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Hydraulic Cartridge Systems

Threaded Cartridge Valves and Integrated Hydraulic Products



ENGINEERING YOUR SUCCESS.

Presenting...

We would like to take this opportunity to welcome you to the new Hydraulic Cartridge Systems catalog. Catalog HY15-3501 represents our entire published product offering. This catalog is intended to replace all previous Hydraulic Cartridge Systems (HCS) catalogs. You will find many changes to this catalog in content and format. Here are a few highlights of what you will find:

□ **Complete Product Offering Including:**

- **Check Valves**
- **Shuttle Valves**
- **Load/Motor Controls**
- **Flow Controls**
- **Pressure Controls**
- **Logic Elements**
- **Directional Controls**
- **Manual Valves**
- **Solenoid Valves**
- **Proportional Valves**



We at the Hydraulic Cartridge Systems Division hope you find this catalog useful and want to thank you for turning to Parker Hannifin for your integrated hydraulic needs.



⚠ WARNING - USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

OFFER OF SALE

The items described in this document are hereby offered for sale by Parker-Hannifin Corporation, its subsidiaries or its authorized distributor. This offer and its acceptance are governed by the provisions stated in the detailed "Offer of Sale" elsewhere in this document.

PLEASE READ

How to use this catalog...

• Product Index

Each product tab has its own product index for that particular section. Basic product specifications are shown along with catalog page numbers and product symbols. Further detail can be found on the specific catalog pages.

SERIES	CAVITY	DESCRIPTION	FLOW L/PM/CFM	PRESSURE BAR/PSI	PAGE NO.
STANDARD CHECKS					
D1A000	2V	Check Valve Insert 1, Ball Type	145/38	420/6000	CS5
D1B125	2C	Check Valve Insert 1, Ball Type	500/122	420/6000	CS6
D0900	0B-2	Cartridge Check Ball T type	3,34/33	420/6000	CS7
D0282	0B-2	Cartridge Check Ball T type	45/12	420/6000	CS8
D1H10P	C10-2	Cartridge Check Poppet T type	60/16	350/5000	CS9
D0482	C10-2	Cartridge Check Ball T type	160/42	420/6000	CS10
D1H12P	C12-2	Cartridge Check Poppet T type	121/32	350/5000	CS11
D0628	C12-2	Cartridge Check Poppet T type	280/74	420/6000	CS12
D1D21P	C20-2	Cartridge Check Poppet T type	303/80	350/5000	CS13
D1H14P	C10-2	Cartridge Check Poppet T type	195	300/5000	CS14
D062	C16-2	Cartridge Check Poppet T type	500/132	420/6000	CS15
PILOT OPERATED CHECKS					
CP04P	CS1-3	Simple P.O.			
CP15AP	CS1-3	Simple P.O.			

• Technical Tips

At the beginning of each product section, we have a series of **Technical Tip** pages. These pages describe, in detail, the application and operational parameters of our cartridge valves. If you have any application or specification questions that cannot be answered by this section, please contact your local Parker representative or give us a call.

INTRODUCTION:
This technical tips section is designed to help familiarize you with the Parker line of Check Valves. In this section we present the products that are new to this catalog as well as some design features of our check valves. In addition, we present common options available to help you in selecting products for your application. Finally we give a brief synopsis of the operation and applications of the various product offered in this section.

NEW PRODUCTS:
There are several new additions and product improvements to our Check Valve product line. Here are just some of the general design features and advantages to the "Winner's Circle" check valve.

Dual Sense Paths: The dual sense paths reduce the pressure drop variation.

Spherical Poppet: The spherical poppet allows for a more consistent seating regardless of proper alignment resulting in lower leakage.

• Product Pages

The individual product catalog pages detail fully the product specifications and operating parameters of each valve. Additionally, dimensional information, as well as a complete model code for ordering product is shown.

General Description
Cartridge Style Check Valve. For additional information see Technical Tips on pages CS1-CS4.

Features

- Spherical poppet for low leakage
- T^o-Ring eliminates back-up rings
- Dual sense paths for reduced P

Performance Curve

Dimensions Millimeters (Inches)

• Coil and Body

There are 2 sections in this catalog that assist you in selecting the proper valve body or solenoid coil for your particular application. Also, the cavity details are shown for all Parker and Sterling cavities currently in use.

Technical Information

Features

- Compact one piece encapsulated design
- Minimal ampere draw
- Numerous terminals and voltages
- Coil designed for use with series DSL and DSLH type valves only
- Coils made with high quality Class N magnet wire
- Superior thick internal iron frame surrounding copper windings to increase the flux density
- More ampere turns to deliver more magnetic flux per input voltage
- A.C. coil operates @ 50/60 cycle (Hz)

Ordering Information

Model: S8, L, W, Termination, Slide, Voltage

Code: L, W, Voltage, Termination, Coil Plug Flow

• Technical Data

The Technical Data section outlines various hydraulic guidelines such as ratings, torques, limitations in use, seals, and hydraulic fluid/filtration information.

