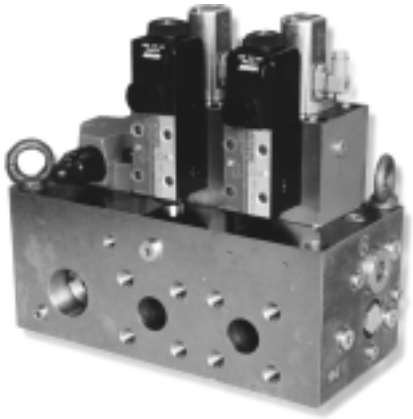
Vickers®

Guide to Mobile Hydraulics



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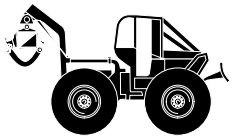



Systems capabilities designed to help you...

When hydraulic systems were first used in mobile equipment that moved earth, plowed crops, built highways, dug trenches and loaded materials, Vickers fluid power was there. Today, Vickers is a global leader in designing and manufacturing complete fluid power systems that move the world's most powerful mobile machinery.

Vickers has the expertise needed to provide you with complete fluid power system solutions, including the huge product selection previewed on following pages. We also offer in-depth knowledge of your market, and system design know-how to overcome design problems inherent in your market segment.

With manufacturing and design locations around the world, we "speak your language." Our system engineers understand your vehicle needs as well as regional differences.

When you're challenged to provide more energy-efficient equipment that must work harder than ever before, let us help you meet the challenge with:

- Systems that give you total power and motion control management capability
- Systems that operate at greater pressures and provide higher power-to-weight ratios
- Systems with faster control response and enhanced reliability
- Systems featuring integral control logic, sensors, and self-diagnostics
- Systems that weigh less and handle elevated temperatures

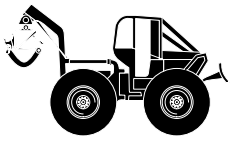
Let one of our dedicated-market teams work closely with you in your early preliminary design stages to:

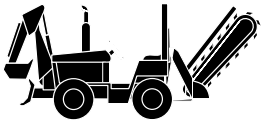
- Design an optimal power and motion control system
- Ensure the performance compatibility of Vickers products with that of your basic vehicle
- Share application knowledge that allows better support of products – yours and ours – in the field.

With every Vickers system, you'll receive support on a global scale... research, development and design; systems application engineering; prompt delivery and expert service. Most important, you'll get quality in everything we do for you.

So whether you design, build or maintain equipment for earthmoving, agriculture, construction, mining, forestry, utilities or material handling, Vickers has dedicated resources to serve your market and provides unmatched expertise in vehicle functionality.

Choose Vickers – for "systems thinking" that will maximize the performance of your mobile applications.





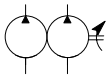
Vane pumps, single fixed displacement type

Vickers, the world leader in vane pumps, offers an extensive line of fixed displacement single pumps with displacements from 3,3 to 193 cm^3/r (.20 to 11.80 in^3/r); continuous pressures to 210 bar (3000 psi); speeds to 4800 r/min. V10 and V20 models can be provided with integral valving to limit flow to the operating system, to limit maximum system pressure, and to divide flow between two circuits. VTM42 pumps are for power steering applications. VQ models are available with thru-drives.

Symbol	Model	Displacement cm^3/r (in^3/r)	Max. pressure bar (psi)	Max. speed r/min	Catalog
	V10	3,3 (.20) – 22,8 (1.39)	175 (2500)	4800	353
	V20	19,5 (1.19) – 42.4 (2.59)	175 (2500)	3400	353
	VTM42	3,4 (.21) – 19,3 (1.18)	140 (2000)	7000	353
	20VQ	18 (1.10) – 45 (2.80)	210 (3000)	2700	353
	25VQ & 25VQT	40 (2.45) – 68 (4.12)	210 (3000)	2700	353
	35VQ & 35VQT	82 (4.98) –122 (7.42)	210 (3000)	2500	353
	45VQ & 45VQT	139 (8.46) –193 (11.80)	175 (2500)	2200	353

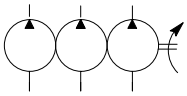
Vane pumps, double fixed displacement type

Vickers extensive line of fixed displacement double pumps offers: displacements from 22,8 to 390 cm^3/r (1.39 to 23.78 in^3/r); continuous pressures to 280 bar (4000 psi); speeds to 3000 r/min. V2010 and V2020 models can be provided with integral valving to limit flow to the operating system, to limit maximum system pressure, and to divide flow between two circuits. VQ models are available with thru-drives.

Symbol	Model	Section	Displacement cm^3/r (in^3/r)	Max. pressure bar (psi)	Max. speed r/min	Catalog
	V2010	Shaft end Cover end	19,5 (1.19) – 42,4 (2.59) 3,3 (.20) – 22,8 (1.39)	175 (2500) 175 (2500)	3000	353
	V2020	Shaft end Cover end	19,5 (1.19) – 42,4 (2.59) 19,5 (1.19) – 36,4 (2.22)	175 (2500) 175 (2500)	3000	353
	2520VQ	Shaft end Cover end	40 (2.45) – 68 (4.12) 18 (1.10) – 45 (2.80)	210 (3000) 210 (3000)	2700	353
	3520VQ	Shaft end Cover end	82 (4.98) – 122 (7.42) 18 (1.10) – 45 (2.80)	210 (3000) 210 (3000)	2500	353
	3525VQ	Shaft end Cover end	82 (4.98) – 122 (7.42) 40 (2.45) – 68 (4.12)	210 (3000) 210 (3000)	2500	353
	3525VQT	Shaft end Cover end	82 (4.98) – 122 (7.42) 40 (2.45) – 68 (4.12)	210 (3000) 210 (3000)	2500	612
	4520VQ	Shaft end Cover end	138 (8.46) – 193 (11.80) 18 (1.10) – 45 (2.80)	175 (2500) 210 (3000)	2200	353
	4525VQ	Shaft end Cover end	138 (8.46) – 193 (11.80) 40 (2.45) – 68 (4.12)	175 (2500) 210 (3000)	2200	353
	4525VQT	Shaft end Cover end	138 (8.46) – 193 (11.80) 40 (2.45) – 68 (4.12)	175 (2500) 210 (3000)	2200	612
	4535VQ	Shaft end Cover end	138 (8.46) – 193 (11.80) 82 (4.98) – 122 (7.42)	175 (2500) 210 (3000)	2200	353

Vane pumps, triple fixed displacement type

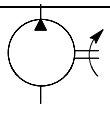
Vickers fixed displacement triple pumps offer: displacements from 61,3 to 336,8 cm^3/r (3.75 to 20.6 in^3/r); continuous pressures to 210 bar (3000 psi); speeds to 2700 r/min. All models can be provided with integral valving to limit flow to the operating system, to limit maximum system pressure, and to divide flow between two circuits.

