

HY13-PM1652-41-M1/US

# Parker Pumps Parts & Service

Effective: September, 2001



PV Size 3 Design Series 41 Variable Volume Piston Pump Service Bulletin

Model PV063 \*\*\*\* 41 PV080 \*\*\*\* 41 PV092 \*\*\*\* 41

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#### Introduction:

The PV series piston pumps are designed to provide long life while operating with Hydraulic Oil. Refer to Bulletin HY13-2600-600-3/US for limits. However, should maintenance be required, the following instructions should be used for disassembly, replacement of parts, cleaning and assembly.

#### Note:

Prior to any pump disassembly, plug the open ports and clean all dirt from the outside of

the pump.

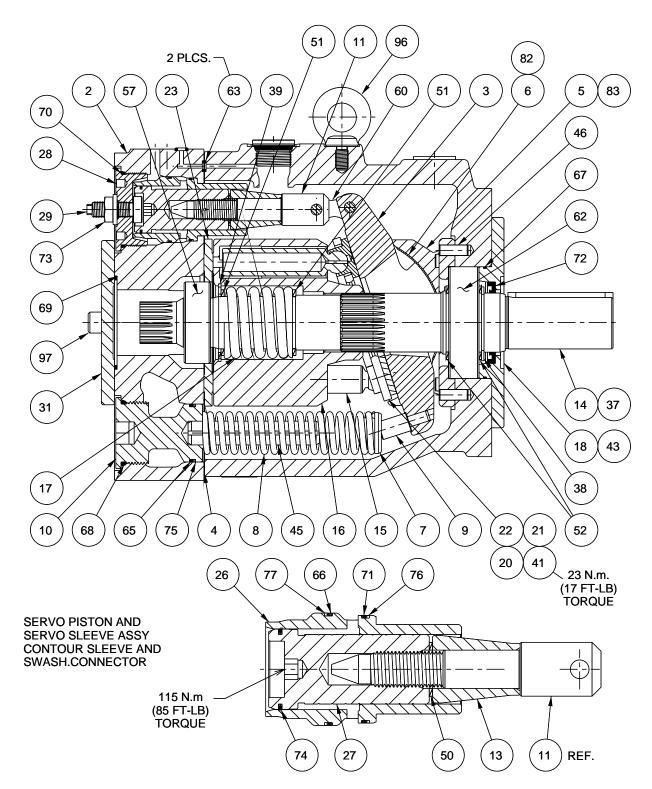
Prior to assembly all parts should be cleaned and then lightly coated with oil.

### Warning:

Protective eye wear should be worn during all maintenance procedures.