Technical Information

Valve/Cavity Compatibility
For additional information see Technical Tips on pages BC1-BC3.

CAVITY	Winner's Circle	Walter	Waltman	EPF	CS
Winner's Circle	X	X	X	X	X
Parker	X	X	X	X	X
Waltman	X	X	X	X	X
EPF	X	X	X	X	X
CS	X	X	X	X	X

Dimensions Millimeters (Inches)

Performance Curve
Drop vs. Flow

• Phase-Out/Legacy Products

See www.parker.com/hcs/legacy.pdf

	SERIES	DESCRIPTION	PAGE NO.	SERIES	DESCRIPTION	PAGE NO.
CV Check Valves	10SLC1-A	Normally Closed, Pilot to Close	LE7	DF122N	Flow Control, N.O.	PV51-PV52
	10SLC2-A	Normally Closed, Pilot to Close	LE12	DF161C	Flow Control, N.C.	PV31-PV32
SH Shuttle Valves	10SLC2-B	Normally Closed, Vent to Open	LE18	DF201C	Flow Control, N.C.	PV33-PV34
	10SLC3-A	Normally Open, Vent to Close	LE24	DH103	3 Way, External Pilot, Normally Open, Vent to Atmosphere	DC7-DC8
LM Load/Motor Controls	10SLC3-B	Normally Open, Vent to Close	LE28	DL081	2 Position, 2 Way, N.C. Poppet, Pull to Open	MV1
	16SLC1-A	Normally Closed, Pilot to Close	LE8	DL101	2 Position, 2 Way, N.C. Poppet, Pull to Open	MV2
FC Flow Controls	16SLC1-B	Normally Closed, Vent to Open	LE10	DM103	3 Way, Rotary Spool	MV5-MV6
	16SLC1-C	Normally Closed, Vent to Open	LE11	DM104	4 Way, Rotary Spool	MV7-MV8
PC Pressure Controls	16SLC2-A	Normally Closed, Pilot to Close	LE13	DS161	2 Position, 2 Way, N.C. or N.O.	SV43-SV44
	16SLC2-B	Normally Closed, Vent to Open	LE19	DS162	2 Position, 2 Way	SV73-SV74
LE Logic Elements	16SLC3-A	Normally Open, Vent to Close	LE25	DS163	2 Position, 3 Way	SV87-SV88
	16SLC3-B	Normally Open, Vent to Close	LE29	DS201	2 Position, 2 Way, N.C. or N.O.	SV45-SV46
DC Directional Controls	20SLC1-A	Normally Closed, Pilot to Close	LE9	DSH081	2 Position, 2 Way, N.C. or N.O.	SV35-SV36
	20SLC2-A	Normally Closed, Pilot to Close	LE14	DSH082	2 Position, 2 Way	SV67-SV68
MV Manual Valves	20SLC2-B	Normally Closed, Vent to Open	LE20	DSH083	2 Position, 3 Way	SV78-SV80
	A02A2	Direct Acting Relief, Ball Type	PC9-PC10	DSH084	2 Position, 4 Way	SV91-SV92
SV Solenoid Valves	A02B2	Direct Acting Relief, Poppet Type	PC11-PC12	DSH101	2 Position, 2 Way, N.C. or N.O.	SV99-SV40
	A04B2	Direct Acting Relief, Poppet Type	PC15-PC16	DSH102	2 Position, 2 Way	SV71-SV72
PV Proportional Valves	A04B2*CE	Direct Acting Relief, Poppet Type	PC17-PC18	DSH103	2 Position, 3 Way	SV84-SV86
	A04C2	Direct Acting Relief, Spool Type	PC19-PC20	DSH104	2 Position, 4 Way	SV95-SV96
CE Coils & Electronics	A04H3	Pilot Operated Vented Relief	PC41-PC42	DSH121	2 Position, 2 Way, N.C. or N.O.	SV41-SV42
	A04J2	Direct Acting Cross-over Relief	PC45-PC46	DSL081	2 Position, 2 Way, N.C. or N.O.	SV33-SV34
BC Bodies & Cavities	A04J2*CE	Direct Acting Cross-over Relief	PC47-PC48	DSL082	2 Position, 2 Way	SV65-SV66
	A04K2	Pilot Operated Spool Type Kick Down	PC37-PC38	DSL083	2 Position, 3 Way	SV75-SV77
TD Technical Data	A06G2	Pilot Operated Spool Type	PC33-PC34	DSL084	2 Position, 4 Way	SV89-SV90
	A06H3	Pilot Operated Vented Relief	PC43-PC44	DSL101	2 Position, 2 Way, N.C. or N.O.	SV37-SV38
	A06P2	Pilot Operated Poppet Type	PC53-PC54	DSL102	2 Position, 2 Way	SV69-SV70
	AP01B2YP	Increase Pressure/Increase Current	PV7-PV8	DSL103	2 Position, 3 Way	SV81-SV83
	AP01B2YR	Decrease Pressure/Increase Current	PV17-PV18	DSL104	2 Position, 4 Way	SV93-SV94
	AP02A2	Increase Pressure/Increase Current	PV9-PV10	E2*020	Load Control Cartridge Valve	LM11-LM12
	AP02B2YR	Decrease Pressure/Increase Current	PV19-PV20	E2*040	Load Control Cartridge Valve	LM13-LM14
	AP04G2YP	Increase Pressure/Increase Current	PV11-PV12	E2*060	Load Control Cartridge Valve	LM21-LM22
	AP04G2YR	Decrease Pressure/Increase Current	PV21-PV22	E2*1	Load Control Cartridge Valve	LM15-LM16
	ASH-04	In-Line Shuttle, -4 Male JIC	SH8-SH9	E2*1R	Load Control Cartridge Valve	LM19-LM20
