Tractors and Trailer Brake Valves

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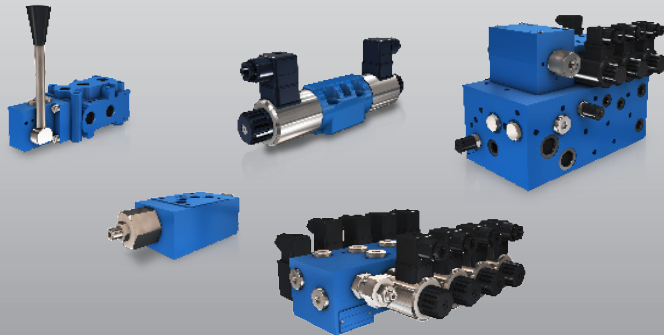


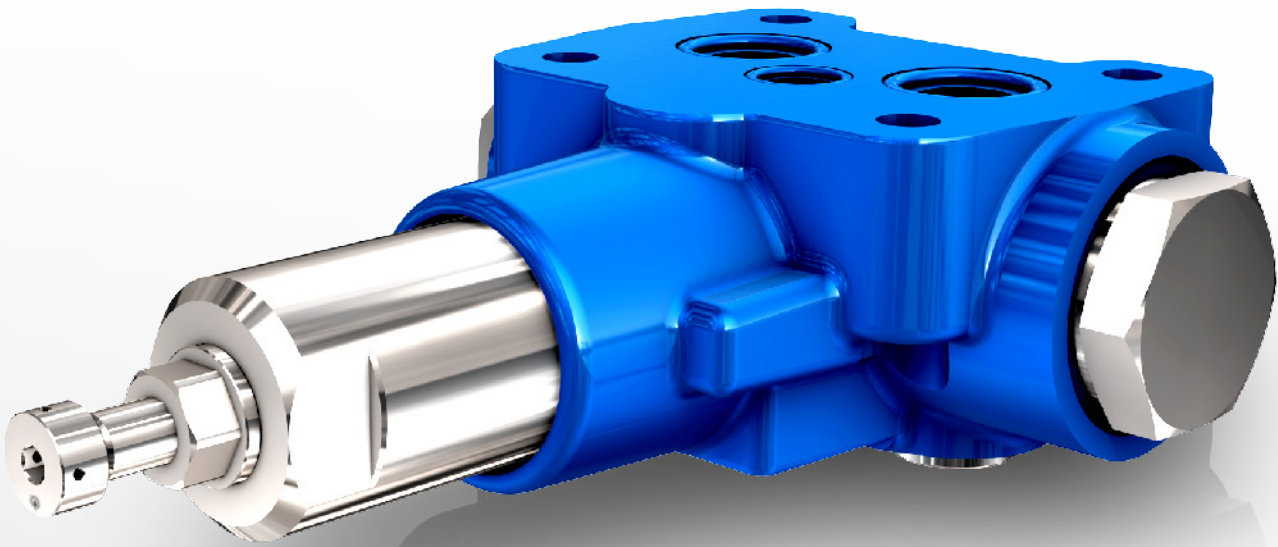
## A LARGE RANGE OF FUNCTIONS

**OPEN  
LOOP  
VALVES**

- Directional Control Valves
- Check Valves
- Pressure Control Valves
- Flow Control Valves

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**DESIGNED FOR HYDROSTATIC TRANSMISSIONS**  
**SIZED TO OPERATE AT HIGH PRESSURE AND HIGH FLOW**



**POWER  
TRANSMISSION  
VALVES**

- Anti-skidding valves
- Flow dividers
- Freewheeling valves
- Exchange valves
- Selector valves
- Pressure Reducers




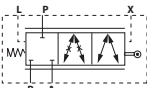

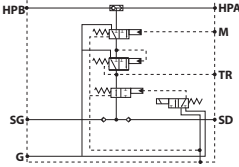
Anti-skidding valves

To control wheel slippage of hydrostatic self-propelled machines in rough terrain conditions, Poclain Hydraulics has developed two solutions that allow good traction control and maintain outstanding vehicle gradeability. The benefits are:

- synchronization of wheel speed to avoid soil damage
- optimized machine performance and stability
- reduced fuel consumption, and
- increased tire life (reduced wear)


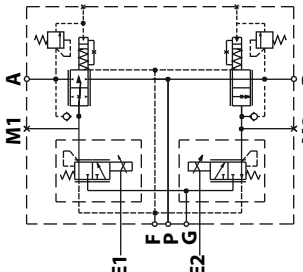

Twin-Lock™ valves

Twin-Lock™ is a unique proactive hydraulic traction control that automatically transfers torque to the wheels with the greatest ground adhesion. Since it eliminates the need for flow dividers, it dramatically reduces the heat generation and horsepower loss of conventional traction control systems. Twin-Lock™ operate through a unique combination of serial and parallel connection between wheel motors. The Twin-Lock™ valves prevent excessive pressure build-up in the serial lines, for instance when steering.

		Weight	Max. operating pressure	Max. flow	Operation	Connections*	Hydraulic schematics
		kg [lb]	bar [PSI]	L/min [GPM]			
VDP		3,3 [7.3]	450 [6,526]	26 - 50 [7 - 13]	Mechanical	Metric	
PR-TL-SV		9,5 [20.9]	450 [6,526]	30 - 50 [7.9 - 13]	Hydraulic	Metric	

SmartDrive™ Off-Road valves

SmartDrive™ Off Road is an electronically managed traction control, which operates to restrict flow only when slippage is detected, by using wheel speed sensors for splippage detection and proportional valves for flow throttle. Entirely programmable, the system easily accommodates varying pump displacements and vehicle steering geometry to offer optimal performance. SmartDrive™ Off Road can be installed by OEMs on production vehicles or offered as a conversion kit (Poclain Hydraulics motors just need to be eqipped with a pre-disposition for a speed sensor).

		Weight	Voltage	Max. operating pressure	Max. restricted flow	Connections*	Hydraulic schematics
		kg [lb]		bar [PSI]	L/min [GPM]		
VMA In-line model		7,2 [15.9]	12 V DC or 24 V DC	450 [6,526]	20 [5.2] or 50 [13.2]	Metric	
VMA Flanged model		11,9 [26.2]					

\*Connecting dimensions: Metric = ISO 9974; Gas = ISO 1179; UNF = ISO 11926-1, CETOP = ISO 4401

ANTI-SKIDDING SYSTEMS

Increase the off-road capability of your machines

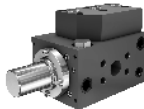


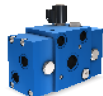
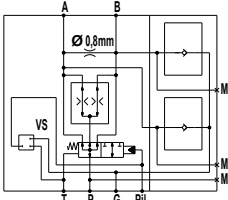
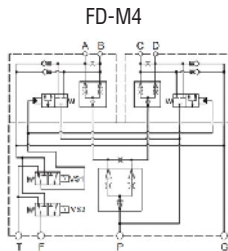
Wheel adherence is a critical factor with off road vehicles. Lose adequate wheel contact with the ground and you can lose control of your machine, put it temporarily out of service, cause premature tire wear, dramatically increase fuel consumption or churn up the site. Poclain Hydraulics, has designed and developed systems to increase the performance of your machine on difficult ground conditions and steep gradients.

