



Bulletin 2537-M5/USA Service Bulletin Series CM

Effective: April 1, 2000
Supersedes: November 11, 1996



 **WARNING**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS 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 and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

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

© Copyright 1996, 2000, Parker Hannifin Corporation, All Rights Reserved

Contents

Series CM2

Service Parts Information 1

Ordering Information 2

Series CM3

Service Parts Information 3

Ordering Information 4

Series CM6

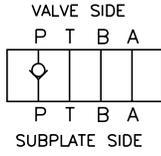
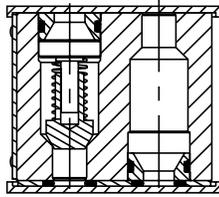
Service Parts Information 5

Ordering Information 6

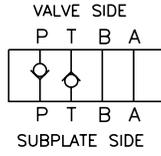
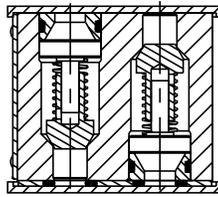
Operation 7

Trouble-Shooting 7

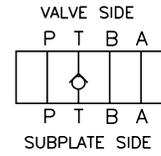
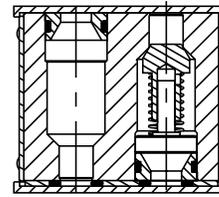
Offer of Sale 8



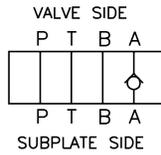
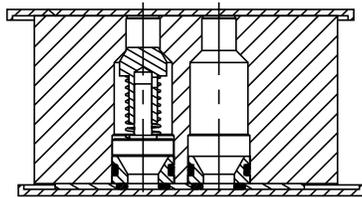
PP OPTION



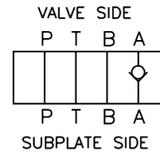
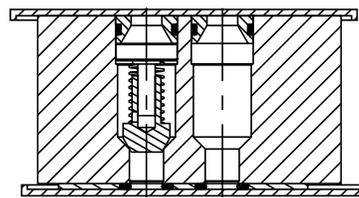
PT OPTION



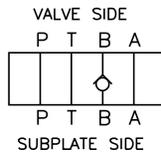
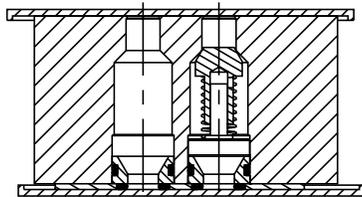
TT OPTION



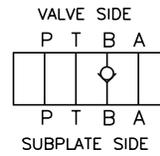
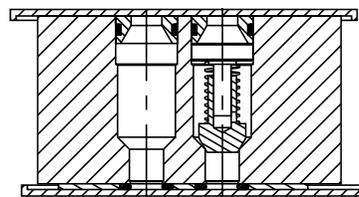
AA OPTION



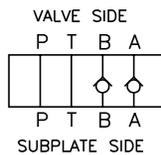
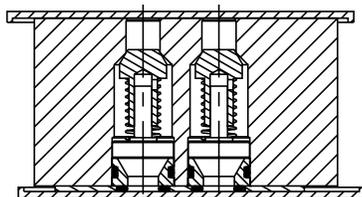
AAF OPTION



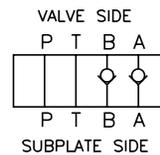
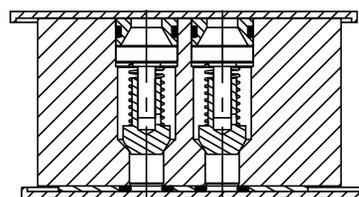
BB OPTION



BBF OPTION



DD OPTION



DDF OPTION

CM2

Check Manapak

Check Option

Spring Option

Seal Compound

55

Design Code

Item	Part No.	Quantities						Description
		PP/TT	PT	DD/DDF	AA/AAF	BB/BBF		
9	1820143	1	1	-	-	-	Body	
	1301340	-	-	1	1	1		
10	001490	1	2	2	1	1	Poppet	
11	002505	1	2	2	1	1	Spring Retainer	

Code	Description
V	Florocarbon
N	Nitrile

Item	Part No.	Qty	Description
1	002199	1	O-Ring Plate
2	697628	2	Shipping Plate
3	1300448	1	Nameplate
4	1301066	4	Stick Screw
	33 x 99		Drive Screw
5	2-012 \square -9	4	O-Ring
6	99 x 37	1	Roll Pin
7	002514	2	Plug Retainer
8	2-013 \square -7	2	O-Ring

\square Denotes Seal Compound.