	ASH-06	In-Line Shuttle, -6T	SH8-SH9	E2*1S	Load Control Cartridge Valve	LM17-LM18
	B02E3F	Direct Acting, 2P-3W, Int. Pilot, Int. Drain	PC69-PC70	E2*125	Load Control Cartridge Valve	LM23-LM24
	B04C3	Pilot Operated, Kick Down	PC67-PC68	E2*300	Load Control Cartridge Valve	LM25-LM26
	B04D3	Pilot Operated, Reverse Check, Ext. Drain	PC65-PC66	E6*1	Load Control Cartridge Valve	LM31-LM32
	B04E3	Direct Acting, 2P-3W, Int. Pilot, Int. Drain	PC71-PC72	E6A060*409	Load Control Cartridge Valve, 3:1 Ratio	LM35-LM36
	B04F3	Direct Acting, 2P-2W, NC, Ext. Pilot, Int. Drain	PC73-PC74	E6B020	Load Control Cartridge Valve, 4.5:1 Ratio	LM27-LM28
	B04G3	Direct Acting, 2P-2W, NO, Ext. Pilot, Int. Drain	PC75-PC76	E6B040	Load Control Cartridge Valve, 3:1 Ratio	LM33-LM34
	B04H4	Direct Acting, 2P-2W, NC, Ext. Pilot, Ext. Drain	PC77-PC78	E6B060*409	Load Control Cartridge Valve, 3:1 Ratio	LM35-LM36
	B04J4	Direct Acting, 2P-2W, NO, Ext. Pilot, Ext. Drain	PC79-PC80	E6K020	Load Control Cartridge Valve, 15:1 Ratio	LM29-LM30
	B04K4	Direct Acting, 2P-3W, NO, Ext. Pilot, Int. Drain	PC81-PC82	E9*1	Load Control Cartridge Valve	LM37-LM38
	C02A3	Direct Acting Reducing/Relieving	PC83-PC84	ERD081C	Normally Closed Direct Acting Proportional Relief	PV33-PV34
	CB101	Load Control Cartridge Valve	LM5-LM6	ERV121N	Increase Pressure/Increase Current	PV13-PV14
	CP084P	Single P.O. Check, Pilot on Port 1	CV18	ERV161N	Increase Pressure/Increase Current	PV15-PV16
	CPC101P	Pilot to Close Check, Pilot on Port 3	CV31	FA101	Restrictive Flow Control, Reverse Check, Adjustable	FC25-FC26
	CPD084P	Dual P.O. Check Cartridge	CV32	FC101	Restrictive Flow Control, Reverse Check, Tuneable	FC27-FC28
	CPH104P	Single P.O. Check, Pilot on Port 1	CV19	FCP101	Priority Type, with Bypass	FC39
	CPH124P	Single P.O. Check, Pilot on Port 1	CV20	FCPH121	Priority Type, with Bypass	FC41-FC42
	CS041B	Cartridge Shuttle	SH5	FCR101	Restrictive Type, Press. Compensators	FC37
	CSH101B	Cartridge Shuttle	SH7	FCR161	Restrictive Type, Press. Compensators	FC38
	CVH081P	Cartridge Check, Poppet Type	CV9	FDC101	Flow Divider/Combiner	FC43-FC44
	CVH103P	Cartridge Check, Poppet Type	CV10	FP101	Priority Type, with Bypass	FC31-FC32
	CVH104P	Cartridge Check, Poppet Type 2 to 1 Flow Path	CV16	FR101	Restrictive Flow Control, Tuneable	FC19-FC20
	CVH121P	Cartridge Check, Poppet Type	CV12	FV101	Needle Valve with Reverse Check, 1 to 2 Free Flow	FC15-FC16
	CVH161P	Cartridge Check, Poppet Type	CV14	FV102	Needle Valve with Reverse Check, 1 to 2 Free Flow	FC15-FC16
	CVH201P	Cartridge Check, Poppet Type	CV15	GA0201	2 Position, 2 Way, N.C. Poppet, Air Pilot or Pull to Open, Restricted Reverse Flow	MV15-MV16
	D0WB2	Cartridge Check, Ball Type	CV7	GA0205	2 Position, 2 Way, N.C. Poppet, Air Pilot or Pull to Open, Free Reverse Flow	MV15-MV16
	D02B2	Cartridge Check, Ball Type	CV8	GH02 01	2 Position, 2 Way, N.C., with Flow Adj.	SV47-SV48
	D04B2	Cartridge Check, Ball Type	CV11	GM0212	2 Position, 2 Way, N.O. Poppet, Push to Close	MV3
	D04F2	Check With Thermal Relief, Relieving Port 2 to 1	CV39	GM0233	2 Position, 3 Way, Spool Type, Pull to Shift	MV4
	D06B2P	Cartridge Check, Poppet Type	CV13	GM0240CS	2 Position, 4 Way, Push to Shift	MV10
	D06C2	Cartridge Check, Poppet Type 2 to 1 Flow Path	CV17	GM0240XS	2 Position, 4 Way, Push to Shift	MV9
	D1A060	Check Valve Insert, Ball Type	CV5	GM0251	3 Position, 4 Way, Closed Center, Pull to Shift and Push to Shift	MV11
	D1B125	Check Valve Insert, Ball Type	CV6	GM0253	3 Position, 4 Way, Float Center, Pull to Shift and Push to Shift	MV12
	D2K1	Single P.O. Check, Pilot on Port 3	CV29			
	D3B125	Single P.O. Check, Pilot on Port 3	CV30			
	D4A020	Single P.O. Check, Pilot on Port 3	CV27			
	D4A040	Single P.O. Check, Pilot on Port 3	CV28			
	DF083N	Flow Control, 3-Way	PV53-PV54			
	DF122C	Flow Control, N.C.	PV29-PV30			