 [Twin-Lock system > Page 142](#)  
[SD-CT Off-Road system > Page 144](#)



Flow dividers

Flow divider controls the speed between wheels of the same axle or between different axles by dividing or combining the flow. The flow divider is equipped with an electric or hydraulic controlled by-pass and can be used in open or closed loop circuits.

HIGH PERFORMANCE											
	FD-H2-1			FD-H2-2			FD-M2			FD-M4	
Weight	Number of outlets	Division Ratio**	Max. operating pressure	Max. by-pass flow (ratio 50/50)	By-pass control	Connections*	Hydraulic schematics				
kg [lb]		(% of max. flow)	bar [PSI]	L/min [GPM]							
FD-H2-1	14,2 [31.3]	2	50-50 60-40 70-30 80-20	500 [7,252]	200 [52.8]	Hydraulic or Electrical	BSPP, UNF				
FD-H2-2					300 [79.3]						
FD-M2	7,9 [17.4]	2	50-50 70-30 60-40	420 [6,000]	150 [39.6]	Hydraulic or Electrical	UNF BSPP				
FD-M3	13,0 [26.6]	3	33-33-33	350 [5,075]	150 [39.6]	Electrical					
FD-M4	21 [46.3]	4	25-25-25-25 30-30-20-20 33,5-33,5-16,5-16,5	420 [6,000]	150 [39.6]						

\*Connecting dimensions: Metric = ISO 9974; Gas = ISO 1179; UNF = ISO 11926-1, CETOP = ISO 4401

\*\* Others ratio are available on-demand



Freewheeling valves

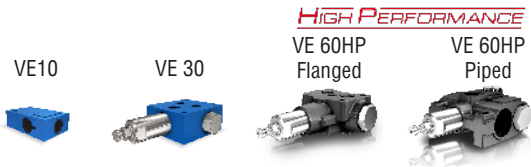
In an assist drive circuit, hydraulics motors are engaged when traction is needed, for instance, in rough terrain condition (work mode). At high speed (road mode) when traction condition are good, motors can be disengaged. The freewheeling valve connects the high pressure ports of the motor to tank and allows pistons to stay retracted inside the cylinder-block: the motor is then freewheeled. A pump by-pass option is of interest if the pump is only dedicated to the assist drive function.



	Max. Weight	Max. operating pressure	Max.flow	Operation	Connections*	Hydraulic schematics	
	kg [lb]	bar [PSI]	L/min [GPM]			With pump by-pass	Without pump by-pass
VDF H15	19,1 [42.1]	450 [6,526]	120 [31.6]	Electro-hydraulic 12-24 V DC	Metric		
VDF H25	39,3 [86.6]	450 [6,526]	300 [79]	Electro-hydraulic 12-24 V DC	Flange		
VDF H25 with remote pilot valve							

Exchange valves

Our very compact valve bleed hot oil from the low pressure side of a hydrostatic transmission circuit to be cooled, filtered or used as a source of oil for flushing pump and motor cases. For all VE (except VE10), exchange pressure setting can be tuned by customer.



	Weight	Max. operating pressure	Max.exchange flow	Pressure relief setting	High pressure relief setting	Connections*		Hydraulic schematics
	kg [lb]	bar [PSI]	L/min [GPM]	bar [PSI]	bar [PSI]	Piped	Flanged	
VE 10	1,1 [2,4]	450 [6,526]	10 [2.64]	18 [261] or 20 [290] or 22 [319]		●		
VE 30	1,5 [3.3]	500 [7,252]	30 [7.9]	12 to 18 [174 to 261] 18 to 24 [261 to 348] 24 to 30 [348 to 435]		●	●	
VE 60 HP	2,4 [5.3] Flanged 3,2 [7.1] Piped	500 [7,252]	60 [15.9]	12 to 18 [174 to 261] 18 to 30 [261 to 435]		●	●	
VES 60	7,3 [16.1]	450 [6,526]	60 [15.9]	12 to 18 [174 to 261] 18 to 30 [261 to 435]	Up to 420 [6,091] (Factory setting)	●	●	

Selector valves

- Two position flow directional control valve
- Circuit isolation
- High flow bypass, very high pressure capability
- Tool selection

	Weight	Max. operating pressure	Max.flow	Operation	Hydraulic schematics	3V2H20
	kg [lb]	bar [PSI]	L/min [GPM]			
3V2H20	8.5 [18.7]	450 [6,526]	170 [45]	Hydraulic 12-24 V DC		
3V2H25	8.5 [18.7]	450 [6,526]	300 [79]	Hydraulic		

Pressure Reducers

They are used to limit the pressure in motor brake line or in auxiliary functions.

	Type of setting	Weight	Pressure setting range	Max. operating pressure	Max.flow	Hydraulic schematics	
		kg [lb]	bar [PSI]	bar [PSI]	L/min [GPM]		
PR3-...-S	Fix	0.7 [1.54]	10 to 120 [145 to 1,740]	250 [3,626]	30 [7.92]		
PR3-...-V	Variable						

\*Connecting dimensions: Metric = ISO 9974; Gas = ISO 1179; UNF = ISO 11926-1, CETOP = ISO 4401

