

Hydraulic Cartridge Systems

Threaded Cartridge Valves and Integrated Hydraulic Products

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



ENGINEERING YOUR SUCCESS.

Presenting...

We would like to take this opportunity to welcome you to the new Hydraulic Cartridge Systems catalog. Catalog HY15-3502 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 it's 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.

Catalog HY15-3502/US
Contents

SERIES	CAVITY	DESCRIPTION	FLOW LPM/GPM	PRESSURE BAR/PSI	PAGE NO.	CV	
STANDARD CHECKS							
D1A060	2U	Check Valve Insert, Ball Type	145/39	420/6000	CV5	SH LM PC	
D1B125	2C	Check Valve Insert, Ball Type	500/125	420/6000	CV6		
D0882	CMW-2	Cartridge Check, Ball Type	3.5/9	420/6000	CV7		
D0282	C08-2	Cartridge Check, Ball Type	45/12	420/6000	CV8		
★ CVH031P	C03-2	Cartridge Check, Poppet Type	38/10	300/5000	CV9		
★ CVH103P	C10-2	Cartridge Check, Poppet Type	60/16	300/5000	CV10		
D0482	C16-2	Cartridge Check, Ball Type	150/40	420/6000	CV11		
CVH121P	C12-2	Cartridge Check, Poppet Type	121/32	300/5000	CV12		
D0882P	C16-2	Cartridge Check, Poppet Type	280/74	420/6000	CV13		
CVH161P	C16-2	Cartridge Check, Poppet Type	205/50	300/5000	CV14		
CVH01P	C20-2	Cartridge Check, Poppet Type	303/80	300/5000	CV15		
★ CVH104P	C10-2	Cartridge Check, Poppet Type	2 to 1 Flow Path				
D062C	C16-2	Cartridge Check, Poppet Type	2 to 1 Flow Path	195	300/5000		CV16
PILOT OPERATED CHECKS							

• 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.

Catalog HY15-3502/US
Technical Tips

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 across the valve.

Structural Supports: The additional design 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.

Catalog HY15-3502/US
Check Valve Series CVH103P

General Description
Cartridge Style Check Valve. For additional information see Technical Tips on pages CV1-CV4.

Features

- Spherical poppet for low leakage
- "O"-Ring eliminates back-up rings
- Dual sense paths for reduced slip
- All external parts zinc plated

Performance Curve
Pressure Drop vs. Flow (Through cartridge only)

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.

Catalog HY15-3502/US
Super Coil Series 5/8" I.D.

Features

- Integral Deutsch connector coil exceeds IP69K standards
- Integral Deutsch connector coil thermal shock dunk test rated
- Integral Amp Jr. coil exceeds IP67 standards for thermal shock, water resistance and "dunk capability"
- Universal 50/50 Hz operation
- Coil hermetically sealed, requires no O-rings or waterproofing kits
- External plated steel flux-carrying band (unlike encapsulated band) enables coil to withstand severe thermal shocks without cracking
- Symmetrical coil can be reversed without affecting performance

Specifications

Coil Type	S	Standard
	P	Pulsed
Power	S	18 Watts
	P	20 Watts

Ordering Information

Super Coil 5/8" I.D. Voltage Valve Termination

CA [] [] [] []

Coil Voltage: S Standard, P Pulsed

Side Voltage: []

• Technical Data

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

Catalog HY15-3502/US
Standard Bodies and Cavities 10 Size, 2-Way

Valve/Cavity Compatibility
For additional information see Technical Tips on pages BC1-BC5.

CAVITY	VALVE			
	Winner's Circle	Parker	Waterman	CFP
Parker	X	X	X	X
Waterman	X	X	X	X
CFP	X	X	X	X
SCC	X	X	X	X

Dimensions (Millimeters (Inches))

Performance Curve
Drop vs. Flow

Integrated Hydraulic Circuits

Parker is a recognized leader in integrated circuit design focusing on flexibility, innovation and support. Application engineering and manufacturing support facilities are located throughout North America, Europe, Scandinavia and in other areas around the world.