SERIES	DESCRIPTION	PAGE NO.	SERIES	DESCRIPTION	PAGE NO.
GM0257	3 Position, 4 Way, Tandem Center, Pull to Shift and Push to Shift	MV13	L04A3	Flow Divider/Combiner	FC45-FC46
GM0259	C3 Position, 4 Way, Open Center, Pull to Shift and Push to Shift	MV14	L06A3	Flow Divider/Combiner	FC47-FC48
GP01 30	Pressure Reducing Valve	PV23-PV24	L1A300	Flow Divider/Combiner	FC49-FC50
GP02 51	4 Way, 3 Pos - Closed Center	PV57-PV58	M04A4J	Direct Acting Piloting Unloading	PC51-PC52
GP02 53	4 Way, 3 Pos - Float Center	PV61-PV62	MHC-010-S***	Load Control Cartridge Valve	LM7-LM8
GP04 51	4 Way, 3 Pos - Closed Center	PV59-PV60	MHC-010-V***	Load Control Cartridge Valve	LM7-LM8
GP04 53	4 Way, 3 Pos - Float Center	PV63-PV64	MHC-022-S***	Load Control Cartridge Valve	LM9-LM10
GS02 08	2 Position, 2 Way, N.C.	SV7-SV8	MHC-022-V***	Load Control Cartridge Valve	LM9-LM10
GS02 22	2 Position, 2 Way, N.C. Spool	SV21-SV22	N04A4	3 Way, Internal Vent, External Pilot	DC9
GS02 27	2 Position, 2 Way, N.O. Spool	SV23-SV24	N04B4	3 Way, Internal Vent, External Pilot	DC10
GS02 31/32	2 Position, 3 Way	SV27-SV28	N04G4	3 Way, Vent to Atmosphere, External Pilot	DC11
GS02 42	2 Position, 4 Way	SV31-SV32	N04H4	3 Way, Vent to Atmosphere, External Pilot	DC12
GS02 51	3 Position, 4 Way	SV97-SV98	N5A125	3 Way, 2 Position, External Drain, Open Transition	DC13
GS02 53	3 Position, 4 Way	SV101-SV102	N5A300	3 Way, 2 Position, External Drain, Open Transition	DC14
GS02 57	3 Position, 4 Way	SV105-SV106	N5B125	3 Way, 2 Position, External Drain, Closed Transition	DC15
GS02 59	3 Position, 4 Way	SV109-SV110	N5B300	3 Way, 2 Position, External Drain, Closed Transition	DC16
GS02 72/73	Bi-Directional Poppet, N.C.	SV49-SV50	N5C125	3 Way, 2 Position, External Drain, Diverter Valve, N.O.	DC17
GS02 77/78	Bi-Directional Poppet, N.O.	SV57-SV58	N5C300	3 Way, 2 Position, External Drain, Diverter Valve, N.O.	DC18
GS02 80/81	Bi-Directional Poppet, N.C.	SV51-SV52	N5D125	3 Way, 2 Position, External Drain, Diverter Valve, N.C.	DC19
GS02 85/86	Bi-Directional Poppet, N.O.	SV59-SV60	N5D300	3 Way, 2 Position, External Drain, Diverter Valve, N.C.	DC20
GS04 08	2 Position, 2 Way, N.C.	SV9-SV10	NVH081	Needle Valve, Cartridge Type	FC7-FC8
GS04 17	2 Position, 2 Way, N.O.	SV15-SV16	NVH101	Needle Valve, Cartridge Type	FC9-FC10
GS04 27	2 Position, 2 Way, N.O. Spool	SV25-SV26	PP02DP	Dual P.O. Check Package, Steel Body	CV33-CV34
GS04 31/32	2 Position, 3 Way	SV29-SV30	PP02SP	Single P.O. Check Package, Steel Body	CV21-CV22
GS04 52D	3 Position, 4 Way	SV99-SV100	PP04DP	Dual P.O. Check Package, Steel Body	CV35-CV36
GS04 54D	3 Position, 4 Way	SV103-SV104	PP04SP	Single P.O. Check Package, Steel Body	CV23-CV24
GS04 57D	3 Position, 4 Way	SV107-SV108	PP06DP	Dual P.O. Check Package, Steel Body	CV37-CV38
GS04 59D	3 Position, 4 Way	SV111-SV112	PP06SP	Single P.O. Check Package, Steel Body	CV25-CV26
GS04 80/81	Bi-Directional Poppet, N.C.	SV53-SV54	PR103	Direct Acting Reducing/Relieving	PC85-PC86
GS04 85/86	Bi-Directional Poppet, N.O.	SV61-SV62	PRH081	Pilot Operated Reducing/Relieving	PC95-PC96
GS06 07	2 Position, 2 Way, N.C.	SV13-SV14	PRH082	Pilot Operated Reducing	PC87-PC88