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ADDIDRIVE™

On-Demand all-wheel drive for truck

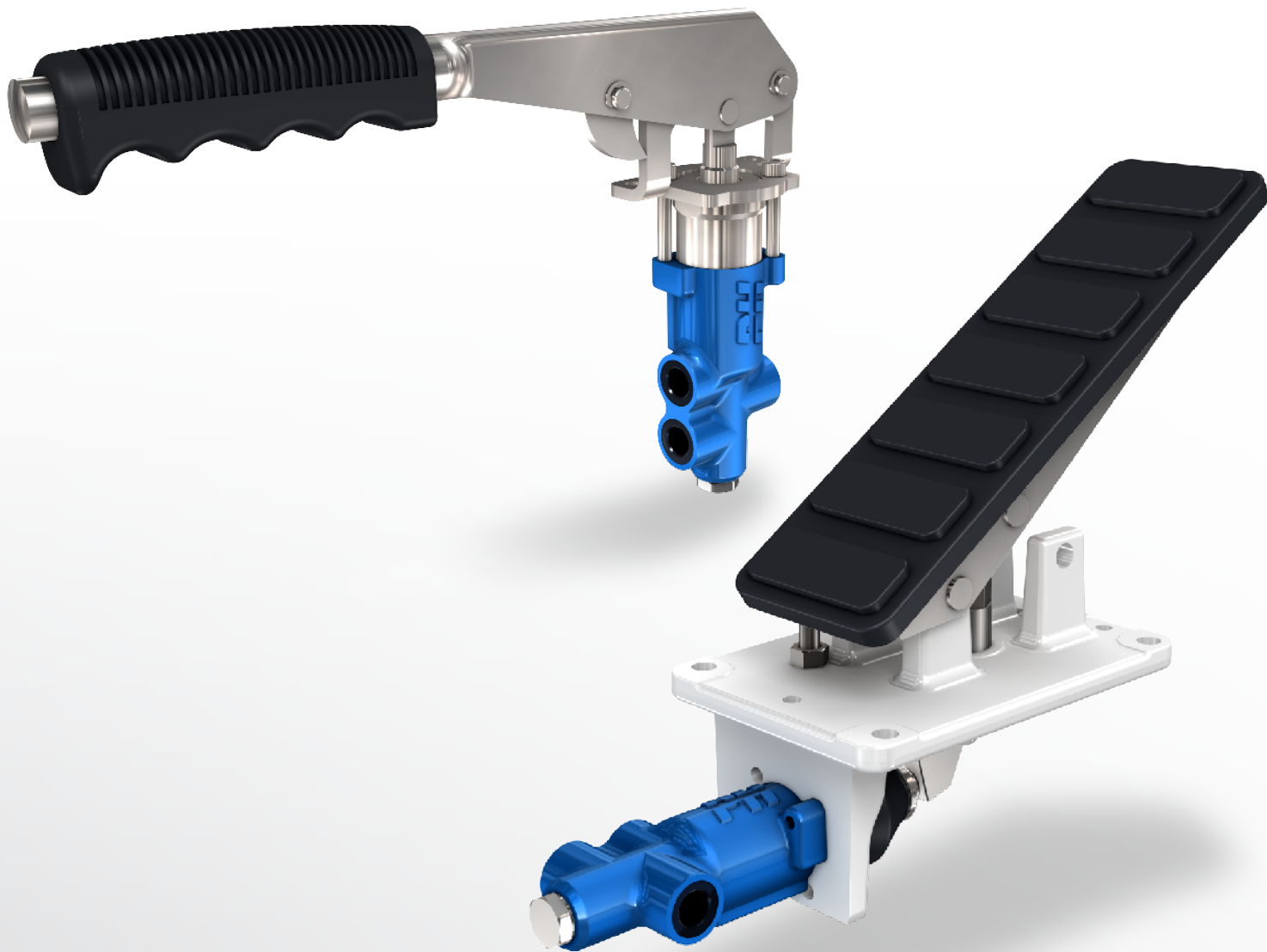
AddiDrive™ system is an additional hydrostatic transmission, which offers a better mobility for trucks in difficult driving conditions such as mud, snow, sand, and slopes downhill or uphill.

It consists of a hydraulic transmission in addition to the standard mechanical transmission which automatically transfers torque to a hydraulically driven axle, only when a complement of traction is needed.

This hydraulic assist drive fitted on the front or rear axle is an energy efficient alternative to mechanical all-wheel drive because no drag losses take place when Addidrive is deactivated.





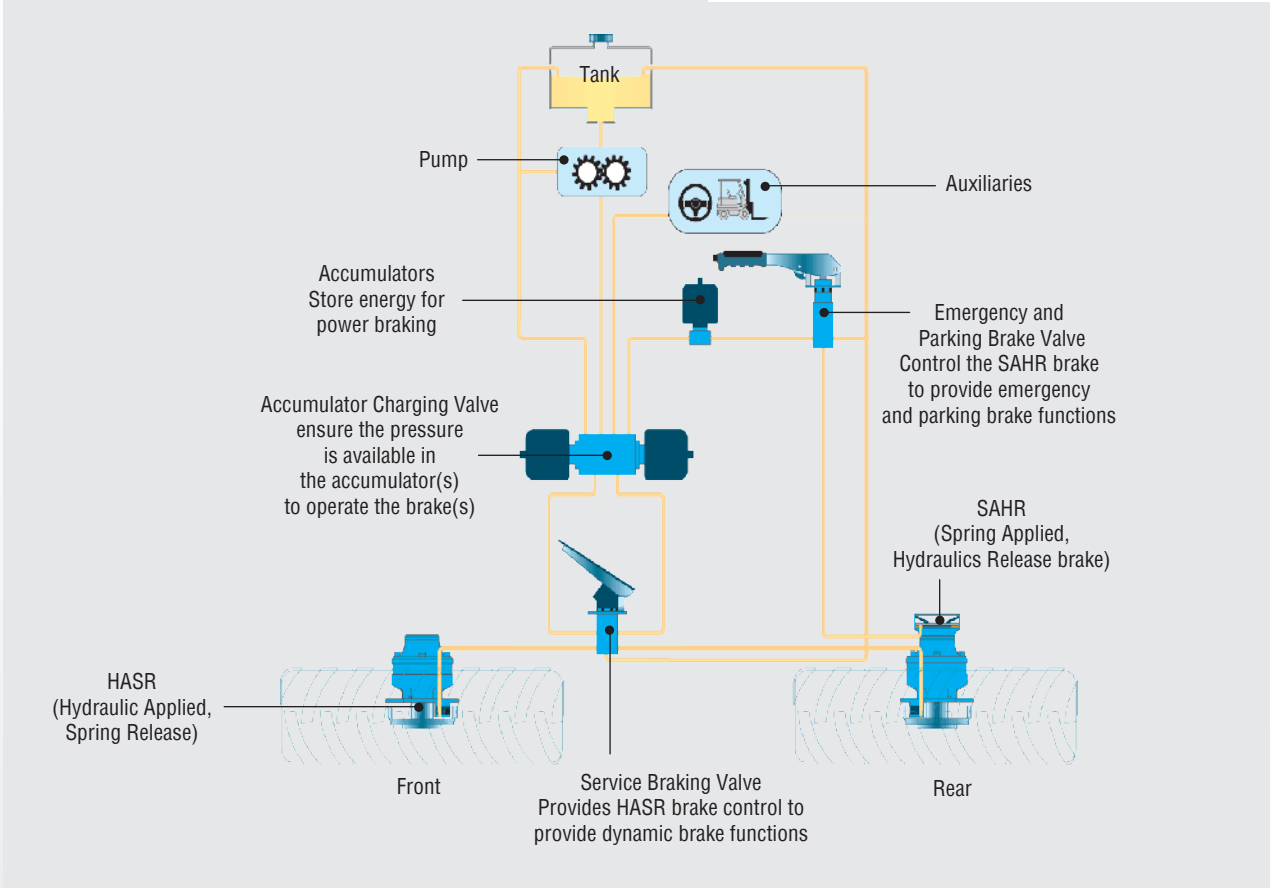


# VARIOUS BRAKING FUNCTIONS FOR ALL TYPES OF HYDRAULIC CIRCUITS

## Advantages of hydraulic brake valves (power braking type) are numerous

- No need for an additional supply source (air compressor)
- Valves are fed by the hydraulic source on the tractor
- Hydraulic accumulators are smaller than air reservoirs
- Faster response time thanks to available reserve of energy in accumulators
- Fewer risks of system contamination and no need for additional filters
- Comfortable and progressive feel