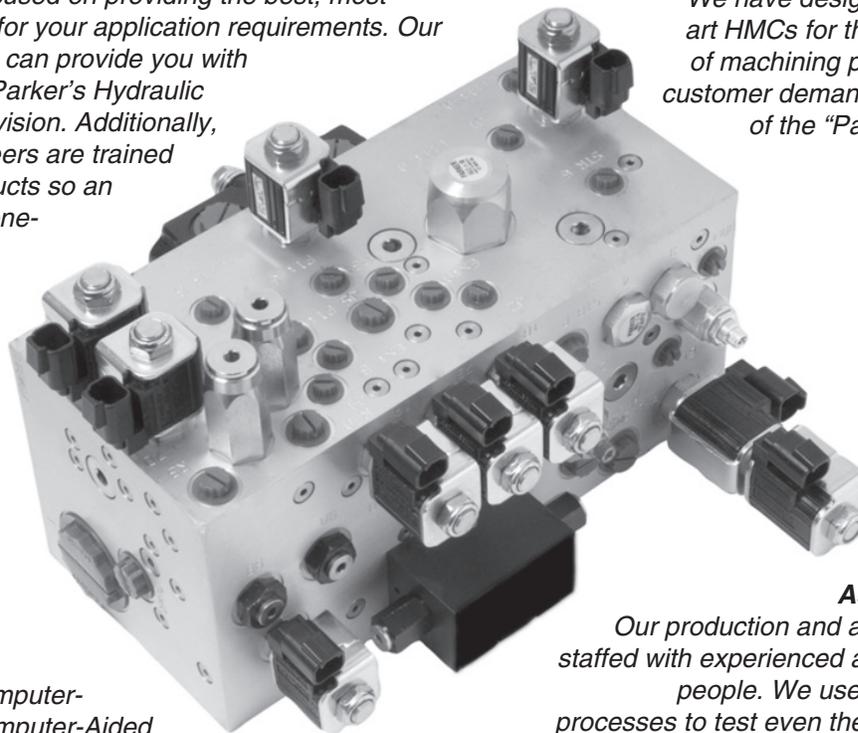
The Parker Hydraulic Cartridge Systems Applications Engineering team is thoroughly experienced in all facets of hydraulic system design, particularly the **integration of Parker technologies** that develop into complete manifold and sub-system solutions. We can assist in the development of any circuit, be it a simple single cartridge, or a complex multi-station assembly. We have the tools to engineer your success!

Application Engineering Assistance

Parker has many trained and experienced application engineers who are focused on providing the best, most cost efficient solution for your application requirements. Our application specialists can provide you with all the capabilities of Parker's Hydraulic Cartridge Systems Division. Additionally, our application engineers are trained in all of Parker's products so an application can be a one-stop call.

Expert Machining

We have designated state-of-the-art HMCs for the specific purpose of machining prototypes for quick customer demand. This is the basis of the "Parker Speed Shop".



Manifold Design

Our advanced 3D Computer-Aided Design and Computer-Aided Manufacturing software enables fast and accurate design as well as rapid manufacturing integration among our integrated circuit production facilities.

Assembly and Test

Our production and assembly areas are staffed with experienced and knowledgeable people. We use automated testing processes to test even the most complicated assemblies.

Integrated Hydraulic Circuits advantage:

- Reduce the number of fittings, hoses and couplings
- Optimize and reduce components used
- Allow fewer leakage points
- Consume less space
- Provide simplified assembly and service
- Create a complete system solution with optimized functions
- Allow you to flange one or more directional valves as well as pumps, cylinders, motors and filters.

Parker Rotary Manifolds

Parker Hannifin Hydraulic Cartridge Systems introduces a new offering to its already extensive product line - the Rotary Manifold.

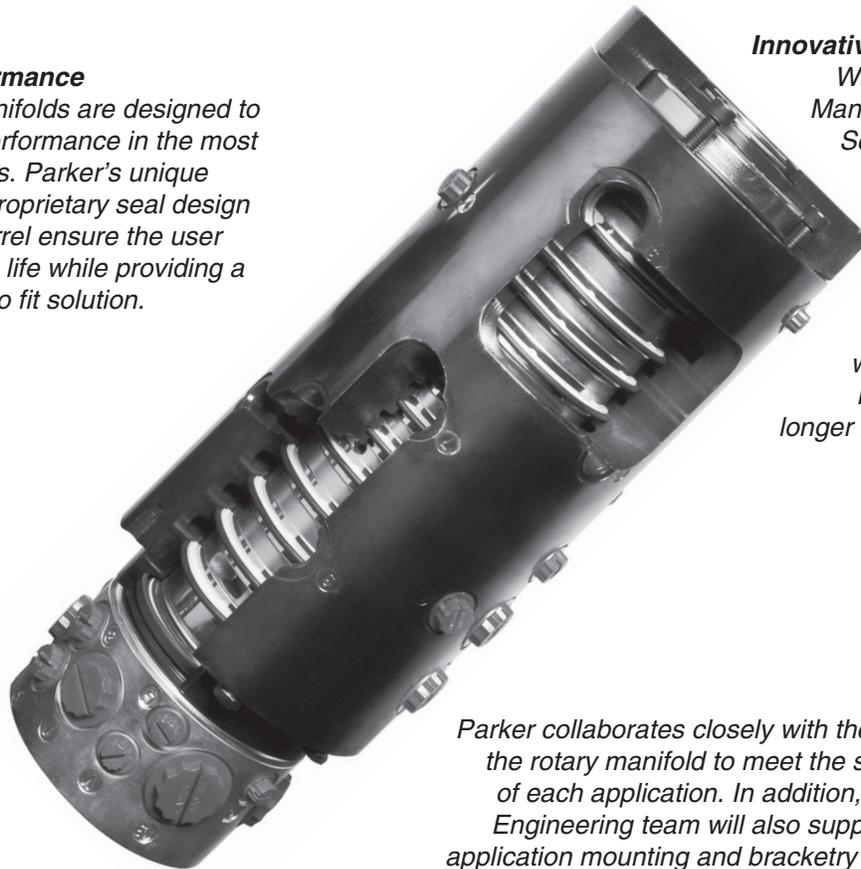
Parker Rotary Manifolds are used in applications where multiple rotations of a mechanical structure are required. A hydraulic rotary manifold's primary function is to allow oil, water, gases and electronics to pass through it while allowing a 360 degree constant rotation. Depending on the application, these manifolds are manufactured in various configurations and sizes containing up to 20 stations and can operate at pressures as high as 7,500 psi.