GS06 08	2 Position, 2 Way, N.C.	SV11-SV12	PRH101	Pilot Operated Reducing/Relieving	PC97-PC98
GS06 17	2 Position, 2 Way, N.O.	SV19-SV20	PRH102	Pilot Operated Reducing	PC89-PC90
GS06 18	2 Position, 2 Way, N.O.	SV17-SV18	PRH121	Pilot Operated Reducing/Relieving	PC99-PC100
GS06 80/81	Bi-Directional Poppet, N.C.	SV55-SV56	PRH122	Pilot Operated Reducing	PC91-PC92
GS06 85/86	Bi-Directional Poppet, N.O.	SV63-SV64	PRH161	Pilot Operated Reducing/Relieving	PC101-PC102
GTP02 34	Pressure Reducing Valve	PV25-PV26	PRH162	Pilot Operated Reducing	PC92-PC94
GTP04 34	Pressure Reducing Valve	PV27-PV28	R04A4	2 Way, Normally Open, Pilot to Close, Ext. Vent	DC4
HP02C	Flow Control, N.C.	PV35-PV36	R04B4	2 Way, Normally Closed, Pilot to Open, Ext. Vent	DC5
HP02P	Flow Control, N.O.	PV43-PV44	R04C3	2 Way, Normally Open, Pilot to Close	DC1-DC2
HP04C	Flow Control, N.C.	PV39-PV40	R04D3	2 Way, Normally Closed, Pilot to Open	DC3
HP04P	Flow Control, N.O.	PV47-PV48	R04E3	Normally Closed, Pilot to Close	LE15
J02A2	Needle Valve, Cartridge Type	FC5-FC6	R04F3	Normally Closed, Vent to Open	LE21
J02B2	Needle Valve with Reverse Check, 2 to 1 Free Flow	FC13-FC14	R04G3	Normally Open, Vent to Close	LE30
J02D3	Priority Type, with Bypass	FC29-FC30	R04H3	Normally Open, Vent to Close	LE26
J02E2	Restrictive Flow Control, Adjustable	FC17-FC18	R06E3	Normally Closed, Pilot to Close	LE16
J04C2	Restrictive Flow Control, Adjustable	FC23-FC24	R06F3	Normally Closed, Vent to Open	LE22
J04D3	Priority Type, with Bypass	FC33-FC34	R06G3	Normally Open, Vent to Close	LE31
J04E2	Restrictive Flow Control, Adjustable	FC21-FC22	R06H3	Normally Open, Vent to Close	LE27
J06A2	Needle Valve, Cartridge Type	FC11-FC12	R08E3	Normally Closed, Pilot to Close	LE17
J1A125	Priority Type, with Bypass	FC35-FC36	R08F3	Normally Closed, Vent to Open	LE23
JP02C	Flow Control, N.C.	PV37-PV38	RAH081	Pilot Operated Spool Type	PC27-PC28
JP02P	Flow Control, N.O.	PV45-PV46	RAH101	Pilot Operated Spool Type	PC29-PC30
JP04C 21	Flow Control, N.C.	PV41-PV42	RAH101V	Pilot Operated Vented Relief	PC39-PC40
JP04C 31	Priority Flow Control, N.C.	PV55-PV56	RAH161	Pilot Operated Spool Type	PC31-PC32
JP04P	Flow Control, N.O.	PV49-PV50	RAH201	Pilot Operated Spool Type	PC35-PC36
K02A3	Cartridge Shuttle	SH6	RU101	Direct Acting Unloading	PC49-PC50
K04B3	Spool Type Shuttle	SH10	RD102	Direct Acting Relief, Poppet Type	PC13-PC14
K04C3	Spool Type, Spring Centered, All Ports Closed	SH12	RD163	Direct Acting Differential Area Relief	PC25-PC26
K04D3	Spool Type Shuttle	SH11	RDH042	Direct Acting Relief, Poppet Type	PC7-PC8
K04F3	Spool Type, Spring Centered, All Ports Open	SH14	RDH083	Direct Acting Differential Area Relief	PC21-PC22
K04G3	Spool Type Shuttle, Inverse	SH15	RDH103	Direct Acting Differential Area Relief	PC23-PC24
K2A005	Poppet Insert Type	SH4	SVH081	Pilot Operated, Int. Pilot, Ext. Drain	PC55-PC56
K3A125	Spool Type, Spring Centered, All Ports Closed	SH13	SVH101	Pilot Operated, Int. Pilot, Ext. Drain	PC57-PC58
KSWA3	Ball Insert Type	SH3	SVH102	Pilot Operated, Ext. Pilot, Int. Drain	PC61-PC62
			SVH161	Pilot Operated, Int. Pilot, Ext. Drain	PC59-PC60
			SVH162	Pilot Operated, Ext. Pilot, Int. Drain	PC63-PC64