Basic Pump Assembly

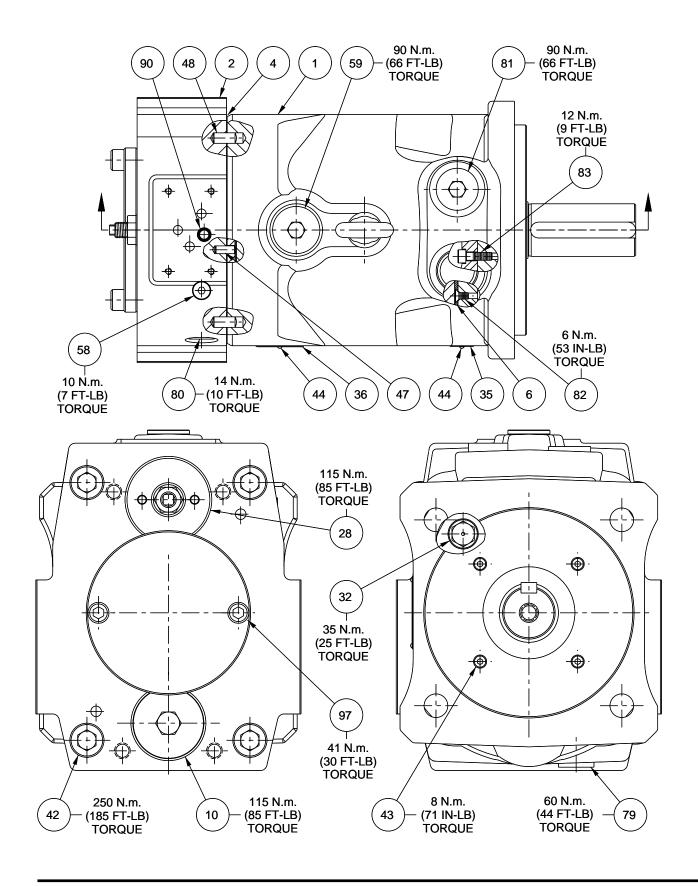


# NOTE:

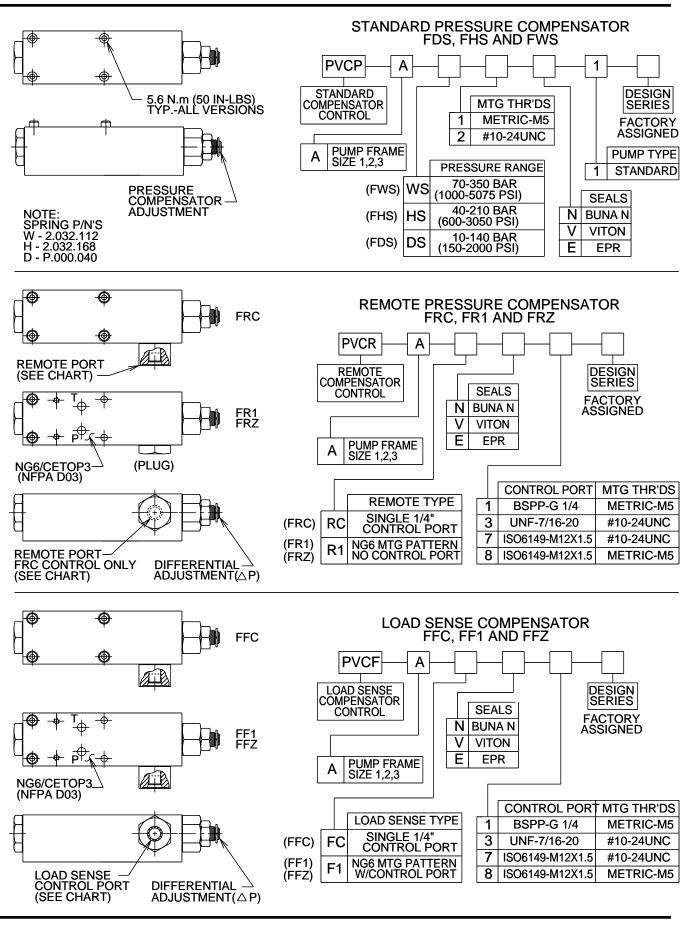
- 1. PUMP SHOWN IS A RIGHTHAND (CW) ROTATION. LEFTHAND (CCW) ROTATION PUMP WILL HAVE THE INLET, OUTLET, DRAIN AND GAGE PORTS REVERSED. COMPENSATOR MOUNTING AND AIRBLEED VALVE WILL ALSO BE REVERSED.
- 2. PUMP SHOWN WITHOUT COMPENSATOR FOR CLARITY PURPOSE.