Exceptional Performance

Parker's Rotary Manifolds are designed to provide leak-free performance in the most rigorous applications. Parker's unique step shaft design, proprietary seal design and non-welded barrel ensure the user of extensive service life while providing a compact and easy to fit solution.

Global Applications

Common applications can include aerial work platform booms to hydraulic excavators. These manifolds replace complex swivels and complicated hose routings, thereby saving weight and space.



Innovative GLIDELOC Seals

With the Parker Rotary Manifold, the GLIDELOC Seal uses locking tabs to secure the o-ring into the barrel.

This locking design assures that the o-ring will not "go dynamic" when energized. This means a significantly longer life for the manifold's sealing system.

Superior Support

Parker collaborates closely with the customer to design the rotary manifold to meet the specific requirements of each application. In addition, Parker's Application Engineering team will also supply design support for application mounting and bracketry to ensure the proper installation of your custom designed manifold. This elevated level of customization guarantees the quality performance you expect from a Parker product.

Parker Rotary Manifolds offer:

Direct barrel porting – reduces leak point failure by omitting weld joints and provides greater port orientation flexibility

Compact Design- allows for easier installation and alleviates hose routing issues

Improved Sealing technology- increases life expectancy of rotary

Easily capable of continuous rotation while under pressure

Extensive lifecycle testing performed in-house

	SERIES	DESCRIPTION	PAGE NO.	SERIES	DESCRIPTION	PAGE NO.
CV Check Valves	10SLC1-A	Normally Closed, Pilot to Close	LE7	D3B125	Single P.O. Check, Pilot on Port 3	CV29
	10SLC2-A	Normally Closed, Pilot to Close	LE11	D4A020	Single P.O. Check, Pilot on Port 3	CV27
	10SLC2-B	Normally Closed, Vent to Open	LE17	D4A040	Single P.O. Check, Pilot on Port 3	CV28
SH Shuttle Valves	10SLC3-A	Normally Open, Vent to Close	LE23	DF122C	Flow Control, N.C.	PV25-PV26
	10SLC3-B	Normally Open, Vent to Close	LE27	DF122N	Flow Control, N.O.	PV49-PV50
	16SLC1-A	Normally Closed, Pilot to Close	LE8	DF161C	Flow Control, N.C.	PV27-PV28
LM Load/Motor Controls	16SLC1-C	Normally Closed, Vent to Open	LE10	DF201C	Flow Control, N.C.	PV29-PV30
	16SLC2-A	Normally Closed, Pilot to Close	LE12	DFA125C21	Flow Control, N.C.	PV39-PV40
	16SLC2-B	Normally Closed, Vent to Open	LE18	DFA125C31	Priority Flow Control, N.C.	PV53-PV54
FC Flow Controls	16SLC3-A	Normally Open, Vent to Close	LE24	DH103	3 Way, External Pilot, Normally Open, Vent to Atmosphere	DC7-DC8
	16SLC3-B	Normally Open, Vent to Close	LE28	DL081	2 Position, 2 Way, N.C. Poppet, Pull to Open	MV1
	20SLC1-A	Normally Closed, Pilot to Close	LE9	DL101	2 Position, 2 Way, N.C. Poppet, Pull to Open	MV2
PC Pressure Controls	20SLC2-A	Normally Closed, Pilot to Close	LE13	DM103	3 Way, Rotary Spool	MV5-MV6