- CV**
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- SH**
- Shuttle Valves
- LM**
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SERIES DESCRIPTION PAGE NO.

Cartridge Valve Coils

CC	1/2" Solenoid Tubes	CE3-CE4
CA	5/8" Solenoid Tubes	CE5-CE6
Unicoil	1/2" Solenoid Tubes	CE7-CE8
Unicoil	5/8" Solenoid Tubes	CE9-CE10
DS	1/2" Solenoid Tubes	CE11-CE12
DS	5/8" Solenoid Tubes	CE13-CE14
DS	1" Solenoid Tubes	CE15

Electronics

XPR0704	Soft Start Valve Controller, 12/24 VDC	CE23
XPR0704b	Soft Start and Stop Valve Controller, 12/24 VDC	CE24
XPR0804	Power Saver Controller, 12/24 VDC PWM	CE25
XPR0902	12 VDC PWM Controller, 110Hz, 19W	CE17-CE18
XPR0902d	12 VDC PWM Controller, 95-230Hz, 19W	CE19-CE20
XPR0902rid	12 VDC PWM Controller, 95-230Hz, 19W, Multi-adj.	CE21-CE22
XPR0904	24 VDC PWM Controller, 110Hz, 19W	CE17-CE18
XPR0904d	24 VDC PWM Controller, 95-230Hz, 19W	CE19-CE20
XPR0904rid	24 VDC PWM Controller, 95-230Hz, 19W, Multi-adj.	CE21-CE22
XPR0932	12 VDC PWM Controller, 110Hz, 30W	CE17-CE18
XPR0932d	12 VDC PWM Controller, 95-230Hz, 30W	CE19-CE20
XPR0932rid	12 VDC PWM Controller, 95-230Hz, 30W, Multi-adj.	CE21-CE22
XPR0934	24 VDC PWM Controller, 110Hz, 30W	CE17-CE18
XPR0934d	24 VDC PWM Controller, 95-230Hz, 30W	CE19-CE20
XPR0934rid	24 VDC PWM Controller, 95-230Hz, 30W, Multi-adj.	CE21-CE22

Standard Bodies and Cavities

C04-2	04 Size, 2 Way	BC7
C04-3	04 Size, 3 Way	BC8
C08-2	08 Size, 2 Way	BC9
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C08-4	08 Size, 4 Way	BC11
C09-2	09 Size, 2 Way	BC12
C10-2	10 Size, 2 Way	BC13
C10-2T	10 Size, 2 Way, "T" Body	BC14
C10-3	10 Size, 3 Way	BC15
C10-3S	10 Size, 3 Way, Short	BC16
C10-4	10 Size, 4 Way	BC17
C11-3	11 Size, 3 Way	BC18
C12-2	12 Size, 2 Way	BC19
C12-3	12 Size, 3 Way	BC20
C12-3L	12 Size, 3 Way, Long	BC21
C12-4	12 Size, 4 Way	BC22
C12-4L	12 Size, 4 Way, Long	BC23
C16-2	16 Size, 2 Way	BC24
C16-3	16 Size, 3 Way	BC25
C16-3S	16 Size, 3 Way, Short	BC26
C20-2	20 Size, 2 Way	BC27
C20-3S	20 Size, 3 Way, Short	BC28