Symbol	Model	Section	Displacement cm^3/r (in^3/r)	Max. pressure bar (psi)	Max. speed r/min	Catalog
	2520VQSV10	Shaft end Center section Cover end	40 (2.45) – 67 (4.12) 18 (1.10) – 45 (2.80) 3,3 (.20) – 22,8 (1.39)	210 (3000) 210 (3000) 175 (2500)	2700	353
	3520VQSV10	Shaft end Center section Cover end	81 (4.98) – 121 (7.42) 18 (1.10) – 45 (2.80) 3,3 (.20) – 22,8 (1.39)	210 (3000) 210 (3000) 175 (2500)	2500	353
	3525VQSV10	Shaft end Center section Cover end	81 (4.98) – 121 (7.42) 40 (2.45) – 67 (4.12) 3,3 (.20) – 22,8 (1.39)	210 (3000) 210 (3000) 175 (2500)	2500	353
	4525VQSV10	Shaft end Center section Cover end	138 (8.46) – 193 (11.80) 40 (2.45) – 67 (4.12) 3,3 (.20) – 22,8 (1.39)	175 (2500) 210 (3000) 175 (2500)	2200	353
	4535VQSV10	Shaft end Center section Cover end	138 (8.46) – 193 (11.80) 81 (4.98) – 121 (7.42) 3,3 (.20) – 22,8 (1.39)	175 (2500) 210 (3000) 175 (2500)	2200	353

Steering Pumps

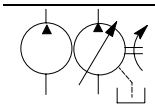
Optimum running clearances and hydraulic balance provide sustained high efficiency throughout the power steering pump life. Vickers design eliminated pressure-induced bearing loads to provide longer life and reduced maintenance.

Flow control and relief eliminate the need for separate valving. Vickers pump supply in one package provides a complete power source for steering.

Symbol	Model	Displacement cm^3/r (in^3/r)	Max. pressure bar (psi)	Max. speed r/min	Catalog
	VTM42	3,4 (.21) – 19,3 (1.18)	140 (2000)	7000	353
	V10F	3,3 (.20) – 22,8 (1.39)	175 (2500)	4800	353
	V20F	19,5 (1.19) – 42.4 (2.59)	175 (2500)	3400	353

Axial piston and vane pump combination

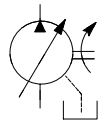
These compact packages provide a variable displacement piston pump and fixed displacement vane pump in a single-inlet double-outlet unit. They are used in a wide variety of circuits that require both fixed and variable flow requirements.

Symbol	Model	Displacement (in^3/r) Variable	Fixed	Max. pressure bar (psi)	Max. speed r/min	Catalog
	PVE41-–25V Shaft end (Piston) Cover end (Vane)	41 (2.50)	40 (2.44) – 67 (4.09)	210 (3000)	2400	GB-C-2023
	PVE45-25V Shaft end (Piston) Cover end (Vane)	45 (2.75)	40 (2.44) – 67 (4.09)	185 (2700)	2400	GB-C-2023

Axial piston pumps – single, variable displacement, open loop

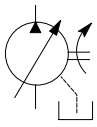
These variable displacement pumps offer: displacements from 10,5 to 141 cm^3/r (.64 to 8.64 in^3/r); continuous pressures to 420 bar (6100 psi); speeds to 3000 r/min. Numerous controls are offered to satisfy application requirements. Thru-drives are available in certain PVE and PVH models. Thru-shafts are available in the PVB models.

(1) @ 0 inlet

Symbol	Model	Displacement cm^3/r (in^3/r)	Max. pressure bar (psi)	Max. speed r/min (1)	Catalog
	PVB5	10,5 (.643)	210 (3000)	2900	GB–2379B
	PVB6	13,8 (.843)	140 (2000)	2700	GB–2379B
	PVB10	21,1 (1.29)	210 (3000)	2900	GB–2379B
	PVB15	32,9 (2.01)	140 (2000)	2000	GB–2379B
	PVE12	25 (1.54)	210 (3000)	3000	GB-C-2023
	PVE19	41 (2.50)	210 (3000)	2400	GB-C-2023
	PVE21	45 (2.75)	185 (2700)	2400	GB-C-2023
	PVH57	57,4 (3.5)	250 (3600)	2400	GB-C-2010
	PVH63	62,7 (3.84)	230 (3300)	2300	–
	PVH74	73,7 (4.5)	250 (3600)	2200	GB-C-2010
	PVH81	81 (4.94)	230 (3300)	2100	–
	PVH98	98,3 (6.0)	250 (3600)	2100	GB-C-2010
	PVH106	106,5 (6.5)	230 (3300)	2000	–
	PVH131	131,1 (8.0)	250 (3600)	2000	GB-C-2010
	PVH141	141 (8.64)	230 (3300)	1900	–
	PVH18 (800 Series) PVH45 PVH57 PVH74 PVH98 PVH131	18,0 (1.7) 45,1 (2.75) 57,4 (3.5) 73,7 (4.5) 98,3 (6.00) 131,1 (8.0)	280 (4000)	2800 2600 2500 2400 2200 2000	5017.00/EN/0297/A
	PVQ20 (700 Series) PVQ50 PVQ63 PVQ81 PVQ106 PVQ141	21,1 (1.29) 50 (3.05) 62,7 (3.84) 81 (4.94) 106,5 (6.50) 141 (8.64)	210 (3000)	2800 2600 2500 2400 2200 2000	5015.00/EN/0297/A

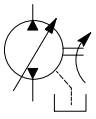
Axial piston pumps and pumpval, closed loop (hydrostatic)

These variable pumps and pumpvals offer: displacements from 3.5 to 21.0 cm^3/r; maximum pressures to 6000 psi; speeds to 3200 r/min. Numerous controls are offered to satisfy application requirements. The A series pump has a standard charge pump relief in the cover that dumps to case. The B series pumpval comes standard with SAE "B" 2 bolt flange and a splined coupling for charge pumps. All pumps and pumpvals are standard SAE 4 bolt configuration.