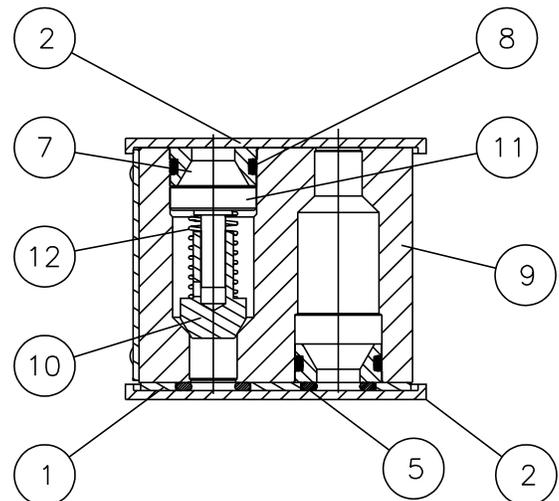
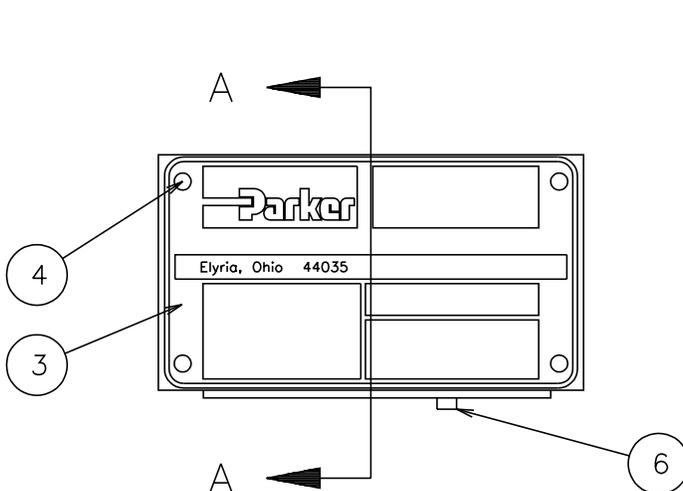
Item	Code	Part No.	Quantities						Description
			PP/TT	PT	DD/DDF	AA/AAF	BB/BBF		
12	OMIT	001516	1	2	2	1	1	5 PSI Spring	
	Y	1820151	1	2	2	1	1	45 PSI Spring	
	Z	1820152	1	2	2	1	1	75 PSI Spring	

SAE Bolt Kits				
Manapak & Valve Combination	Bolt Kit	Description	Qty./Kit	Torque IN-LBS.
D1VW Valve (Non-explosion proof)	BK209	10-24 X 1.25	4	50
1 Manapak & D1VW Valve	BK243	10-24 X 2.88	4	50
2 Manapak & D1VW Valve	BK225	10-24 X 4.38	4	50
3 Manapak & D1VW Valve	BK244	10-24 X 6.00	4	50
4 Manapak & D1VW Valve	BK245	10-24 X 7.50	4	50

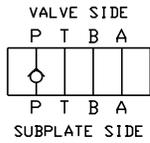
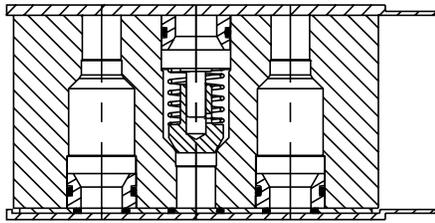
Note: Bolt kits must be ordered separately.

Metric Bolt Kits				
Manapak & Valve Combination	Bolt Kit	Description	Qty./Kit	Torque NM
D1VW Valve (Non-explosion)	BK375	M5-0.8 X 30	4	5.7
1 Manapak & D1VW Valve	BK400	M5-0.8 X 70	4	5.7
2 Manapak & D1VW Valve	BK405	M5-0.8 X 110	4	5.7
3 Manapak & D1VW Valve	BK429	M5-0.8 X 150	4	5.7
4 Manapak & D1VW Valve	TK400	M5-0.8 X 205	4	5.7

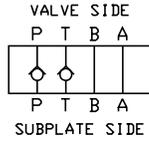
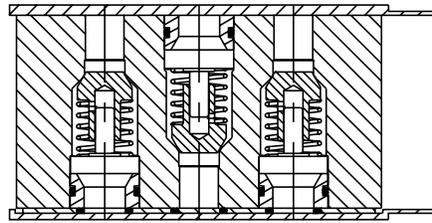
Note: Bolt kits must be ordered separately.