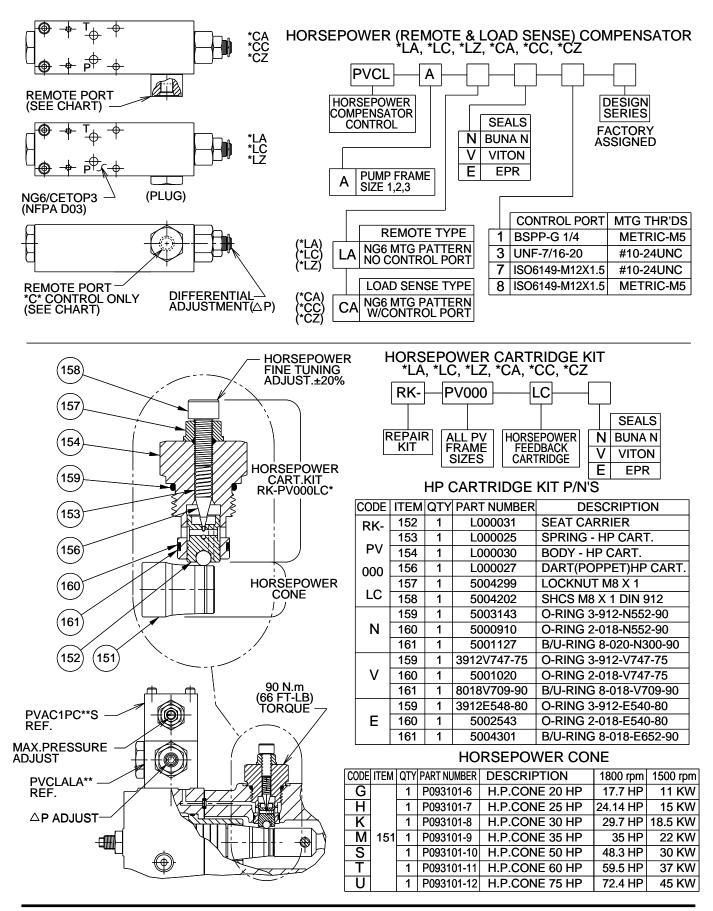


**Basic Pump Assembly** 



**Hydraulics** 





# HY13-PM1652-41-M1/US Thru Shaft and Coupling Kits

Thru Shaft Kits and Parts Breakdown													
_	MOUNTING AXIAL PUMI KIT PUMP SIZE 3						IAFT ODE	THREAD SI TYPE	EALS	DESIGN SERIES			
	ITEN	PART NUMBER	QTY	DESCRIPTION									
BG	87	5003011	2	LOCATOR PIN				05440		7			
DG.	3 69	2153 ()-9	1	O-RING				SEALS		_			
			•	·			N	BUNA-N		_			
	ITEN	PART NUMBER	QTY	DESCRIPTION	7			FLUOROCAR	-	_			
	30	4092071-4S	1	ADAPTER-SAE"A	"		E	ETHYLEN-PROF	YLEN				
A	84	2042 ()-9	1	O-RING									
В	30	4092071-3S	1	ADAPTER-SAE"B	" r		ITEM	PART NUMBER	QTY	TYPE AND DESCRIPTION			
W	V 84	2045 ()-9	1	O-RING		M	85	5000143	4	MERTIC THREAD SHCS M12X35 DIN912			
С	. 30	4092071-2S	1	ADAPTER-SAE"C	"								
	84	2049 ()-9	1	O-RING		S	85	10X292	4	UNC THREAD SHCS 1/2-13UNCX1-1/4"			
D	30	4092071-1S	1	ADAPTER-SAE"D	"								
	84	2163 ()-9	1	O-RING									
G	30	4092070-5	1	ADAPTER- 63 MM	1								
	84	2037 ()-9	1	O-RING		ΝΟΤΙ	<b>-</b> .						
Н	30	4092070-4	1	ADAPTER- 80 MM	1	1. SAE ADAPTER P/N'S REFERENCED WITH UNC THR							
	84	2041 ()-9	1	O-RING						ABLE WITH METRIC THREADS			
J	30	4092070-3	1	ADAPTER-100 MM	1			ULT FACTORY).					
	84	2045 ()-9	1	O-RING				• • • • • • • • • • • • • • • • • • • •					
ĸ	30	4092070-2	1	ADAPTER-125 MM	1					RS ALSO AVAILABLE WITH SAE			
	84	2049 ()-9	1	O-RING		THREADS (CONSULT FACTORY). 3. SCREWS, WASHERS, ETC. NEEDED TO ATTACH							
1	30	4092070-1	1	ADAPTER-160 MM	SECOND PUMP TO THE ADAPTER ARE NOT INCL								
	84	2164 ()-9	1	O-RING	THE KIT.								