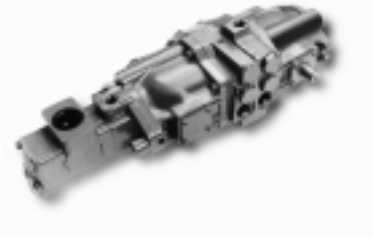
Symbol	Model	Displacement cm^3/r	Max. pressure psi	Max. speed r/min	Actual Output Torque (ft.lbs/1000 psi)	Catalog
	35 A / B	3.5	6000	3200		
	48 A / B	4.8		3200	60	
	60 A / B	6.0		3000	74	
	90 A / B	9.0		2800	111	
	120 A / B	12.0		2500	148	
	210 A / B	21.0		2100	260	

Axial piston pumps – single, variable displ., closed loop (hydrostatic)

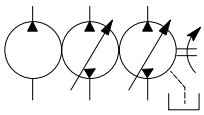
TA19 transmission pumps are furnished with an integral supercharge pump, or with a tandem-mounted single or double vane pump that provides high pressure for the vehicle hydraulic system and also supercharges the hydrostatic transmission. Replenishing check valves and a supercharge relief valve are built into the pump. Control is manual.

Symbol	Model	Displacement cm^3/r (in^3/r)	Max. pressure bar (psi)	Max. speed r/min	Catalog
	TA19	41 (2.5)	350 (5000)	3600	320A

Axial piston pumps – double, variable displ., closed loop (hydrostatic)

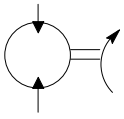
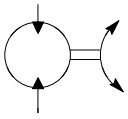


TA1919 transmission pumps are furnished with a tandem-mounted single or double vane pump that provides high pressure for the vehicle hydraulic system and also supercharges the hydrostatic transmission. Replenishing check valves and a supercharge relief valve are built into the pumps. Control is manual. Optional fixed single or double auxiliary pump is available.

Symbol	Model		Displacement cm^3/r (in^3/r)	Max. pressure bar (psi)	Max. speed r/min	Catalog
	TA1919	Section 1 Section 2 Section 3 & 4 (optional)	41 (2.5) 41 (2.5	350 (5000)	3400 3400	320A

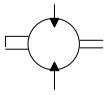
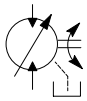
Vane motors

Vickers vane motors offer: displacements from from 21,6 to 317,1 cm^3/r (1.32 to19.35 in^3/r); pressures to 175 bar (2500 psi); speeds to 4000 r/min; a choice of 15 torque ratings.

Symbol	Model	Displacement cm^3/r (in^3/r)	Max. pressure bar (psi)	Max. speed r/min	Torque Nm/7 bar (lbf in/100 psi)	Catalog
	M2U	21,6 (1.32) –37,5 (2.29)	140 (2000)	2800	4,0 (35)	353
	M2-210-25	23,9 (1.51)	140 (2000)	2000	2,8 (25)	353
	M2-210-35	35,9 (2.16)	120 (1750)	1800	4,0 (35)	353
	25M	43,9 (2.68) – 68,7 (4.19)	175 (2500)	4000	7,3 (65)	353
	35M	83,6 (5.10) – 121,9 (7.44)	175 (2500)	4000	13,0 (115)	353
	45M	138,0 (8.42) – 193,2 (11.79)	175 (2500)	4000	20,9 (185)	353
	50M	231,2 (14.11) – 317,1 (19.35)	175 (2500)	3200	33,9 (300)	353

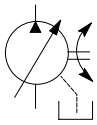
Piston motors

Vickers piston motors offer: fixed displacements from 10,5 to160 cm^3/r (.64 to 9.76 in^3/r) and variable displacements from 41 to 355 cm^3/r (2.5 to 21.66 in^3/r); continuous pressures to 480 bar (6960 psi); speeds to 3600 r/min. MFE and MVE models are ideal for use with Vickers TA19 and TA1919 hydrostatic transmission pumps.

Symbol	Model	Displacement cm^3/r (in^3/r)	Max. pressure bar (psi)	Max. speed r/min	Max. torque Nm (lbf in)	Catalog
	MFB5	10,5 (.643)	210 (3000)	3600	30.5 (270)	691
	MFB10	21.12 (1.29)	210 (3000)	3200	64.2 (568)	691
	MFB20	42,8 (2.61)	175 (2500)	2400	101.7 (900)	691
	MFB29	61,6 (3.76)	140 (2000)	2400	117.5 (1040)	691
	MFB45	94,4 (5.76)	210 (3000)	2200	271.2 (2400)	691
	MFE15	32.8 (2.0)	350 (5000)	3600	153 (1352)	691
	MFE19	41,0 (2.5)	350 (5000)	3600	193 (1712)	691
	MFE19X with brake mounting	41,0 (2.5)	350 (5000)	3600	193 (1712)	691
	MVE19	41,0 (2.5)	350 (5000)	3600	193 (1708)	691

Piston fixed and variable motors, closed loop (hydrostatic)

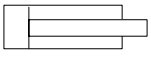
These fixed and variable motors offer: displacements from 3.5 to 21.0 cm^3/r; maximum pressures to 6000 psi; speeds to 3200 r/min. Adjustable detent controls are standard on these motors. A two speed and pressure compensated control is also available to satisfy application requirements. All motors have Code 62 as standard SAE pressure ports. Code 61 and optional adapters are also available.