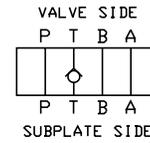
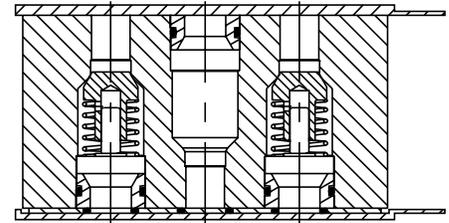
PP Check Option
Section A-A



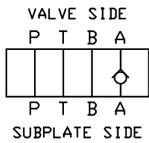
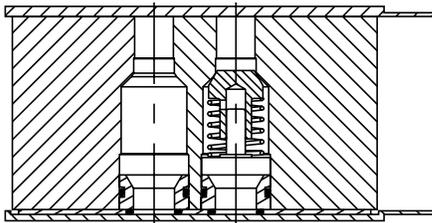
PP OPTION



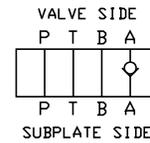
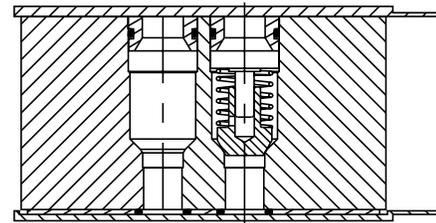
PT OPTION



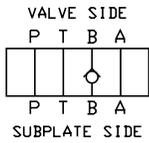
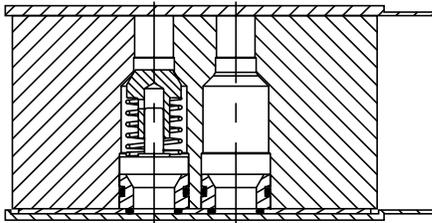
TT OPTION



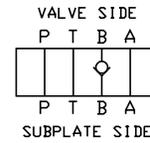
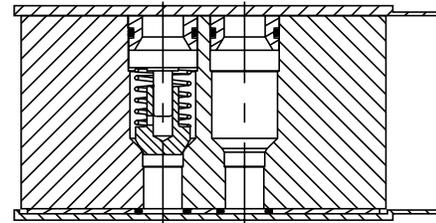
AA OPTION



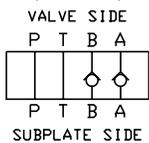
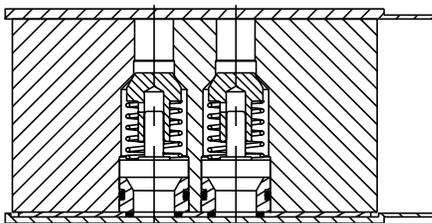
AAF OPTION



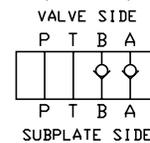
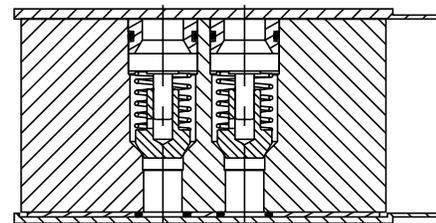
BB OPTION



BBF OPTION



DD OPTION



DDF OPTION

CM3

Check Manapak

Check Option

Check Option

Spring Option

Spring Option

Seal Compound

Seal Compound

55

Design Code

Item	Code	Part No.	Quantities						Description
			PP	TT	PT	DD/DDF	AA/AAF	BB/BBF	
11	Omit	004394	1	2	3	2	1	1	5 PSI Spring
	Y	1820154	1	2	3	2	1	1	45 PSI Spring
	Z	1820155	1	2	3	2	1	1	75 PSI Spring

Item	Part No.	Quantities						Description
		PP	TT	PT	DD/DDF	AA/AAF	BB/BBF	
6	1820144	1	1	1	-	-	-	Body
	1301344	-	-	-	1	1	1	
7	004970	1	2	3	2	1	1	Retainer
8	004977	3	3	3	2	2	2	Plug
9	2-015○-9	3	3	3	2	2	2	O-Ring
10	004374-3	1	2	3	2	1	1	Poppet

Code	Description
V	Fluorocarbons
N	Nitrile

Item	Part No.	Qty	Description
1	700499	1	O-Ring Plate
2	679192	2	Shipping Plate
3	1300448	1	Nameplate
4	1301066	4	Stick Screw
	33 x 99		Drive Screw
5	2-014○-9	4	O-Ring