	20SLC2-B	Normally Closed, Vent to Open	LE19	DM104	4 Way, Rotary Spool	MV7-MV8
	A02A2	Direct Acting Relief, Ball Type	PC15-PC16	DMH085C1	3 Position, 4 Way, Closed Center, Pull to Shift and Push to Shift	MV11-MV12
LE Logic Elements	A02B2	Direct Acting Relief, Poppet Type	PC17-PC18	DMH085C2	3 Position, 4 Way, Open Center, Pull to Shift and Push to Shift	MV11-MV12
	A04B2	Direct Acting Relief, Poppet Type	PC21-PC22	DMH085C4	3 Position, 4 Way, Float Center, Pull to Shift and Push to Shift	MV11-MV12
	A04B2*CE	Direct Acting Relief, Poppet Type	PC23-PC24	DMH085C9	3 Position, 4 Way, Tandem Center, Pull to Shift and Push to Shift	MV11-MV12
DC Directional Controls	A04C2	Direct Acting Relief, Spool Type	PC25-PC26	DS161	2 Position, 2 Way, N.C. or N.O.	SV23-SV24
	A04H3	Pilot Operated Vented Relief	PC53-PC54	DS162	2 Position, 2 Way	SV57-SV58
	A04J2	Direct Acting Cross-over Relief	PC59-PC60	DS163	2 Position, 3 Way	SV71-SV72
MV Manual Valves	A04J2*CE	Direct Acting Cross-over Relief	PC61-PC62	DS201	2 Position, 2 Way, N.C. or N.O.	SV27-SV28
	A04K2	Pilot Operated Spool Type Kick Down	PC47-PC48	☆DSH081	2 Position, 2 Way, N.C. or N.O.	SV15-SV16
	A06G2	Pilot Operated Spool Type	PC43-PC44	☆DSH082	2 Position, 2 Way	SV51-SV52
SV Solenoid Valves	A06H3	Pilot Operated Vented Relief	PC55-PC56	☆DSH083	2 Position, 3 Way	SV62-SV64
	A06P2	Pilot Operated Poppet Type	PC73-PC74	☆DSH084	2 Position, 4 Way	SV75-SV76
	AP01B2YP	Increase Pressure/Increase Current	PV7-PV8	☆DSH101	2 Position, 2 Way, N.C. or N.O.	SV19-SV20
PV Proportional Valves	AP01B2YR	Decrease Pressure/Increase Current	PV13-PV14	☆DSH102	2 Position, 2 Way	SV55-SV56
	AP02B2YP	Increase Pressure/Increase Current	PV9-PV10	☆DSH103	2 Position, 3 Way	SV68-SV70
	AP02B2YR	Decrease Pressure/Increase Current	PV15-PV16	☆DSH104	2 Position, 4 Way	SV79-SV80
CE Coils & Electronics	AP04G2YP	Increase Pressure/Increase Current	PV11-PV12	DSH121	2 Position, 2 Way, N.C. or N.O.	SV21-SV22
	AP04G2YR	Decrease Pressure/Increase Current	PV17-PV18	DSH125 52	3 Position, 4 Way	SV101-SV102
	AS04G2	Solenoid Operated Unloading Relief	PC49-PC50	DSH125 54	3 Position, 4 Way	SV103-SV104
BC Bodies & Cavities	ASH-04	In-Line Shuttle, -4 Male JIC	SH8-SH9	DSH125 57	3 Position, 4 Way	SV105-SV106
	ASH-06	In-Line Shuttle, -6T	SH8-SH9	DSH125 59	3 Position, 4 Way	SV107-SV108
	B02E3F	Direct Acting, 2P-3W, Int. Pilot, Int. Drain	PC91-PC92	☆DSH161	2 Position, 2 Way, N.C. or N.O.	SV25-SV26
TD Technical Data	B04C3	Pilot Operated, Kick Down	PC89-PC90	DSH164	2 Position, 4 Way	SV81-SV82
	B04D3	Pilot Operated, Reverse Check, Ext. Drain	PC87-PC88	☆DSL081	2 Position, 2 Way, N.C. or N.O.	SV13-SV14
	B04E3	Direct Acting, 2P-3W, Int. Pilot, Int. Drain	PC93-PC94	☆DSL082	2 Position, 2 Way	SV49-SV50
SH Shuttle Valves	B04F3	Direct Acting, 2P-2W, N.C., Ext. Pilot, Int. Drain	PC99-PC100	☆DSL083	2 Position, 3 Way	SV59-SV61
	B04G3	Direct Acting, 2P-2W, N.O., Ext. Pilot, Int. Drain	PC101-PC102	☆DSL084	2 Position, 4 Way	SV77-SV74
	B04H4	Direct Acting, 2P-2W, N.C., Ext. Pilot, Ext. Drain	PC103-PC104	☆DSL101	2 Position, 2 Way, N.C. or N.O.	SV17-SV18