Symbol	Model	Displacement cm^3/r	Max. pressure psi	Max. speed r/min	Actual Output Torque (ft.lbs/1000 psi)	Catalog
	48 MF / MV	4.8	6000	3600	60	
	60 MF / MV	6.0		3400	74	
	90 MF / MV	9.0		3000	111	
	120 MF / MV	12.0		2800	148	
	210 MF / MV	21.0		2200	260	

Cylinders

Vickers line of hydraulic cylinders offers a wide variety of cylinder bore and rod diameters for use in agricultural applications.

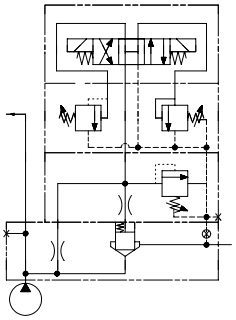
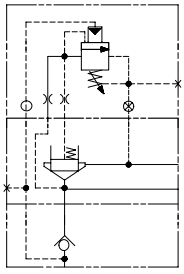
Tie rod construction

Symbol	Model	Max. pressure bar (psi)	Min. working pressure bar (psi)	Cylinder bore mm (in)	Rod diameter mm (in)	Pin Centers Range mm	Catalog
	TQ series	175 (2500)	4 (60)	50 – 127 (2–4)	28 – 50 (1.125–2)	464–1073 (18.25–42.25)	4113A

Flange Mounted Valves

Flange mounted valves mount directly to the pump flange and reduces potential leak points for superior leak resistance. Three different valves are available: relief, unloading and check. Pilot design minimizes response time and cracking flow which allows for high pressure stability and increased system productivity.

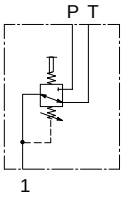
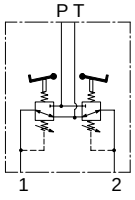
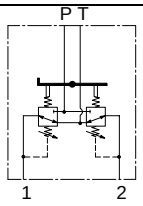
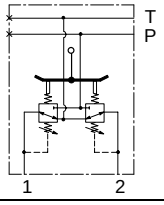
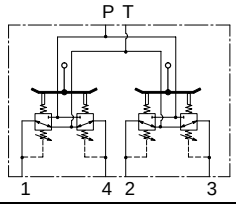
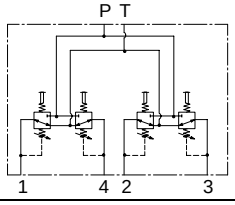
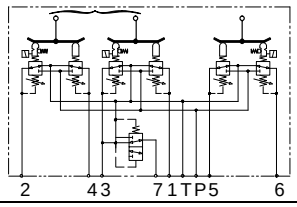
Port size: **06** - 3/4” flange; **08** - 1” flange; **10** - 1-1/4” flange; **12** - 1-1/2” flange. Maximum pressure 350 bar (5000 psi); maximum flow 600 l/min (160 USgpm).

Typical Symbol	Model	Max. pressure bar (psi)	Max. flow l/min (USgpm)	Catalog
Relief Valves 	CPF1S-06 / 08 / 10 / 12	275 (4000)	100–600 (26–160)	627
	CPF1V-12	350 (5000)	600 (160)	627
	CPF2S-06 / 08 / 10 / 12	275 (4000)	100–600 (26–160)	627
	CPF2V-12	350 (5000)	600 (160)	627
	CPF3S-06 / 08 / 10 / 12	275 (4000)	100–600 (26–160)	627
	CPF3V-12	350 (5000)	600 (160)	627
	CPF4S-06 / 08 / 10 / 12	275 (4000)	100–600 (26–160)	627
	CPF4V-12	350 (5000)	600 (160)	627
Unloading Valves 	UPF1S-06 / 08 / 10 / 12	275 (4000)	100–600 (26–160)	627
	UPF1V-12	275 (4000)	600 (160)	627
	UPF2S-06 / 08 / 10 / 12	275 (4000)	100–600 (26–160)	627
	UPF2V-12	350 (5000)	600 (160)	627
Check Valves 	DCPFS-08 / 10 / 12	275 (4000)	114–378 (30–100)	627
	DICPFS-06 / 08 / 10 / 12	210–350 (3000–5000)	120–750 (32–200)	627

Hydraulic Remote Control

HRCs (hydraulic remote controls) are available in hand, foot and mechanically operated versions, designed for pilot pressure actuation and control of remotely located directional valves. They are used in applications where hydraulic pilot operation of system components is controlled from one operator station.

The HRCs operate on input flows up to 16 l/min (4.2 USgpm) and pressures up to 110 bar (1600 psi) or 150 bar (2200 psi), dependent on the model and the type of response required for the application. HRCs require input pressures equal to the maximum required output pressures, and preferably a minimum of 10 bar (150 psi) higher to assure fast response.