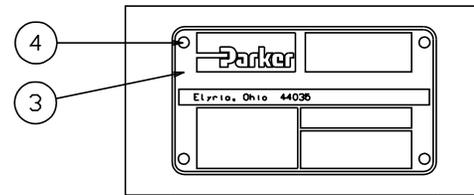
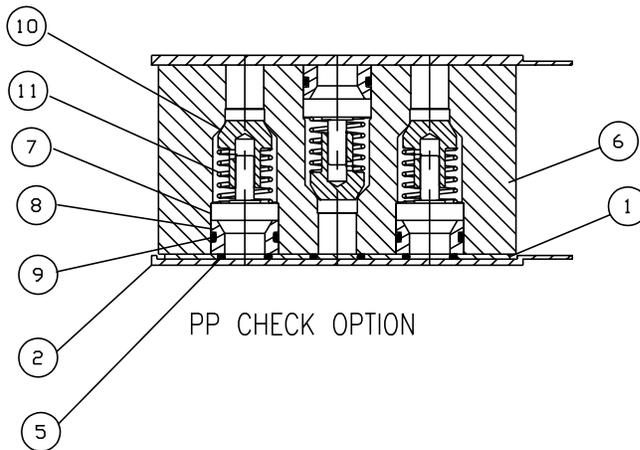
○ Denotes Seal Compound.

