

CLS100 Application data sheet

Eaton introduces the new CLS mobile sectional valves, further enhancing the system integration capabilities of Eaton and their distributor network.

Eaton's mobile valves bring a modularity that is an advantage to customers seeking flexibility in design while needing to deliver enhanced control and productivity. As with any element of a hydraulic system, these valves play an integral role in machine control and command the system

to work in numerous applications.

This quote sheet highlights features of the CLS100 valve offering and gives customers the ability to spec a mobile valve for specific application requirements.

Date:	
Distributor:	
Customer / Cust #:	
Requester:	Requester Email:
Application:	Requester Phone Number:
Make / Model:	Competitive Valve Model:
Number of Sections:	Target Pricing:

Comments / Remarks:

Special Features:

Note: To submit via email please utilize the Submit button on page 6 of the document.



Powering Business Worldwide

Inlet	Description								
	in/te build Configuration	Type	Ports	Reliefs	Load Sense Relief Setting	Full Flow Relief Setting	Dump Valve	Dump Valve Coil	
CLS100									

Inlet	Code	Description	List Adder
Family:	CLS100		
Inlet build:	R	RH inlet	
	L	LH inlet	
Type:	L	Load sensing	
	U	Unload for open center	
Ports:	B	BSP (G 3/4 P&T, G 1/4 LS)	
	S	SAE (-12 P&T, -6 LS)	
Reliefs:	D	LS and Full Flow Reliefs	
	L	LS Relief Only	
	R	Full Flow Relief Only	
	Z	No reliefs	
LS Relief Setting (bar):	###	5 bar increments (Code 000 if none 50-350 Bar)	
Full Flow Relief Setting (bar):	###	*5 bar increments (Code 000 if none 40-420 Bar) <i>*Requires at least 40 bar difference over LS Relief</i>	
Dump Valve	F	Full Flow Dump Valve	
	L	LS Dump Valve	
	Z	No Dump Valve	
Dump Valve Coil	A	12V - DIN connector	
	B	24V - DIN connector	
	C	12V coil with Deutsch connector	
	D	24V coil with Deutsch connector	
	E	12V coil with AmpJr connector	
	F	24V coil with AmpJr connector	
	Z	No coil	

**Omit further digits from this code*

Mid Inlet Adapter Section	Description												
	Adapter Configuration	Adapter Material	Adapter Type	Adapter Ports	Dump Valves	Dump Coil Connector	Relief Valve Options	Full Flow Relief Setting	Priority Valve	Load Sense Relief Setting	CF Relief Setting	Special Features	Design Level
Code													

Mid Inlet	Code	Description	List Adder
Family:	CLS100		
Adapter Configuration	A	CLS100 to CLS100	
	B	CLS100 to CLS180	
Adapter Material	D	65-45-12 Ductile Iron	
Adapter Type	A	Load Sense - Plain Adapter	
	B	Open Center Unload - Plain Adapter	
	D	Load Sense with Relief and LS Relief Capability	
	P	Load Sense with load Sense Priority Valve and CF (Priority) Relief	
Adapter Ports	B	BSP G1	
	S	SAE -16	
	F	SAE code 61 split flange 1 1/4 P, 1 1/2 T	
Dump Valves	A	Full flow dump valve, 12V	
	B	Full Flow dump valve, 24V	
	Z	No dump valve	

Mid Inlet (cont.)	Code	Description	List Adder
Dump Coil Connector	A	Amp Jr Timer	
	B	DIN	
	D	Deutsch DT04-2P	
	M	MetriPack 150	
	L	300mm Leadwires	
	Z	None	
Relief Valve Options	A	Adjustable full flow relief	
	L	LS relief only	
	R	Internal set full flow relief	
	N	Full flow and LS relief	
	P	Plugged - Work port or LS relief cavity, machined and plugged	
	Z	None - No work port or LS relief option machining	
Full Flow Relief Settings		050-350 Setting in bar between 50 and 350 bar in 5 bar increments. (000 if not present, P00 if plugged)	
Priority Valve		000 if not present D6A Dynamic Signal, 80 psi D6B Dynamic signal, 110 psi D6C Dynamic signal, 130 psi	
LS Relief Setting		040-350 Setting in bar between 40 and 350 bar in 5 bar increments, required to be 40 bar less than full flow relief setting when ordered together (000 if not present, P00 if plugged)	
CF Relief Setting		000 if not present 050-240 Bar between 50-240 Bar in 5 bar increments.	
Special Features		00 = None	
Design Level		A = Initial Release	