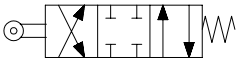
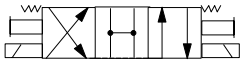
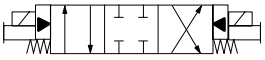
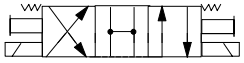
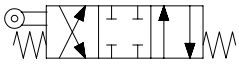
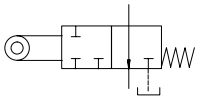
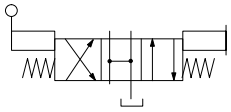
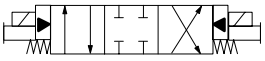
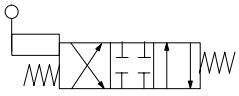
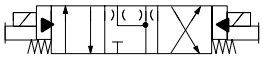
Symbol	**Model**	**Port Size**	**Max.inlet pressure** bar (psi)	**Max. control flow** l/min (USgpm)	**Catalog**
	HRC1-S0	G 1/4” SAE 6 ISO 6149	110 (1600)	16 (4.2)	5036.00/EN/0896/A
	HRC2-P2	G 1/4” SAE 6 ISO 6149	110 (1600)	16 (4.2)	5036.00/EN/0896/A
	HRC2-R1	G 1/4” SAE 6 ISO 6149	150 (2200)	16 (4.2)	5036.00/EN/0896/A
	HRC2-S / LV	G 1/4” SAE 6 ISO 6149	150 (2200)	16 (4.2)	5036.00/EN/0896/A
	HRC4-H	G 1/4” SAE 6 ISO 6149	110 (1600)	16 (4.2)	5036.00/EN/0896/A
	HRC4-J1 / LV	G 1/4” SAE 6 ISO 6149	110 (1600)	16 (4.2)	5036.00/EN/0896/A
	HRC6/7 LV	G 1/4” SAE 6 ISO 6149	110 (1600)	16 (4.2)	5036.00/EN/0896/A

Directional Control Valves / Proportional Directional Valves

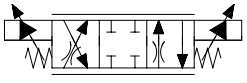
Vickers offers a complete line of mobile directional control valves designed for flexibility, easy application and performance. These valves come in various sizes and operators... solenoid, hydraulic, air, cam or lever to meet a wide range of applications. A soft shift feature is designed to provide smoother control of actuator acceleration and deceleration. The electrically actuated valves use industry- standard connectors to make installation and replacement easier and faster. Our valves use many common connectors such as...Packard Weatherpak, DIN, Amp and Deutsche (single & double spade). Surge suppression is available as standard on applicable valves.

These mobile valves are designed to optimize equipment performance with operating pressures up to 350 bar (5000 psi) and flows to 1100 l/min (290 USgpm)

The DG4V-3S-EN490 directional control valve is specifically designed to operate in harsh mobile environments which produce dirt, dust, thermal shock, salt spray and extreme temperatures.

Symbol	Model	ISO Size	Max. pressure bar (psi)	Max. flow l/min (USgpm)	Catalog
	DG2V–2 DG17V–2 DG21V–2	02	250 (3600)	30 (8)	5018.00/EN/0596/A 5018.00/EN/0596/A 5018.00/EN/0596/A
	DG4V-2 DG4S*-01	02 05	250 (3600)	30 (8) 95 (25)	5018.00/EN/0596/A GB-C-2129
	DG4V–3S, EN490	03	350 (5000)	40 (10)	5049/EN/0596/A
	DG4V-3S DG4V3	03	350 (5000)	40 (10) 80 (21)	GB2015B GB2015B
	DG4V-3-**2	03	350 (5000)	40 (10)	614
	DG3V–3 DG17V–3 DG18V–3 DG20V–3 DG21V–3	03	350 (5000)	75 (20)	682 682 682 682 682
	DG1S*–01 DG16S*–01	05	210 (3000)	75 (20)	672 672
	DG2S*–01 DG17S*–01	05 08 / 10	210 (3000)	75 (20)	672 672
	DG5S4–02 DG5S4–04 DG5S8	05 07 08	210 (3000)	115 (30) 227 (60) 170 (45)	GB-C-2037 673 591
	DG17S8 DG17S4–10	08 10	210 (3000)	380 (100)	681 681
	DG3V–8 DG5V–8	08	350 (5000)	700 (185)	5007.02/EN/0196/A 5007.02/EN/0196/A
	DG3V–10 DG5V–10	10	350 (5000)	1100 (290)	5007.01/EN/0196/A 5007.01/EN/0196/A

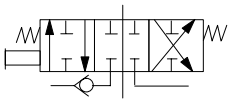
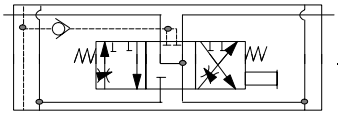
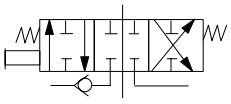
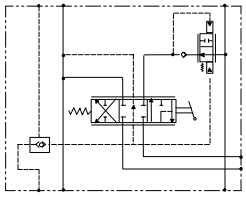
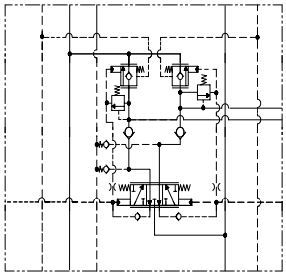
KDG3V3/5 proportional directional valves are controlled by applying pilot pressure, through an operator mechanism, to either end of the valve's normally spring centered spool. Flow rating up to 34 l/min (9 USgpm) and operating pressure rating of 350 bar (5000 psi).

	KDG3V-3	03	350 (5000)	60 (15)	660
	KDG3V-5	05	315 (4500)	150 (40)	660

Directional Controls, Sectional Construction

These manually, hydraulically and electrically actuated spool type valves are comprised of sections that are internally connected to common pressure and tank return passages. Seals between the sections seal the connecting passages, and the sections are held together by studs and nuts.

Valve sections are available as assembled banks, and as separate sections for assembly into banks or to add to or change the functions of a bank.