CV Check Valves	B04J4	Direct Acting, 2P-2W, N.O., Ext. Pilot, Ext. Drain	PC107-PC108	☆DSL102	2 Position, 2 Way	SV53-SV54
	B04K4	Direct Acting, 2P-3W, N.O., Ext. Pilot, Int. Drain	PC109-PC110	☆DSL103	2 Position, 3 Way	SV65-SV67
	C02A3	Direct Acting Reducing/Relieving	PC111-PC112	☆DSL104	2 Position, 4 Way	SV77-SV78
PV Proportional Valves	CB101	Load Control Cartridge Valve	LM5-LM6	☆DSL105	3 Position, 4 Way	SV91-SV92
	☆CDP(H)081	Dual P.O. Check Package	CV33-CV34	☆DSL201	2 Position, 2 Way, N.C. or N.O.	SV29-SV30
	☆CDP(H)103	Dual P.O. Check Package	CV35-CV36	DSP105C1	3 Position, 4 Way - Closed Center	PV59-PV61
BC Bodies & Cavities	CDP(H)161	Dual P.O. Check Package, Steel Body	CV37-CV38	DSP105C4	3 Position, 4 Way - Float Center	PV59-PV61
	CP084P	Single P.O. Check, Pilot on Port 1	CV18	E2*020	Load Control Cartridge Valve	LM17-LM18
	CPC101P	Pilot to Close Check, Pilot on Port 3	CV30	E2*040	Load Control Cartridge Valve	LM19-LM20
CE Coils & Electronics	CPD084P	Dual P.O. Check Cartridge	CV32	E2*060	Load Control Cartridge Valve	LM27-LM28
	☆CPH104P	Single P.O. Check, Pilot on Port 1	CV19	E2*1	Load Control Cartridge Valve	LM21-LM22
	CPH124P	Single P.O. Check, Pilot on Port 1	CV20	E2*1R	Load Control Cartridge Valve	LM25-LM26
TD Technical Data	CS041B	Cartridge Shuttle	SH5	E2*1S	Load Control Cartridge Valve	LM23-LM24
	CSH101B	Cartridge Shuttle	SH7	E2*125	Load Control Cartridge Valve	LM29-LM30
	☆CSP(H)081	Single P.O. Check Package	CV21-CV22	E2*300	Load Control Cartridge Valve	LM31-LM32
CV Check Valves	☆CSP(H)103	Single P.O. Check Package	CV23-CV24	E6*1	Load Control Cartridge Valve	LM37-LM38
	CSP(H)161	Single P.O. Check Package, Steel Body	CV25-CV26	E6A060*409	Load Control Cartridge Valve, 3:1 Ratio	LM41-LM42
	☆CVH081P	Cartridge Check, Poppet Type	CV9	E6B020	Load Control Cartridge Valve, 4.5:1 Ratio	LM33-LM34
SH Shuttle Valves	☆CVH103P	Cartridge Check, Poppet Type	CV10	E6B040	Load Control Cartridge Valve, 3:1 Ratio	LM39-LM40
	☆CVH104P	Cartridge Check, Poppet Type 2 to 1 Flow Path	CV16	E6B060*409	Load Control Cartridge Valve, 3:1 Ratio	LM41-LM42
	CVH121P	Cartridge Check, Poppet Type	CV12	E6K020	Load Control Cartridge Valve, 15:1 Ratio	LM35-LM36
PV Proportional Valves	CVH161P	Cartridge Check, Poppet Type	CV14	E9*1	Load Control Cartridge Valve	LM49-LM50
	CVH201P	Cartridge Check, Poppet Type	CV15	FA101	Restrictive Flow Control, Reverse Check, Adjustable	FC25-FC26
	D0WB2	Cartridge Check, Ball Type	CV7	FC101	Restrictive Flow Control, Reverse Check, Tuneable	FC27-FC28
BC Bodies & Cavities	D02B2	Cartridge Check, Ball Type	CV8	FCP101	Priority Type, with Bypass	FC39
	D04B2	Cartridge Check, Ball Type	CV11	FDPH121	Priority Type, with Bypass	FC41-FC42
	D04F2	Check With Thermal Relief, Relieving Port 2 to 1	CV39			
TD Technical Data	D06B2P	Cartridge Check, Poppet Type	CV13			
	D06C2	Cartridge Check, Poppet Type 2 to 1 Flow Path	CV17			
	D1A060	Check Valve Insert, Ball Type	CV5			
	D1B125	Check Valve Insert, Ball Type	CV6			