# COUPLING KITS FOR THRU SHAFT OPTION

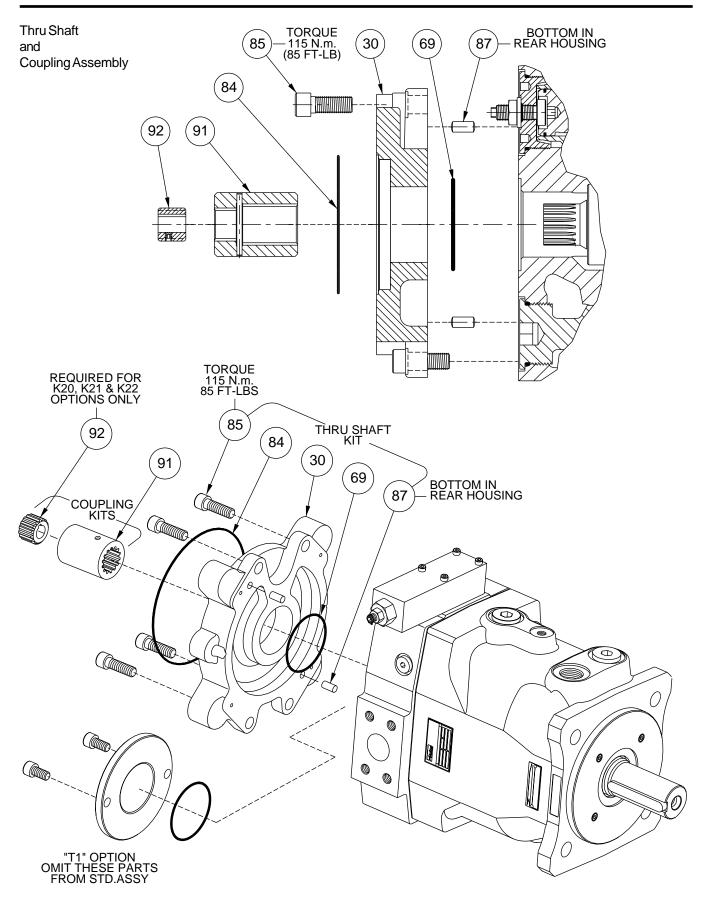
MK	PV	BG3		
MOUNTING KIT	AXIAL PISTON PUMP	PUMP FRAME SIZE 3	THRU SHAFT CODE	DESIGN SERIES

		ITEM	PART NUMBER	QTY	SECOND PUMP SHAFT TYPE
K	)1	91	3092081-3	1	N25X1.5X15 DIN 5480 - METRIC SPLINE
K	)2	91	3092081-2	1	N32X1.5X20 DIN 5480 - METRIC SPLINE
K	)3	91	3092081-1	1	N40X1.5X25 DIN 5480 - METRIC SPLINE
K	11	91	3092082-5	1	9 T00TH, 16/32 D.P SAE "A" SPLINE
K	12	91	3092082-9	1	11T00TH, 16/32 D.P SAE SPLINE
K	13	91	3092082-4	1	13T00TH, 16/32 D.P SAE "B" SPLINE
K	14	91	3092082-3	1	15T00TH, 16/32 D.P SAE"BB" SPLINE
K	15	91	3092082-2	1	14T00TH, 16/32 D.P SAE "C" SPLINE
K	16	91	3092082-1	1	17T00TH, 12/24 D.P SAE"CC" SPLINE
K	17	91	3092082-7	1	13T00TH, 8/16 D.P SAE "D" SPLINE
Kź	20	92	3046083-3	1	12 MM DIA.SHAFT (USED W/ 63 MM PILOT)
Kź	21	92	3046083-2	1	16 MM DIA.SHAFT (USED W/ 80 MM PILOT)
Kź	22	92	3046082-1	1	18 MM DIA.SHAFT (USED W/ 80 MM PILOT)

\* MUST BE IN CONJUNCTION WITH MK-PVBG3K02 (3092081-2).