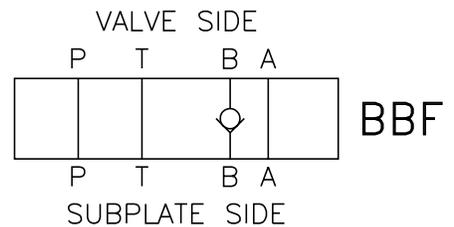
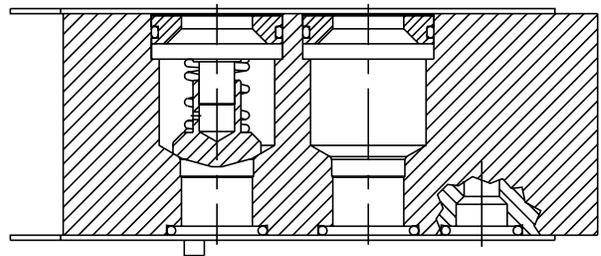
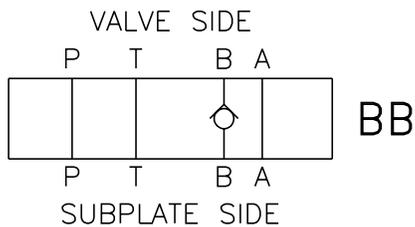
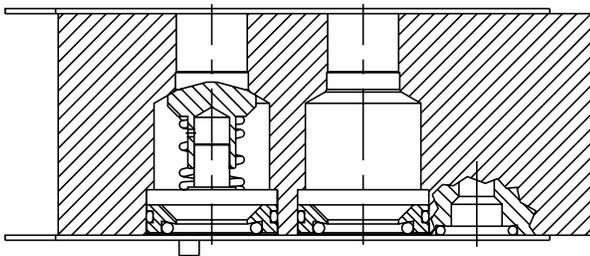
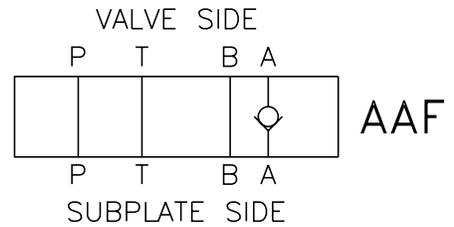
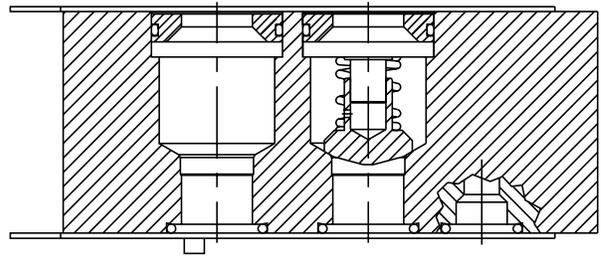
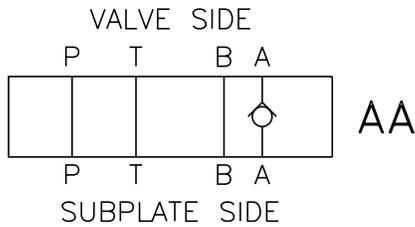
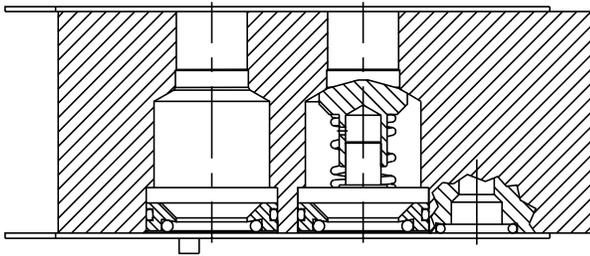
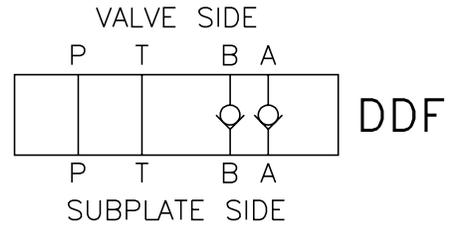
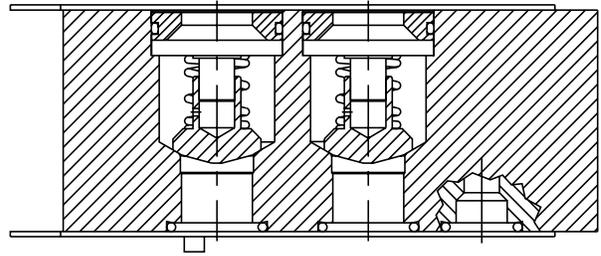
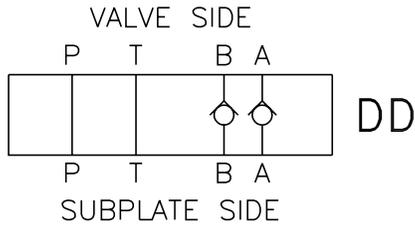
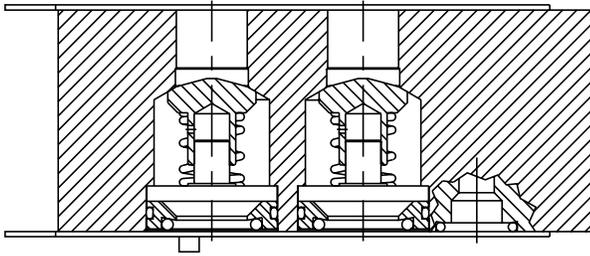
SAE Bolt Kits					
Manapak/Valve Combination	D3W-14	D3 Manaplug w/ Extension	Bolt length Inch	D3DW/D31W D3W-30	Bolt length Inch
D3 (Non-explosion proof)	BK226	BK80	2.25	BK98	1.63
1 Manapak +D3	BK61	BK91	4.25	BK141	3.50
2 Manapak +D3	BK62	BK94	6.25	BK142	5.50
3 Manapak +D3	BK63	BK95	8.25	BK33	7.50

-Bolt Kits are ordered separately.
-All bolts are 1/4-20 and grade 8.
-Torque for all D3 bolts: 12 ft-lbs.
-Size 3 Manapaks are 2.0 thick.

Metric Bolt Kits					
Manapak/Valve Combination	D3W-14	D3 Manaplug w/ Extension	Bolt length Inch	D3DW/D31W D3W-30	Bolt length Inch
D3 (Non-explosion proof)	BK310	BKM80	55	BKM98	41.28
1 Manapak +D3	BK311	BKM91	105	BKM141	88.9
2 Manapak +D3	BK312	BKM94	169	BKM142	139.7
3 Manapak +D3	BK313	BKM95	219	BKM33	190.5

-Bolt kits are ordered separately.
-All bolts are M6-1 and grade 12.9.
-Torque for all D3 bolts: 16.3 NM.
-Size 3 Manapaks are 50.0 thick.