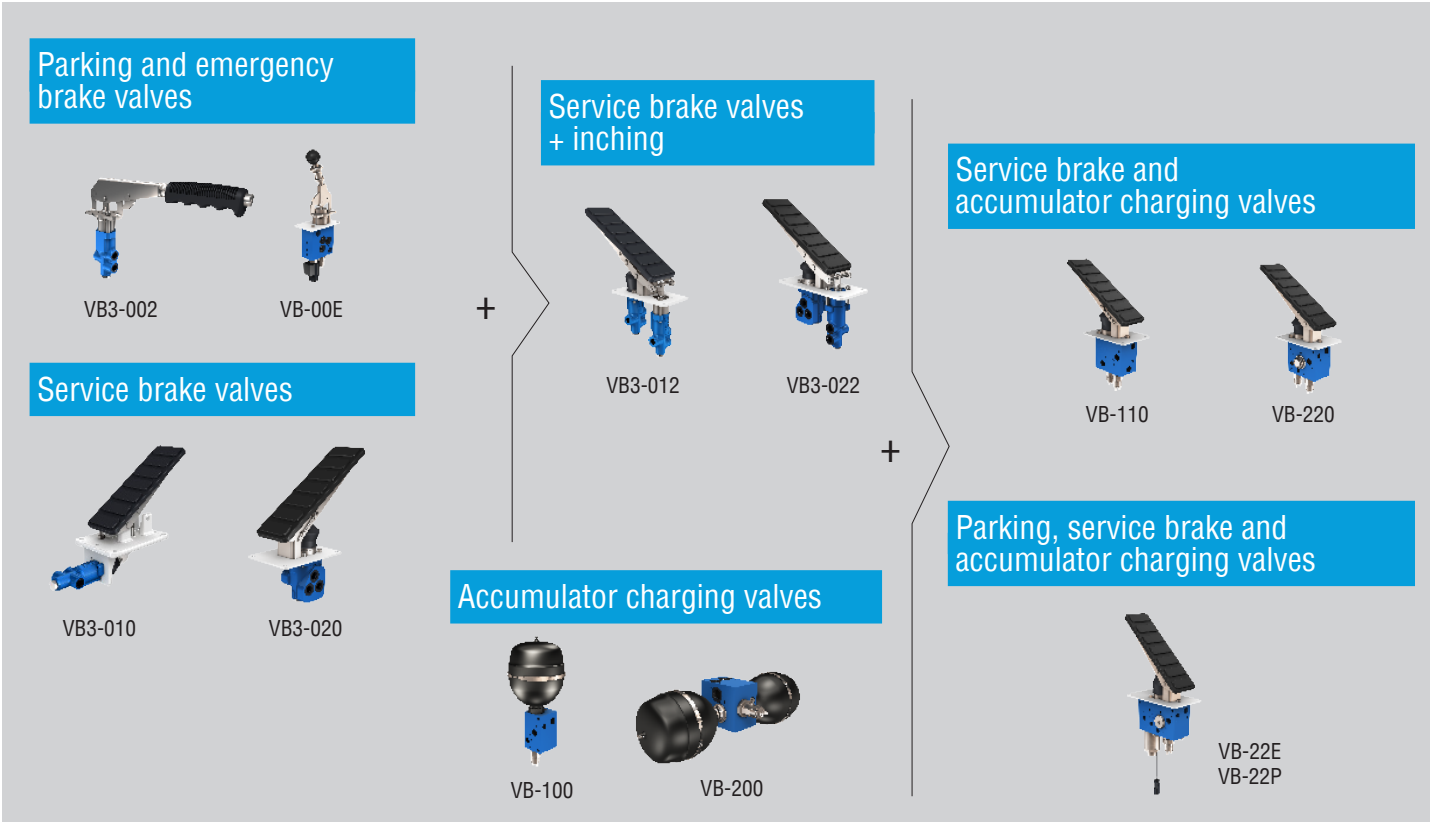
The Poclain Hydraulics braking systems can be adapted to handle your specific braking requirements.




**VB**  
**VFR**

- Parking and emergency brake valves
- Service brake valves
- Service brake valves + inching
- Accumulator charging valves
- Service brake and accumulator charging valves
- Parking, service brake and accumulator charging valves





Parking and emergency brake valves

	Weight	Brake operating pressure	Circuit	Control	Actuator
	kg [lb]	bar [PSI]			
VB3-002	0,9 [2.0]	10 - 150 [145 - 2,175]	Single-circuit	Reverse modulating Hydraulic	Horizontal / Vertical lever Floor / Wall mount pedal
VB-00E	3,0 [6.6]	10 - 100 [145 - 1,740]	Single-circuit	Reverse modulating Electro-hydraulic	Horizontal / Vertical lever Wall mount pedal
 VB-00M	10 [22.0]	30 - 120 [435 - 1,740]	Single/Dual-circuit (EU 2015/68 regulation)	On-Off	Electrical and Manual

Service brake valves and inching

	Weight	Brake operating pressure	Brake type	Circuit	Control	Actuator
	kg [lb]	bar [PSI]				
VB3-010	1,0 [2.2]	20 - 150 [290 - 2,175]	Service brake	Single-circuit	Modulating Mechanical	Floor / Wall mount pedal
VB3-020	2,0 [4.4]	20 - 150 [290 - 2,175]		Dual-circuit	Modulating Mechanical	Floor / Wall mount pedal
VB3-012	3,5 [7.7]	20 - 150 [290 - 2,175]	Service brake and inching	Single-circuit	Combined VB3-002 + VB3-010	Floor mount pedal
VB3-022	4,1 [9.0]	20 - 150 [290 - 2,175]		Dual-circuit	Combined VB3-002 + VB3-020	Floor mount pedal

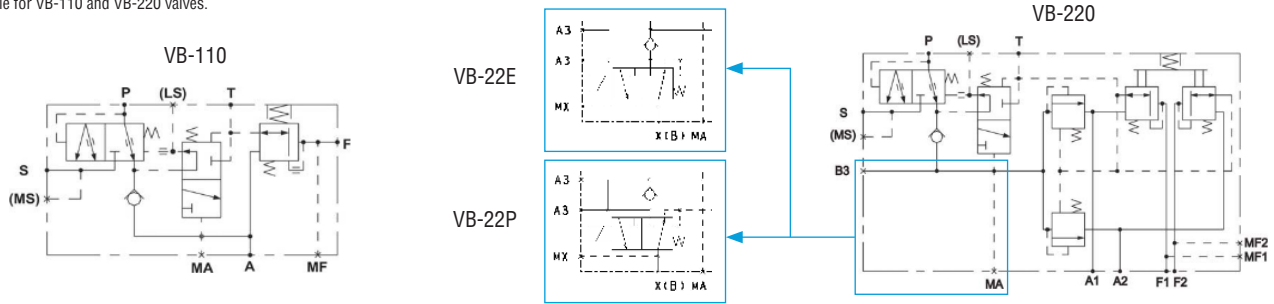
Accumulator charging valves

				Cut-in/ cut-out pressure range	Flow rate	
					To auxiliary	To accumulator
	kg [lb]	Circuit	Control		bar [PSI]	l/min [GPM]
VB-100	2,2 [4.8]	Single-circuit	Hydraulic	110 / 130 [1,595 / 1,888]	45 - 120 [11.9 - 31.7]	2.75 - 15 [0.73 - 3.96]
				120 / 140 [1,740 / 2,031]		
				135 / 160 [1,958 / 2,321]		
VB-200	4.0 [8.8]	Dual-circuit	Hydraulic	160 / 190 [2,321 / 2,756]		
				170 / 200 [2,466 / 2,901]		
				180 / 210 [2,611 / 3,046]		

Parking, service brake and accumulator charging valves

				Cut-in/ cut-out pressure range	Brake operating pressure	Flow rate			
	Weight		Circuit			Control			Actuator
	kg [lb]						To auxiliary	To accumulator	
	kg [lb]	Circuit	Control	bar [PSI]	bar [PSI]	l/min [GPM]	l/min [GPM]		
VB-110	5,0 [11.0]	Single-circuit	Hydraulic	110 / 130 [1,595 / 1,888]	30 - 120 [435 - 1,740]	45 - 120 [11.9 - 31.7]	2.75 - 15 [0.73 - 3.96]	Floor mount / Lockable pedal	
VB-220	6.0 [13.2]	Dual-circuit	Hydraulic	120 / 140 [1,740 / 2,031]					
				135 / 160 [1,958 / 2,321]					
VB-22E	8.0 [17.6]	Dual-circuit + parking brake	Electro hydraulic	160 / 190 [2,321 / 2,756]					
				170 / 200 [2,466 / 2,901]					
VB-22P			Proportional Electro hydraulic	180 / 210 [2,611 / 3,046]					
			205 / 240 [2,973 / 3,481]*						

\* Only available for VB-110 and VB-220 valves.