☆ Denotes New Winner's Circle Product Line.

SERIES	DESCRIPTION	PAGE NO.	SERIES	DESCRIPTION	PAGE NO.
FCR101	Restrictive Type, Press. Compensators	FC37	MHC-022-S***	Load Control Cartridge Valve	LM9-LM10
FCR161	Restrictive Type, Press. Compensators	FC38	MHC-022-V***	Load Control Cartridge Valve	LM9-LM10
FDC101	Flow Divider/Combiner	FC43-FC44	MMB-015-****	Motor Load Control	LM43-LM45
FP101	Priority Type, with Bypass	FC31-FC32	MMB-025-****	Motor Load Control	LM46-LM48
FR101	Restrictive Flow Control, Tuneable	FC19-FC20	N04A4	3 Way, Internal Vent, External Pilot	DC9
FV101	Needle Valve with Reverse Check, 1 to 2 Free Flow	FC15-FC16	N04B4	3 Way, Internal Vent, External Pilot	DC10
FV102	Needle Valve with Reverse Check, 1 to 2 Free Flow	FC15-FC16	N04G4	3 Way, Vent to Atmosphere, External Pilot	DC11
GH02 01	2 Position, 2 Way, N.C., with Flow Adj.	SV31-SV32	N04H4	3 Way, Vent to Atmosphere, External Pilot	DC12
GM0212	2 Position, 2 Way, N.O. Poppet, Push to Close	MV3	N5A125	3 Way, 2 Position, External Drain, Open Transition	DC13
GM0233	2 Position, 3 Way, Spool Type, Pull to Shift	MV4	N5A300	3 Way, 2 Position, External Drain, Open Transition	DC14
GM0240CS	2 Position, 4 Way, Push to Shift	MV10	N5B125	3 Way, 2 Position, External Drain, Closed Transition	DC15
GM0240XS	2 Position, 4 Way, Push to Shift	MV9	N5B300	3 Way, 2 Position, External Drain, Closed Transition	DC16
GP01 30	Pressure Reducing Valve	PV19-PV20	N5C125	3 Way, 2 Position, External Drain, Diverter Valve, N.O.	DC17
GP02 51	4 Way, 3 Pos - Closed Center	PV55-PV56	N5C300	3 Way, 2 Position, External Drain, Diverter Valve, N.O.	DC18
GP02 53	4 Way, 3 Pos - Float Center	PV57-PV58	N5D125	3 Way, 2 Position, External Drain, Diverter Valve, N.C.	DC19
GS02 22	2 Position, 2 Way, N.C. Spool	SV7-SV8	N5D300	3 Way, 2 Position, External Drain, Diverter Valve, N.C.	DC20
GS02 27	2 Position, 2 Way, N.O. Spool	SV9-SV10	☆NVH081	Needle Valve, Cartridge Type	FC7-FC8
GS02 42	2 Position, 4 Way	SV11-SV12	☆NVH101	Needle Valve, Cartridge Type	FC9-FC10
GS02 51	3 Position, 4 Way	SV83-SV84	☆PR103	Direct Acting Reducing/Relieving	PC113-PC114
GS02 53	3 Position, 4 Way	SV85-SV86	☆PRCH101	Pilot Operated Reducing/Relieving w/Reverse Check	PC131-PC132
GS02 57	3 Position, 4 Way	SV87-SV88	☆PRH081	Pilot Operated Reducing/Relieving	PC123-PC124
GS02 59	3 Position, 4 Way	SV89-SV90	☆PRH082	Pilot Operated Reducing	PC115-PC116
GS02 72/73	Bi-Directional Poppet, N.C.	SV33-SV34	☆PRH101	Pilot Operated Reducing/Relieving	PC125-PC126
GS02 77/78	Bi-Directional Poppet, N.O.	SV41-SV42	☆PRH102	Pilot Operated Reducing	PC117-PC118
GS02 80/81	Bi-Directional Poppet, N.C.	SV35-SV36	PRH121	Pilot Operated Reducing/Relieving	PC127-PC128
GS02 85/86	Bi-Directional Poppet, N.O.	SV43-SV44	PRH122	Pilot Operated Reducing	PC119-PC120
GS04 52D	3 Position, 4 Way	SV93-SV94	PRH161	Pilot Operated Reducing/Relieving	PC129-PC130
GS04 54D	3 Position, 4 Way	SV95-SV96	PRH162	Pilot Operated Reducing	PC121-PC122
GS04 57D	3 Position, 4 Way	SV97-SV98	R04A4	2 Way, Normally Open, Pilot to Close, Ext. Vent	DC4
GS04 59D	3 Position, 4 Way	SV99-SV100	R04B4	2 Way, Normally Closed, Pilot to Open, Ext. Vent	DC5
GS04 80/81	Bi-Directional Poppet, N.C.	SV37-SV38	R04C3	2 Way, Normally Open, Pilot to Close	DC1-DC2
GS04 85/86	Bi-Directional Poppet, N.O.	SV45-SV46	R04D3	2 Way, Normally Closed, Pilot to Open	DC3
GS06 80/81	Bi-Directional Poppet, N.C.	SV39-SV40	R04E3	Normally Closed, Pilot to Close	LE14
GS06 85/86	Bi-Directional Poppet, N.O.	SV47-SV48	R04F3	Normally Closed, Vent to Open	LE20