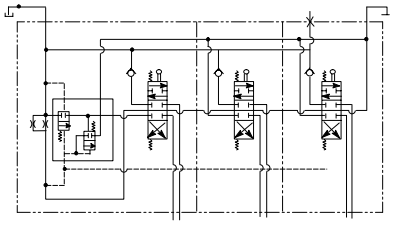
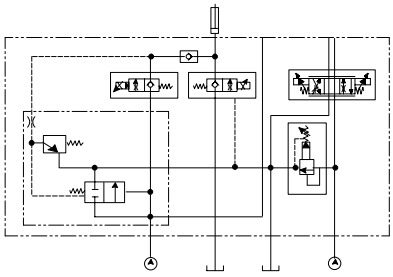
Symbol	Model	Port Size	Max. pressure bar (psi)	Max. flow l/min (USgpm)	Catalog
	CMB4P Spool type	P,A,B: G 3/8” T: G 1/2”	315 (4500)	40 (11)	C-2280
	CME4	P,A,B: G 3/8” T: G 1/2” a,b: G 1/4”	315 (4500)	40 (11)	MV-652
	CME7P	P,A,B: G 1/2” T: G 3/4” a,b: G 1/4”	315 (4500)	80 (21)	MV-652
	CMB7 Spool type	P,A,B: G 1/2” T: G 3/4”	315 (4500)	80 (21)	GB-633
	CME15	P,T: 1” A,B: 3/4”	350 (5000)	160 (42)	C-2361
	CMX100	A,B:1.062-12UN-2B or SAE flange P: 1.062-12UN-2B T: 1.312-12 UN-2B	250-350 (3600-5000)	100 (26)	536
	CMX160	A,B: 1.3125 -12UN-2B or SAE flange P: 3/4” or 1.0 ” T: 1.25-12UN-2B	250-350 (3600-5000)	160 (42)	536

Engineering Applied Valves

Each product in this group is designed for a specific application and meets the needs of improving environmental adaptability, design flexibility, increased productivity, and improved safety and reliability.

The LT Sectional Directional Control Valve can be actuated manually by levers or hydraulically with a hydraulic remote control and is available in 2-10 section configurations, providing flexible options for specific customer requirements.

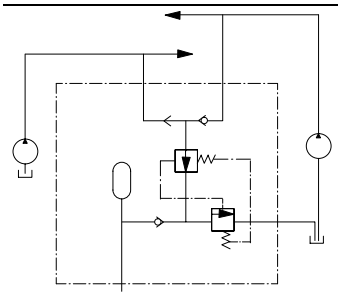
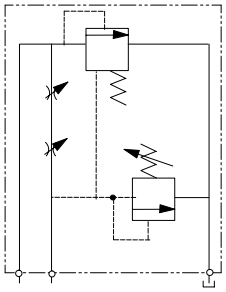
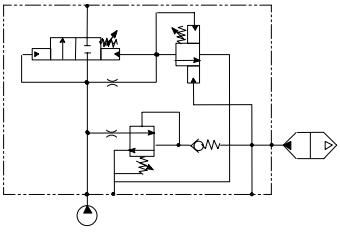
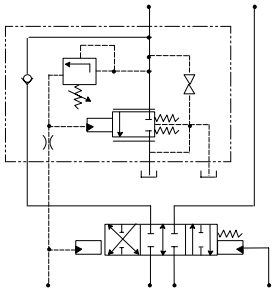
The EPM Electro-Hydraulic Lift Truck Valve incorporates products such as the Valvistor (EPV) valve and the KTG4V-3S valve into a special manifold which results in proportional control for tilt and reach. The EPM can be operated by an amplifier or electronic remote control.

Symbol	**Model**	**Max. pressure** bar (psi)	**Max. flow** l/min (USgpm)
	LT Sectional Directional Control Valve	225 (3250)	90 (25)
	EPM Electro-Hydraulic Lift Truck Valve	210 (3000)	160 (42) Lift 20 (5) Tilt

Auxiliary Valves

The RM3 is an internally pilot operated relief valve providing pressure protection to a hydraulic system. The FM3 is a bypass type pressure compensated flow control and a relief valve. It is used in applications where a constant actuator speed is required in the face of varying pump output.

The ACX2 pilot pressure supply unit is used to feed one or more Vickers HRC or other similar hydraulic remote control. It maintains pilot pressure within preset limits when inlet pressure varies above the minimum set reduced pressure.

Symbol	Model	Port Size	Max. pressure bar (psi)	Max. flow l/min (USgpm)	Catalog
	ACX2 Pilot pressure supply unit	P: G 1/4” T: G 3/8”	350 (5000)	45 (12)	C-2277
	RM3 relief FM3 flow & relief	08P – 1/2” NPT 12S – 3/4-16 UNF-2B 14S – 7/8-14 UNF-2B	175 (2500)	94 (25)	303C
	SPX Priority unloading valve	G 1/2”	250 (3600)	45 (12)	–
	CL-160 CL-400 Hose burst valves	C1,A:Flange SAE J518, 1”	380 (5500)	160–360 (42–96)	–

Electronics for Directional / Proportional Valves

UNIPLUG Connector
Vickers UNIPLUG system consists of a solenoid-operated valve fitted with a single-cable electrical connector ideally suited for economical wiring of single- and double-solenoid models. It is used on the size 3 directional and proportional valves, type DG4V-3(S), 60 series and KD/TG4V-3(S), 60 series. The correctly installed Uniplug / valve conforms to protection code IEC 529 class IP67.

The UNIPLUG connector offers: low power switching of 24V DC solenoids; ‘‘soft switching’’ of proportional valves; control of proportional valves from low voltage differential input signal; and direct switching of 24V DC solenoids.

Model	Function	Catalog
EHH-AMP-724-A	Switching amplifier	GB-2367C
EHH-AMP-724-C	Soft switch	
EHH-AMP-724-D	Proportional amplifier	
EHH-AMP-724-Z	Direct solenoid connection	

Open Loop Amplifier for Proportional Valves
This modern, inexpensive and rugged amplifier is suitable for driving most non-feedback proportional valves. These include Vickers EPV16 throttle valves, CMX directional valves, and ERV cartridge pressure relief valves. Amplifier supply voltage is 12 or 24V DC nominal.

Two versions of the amplifier are available. A proportional version, featuring cable–break detection, is available for use with a joystick. A softswitch version is offered for use with switched inputs. In conjunction with a Vickers CMX valve, the softswitch amplifier can provide a “float condition” for attached actuators.