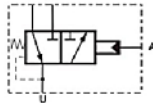
Relay valves

- Large volume brake actuation
- Long braking lines
- Fast tank return
- Remote electric actuation of service brake

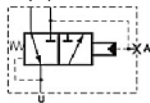


	Weight	Max. brake operating pressure	Max. flow rate to brake	Circuit	Control
	kg [lb]	bar [PSI]	l/min [GPM]		
VS	2,5 [5.5]	210 [3,045]	70 [18.50]	Single-circuit	Hydraulic

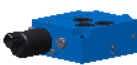
VS as Relay valve



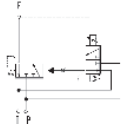
VS as Quick return valve



Electrically piloted brake valve



	Weight	Brake operating pressure	Brake type	Pressure control
	kg [lb]	bar [PSI]		
VBR-010	2,5 [5.5]	10 - 150 [145 - 2,175]	Service brake	Proportional





## TRACTOR AND TRAILER BRAKE VALVES RANGE

### Combination of hydrostatic and mechanical friction brake

Poclain Hydraulics has developed braking system to both enhance hydrostatic braking performance and add synchronized control for combinations of both hydrostatic and mechanical brake systems on a single vehicle.

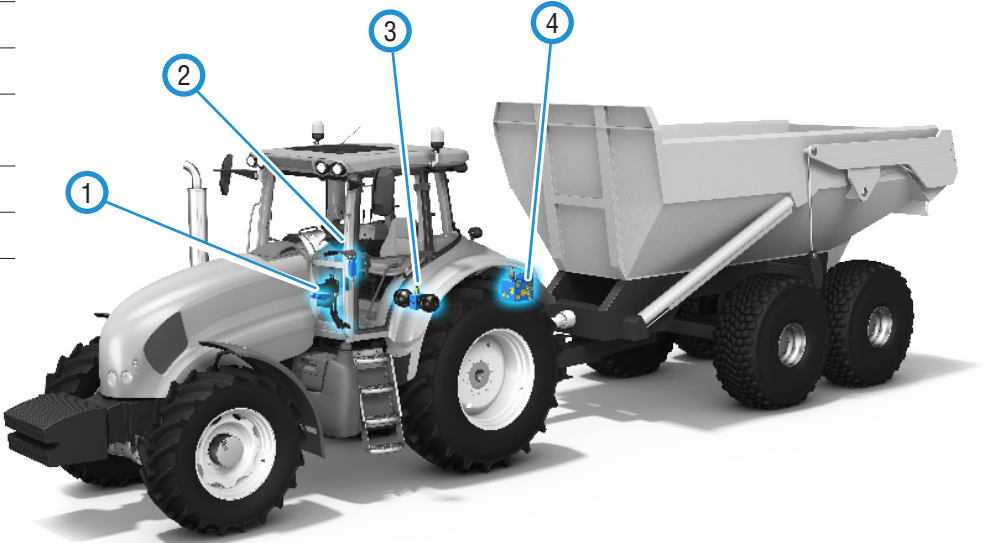
This product range is designed to be easily integrated to an existing braking circuit.

Valves compatibility and modularity

Whether you want to fit Hydraulic or Electro-hydraulic brake valves on your tractor/trailer, you can choose any of our products. It is possible to mix and match hydraulic and electro-hydraulic components.

Poclain Hydraulics can design specific brake valves to answer your needs regarding space constraints, function integration, and/or develop specific performance characteristics.

	Hydraulic solution	Electro-hydraulic solution
1	Steering Assist Valves	VB3-0B0 / VB3-0D0
2	Parking and Emergency Brake Valves	VB3-002 VB-00E
3	Accumulator Charging Valves	VB-100 / VB-200 -
4	Trailer Brake Valves	VFR-0HX VFR-0EX / VBT



Steering assist valves

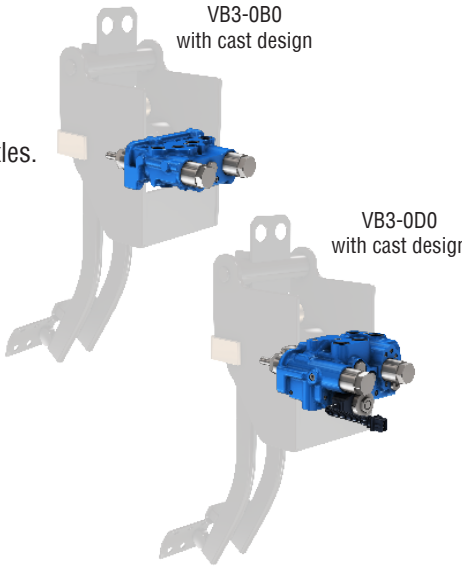
The VB3-0B0 and VB3-0D0 valves feature a double brake pedal (left and right) and allows:

- Steering assist braking (right/left) for field work (U-turn capability by braking the inner rear wheel) with two circuit selectors each associated with one of the pedals.
- Service braking when both pedals are mechanically linked (road mode).

The VB3-0D0 valve differences vs VB3-0B0:

- VB3-0D0 is a double circuit steering assist brake valve, acting on brake in rear and front axles.
- VB3-0D0 always allows independent braking in case of circuit leakage on one of the axles.

		Weight	Max. brake operating pressure	Service brake pressure
		kg [lb]	bar [PSI]	bar [PSI]
VB3-0B0	Steering assist brake (Single circuit)	7,0 [15.4]	250 [3,626]	150 [2,176]
VB3-0D0	Steering assist brake (Dual circuit) (EU 2015/68 regulation)	7,0 [15.4]	250 [3,626]	150 [2,176]



Parking and emergency brake valves



	Weight	Brake operating pressure	Circuit	Control	Actuator
	kg [lb]	bar [PSI]			
VB 00E	3,4 [7.5]	10 - 150 [145 - 2,176]	Single (EU 2015/68 regulation)	Reverse modulating Electro-hydraulic	Horizontal / Vertical lever Floor/ wall mount pedal