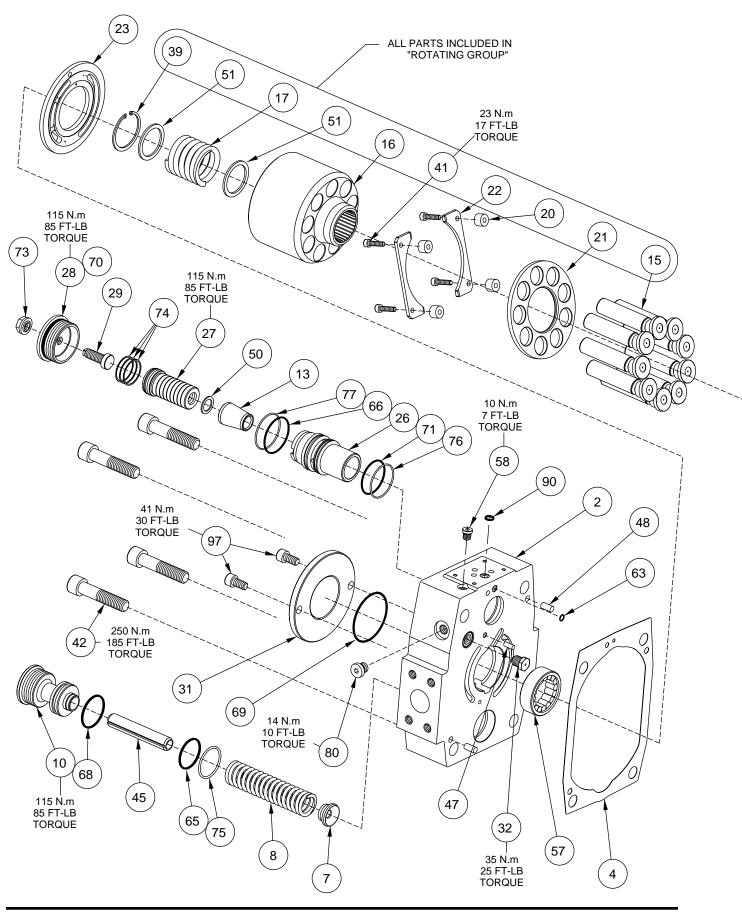
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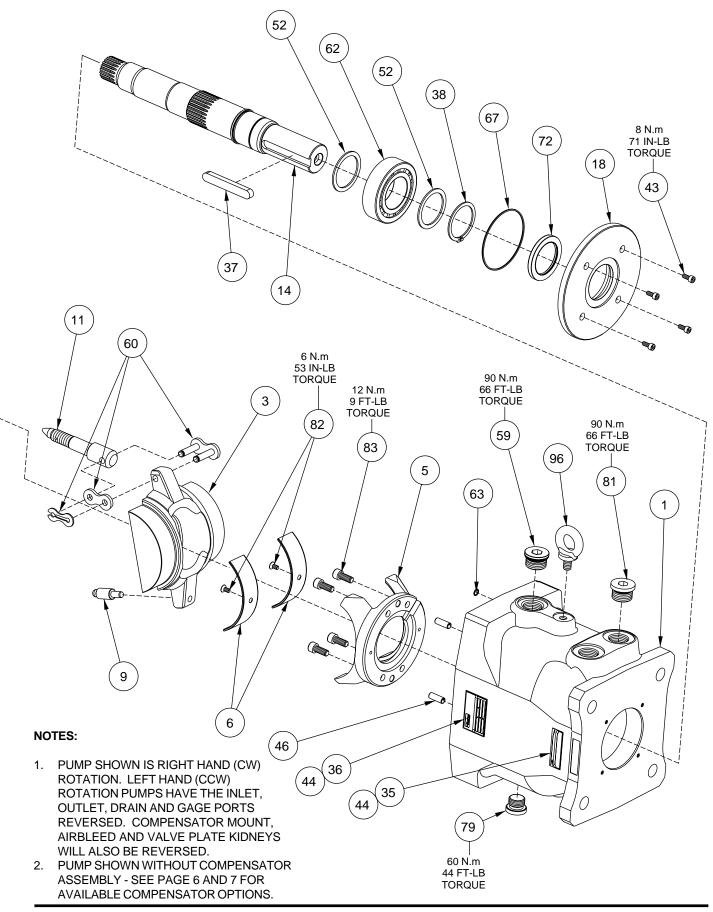
## HY13-PM1652-41-M1/US Thru Shaft and Coupling Kits