Model	Function	Catalog
EHD-AMP-73*-C	Softswitch-switching inputs (double solenoids)	GB-2448A
EHD-AMP-73*-D	Joystick input (double solenoids)	
EHD-AMP-73*-E	Joystick input (single solenoid)	
EHD-AMP-73*-F	Softswitch (single solenoid)	

Slip-in Cartridge Valves to ISO 7368 (DIN 24342)

Cartridge valves are generally used in medium to high pressure hydraulic systems where flows may be greater than 150 L/min (40 USgpm), to provide power transmission and motion control in a wide variety of applications

The HFV (Hydraulic Feedback Valvistor®) range of slip-in cartridge valves uses a self-regulating hydraulic design for the control of flow rate by a current-controlled PWM signal. The design achieves servo-type control of the main poppet without using an electrical feedback transducer.

Available functions

Check, Directional and Flow Restrictor Functions	Dynamic Functions
Pressure Relief and Venting Functions	Valvistor Proportional Throttle Valve
Pressure Unloading / Relief Functions	Electrohydraulic Proportional Throttle Valve
Pressure Reducing Functions	Directional Valves with Electrical Indication

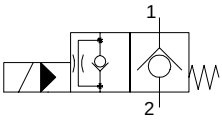
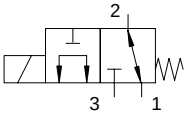
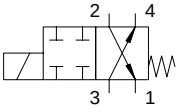
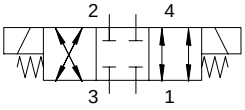
Nominal size	Flow L/min	(USgpm)	Max. operating pressure bar (psi)	Catalog
06 (NG16) (approx 5/8”)	230	(60)	350 (5000)	5043.00/EN/0496/A
08 (NG25) (approx 1”)	550	(145)	350 (5000)	5043.00/EN/0496/A
09 (NG32) (approx 1-1/4”)	900	(238)	350 (5000)	5043.00/EN/0496/A

Screw-in Cartridge Valves

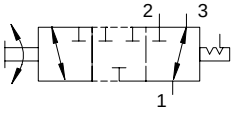
Vickers screw-in cartridge valves provide many advantages over traditional hydraulic valves. While offering the same control functions as traditional hydraulic valves, screw-in cartridge valves are compact, reliable, and economical. The concept of combining multiple cartridge valves in a common manifold offers the user substantial cost-saving advantages that cannot be achieved with traditional valving.
Our selection of screw–in cartridge valves includes:

- Solenoid operated directional controls
- Directional controls
- Proportional controls
- Pressure controls
- Flow controls
- Check valves
- Logic elements
- Load controls
- Circuit makers

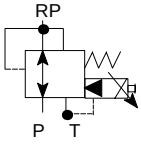
Solenoid Operated Directional Controls – 2 and 3–way 2 position; 4–way 2 and 3 position

Typical Symbol	Model	Cavity	Max. pressure bar (psi)	Max. flow l/min (USgpm)	Catalog
	S(B)V**–8 S(B)V**–10 S(B)V**–12 SV**–16 SV**–20	C–8–2 C–10–2 C–12(U)2 C–16–2 C–20–2	210-350 (3000-5000)	11–57 (3–15) 11–76 (3–20) 1–114 (.25–30) 132 (35) 225 (60)	727 / 728 5082.00/EN/0397/A
	SV**–8 SV**–10	C–*–3	210-350 (3000-5000)	11–13 (3–4) 23 (6)	727 / 728
	SV**–8 SV**–10	C–*–4	210-350 (3000-5000)	11–13 (3–4) 17–23 (5–6)	727 / 728
	SV9–10	C–*–4	210 (3000)	11 (3)	727

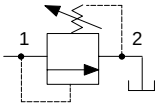
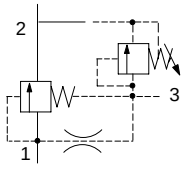
Manually Operated Directional Controls

	MPV–10 MRV–10/16 PTS–10/16/20 DSV–6/8/10/12/16	C–10–2 C–*–2 C–10–3 / 4 C–*–3 / 4	210–350 (3000–5000)	45 (12) 11–64 (3–17) 11–265 (3–70) 11–170 (3–45)	721

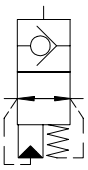
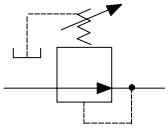
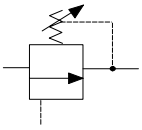
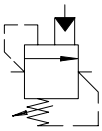
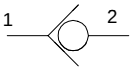
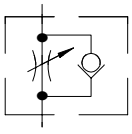
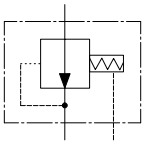
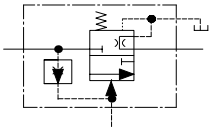
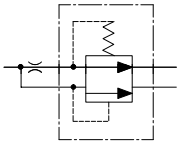
Proportional Controls

	EPRV–8/10/16 EPV10 EPV16 ERV10/16	C–*–3 C–*–2 C–16–3S C–*–2	35 (500) 210 (3000) 280 (4000) 210 (3000)	7,6–38 (2–10) 30 (8) 160 (42) 3–132 (0.8–35)	726

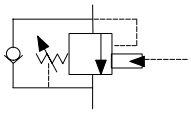
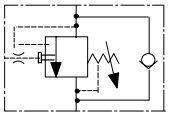
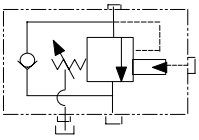
Relief Valves