Trailer brake valves

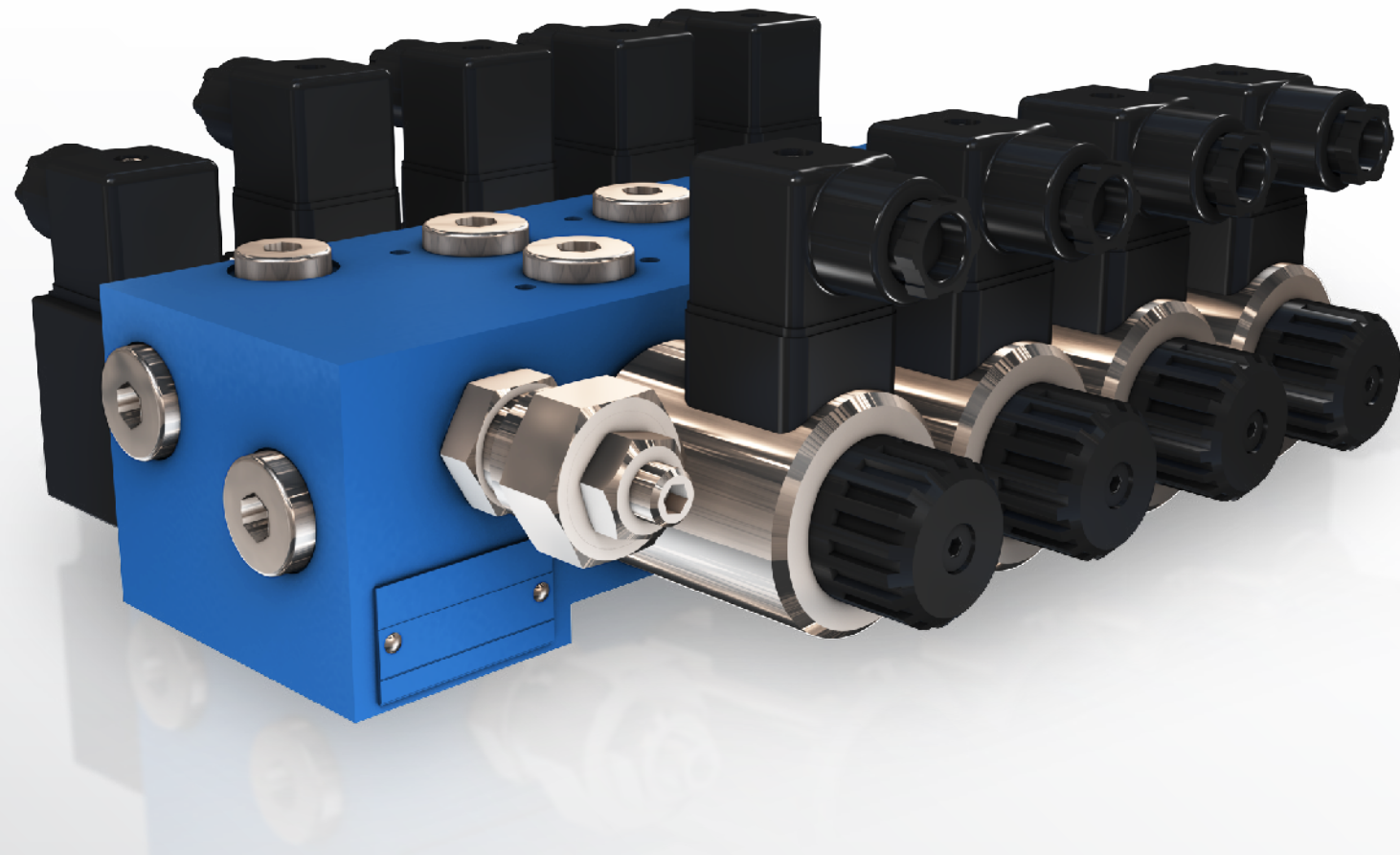
The trailer brake valves allow to apply the trailer brake pressure based on the tractor brake pressure.



VBT two lines trailer hydraulic brake system: negative emergency brake on supplementary line and positive service brake on control line.

			Weight	Flow rate	
			kg [lb]	To brake	To auxiliary
		Circuit		l/min [GPM]	l/min [GPM]
VFR-0HX	Trailer service brake hydraulically piloted	Single	6,5 [14.3]	50 [13]	200 [53]
VFR-0EX	Trailer service brake electronically piloted	Single	6,5 [14.3]		
VBT	Trailer service brake electronically piloted	Dual (EU 2015/68 regulation)	17,0 [37.5]	20 [5.3]	100 [26.5]





**A LARGE RANGE OF FUNCTIONS  
TO ANSWER EVERY NEED**



# OPEN LOOP VALVES

- Directional control valves
- Check valves
- Pressure control valves
- Flow control valves

Directional control valves

CETOP valves

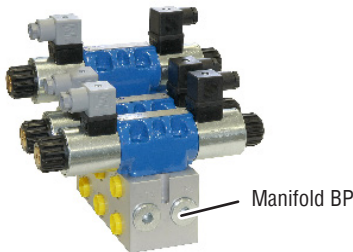
Valves for sub-plate connection to ISO 4401



	Actuation	Size (NG)			Max. operating pressure	Flow rate	Modular Mounting*	Weight	Hydraulic schematics (examples)
		6	10	16	bar [PSI]	l/min [GPM]		kg [lb]	
4/2 and 4/3									
KV	Hydraulic	●			350 [5,077]	80 [21.1]	CETOP	1,4 [3.1]	
			●		350 [5,077]	130 [34.2]	CETOP	4,0 [8.8]	
KV	Mechanical	●			350 [5,077]	60 [15.8]	CETOP	2,0 [4.5]	
			●		350 [5,077]	100 [26.4]	CETOP	5,2 [11.5]	
KV (5KL)	Electrical	●			350 [5,077]	75 [19.8]	CETOP	2,2 [4.9]	
KV (5K0)	Electrical		●		350 [5,077]	120 [31.6]	CETOP	7,3 [16.1]	
KV (3K0)	Electrical	●			250 [3,626]	40 [10.5]	CETOP	1,8 [3.9]	
KV	Electrical			●	350 [5,077]	300 [79]	CETOP	13,1 [29.0]	
KVP proportional	Electrical	●			350 [5,077]	30 [7.9]	CETOP	2,2 [4.9]	
PKV-6	Indirect hydraulic	●			210 [3,046]	25 [6.6]	CETOP (Non modular)	2,6 [5.7]	
PKV-10	Indirect hydraulic		●		210 [3,046]	60 [15.8]	CETOP (Non modular)	3,2 [7.0]	

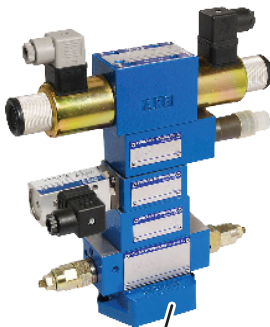
Manifolds for CETOP valves

	Size (NG)		Operating pressure	Flow rate	Connections*	Weight
	6	10	bar [PSI]	l/min [GPM]		kg [lb]
Manifold BP (max. 8 stations)	●		350 [5,077]	80 [21.1]	CETOP	2,3 to 41.2 [5.1 to 90.8]
		●	350 [5,077]	120 [31.6]	CETOP	