CM6

Check Manapak

Check Option

Spring Option

Seal Compound

10

Design Code

Item	Part No.	Quantities						Description
		DD	DDF	AA	AAF	BB	BBF	
8	1820186	1	-	1	0	1	0	Body
	1820042	-	1	0	1	0	1	
9	011146	2	2	1	1	1	1	Spring Retainer
10	010600-3	2	2	1	1	1	1	Poppet
11	011147	2	-	2	-	2	-	Plug Retainer
	1820188	-	2	-	2	0	2	

Code	Description
V	Fluorocarbons
N	Nitrile

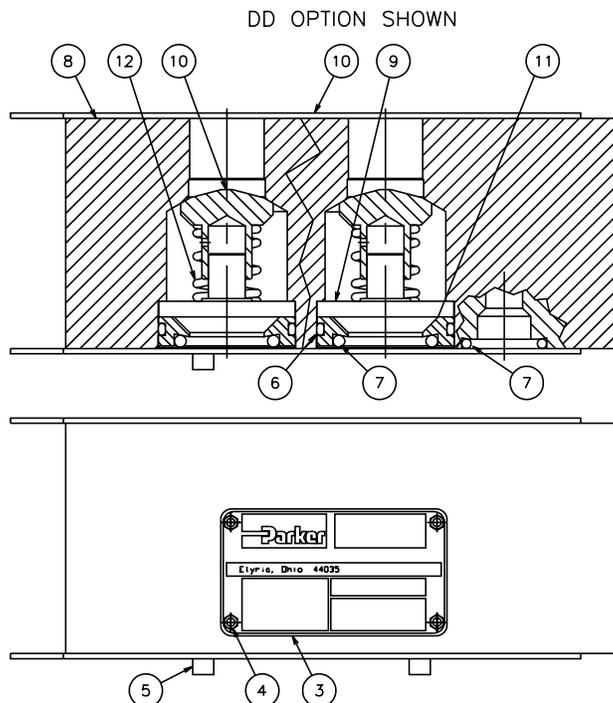
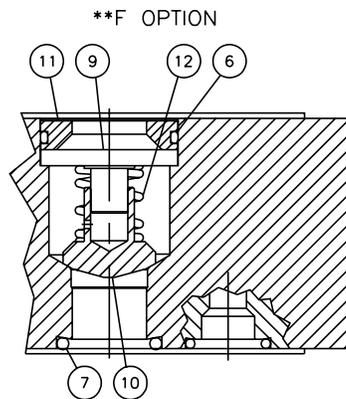
Item	Code	Part No.	Quantities					Description	
			DD	DDF	AA	AAF	BB		BBF
12	Omit	025314	2	2	1	1	1	1	5 PSI Spring

Item	Part No.	Qty	Description
1	2-210 \varnothing -9	2	O-Ring
2	691139	2	Shipping Plate
3	1300448	1	Nameplate
4	1301066	4	Stick Screw
	33 x 99		Drive Screw
5	99 x 125	2	Roll Pin
6	2-127 \varnothing -9	2	O-Ring
7	2-214 \varnothing -9	4	O-Ring

\varnothing Denotes Seal Compound.

SAE Bolt Kits				
Manapak & Valve Combination	Bolt Kit	Description	Qty./Kit	Torque IN-LBS.
D61*VW Valve	BK 70	1/2-13 X 2.50	6	80
1 Manapak & D6*VW Valve	BK121	1/2-13 X 5.25	6	80
2 Manapak & D6*VW Valve	BK122	1/2-13 X 8.00	6	80
3 Manapak & D6*VW Valve	BK123	1/2-13 X 10.75	6	80
4 Manapak & D6*VW Valve	BK124	1/2-13 X 13.50	6	80

Note: Bolt kits must be ordered separately.



Operation

The check valve allows flow in one direction and blocks flow in the opposite direction. When the system pressure at the check valve inlet is high enough to overcome the spring force biasing the poppet, the poppet is pushed off its seat, and flow passes through

the valve. When fluid flow attempts to enter through the outlet, the poppet is forced on its seat, and flow through the valve is blocked. These checks can occur in any single passage, or combination except in the pump and tank passage simultaneously.

Trouble-Shooting

Symptom	Cause	Solution
No flow through valve	<i>Valve in backwards</i>	Reverse valve.
	<i>Broken spring</i>	Replace spring.
Excessive leakage through check	<i>Contamination lodged in poppet seat</i>	Inspect and remove.
	<i>Worn or distorted poppet/seat</i>	Inspect and replace valve if necessary

Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such items, when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.**

5. Limitation Of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges

paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights. If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

9/91-P



Parker Hannifin Corporation

Hydraulic Valve Division
520 Ternes Avenue
Elyria, Ohio 44035 USA
Tel: (440) 366-5200
Fax: (440) 366-5253
Web Site: <http://www.parker.com/hydraulicvalve>

Bulletin 2537-M5/USA,
2M, 4/00, PHD