Counterbalance Cavities and Bodies

MHC-010	Single and Dual Counterbalance Bodies	BC29
MHC-022	Single and Dual Counterbalance Bodies	BC30
MHC-025	Single and Dual Counterbalance Bodies	BC31
MHC-050	Single and Dual Counterbalance Bodies	BC32

Pilot Piston Cavities

10 Size	10 Size Cavity for Single Check and Pilot Piston	BC33
10 Size	10 Size Cavity for Dual Check and Pilot Piston	BC33
16 Size	16 Size Cavity for Single Check and Pilot Piston	BC33
16 Size	16 Size Cavity for Dual Check and Pilot Piston	BC33

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Standard Cavity Plugs

Cavity Plugs	BC34
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Cartpak Bodies

BD03-ABN	A and B Port Interrupt, Body Only	BC40
BD03-ABT	A and B Ports to Tank, Body Only	BC42
BD03-ABX	A and B Port Crossover, Body Only	BC41
BD03-ADB	A Port Drain to B, Body Only	BC45
BD03-BDA	B Port Drain to A, Body Only	BC44
BD03-DDX	Ports A and B Drain to Crossover Port, Body Only	BC43
BD03-PN	P Port Interrupt, 2-Way, Body Only	BC35
BD03-PN2	P Port Interrupt, 2-Way, Body Only	BC36
BD03-PNR	P Port Interrupt, Reducing Function, Body Only	BC37
BD03-PNS	P Port Interrupt, Sequencing Function, Body Only	BC38
BD03-PT	P to T, Body Only	BC39

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CAVSW-3	3 Port	BC47
CAVT11A	3 Port or 4 Port Dual	BC48
CAVT21A	4 Port	BC49
2C	2 Port	BC50
2G	2 Port	BC51
2R	2 Port	BC52
2U	2 Port	BC53
2X	2 Port	BC54
3A	3 Port	BC55
3C	3 Port or 4 Port Dual	BC56
3J	3 Port	BC57
3K	3 Port	BC58
3M	3 Port or 4 Port Dual	BC59
3X	3 Port	BC60
3Z	3 Port	BC61
4C	4 Port	BC62
5A	5 Port	BC63
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54-1	3 Port	BC65
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Technical Data	TD1-TD4	TD Technical Data

The HCSD Story . . .

The Hydraulic Cartridge Systems Division (HCSD), headquartered in Lincolnshire, Illinois, was “born” as a Parker manufacturing division on July 1st, 2000. Through several acquisitions, Parker has assembled a line-up of respected cartridge valve manufacturers, including; Sterling Hydraulics, Waterman Hydraulics, Fluid Power Systems (FPS), Gresen, and CEC. Through this assembly of products, Parker’s product offering is now one of the most extensive in the industry.

The objective and mission of HCSD:

“The Hydraulic Cartridge Systems Division of Parker Hannifin is a world leader in the manufacture of hydraulic cartridge products and integrated systems. We will provide the best quality and value to our Customers by delivering Premier Customer Service, rapid application support, advanced technology products, and value-based engineering solutions.”

The division currently has four locations, each providing various aspects of cartridge valve manufacturing, assembly, test, as well as manifold machining and other secondary operations. Each location is supported by a local management team, along with an experienced and well-trained work force. Parker believes the best in efficient manufacturing and Premier Customer Service cannot be achieved unless the process of continuous improvement is in place. We are continuously measuring our progress to exceed the expectation of the market through Kaizen events, Lean initiatives, 5 “S” quality programs, and other continuous improvement programs.

Lincolnshire operations . . .

The division headquarters is located in Lincolnshire, Illinois, which is approximately 15 miles north of



Chicago, and a 20 minute drive north of O’Hare airport. This location houses many of the primary division functions such as Marketing, Product Management, Engineering, Customer Service, Accounting, Quality Engineering, and Research & Development. In addition to the office headquarters, the 85,000 sq. ft. building features a newly remodeled plant space for the assembly and test of cartridge valves and manifold products. With its experienced, dedicated work force, Parker is proud to present Lincolnshire as the assembly and test home for the new Winner’s Circle product line. This location serves as the primary contact point for customers, distributors, and Parker sales representatives.



Chanhassen operations . . .