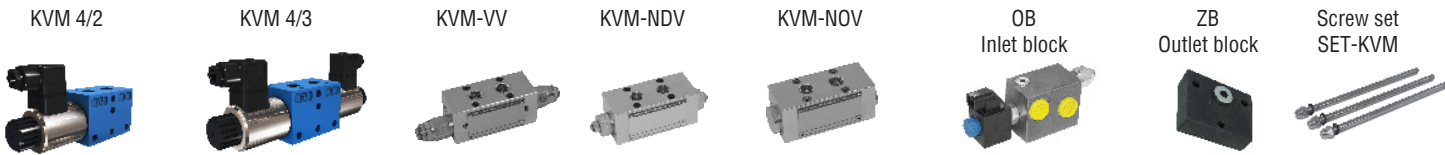
Subplates for CETOP valves and vertical stacking

	Size (NG)			Operating pressure	Flow rate	Connections*	Weight
	6	10	16	bar [PSI]	l/min [GPM]		kg [lb]
Subplates PP-KV (max.1 station)	●			350 [5,077]	300 [79.0]	CETOP	0,9 [2.0]
		●		350 [5,077]	300 [79.0]	CETOP	2,3 [5.1]
			●	350 [5,077]	300 [79.0]	CETOP	8,8 [19.4]



Subplates PP-KV

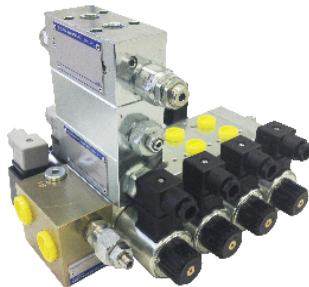
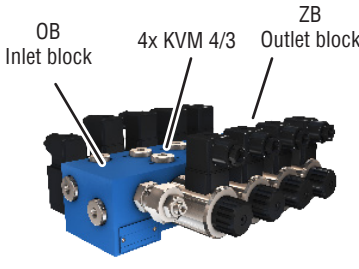
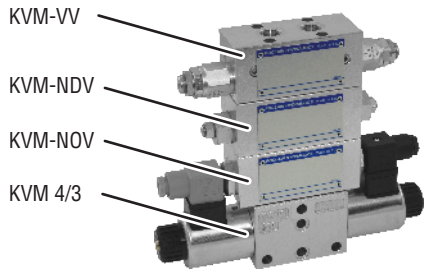
KVM valves for modular mounting



	Size (NG)	Max. operating pressure	Flow rate	Actuation	Modular Mounting*	Non modular in line connection	Weight	Hydraulic schematics (examples)
	6	bar [PSI]	l/min [GPM]				kg [lb]	
KVM-On/Off (4/2 and 4/3)	●	350 [5,077]	40 [10.5]	Electrical	Bankable	Metric, Gas, UNF	2,4 [5.3]	
KVM-P (Proportional) (4/2 and 4/3)	●	350 [5,077]	30 [7.9]	Electrical	Bankable	Metric, Gas, UNF	2,4 [5.3]	
KVM-LS (Load Sensing signal)	●	350 [5,077]	40 [10.5]	Electrical	Bankable	Metric, Gas, UNF	2,4 [5.3]	
KVM-VV (pressure relief valve)	●	350 [5,077]	40 [10.5]		Bankable		1,8 [4.0]	
KVM-NDV (Throttle with check valve)	●	350 [5,077]	40 [10.5]		Bankable		1,5 [3.3]	
KVM-NOV (Pilot operated check valve)	●	350 [5,077]	40 [10.5]		Bankable		1,4 [3.1]	
OB-Inlet block	●	350 [5,077]	40 [10.5]		Bankable	In line	1,2 to 4.5 [2.7 to 9.9]	
ZB-Outlet block	●	350 [5,077]	40 [10.5]		Bankable	In line	0,8 [1.8]	
Screw set SET-KVM	●							

Vertical stacking

Bankable mounting



\*Connecting dimensions: Metric = ISO 9974; Gas = ISO 1179; UNF = ISO 11926-1, CETOP = ISO 4401

\*Connecting dimensions: Metric = ISO 9974; Gas = ISO 1179; UNF = ISO 11926-1, CETOP = ISO 4401



6/2 selector valves

	Actuation	Size (NG)				Max. operating pressure	Flow rate	Non modular in line connection	Weight	Hydraulic schematics (examples)
		6	8	10	16	bar [PSI]	l/min [GPM]		kg [lb]	
KV	Hydraulic				●	450 [6,527]	300 [79.3]	SAE, UNF	16,8 [37.0]	
KV	Mechanical	●				350 [5,077]	60 [15.8]	Metric, Gas, UNF	2,4 [5.3]	
				●		350 [5,077]	120 [31.6]	Metric, Gas, UNF	5,3 [11.7]	
KV	Electrical	●				350 [5,077]	50 [13.2]	Metric, Gas, UNF	2,5 [5.5]	
			●			350 [5,077]	120 [31.6]	Metric, Gas, UNF	5,5 [12.1]	
					●	350 [5,077]	250 [65.8]	Gas, UNF	22 [48.5]	
KV6K2	Electrical		●			315 [4,569]*	50 [13.2]	Metric, Gas, UNF	2,5 [5.5]	
						315 [4,569]*	90 [23.8]	Metric, Gas, UNF	4,8 [10.6]	

\* 250 bar [3,626 PSI] without drain release and 315 bar [4,569 PSI] with drain release.

6/2 selector valves for modular mounting

	Actuation	Size (NG)			Max. operating pressure	Flow rate	Non modular in line connection	Weight	Hydraulic schematics (examples)
		6	8	10	bar [PSI]	l/min [GPM]		kg [lb]	
KVH	Electrical	●			315 [4,569]	50 [13.2]	Metric, Gas, UNF	2,7 [5.9]	
			●		350 [5,077]	90 [23.8]	Metric, Gas, UNF	3,8 [7.7]	
				●	315 [4,569]	120 [31.6]	Metric, Gas, UNF	5,5 [12.1]	

7/2 selector valves

The KV-7/2 valve is used as diverter between two hydraulic cylinders which are not operated simultaneously. This is the perfect solution for all applications where pressure peaks appear because of mechanical shocks acting on hydraulic cylinder(s).





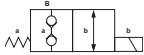
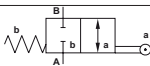


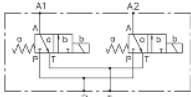
	Actuation	Size (NG)	Max. operating pressure	Flow rate	Non modular in line connection	Weight	Hydraulic schematics (examples)
		6	bar [PSI]	l/min [GPM]		kg [lb]	
KV-7/2	Electrical	●	350 [5,077]	50 [13.2]	Metric, Gas, BSPP	3,6 [7.9]	

\*Connecting dimensions: Metric = ISO 9974; Gas = ISO 1179; UNF = ISO 11926-1, CETOP = ISO 4401

8/3 selector valves

	Actuation	Size (NG)	Max. operating pressure	Flow rate	Non modular in line connection	Weight	Hydraulic schematics (examples)
		6	bar [PSI]	l/min [GPM]		kg [lb]	
KV	Electrical	●	250 [3,626]	50 [13.2]	Metric, Gas, UNF	3,8 [8.4]	

Piped assembly valves

Piped assembly valves		KVC-2/2			KVC-NV		KVC-3/2		KVC2-3/2	
										
	Actuation	Size (NG)			Max. operating pressure	Flow rate	Non modular in line connection	Weight	Hydraulic schematics (examples)	
		4	6	10	bar [PSI]	l/min [GPM]		kg [lb]		
2/2										
KV poppet	Electrical	●			210 [3 046]	30 [7.9]	Metric, Gas, UNF	2,2 [4.9]		
KVC	Mechanical	●			250 [3 626]	35 [9.2]	Metric, Gas, UNF	1,2 [2.6]		
KVC-NV	Mechanical	●			250 [3 626]	40 [10.5]	Metric, Gas, UNF	1,2 [2.6]		
3/2										
KVC	Electrical	●			160 [2 320]	16 [4.2]	Metric, Gas	1,6 [3.5]		
KVC	Electrical	●			350 [5 077]	100 [26.4]	Metric, Gas, UNF	7,1 [15.6]		
KVC2*	Electrical	●			160 [2 320]	16 [4.2]	Metric, Gas, UNF	3,5 [7.7]		

\* This valve is often used to control parking brake actuation and displacement switch of MS motors.