Working sections

Function	Section	Compensation	Actuation	Port Type	Spool Type	Spool Action	Port A Spool Flow (@14 bar)	Port B Spool Flow (@14 bar)	Coil Voltage	Coil Connector	A Port Option Function	Port A Relief Setting**	B Port Option Function	Port B Relief Setting	Section LS Relief	LS Relief Setting (Common to ports A & B)	Position Indicator or Spool Stroke Limiter	Lever Kits	Special Features	Design Level
	1																			
	2																			
	3																			
	4																			
	5																			
	6																			
	7																			
	8																			
	9																			
	10																			
	11																			
	12																			

Section	Code	Description
Compensation:	P	Post, Standard RH build
	R	Post, Standard RH build w/ local flow limiter kit
	L	Pre, Standard RH build
Actuation:	A	Hyd w/top ports
	B	Hyd w/top ports and MO
	C	Hyd w/end ports
	D	Hyd w/top ports, MO, and configured for EH pilot installation
	E	EH w/MO
	F	EH only (no MO)
	G	EH + Hyd + MO
	H	EH + Hyd
	L	Manual w/enclosed lever box
	M	Manual w/exposed spool connection
Hyd = Hydraulic EH = Electrohydraulic MO = Manual Override SL = Stroke Limiter	N	Pneumatic pilot with manual override, pneumatic ports downward
	P	Pneumatic pilot with manual override, top pneumatic ports
	B	G 1/2 BSP (G 1/4 pilot if Hyd, G 1/8 on pneumatic pilot block)
	S	SAE, -10 (SAE -6 pilot if Hyd, 1/8 NPTF on pneumatic pilot block)

Section (cont.)	Code	Description
Spool Type:	D	Double Acting (4 way) Cylinder
	F	Double Acting (4 way) Cylinder with 4th position Float
	H	Bi-directional (4 way) Motor, full open to tank in neutral
	R	Double acting (4 way, 3 position) cylinder, with regeneration
Spool Action:	A	Spring centered to neutral
	B	Detent "in and "out"
	E	Fourth position detent (float)
	F	Friction - hold in position
Port A/B Spool Flow:	005	005 lpm ²
	010	010 lpm ²
	015	015 lpm ^{1,3,4}
	025	025 lpm ^{3,4}
	035	035 lpm
	040	040 lpm ^{3,4}
	050	050 lpm ¹
	065	065 lpm ^{3,4}
	080	080 lpm ²
	100	100 lpm ¹
Flow @ 14 bar		
Post-comp all flows		
¹ H spool flows		
² F spool flows		
Pre-comp spool options		
³ D spool flows		
⁴ F spool flows		

Section (cont.)	Code	Description
Coil Voltage:	G	12V
	H	24V
	Z	None (no coil)
Coil Connector:	D	Deutsch DT04-2P
	A	Amp Jr Timer
	Z	None
Port A Relief Valves:	A	AC
	R	RV/AC
AC = Anti Cavitation	P	Plugged - Work ports machined and plugged
RV = Relief Valve	Z	None - No work port reliefs
Port A Relief Settings:	###	040 - 350 bar, in 5 bar increments (For port option R or N only - 000 if none, P00 if plugged)
Port B Relief Valves:	A	AC
	R	RV/AC
AC = Anti Cavitation	P	Plugged - Work ports machined and plugged
RV = Relief Valve	Z	None - No work port reliefs
Port B Relief Settings:	###	040 - 350 bar, in 5 bar increments (For port option R or N only - 000 if none, P00 if plugged)
Section LS Relief:	P	Post comp - Section load sense relief (applies to both A and B ports)
	L	Pre comp - Section load sense relief (applies to both A and B ports)
	R	Post comp - SAE -6 or G 1/4 Port for remote load sense relief (applies to both A and B ports)
	Y	Pre comp - SAE -6 or G 1/4 Port for remote load sense relief (applies to both A and B ports)
	Z	No LS relief
Section LS Relief Setting:	###	In bar - 000 if not present or if using remote load sense relief, P00 if plugged
Position Indicator/ Stroke Limiter:	A	Electrohydraulic section w/spool stroke limiter
	B	Hydraulic section w/spool stroke limiter
	E	12V EH w/indicator
	F	24V EH w/indicator
	M	Manual w/indicator
	Z	None
Lever Kits:	A	135mm lever kit
	B	210mm lever kit
	Z	None
Special Features:	00	None
Design Level:	A	Initial release