# HY13-PM1652-41-M1/US Pump Exploded View





# Parts List

	063										
	-  -		- PV	080		╞		_		—    -	
MUL		F	BASIC	093		Τ			_		IG
	UMP		PUMP	DISP ROTATION	VARI		ON	SHA	FT	& THREAD	DS
	$\uparrow$										
0	МIТ		NGLE PUMP	-	NDAR						
	_	FACT	ORY MOUNTED HE REAR OF	9   RE	DUCEE ROKE	)   (					
	-	AN	OTHER PUMP			-					
							D	14	1	4092142	SHAFT-SAE KEYED
	CO	DEIT	EM QTY PART N	UMBER   DESCRIPTION	ר		E	37 14	1	3092139 4092146	KEY(7/16 SQ.x3"LG.) SHAFT-SAE SPLINE
		53 2		041-63 SPINDLE - PV06				14	1	4092140	SHAFT-METRIC KEYED
		30 2	29 1 P0920	041-80 SPINDLE - PV08			K	37	1	5003372	KEY (12X8X80)
	05	92 2	29   1   P0920	041-93   SPINDLE - PV093	3		L	14	1	4092144	SHAFT-METRIC SPLINE
	3	1	4092060	SWASHPLATE							
	4	1	4092150	BODY SEAL			1	1		092030	HOUSING-METRIC/BSPP
	5	1	4092156	TRUNNION CARRIER			18			092035	PILOT COVER-METRIC
	6 7	2	4092200 4092210	TRUNNION BEARING GUIDE-SERVO SPRING		1	42			000184	SCREW-M16X70 SCREW-M5X12
	7 8	1	4092210	SERVO SPRING			79			I R1/2"ED	PLUG-BSPP(FLUSH)
	9	1	4092212	LOCATOR-SERVO SPRING			80		VST	[I R1/4"ED()	PLUG-BSPP(GAGE)
	10	1	4092213	PLUG-SERVO SPRING			81	1		∏ R3/4"ED⊖	PLUG-BSPP(DRAIN)
	11	1	4092220	CONNECTOR-SWASHPLATE			1	1		092026	HOUSING-SAE/UNF-UNC
	13 15	1 9	4092223 3092102-02	CONTOUR SLEEVE PISTON ASSEMBLY			42			092037 003241	PILOT COVER-SAE SCREW-5/8-11UNX2.75
	15	9	3092102-02	CYLINDER BLOCK		3				003591	SCREW-#10-24UNCX.5
	17	1	3092122	SPRING-CYL.BLOCK			79			108X10 🔿	PLUG-10HP50 S
	20	4	3092109	DISTANCE WASHER			80			108X4O	PLUG- 4HP50 S
	21	1	3092111	SLIPPER RETAINER			81			108X12 ()	PLUG-12HP50 S
	22	2	3092112	RETAINER SEGMENT			1	1		092024	HOUSING-SAE/ISO PILOT COVER-SAE
	26 27	1 1	P092031 P092032	SERVO PISTON SLEEVE SERVO PISTON			42			003241	SCREW-5/8-13UNX2.75
	28	1	P092040	SERVO PISTON COVER		7	-			003591	SCREW-#10-24UNCX.5
PV	32	1	RK-PV000EVO41	AIR BLEED VALVE			79			2X1.50RA3C 🔿	PLUG-6149(FLUSH)
	35	1	-	ROTATION PLATE			80 81	1		2X1.50RA3C () 27X20RA3C ()	PLUG-6149(GAGE) PLUG-6149(DRAIN)
	36	1	0.014			-	1			092028	HOUSING-METRIC/ISO
	38 39	1	5003399 5003398	SNAP RING-SHAFT SNAP RING-CYL.BLOCK			18			092035	PILOT COVER-METRIC
	41	4	5000064	SHCS-RETAINER(M8X30)			42			000184	SCREW-M16X70
	44	4	5000776	DRIVE SCREW		8				000028	SCREW-M5X12
	45	1	5004429	GUIDE PIN-SERVO			79 80				PLUG-6149(FLUSH) PLUG-6149(GAGE)
	46	2	5004250	LOC.PIN-CRADLE			81			27X20RA3C	PLUG-6149(DRAIN)
	47 48	1	5003406 5003011	LOC.PIN-VLV PLATE				_ I		~~~~~	
	50	1	5003322	WASHER-SERVO PISTON							
	51	2	5003401	WASHER-CYL.BLOCK		T -	23	3092	2130		ATE RH ROT.
	52	2	5003402	WASHER-SHAFT	_	1			2050		RH METRIC/BSPP
	57	1	5003379	NEEDLE BEARING	R	-			2054		RH SAE/UNF
	58 59	1	VSTI10X10RA3CO 4046214 O	PLUG-COMP.INTERFACE PLUG-FEEDBACK		7			2055 2051		RH SAE/ISO RH METRIC/ISO
	59 60	1	5003036	CHAIN LINK	$\vdash$	-			2031		ATE LH ROT.
	62	1	5003378	ROLLER BEARING		1			2052		LH METRIC/BSPP
	73	1	5004427	LOCK NUT WITH SEAL	L	_		4092	2056	HOUSING	LH SAE/UNF
	74	3	P000050-3	SEAL RING		7			2057		
	82 83	2	5004413 5004275	SCREW M5X10 TUFLOK SHCS M6X12 TUFLOK		8	3 2		2053		ELH METRIC/ISO
			5004275	LIFTEYE - METRIC				Ċ		IOTES TRILE SEAL	S
	96	1	5003720	LIFTEYE - SAE				V	′ = VI1	TON SEALS	
LI			-					E	: = EP	PR SEALS	