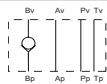
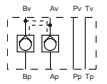
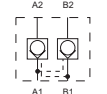
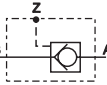
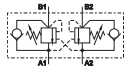
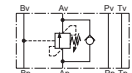
Dedicated valve for snow plough

The KV-7/3-6 valve has been designed especially for use on variable V-blade snow plows, it allows to switch between tilting each blade individually or both simultaneously. The integrated pressure relief valves prevent hydraulic circuit against pressure peeks and the hydraulic accumulator absorbs impact energy to return it back to the circuit through check valves.


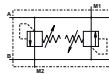

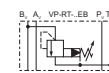
	Actuation	Size (NG)	Max. operating pressure	Flow rate	Non modular in line connection	Weight	Hydraulic schematics (examples)
		6	bar [PSI]	l/min [GPM]		kg [lb]	
KV-7/3	Electrical	●	350 [5,077]	50 [13.2]	Metric, Gas, BSPP	3,6 [7.9]	

\*Connecting dimensions: Metric = ISO 9974; Gas = ISO 1179; UNF = ISO 11926-1, CETOP = ISO 4401

Check valves







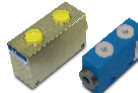

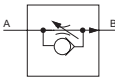

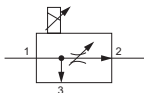
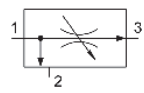

<div>VP-NVNOVBZV</div>							
Size (NG)		Max. operating pressure	Flow rate	Connections*	Weight	Hydraulic schematics	
6	10	bar [PSI]	l/min [GPM]		kg [lb]		
Direct operated valves							
VP-NV	●	350 [5 076]	50 [13.2]	CETOP	0,9 [1.9]		
	●	350 [5 076]	100 [26.4]	CETOP	2,8 [6.1]		
VP-NOV	●	350 [5 076]	60 [15.8]	CETOP	1,8 [3,9]		
	●	350 [5 076]	100 [26.4]	CETOP	3,5 [7.7]		
Pilot operated valves							
NOV-6D	●	350 [5 076]	60 [15.8]	in line Gas, UNF	1,5 [3.3]		
NOV-E	●	350 [5 076]	35 [9.2]	in line Gas, UNF	0,5 [1.1]		
	●	350 [5 076]	50 [13.2]		0.7 [1.4]		
Counterbalance piloted valves							
BZV	●	270 [3 916]	60 [15.8]	in line Metric, Gas, UNF	1,5 to 2,4 [3.3 to 5.3]		
VP-BZV	●	270 [3 916]	60 [15.8]	CETOP	1,8 [4.0]		

Pressure control valves


VVP					VP-RT			
Size (NG)			Max. operating pressure	Flow rate	Connections*	Operation	Weight	Hydraulic schematics
4	6	10	bar [PSI]	l/min [GPM]			kg [lb]	
VVP	●		400 [5 802]	50 [13.2]	Cartridge, in line	Direct	0,5 [1.1]	
		●	400 [5 802]	120 [31.7]			0,6 [1.3]	
VVB2	●		210 [3 046]	60 [15.9]	in line Metric, Gas, UNF	Direct	1,8 [4.1]	
RT	●		350 [5 076]	4 [1.0]	Cartridge	Direct	0,15 [0.3]	
	●		350 [5 076]	60 [15.8]		Pilot	0,15 [0.3]	
		●	350 [5 076]	100 [26.4]			0,18 [0.4]	
VP-RT	●		350 [5 076]	50 [13.2]	CETOP	Pilot	1,7 [3.8]	
		●	350 [5 076]	100 [26.4]			2,6 [5.7]	

\*Connecting dimensions: Metric = ISO 9974; Gas = ISO 1179; UNF = ISO 11926-1, CETOP = ISO 4401

Flow control valves

									
Size (NG)		Max. operating pressure	Flow rate	Connections*	Setting Method	Weight	Hydraulic schematics		
6	10	bar [PSI]	l/min [GPM]			kg [lb]			
Throttle/check valve									
VP-NDV	●	350 [5 076]	60 [15.8]	CETOP	Manual	1,4 [3.2]			
	●	350 [5 076]	100 [26.4]			3,3 [7.3]			
Pressure compensated flow control valves									
TVD	●	350 [5 076]	16 [4.2]	CETOP	Manual, Mechanical	1,6 [3.5]			
TVTC Proportional	●	350 [5 076]	50 [13.2]	in line Metric, Gas, UNF	Mechanical	3,0 [6.6]			
TVTP-P	●	210 [3 046]	50 to 90 [13.2 to 23.8]	Cartridge	Electric proportional	1,0 [2.2]			
	●	210 [3 046]	90 to 150 [23.8 to 39.6]	Cartridge	Electric proportional	1,0 [2.2]			
TVTP-P0	●	210 [3 046]	60 to 90 [15.9 to 23.8]	Cartridge	Electric proportional	1,0 [2.2]			
TVTP-B	●	350 [5 076]	60 to 90 [15.9 to 23.8]	Cartridge	Manual	1,0 [2.2]			
	●	350 [5 076]	90 to 150 [23.8 to 39.6]	Cartridge	Manual	1,0 [2.2]			
Flow dividers									
DTP	●	350 [5 076]	20 to 70 [5.3 to 18.5]	in line Metric, Gas, UNF		1,7 [3.8]			
	●	350 [5 076]				2,7 [5.9]			

PHAST PROGRAM

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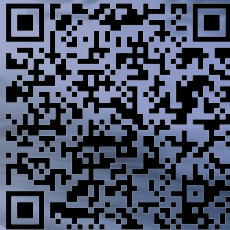
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- Up to 50 pieces for each part number delivery up to 4 weeks.

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Directional control valves	Bankable mounting	Vertical stacking	Check valves	Pressure control valves	Flow control valves
KV-6K/2-6 KV-6/2-6 KVC-3/2-10 KV-8/3-6 KVH-6/2 KV-4 Cetop KVC	KVM OB-KVM-6 ZB-KVM-6	KVM-VV-6 KVM-NDV-6 KVM-NOV-6	NOV VP-NDV VP-NOV	VP-RT	DTP TVTC TVTP





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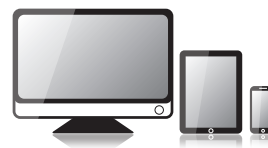


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