	RV–8/10/12/16	C–*–2(U)	70–415 (1000–6000)	15–114 (4–30)	725
	VRV–12	C–12–3S	210 (3000)	114 (30)	725

Screw-in Cartridge Valves – continued

Typical Symbol	Model	Cavity	Max. pressure bar (psi)	Max. flow l/min (USgpm)	Catalog
Pressure Controls 	ADV1–16	C–16–3	210 (3000)	30 (8)	725
	PRV*-10/12/16	C–*–3	165–415 (2400-6000)	15-151 (4-40)	725
	PSV*-8/10/12/16	C–*–3(S) C–*–4	125-415 (1800-6000)	15-114 (4-30)	725
	PUV–10	C–10–3	210 (3000)	4 (1)	725
Check Valves 	CV–8/10/16/20	C–*–2(U)	210–350 (3000–5000)	30–227 (8–60)	720
	DPC–10/16/20	–	210 (3000)	45–227 (12–60)	720
	POC–10/12	C–*–3S	350 (5000)	57–114 (15–30)	720
	SPC–8/10/16/20	C–*–3	210–240 (3000–3500)	19–227 (5–60)	720
Flow Controls 	FCV–10/12/16	C–*–2(U) C–*–4	210–350 (3000–5000)	4,8–208 (1.27–55)	723
	FDC–10/16/20	C–*–4	210 (3000)	68–568 (18–150)	723
	FR*–8/10/16/20	C–*–2	210–350 (3000–5000)	15–227 (4–60)	723
	MRV–10/16 Flow restrictors	C–*–2	210 (3000)	57–170 (15–45)	723
	NV–8/10/16/20 Flow restrictors	C–*–2	210–350 (3000–5000)	45–265 (12–70)	723
	PFR5–8/10/16 Pressure compensated	C–*–3	210–350 (3000–5000)	9,5–114 (2.5–30)	723
	VF–10/16/20 Pipe break valve	C–*–2	210 (3000)	23–227 (6–60)	723
Logic Elements 	DPS2–10/16/20 Differential pressure sensing	C–*–3S	240–290 (3500–4200)	57-303 (15-80)	724
	MOS1–10/16 Spool type modulating orifice	C–*–4	210 (3000)	38-132 (10-35)	724
	PCS3–10/16/20 Hydrostats, 2–way	C–*–3	210 (3000)	38–189 (10–50)	724
	PCS4–10/16/20 Hydrostats, 3–way	C–*–4	210 (3000)	57–265 (15–70)	724

Screw-in Cartridge Valves – continued

Typical Symbol	Model	Cavity	Max. pressure bar (psi)	Max. flow l/min (USgpm)	Catalog
Load Controls 	CBV*–10/12	C–*–3S	350 (5000)	57-114 (15-30)	722
	MCV*–16/20	–	210 (3000)	151–190 (40–50)	722
	VCB1–10/12	C–*–4(U)	350 (5000)	57–114 (15–30)	722

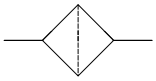
Circuit Makers

Description	Model	Typical pressure bar (psi)	Max. flow l/min (USgpm)	Catalog
Fixed priority flow control with relief on priority flow port	PFRR-8/10/16	7–210 (100–3000)	15-152 (4-40)	737
Solenoid actuated relief valve	SRV–8/10/12/16/20	210 (3000)	23–300 (6–80)	737
Adjustable flow control package	FC-1/2/3/4	210 (3000)	36-190 (9-50)	737
Adjustable pressure compensated flow regulating package	FRC-1/2/3/4	210 (3000)	36-190 (9-50)	737
Pressure sensitive regenerative	RGV-10/12	7–210 (100–3000)	57-114 (15-30)	737
Pressure sensative regenerative with looad locking	RLV-10/12	7–210 (100–3000)	57-114 (15-30)	737
Cross port relief valve	CRV-10/16	17–210 (250–3000)	76-303 (20 - 80)	737
Pump control manifold for single and multiple pump circuits	PCC1/2 - 12/16	210 (3000)	114-228 (30-60)	737
Cross port relief with shuttle and solenoid vent	SCR-1	210 (3000)	114 (30)	737

Filters

Vickers filters for mobile equipment handle flows to 568 L/min (150 USgpm) and pressures to 415 bar (6000 psi). A wide range of port sizes, bypass valves, pressure drop indicators and media grades facilitates filter installation and achievement of desired system cleanliness levels. Inch (H) or metric (M) ports are available.

Reservoir vent filters BR110 and BR210 feature a visual indicator and corrosion–resistant housing. In addition to particle control, the BR110 also features water/moisture control.

Symbol	Model	Max. operating pressure bar (psi)	Max. flow rate L/min (USgpm)	Filter Type	Catalog
	H / M 440 H / M 610 H / M 620	280 (4000) 415 (6000) 415 (6000)	91 (24) 208 (55) 568 (150)	Pressure	5057.00/EN/0497/A (inch) 5057.01/EN/0597/A (metric)
	HL / ML 15 HL / ML 16 HT / MT 15	14 (200) 14 (200) 7 (100)	189 (50) 568 (150) 76 (20)	In-tank	5057.00/EN/0497/A (inch) 5057.01/EN/0597/A (metric)
	H / M O61	41 (600)	189 (50)	Return line	5057.00/EN/0497/A (inch) 5057.01/EN/0597/A (metric)
	H / M O21/23 OFRS15 OFRS25 OFRS60	14 (200) 7 (100) 7 (100) 7 (100)	227 (60) 57 (15) 95 (25) 227 (60)	Return line, spin-on	5057.00/EN/0497/A (inch) 5057.01/EN/0597/A (metric)

Model	Maximum Temperatures	Efficiency	Filter Type	Catalog
BR110	121°C (250°F)	99% @ 3 µ	H_2O Gate	730
BR210	121°C (250°F)	99% @ 2 µ	DIRT Gate	730

Fluid Analyzer

The Vickers Target-Pro Portable Particle Counter allows on-site monitoring of the fluid cleanliness of hydraulic and lubrication systems. Results are reported on-site in extended ISO 2/5/15 code or NAS class for easy comparison to targeted cleanliness levels. Results can be printed on-site, or printing or downloading of results can wait until the user returns to the office or laboratory.

Target-Pro offers three different fluid sampling methods that can be switched, from one to another, by using simple quick-disconnect fittings. It can detect, count and size particles from 2 to 100 micron and up to ISO Code 23 without diluting the sample.

Target-Pro features laser-light-extinction technology that is an ISO and NFPA approved method of particle counting and sizing. Also featuring a user-friendly screen interface, the easy-to-use Target-Pro analyzer offers a convenient way to obtain laboratory-quality results in the field.

Model	Sampling Method	Catalog
TP120 TP210 TP310	On-line Bottle Bailing Probe	5026/EN/0196/P

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