HY13-PM1652-41-M1/US Parts List

						4 <sup>.</sup>	1
	SEALS					DES	GIGN MULTIPLE
						JEr	
	WS STD COMP.1000-5075 PSI	]					
F	WS STD COMP.1000-5075 PSI HS STD COMP. 600-3050 PSI DS STD COMP. 150-2000 PSI	SEE PAGE 6		<u> </u>	PP		- PUMP FACTORY MOUNTED ON REAR
	C "FRC" REMOTE COMP	FOR COMPENSATOR ASSEMBLIES		63	2	5000902	O-RING 2-010-N552-90
	R 1 "FR1"&"FRZ" Z REMOTE PRESSURE COMP	(STANDARD) (REMOTE)		65 66	1	5000948 5000924	O-RING 2-129-N552-90 O-RING 2-032-N552-90
	C "FFC" LOAD SENSE COMP	(LÒAD SENSE) OPTIONS		67		5001000	O-RING 2-032-N552-90
F	F 1 "FF1"&"FFZ"	UF HUNS		68	1	-	O-RING 2-224-N552-90
	Z LOAD SENSE COMP		N	70	1	5000955	O-RING 2-137-N552-90
	G** 20 HORSEPOWER CONTROL	SEE PAGE 7		71	1	5000923	O-RING 2-031-N552-90
	1** 25 HORSEPOWER CONTROL	FOR HORSEPOWER		72	1	5003397	SHAFT SEAL-45X62X7 N
	(** 30 HORSEPOWER CONTROL	ASSEMBLIES		75	1	5001143	B/U-RING 8-129-N300-90
	M**  35 HORSEPOWER CONTROL    S**  50 HORSEPOWER CONTROL	(REMOTE COMP) (L/S COMP)		76	1	5003383 5003386	B/U-RING 8-031-N300-90 B/U-RING 8-032-N300-90
	** 60 HORSEPOWER CONTROL	(CARTRIDGÉ)		90		5000300	O-RING 2-012-N552-90
	J** 75 HORSEPOWER CONTROL	(H.P.CONES)		63	2	5001012	O-RING 2-010-V747-75
		J		65	1	5001090	O-RING 2-129-V747-75
	31 1 A000021 T/S	COVER PLATE		66	1	5003390	O-RING 2-032-V747-75
T1	69 1 2153 -9 O-R			67	1	-	O-RING 2-042-V747-75
		EW M10X20-METRIC		68	1	5001076	O-RING 2-224-V747-75
	2 10x253 SCR	EW 3/8-16x3/4-SAE	l v	70	1	5001057	O-RING 2-137-V747-75
A7 -		JPLING-9T,16/32		71	1	5003392	O-RING 2-031-V747-75
		ADAPT.KIT "A"		72	1	5003396	SHAFT SEAL-45X62X7 V
B3 B7		JPLING-13T,16/32 ADAPT.KIT "B"		75	1	5001181 5003384	B/U-RING 8-129-V709-90 B/U-RING 8-031-V709-90
		JPLING-15T,16/32		77		5003387	B/U-RING 8-032-V709-90
W7 -		ADAPT.KIT "B"		90	1	5001014	O-RING 2-012-V747-75
C3		JPLING-14T,20/40		63	2	5002535	O-RING 2-010-E540-80
Č7		ADAPT.KIT "C"		65	1	5003112	O-RING 2-129-E540-80
D3-		JPLING-13T,8/16		66	1	5003391	O-RING 2-032-E540-80
	÷	ADAPT.KIT "D"		67	1	5004295	O-RING 2-042-E540-80
J3 –		JP.SPL N25X1.5X15		68	1	5004466	O-RING 2-224-E540-80
		ADAPT.KIT-100MM	E	70		5004421	O-RING 2-137-E540-80
K3 –		JP.SPL N32X1.5X20 ADAPT.KIT-125MM		71	1	5003393 5003395	O-RING 2-031-E540-80 SHAFT SEAL-45X62X7 E
		JP.SPL N40X1.5X25		75		5001152	B/U-RING 8-129-E652-90
L3		ADAPT.KIT-160MM		76	1	5003385	B/U-RING 8-031-E652-90
SEE	PAGE 8 FOR PARTS BREAKDO	WN ON THRU SHAFT		77	1	5003388	B/U-RING 8-032-E652-90
K	IT ASSEMBLIES AND COUPLING	G REF.NUMBERS		90	1	5002537	O-RING 2-012-E540-80
NOTE:			l w	72	1	5004483	SHAFT SEAL-45X62X7 W
	SHAFT OPTION CODE:	O DENOTES		"W"	OPI	ION USES	NITRILE ("N") SEALS
* DENC	DTES ETRIC SCREWS(THR'D 1 & 8)	N = NITRILE SEALS V = VITON SEALS				054	
S = UN	C SCREWS(THR'D 3 & 7)	E = EPR SEALS					
				SK	-PV	3G3 —	41
	ROTATING GROUI	41]			AL K ME S		LS MOUNT DESIGN
	REPLACEMENT KIT ROTATI FRAME SIZE 3 GROU			<b>_</b>	<u> </u>		MOUNT/THREAD
	NOTE:			_ <u>↓</u>	SEA		1 METRIC/BSPP
	1.VALVE PLATE (ITEM 23) MU			N	BUN FP		3 SAE/UNF 7 SAE/ISO 6149
				E	EPI		8 METRIC/ISO 6149
	2. △ = ALL PARTS INCLUDED "ROTATING GROUP" KIT	IN					
		1	3			Pa	arker Hannifin Corporation