GTP02 34	Pressure Reducing Valve	PV21-PV22	R04G3	Normally Open, Vent to Close	LE29
GTP04 34	Pressure Reducing Valve	PV23-PV24	R04H3	Normally Open, Vent to Close	LE25
HP02C	Flow Control, N.C.	PV31-PV32	R06E3	Normally Closed, Pilot to Close	LE15
HP02P	Flow Control, N.O.	PV41-PV42	R06F3	Normally Closed, Vent to Open	LE21
HP04C	Flow Control, N.C.	PV35-PV36	R06G3	Normally Open, Vent to Close	LE30
HP04P	Flow Control, N.O.	PV45-PV46	R06H3	Normally Open, Vent to Close	LE26
J02A2	Needle Valve, Cartridge Type	FC5-FC6	R08E3	Normally Closed, Pilot to Close	LE16
J02B2	Needle Valve with Reverse Check, 2 to 1 Free Flow	FC13-FC14	R08F3	Normally Closed, Vent to Open	LE22
J02D3	Priority Type, with Bypass	FC29-FC30	☆RAH081	Pilot Operated Spool Type	PC35-PC36
J02E2	Restrictive Flow Control, Adjustable	FC17-FC18	☆RAH101	Pilot Operated Spool Type	PC37-PC38
J04C2	Restrictive Flow Control, Adjustable	FC23-FC24	☆RAH101V	Pilot Operated Vented Relief	PC51-PC52
J04D3	Priority Type, with Bypass	FC33-FC34	RAH121	Pilot Operated Spool Type	PC39-PC40
J04E2	Restrictive Flow Control, Adjustable	FC21-FC22	RAH161	Pilot Operated Spool Type	PC41-PC42
J06A2	Needle Valve, Cartridge Type	FC11-FC12	RAH201	Pilot Operated Spool Type	PC45-PC46
J1A125	Priority Type, with Bypass	FC35-FC36	☆RD102	Direct Acting Relief, Poppet Type	PC19-PC20
JP02C	Flow Control, N.C.	PV33-PV34	RD163	Direct Acting Differential Area Relief	PC33-PC34
JP02P	Flow Control, N.O.	PV43-PV44	☆RDCH103	Direct Acting Differential Relief Assembly	PC31-PC32
JP04C 21	Flow Control, N.C.	PV37-PV38	RDH042	Direct Acting Relief, Poppet Type	PC7-PC8
JP04C 31	Priority Flow Control, N.C.	PV51-PV52	☆RDH081	Direct Acting Relief, Ball Type	PC9-PC10
JP04P	Flow Control, N.O.	PV47-PV48	RDH082	Direct Acting Relief, Poppet Type	PC11-PC12
K02A3	Cartridge Shuttle	SH6	RDH083	Direct Acting Differential Area Relief	PC27-PC28
K04B3	Spool Type Shuttle	SH10	☆RDH101	Direct Acting Relief, Ball Type	PC13-PC14
K04C3	Spool Type, Spring Centered, All Ports Closed	SH12	☆RDH103	Direct Acting Differential Area Relief	PC29-PC30
K04D3	Spool Type Shuttle	SH11	RU101	Direct Acting Unloading	PC69-PC70
K04F3	Spool Type, Spring Centered, All Ports Open	SH14	☆SV103	Direct Acting, 2P-3W, Int. Pilot, Ext. Drain	PC95-PC96
K04G3	Spool Type Shuttle, Inverse	SH15	☆SV104	Direct Acting, 2P-2W, N.O., Ext. Pilot, Ext. Drain	PC105-PC106
K2A005	Poppet Insert Type	SH4	☆SV105	Direct Acting, 2P-2W, N.C., Ext. Pilot, Int. Drain	PC97-PC98
K3A125	Spool Type, Spring Centered, All Ports Closed	SH13	☆SVCH101	Pilot Operated with Reverse Check Assembly	PC85-PC86
KSWA3	Ball Insert Type	SH3	☆SVH081	Pilot Operated, Int. Pilot, Ext. Drain	PC75-PC76
L04A3	Flow Divider/Combiner	FC45-FC46	☆SVH101	Pilot Operated, Int. Pilot, Ext. Drain	PC77-PC78
L06A3	Flow Divider/Combiner	FC47-FC48	☆SVH102	Pilot Operated, Ext. Pilot, Int. Drain	PC81-PC82
L1A300	Flow Divider/Combiner	FC49-FC50	SVH161	Pilot Operated, Int. Pilot, Ext. Drain	PC79-PC80
M04A4J	Direct Acting Piloting Unloading	PC71-PC72	SVH162	Pilot Operated, Ext. Pilot, Int. Drain	PC83-PC84
MHB-015-L***	Load Control Valve Assembly	LM11-LM13	XR101	Direct Acting Cross-over Relief	PC57-PC58
MHB-015-W***	Load Control Valve Assembly	LM11-LM13	☆XRDH101	Direct Acting Cross-over Relief	PC63-PC64
MHB-030-L***	Load Control Valve Assembly	LM14-LM16	☆XRDH102	Direct Acting Cross-over Relief w/Anti-Cav Check	PC65-PC66
MHB-030-W***	Load Control Valve Assembly	LM14-LM16	☆XRDH103	Direct Acting Cross-over Relief, Motor Mount	PC67-PC68
MHC-010-S***	Load Control Cartridge Valve	LM7-LM8			
MHC-010-V***	Load Control Cartridge Valve	LM7-LM8			