End Cover

Description	End Cover Type	End Cover Ports	Paint / Coating	Tie Rod Kit	Special Features	Design Level
Code						

End Cover	Code	Description
End Cover:	F	Electrohydraulic with external side drain
	G	Electrohydraulic with external end drain
	H	Hydraulic or Manual with internal drain
	K	Hydraulic or Manual with external drain
End Cover Points:	B	BSP (G 1/4 pilot drain)
	S	SAE -6 pilot drain
Painting/Coating:	00	No Paint
	CD	Eaton Blue
	AU	Std Flat Black
Tie Rod Kit:	CLS100-1	1 section tie rod kit
	CLS100-2	2 section tie rod kit
	CLS100-3	3 section tie rod kit
	CLS100-4	4 section tie rod kit
	CLS100-5	5 section tie rod kit
	CLS100-6	6 section tie rod kit
	CLS100-7	7 section tie rod kit
	CLS100-8	8 section tie rod kit
	CLS100-9	9 section tie rod kit
	CLS100-10	10 section tie rod kit
Special Features:	00	None
Design Level	A	Initial release

Submit

Terminology & frequently asked questions

CLS100 Terminology

Saturation (over demand):

When flow demand exceeds flow supply this causes pump saturation or pump over demand.

Post-Compensated (Flow Sharing):

In post-compensated valves, the pressure differential acting on the compensate spool is downstream of the main spool metering orifice. The compensators in a post compensated valve will split the pump flow to all functions proportionally.

Pre-Compensated:

In pre-compensated valves, the pressure differential acting on the compensator spool is picked from either side of the main metering valve. In a Eaton CLS 100, pre and post compensated sections can be put together in one valve bank. In a pump over demand situation, the pre compensated section allows for priority over post compensated sections. This ensures that function will be maintained.

Left or Right Hand Build:

Orientation of the inlet with regard to side assembly lever mount requirements.

Electric Dump Valve:

Solenoid operated screw in cartridge valve used for full flow relief or load sense relief on the inlet.

End Cover Drain (Internal vs. External):

"Internal" drains to tank and "external" drains go to other options. Usually the drain refers to the low pressure side of the pilot valves, or is typically called pilot drain. Normally in a proportional valve like this, we want to reference the pilot drain direct to tank, so there is no back pressure on the drain line. Internal drain would be to the large tank line, and typically there is varying tank line pressure due to the amount of oil flowing back to the tank. This variation in back pressure can cause performance issues and slightly erratic flow rates because the net pilot pressure is affected even with steady current to the solenoid. That is why most applications use an external pilot drain referenced directly to tank. The flow rate is very low in the pilot drain so pressure fluctuations are minimal.

Frequently Asked Questions

When looking at the general specifications, why is the flow rate at 14 bar?

Rated flows are defined for 14 bar as per a KV inlet arrangement. A KV inlet arrangement is fixed displacement system with flow ports on A and B function of spool stroke, pilot pressure, control current inlet flow at 120 l/min.

What are the maximum recommended back pressures for different actuations?

Shown in the general specification information is 25 Bar, which is the maximum recommended pressure with EH or Hydraulic configuration with an external pilot drain.

Maximum recommended pressure with manually operated spool sections is 20 bar and a 10 bar maximum pressure is recommended for a EH configuration with an internal pilot drain.

Is the CLS available with CAN-Bus electronics available for the CLS100?

CAN-Bus electronics are not available for the CLS100 size valve but is available for the CLS350 due to the larger valve package.

What is the benefit of the load sense signal pressure relief valve?

The benefits of the pressure relief valve on the compensator is that it will set a maximum pressure for the service ports without absorbing the flow.

What current draw is required to drive the EH pilots on the CLS valve?

The CLS valve does not require more than 2 amps. In the 12 volt models, the CLS EH pilots require 1300 milliamps (1.3 amps) for full flow. However, the EH float model requires 1800 milliamps (1.8 amps) to guarantee the float position. In the 24 volt models, the current requirements are half of the above values. The electric dump valve options in the inlet modules are strictly on/off and don't require a proportional controller, but their current draw is less than 2 amps as well.