Parker Hannifin Corporation Hydraulic Pump/Motor Division Greeneville, TN 37745 USA

# Service Notes:

- Use a clean lubricant (compatible with the working fluid) on all pump components during assembly.
- Most premature pump failures occur when contaminants from a previous failure have not been removed from the system, or cause for previous failure is still present (i.e. water in oil, filter bypassing, etc.)
- Thoroughly clean the reservoir, suction lines, suction strainer, drain lines, etc. before reinstalling the pump.
- Always fill the pump case with clean fluid before starting a new or serviced pump for flooded suction, purge air from suction lines by cracking the inlet fitting or vent plug on pump. This should prevent an airlock condition and allow for faster priming.
- Starting the pump slowly by jogging (or turning over engine without allowing it to start) will help the pump prime and make it easier to determine when priming has occurred.
- Start pump with an open circuit whenever possible. Reduce the compensator to it's minimum setting during start-up. Cycle the pump on and off stroke while increasing the compensator to its required setting.

This will assist in break-in of new components and help purge air from the case.

# **Basic Troubleshooting:**

#### **Pump Will Not Prime**

- $\Delta$  Pump should prime within 30 seconds. If it does not, **STOP**.
- $\Delta$  Check for proper drive rotation.
- $\Delta$  Make sure pump shaft is turning (i.e. key at coupling hubs is engaged).
- $\Delta$  Make sure reservoir is full.
- ∆ Check for major sources of a suction leak flange not tight, pinched O-Ring at flange or pump housing.

#### **Cannot Build Any Pressure**

- $\Delta$  Make sure pump is primed.
- $\Delta$  Check alignment.
- Make sure systems is not an open circuit.
  A pump produces flow, not pressure. It can only limit pressure when the system requirement is higher than the pump compensator setting.

#### Can Only Build A Few Hundred PSI

- $\Delta$  Compensator is backed all the way out.
- $\Delta$  The remote or load sense line is vented.
- $\Delta$  Control orifice or spool is plugged.
- $\Delta$  Incorrect compensator spool.
- $\Delta$  Pressure control dart is lodged open.

#### **Pump Will Not Compensate**

- △ Differential spring over-compressed (i.e. spring guide dislocated).
- $\Delta$  Pressure control stem vent hole is plugged.
- $\Delta$  Control spool travel is hindered.
- $\Delta$  Saturation orifice is missing in load sense circuit.



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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 COMPROMISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WAR-RANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSO-EVER. 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.

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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 byBuyer, 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 hereof shall be in addition to 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 of 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 carries 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 representation 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.





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