☆ Denotes New Winner's Circle Product Line.

CV	Check Valves
SH	Shuttle Valves
LM	Load/Motor Controls
FC	Flow Controls
PC	Pressure Controls
LE	Logic Elements
DC	Directional Controls
MV	Manual Valves
SV	Solenoid Valves
PV	Proportional Valves
CE	Coils & Electronics
BC	Bodies & Cavities
TD	Technical Data

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		
XPRO704	Soft Start Valve Controller, 12/24 VDC	CE23
XPRO704b	Soft Start and Stop Valve Controller, 12/24 VDC	CE24
XPRO804	Power Saver Controller, 12/24 VDC PWM	CE25
XPRO902	12 VDC PWM Controller, 110Hz, 19W	CE17-CE18
XPRO902d	12 VDC PWM Controller, 95-230Hz, 19W	CE19-CE20
XPRO902rid	12 VDC PWM Controller, 95-230Hz, 19W, Multi-adj.	CE21-CE22
XPRO904	24 VDC PWM Controller, 110Hz, 19W	CE17-CE18
XPRO904d	24 VDC PWM Controller, 95-230Hz, 19W	CE19-CE20
XPRO904rid	24 VDC PWM Controller, 95-230Hz, 19W, Multi-adj.	CE21-CE22
XPRO932	12 VDC PWM Controller, 110Hz, 30W	CE17-CE18
XPRO932d	12 VDC PWM Controller, 95-230Hz, 30W	CE19-CE20
XPRO932rid	12 VDC PWM Controller, 95-230Hz, 30W, Multi-adj.	CE21-CE22
XPRO934	24 VDC PWM Controller, 110Hz, 30W	CE17-CE18
XPRO934d	24 VDC PWM Controller, 95-230Hz, 30W	CE19-CE20
XPRO934rid	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
C08-3	08 Size, 3 Way	BC10
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
C16-4	16 Size, 4 Way	BC27
C20-2	20 Size, 2 Way	BC28
C20-3S	20 Size, 3 Way, Short	BC29
Counterbalance Cavities and Bodies		
MHC-010	Single and Dual Counterbalance Bodies	BC30
MHC-022	Single and Dual Counterbalance Bodies	BC31
MHC-025	Single and Dual Counterbalance Bodies	BC32
MHC-050	Single and Dual Counterbalance Bodies	BC33
Pilot Piston Cavities		
10 Size	10 Size Cavity for Single Check and Pilot Piston	BC34
10 Size	10 Size Cavity for Dual Check and Pilot Piston	BC34
16 Size	16 Size Cavity for Single Check and Pilot Piston	BC34
16 Size	16 Size Cavity for Dual Check and Pilot Piston	BC34

SERIES	DESCRIPTION	PAGE NO.
Standard Cavity Plugs		
Cavity Plugs		BC35
Cartpak Bodies		
BD03-ABN	A and B Port Interrupt, Body Only	BC41
BD03-ABT	A and B Ports to Tank, Body Only	BC43
BD03-ABX	A and B Port Crossover, Body Only	BC42
BD03-ADB	A Port Drain to B, Body Only	BC46
BD03-BDA	B Port Drain to A, Body Only	BC45
BD03-DDX	Ports A and B Drain to Crossover Port, Body Only	BC44
BD03-PN	P Port Interrupt, 2-Way, Body Only	BC36
BD03-PN2	P Port Interrupt, 2-Way, Body Only	BC37
BD03-PNR	P Port Interrupt, Reducing Function, Body Only	BC38
BD03-PNS	P Port Interrupt, Sequencing Function, Body Only	BC39
BD03-PT	P to T, Body Only	BC40
Special Bodies and Cavities		
CAV0W-2	2 Port	BC47
CAVSW-3	3 Port	BC48
CAVT11A	3 Port or 4 Port Dual	BC49
CAVT21A	4 Port	BC50
2C	2 Port	BC51
2G	2 Port	BC52
2R	2 Port	BC53
2U	2 Port	BC54
2X	2 Port	BC55
3A	3 Port	BC56
3C	3 Port or 4 Port Dual	BC57
3J	3 Port	BC58
3K	3 Port	BC59
3M	3 Port or 4 Port Dual	BC60
3X	3 Port	BC61
3Z	3 Port	BC62
4C	4 Port	BC63
5A	5 Port	BC64
53-1	3 Port or 4 Port Dual	BC65
54-1	3 Port	BC66
68-1	3 Port or 4 Port Dual	BC67
91-1	3 Port	BC68
100-1	5 Port	BC69
Technical Data		
Basic Hydraulic Formulas		TD1
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Viscosity		TD1
Pressure Ratings		TD1
Thermal Shock		TD1
Service and Components		TD1
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Seal Material Selection		TD2
Hydraulic Fluids		TD3
Hydraulic Filtration		TD3
Application of Product		TD3
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Check Valves	CV1-CV39	CV Check Valves
Shuttle Valves	SH1-SH15	SH Shuttle Valves
Load and Motor Control Valves	LM1-LM50	LM Load/Motor Controls
Flow Control Valves	FC1-FC50	FC Flow Controls
Pressure Control Valves	PC1-PC132	PC Pressure Controls
Logic Element Valves	LE1-LE30	LE Logic Elements
Directional Control Valves	DC1-DC20	DC Directional Controls
Manual Valves	MV1-MV12	MV Manual Valves
Solenoid Valves	SV1-SV108	SV Solenoid Valves
Proportional Valves	PV1-PV61	PV Proportional Valves
Coils and Electronics	CE1-CE25	CE Coils & Electronics
Bodies and Cavities	BC1-BC69	BC Bodies & Cavities
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.

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.

Extensive Hydraulic Product Offering



Accumulators

Piston, bladder and diaphragm type accumulators, gas bottles and Kleen-Vent reservoir isolators.

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Parker Hydraulic Cartridge Systems

The Hydraulic Cartridge Systems Division is a leader in the cartridge valve and custom manifold industry, serving both the mobile and industrial machine markets.

Our team of application engineers and manufacturers consistently challenge valve standards to achieve the most efficient and flexible designs. They work hard to provide the highest level of customer satisfaction and support. Discover how Parker HCS can be the ONE source for all your hydraulic cartridge and manifold needs.

Have questions? Contact us at HCSInfo@parker.com.

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