The Chanhassen operation is housed in a new state-of-the-art, 32,000 sq. ft. facility, located 10 miles west of Minneapolis. This facility demonstrates Parker's commitment to growth, as it is equipped with many new machining centers for the production of manifolds, line bodies, and cartridge components. Many of the new machines

are connected by a common pallet system allowing for nearly unlimited machine runs, reduced set-up time, and flexible scheduling. We machine most of our own manifolds!

Chanhassen is also the home of the Parker-HCSD "Speed Shop" as well as the IHC application specialist team. The "Speed Shop" is our resource to assist customers and distributors in the initial development of manifold and system solutions. A team of experienced application specialists dedicated to the specification and design of steel and aluminum Integrated Hydraulic Circuit systems (IHC's) lead this process. At the heart of the "Speed Shop" is the machining center, assembly area, and test bench, all dedicated solely to the production of prototype manifolds.

Elk Grove Village operations . . .

The Elk Grove Village location is just minutes from Chicago's O'Hare airport. This location has assembly and test operations for CMB's (Customer Manifold Blocks) as well as solenoid and proportional valves in a 43,000 sq. ft. facility. Formerly, the Sterling Hydraulics USA headquarters, it boasts horizontally integrated manufacturing, including solenoid tube welding, and aluminum manifold machining. Additionally, a very qualified staff handles the warehousing and distribution of U.K. manufactured pressure and flow control cartridges.



Monterrey operations . . .

The Monterrey cartridge valve assembly and test operations are housed in a well-equipped modern manufacturing facility, just 2 hours west of McAllen, Texas. Parker began operations in this new facility in 1998. This location focuses primarily on the assembly and test of cartridge valves.



IHD actually shares this facility with other Parker divisions in order to maximize the efficiency of the assembly and support processes.

All Parker facilities are ISO 9000 registered, ensuring complete customer satisfaction.

The HCSDE Story . . .

With its developments in integrated hydraulic products, Parker has decided to penetrate the expanding European market by creating a focused resource with engineering and manufacturing capability for both cartridge valves and manifold systems. This division is named Hydraulic Cartridge Systems Division-Europe based in Crewkerne - England.

This allows Parker to take advantage of its strengths in product offerings and truly provide OEM's with "one stop shopping". With the vast resources of its many divisions available, Parker has the unique ability to adapt other Parker products within speciality manifolds, beyond just the integration of valve products.

Our objectives and development are linked directly with HCSD and are in line with our Global Hydraulics Group goals. HCSDE have three locations, with its headquarters in Crewkerne, a manifold production facility in Boras - Sweden, and the volume cartridge production facility in Chomutov. - Czech Republic. The following is a brief review of each location:

Crewkerne operations . . .

The Crewkerne operation is the headquarters for Hydraulic Cartridge Systems Division-Europe. This facility houses a complete machine shop well equipped to accommodate a large variety of turning, grinding, and milling operations to support complete cartridge valve manufacturing. Also, the Crewkerne facility has a complete Assembly and Test operation with automated assembly and testing in selected cells. Recent investments have improved efficiency which has allowed capacity to grow to over 1,500,000 valves per year. The following activities are supported from this location:



- Customer Service
- Product and Technical Support
- Manifold Systems
- Quality Assurance Systems
- Manufacturing Support
- Finance
- Purchasing
- Marketing
- Engineering Support for Cartridge Valves

Boras operations . . .

The manifold systems “team” is located in Boras Sweden, 30 miles East of Gothenburg. This “team” focuses on the production on integrated hydraulic circuits which are incorporated into mobile systems. By working closely with the Mobile Controls Division (M.C.D.) we are also able to take full advantage of Parker’s unique spool valve product offering, and systems engineering expertise. Boras also has a prototype Speed Shop capability, and



provides local manifold design and production support for the Nordic region. Manifold system application engineering and manufacturing capability is also available at several other Parker Sales locations throughout Europe. Parker can provide both standard circuit and custom-engineered hydraulic solutions. Each facility uses compatible CAD / CAM packages to enable the resource to be shared whilst keeping the application engineering close to our customers.



Chomutov operations . . .

The Chomutov cartridge valve and simple Manifold system assembly and test operation is located in a brand new manufacturing facility, 50 miles north of Prague in the city of Chomutov - Czech Republic. The facility is based on LEAN manufacturing techniques Such as Value Stream Mapping, “Point-of-Use” Inventory, Kanban controls, 5S, Visual

factory, Small batch flow, Balanced work flow etc. and is operated using fully equipped “cells” which are dedicated to specific product “families” with each one having a “state-of-the-art” test stand with manual or automated electronic controls and quick change-over fixtures.

Products are distributed to customers’ throughout Europe via the Cartridge Valve Distribution Center (C.V.D.C) in conjunction with the United Parcel Service (U.P.S.)

All Parker facilities are ISO 9000 registered, ensuring complete customer satisfaction.

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