



HY13-PM1651-41-M1/US

Parker Pumps Parts & Service

Effective: September, 2001



PV Size 2 Design Series 41 Variable Volume Piston Pump Service Bulletin

Model

PV032 **** 41

PV040 **** 41

PV046 **** 41



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.

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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.

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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:

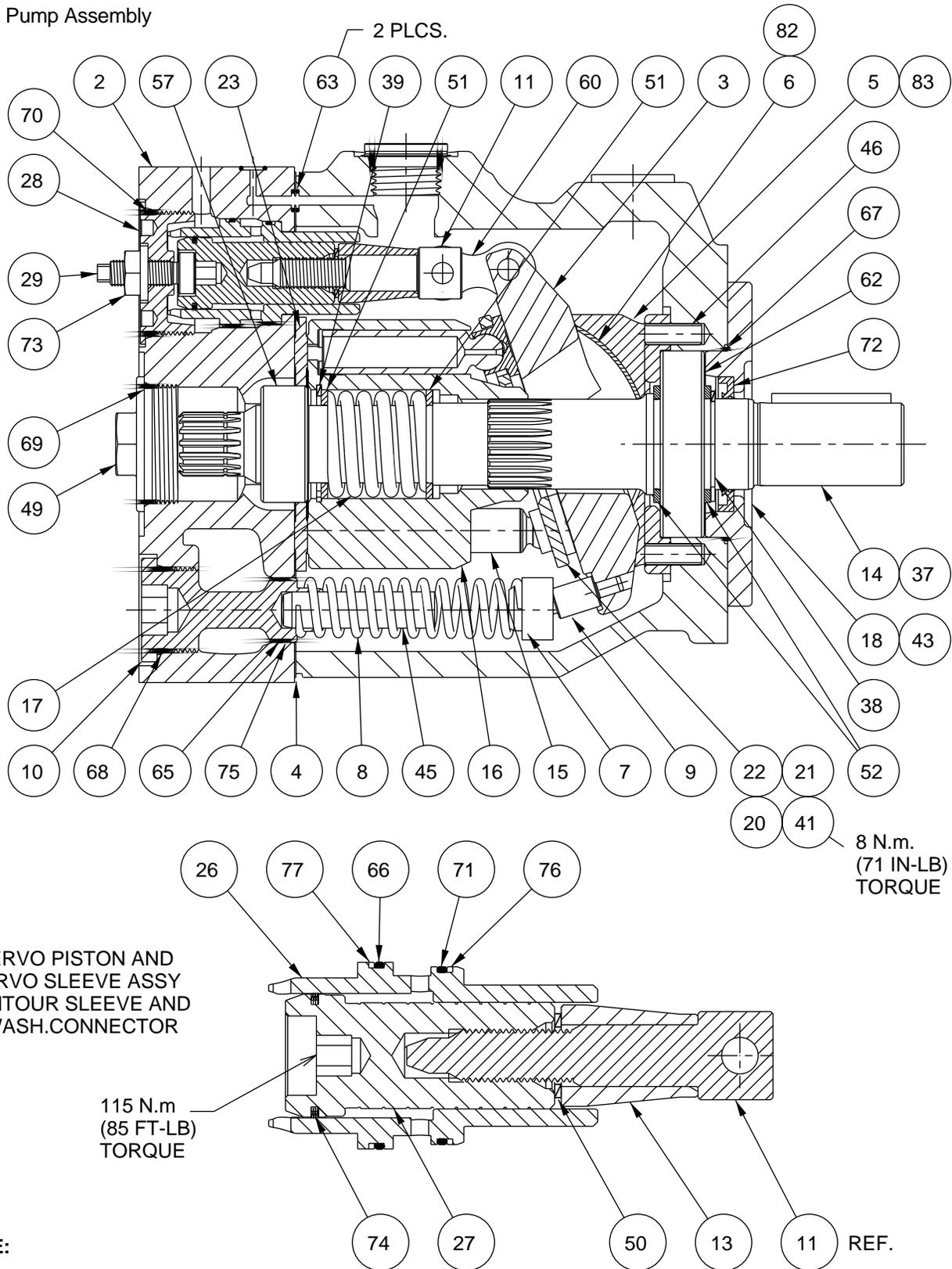
Prior to any pump disassembly, plug the open ports and clean all dirt from the outside of the pump.

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

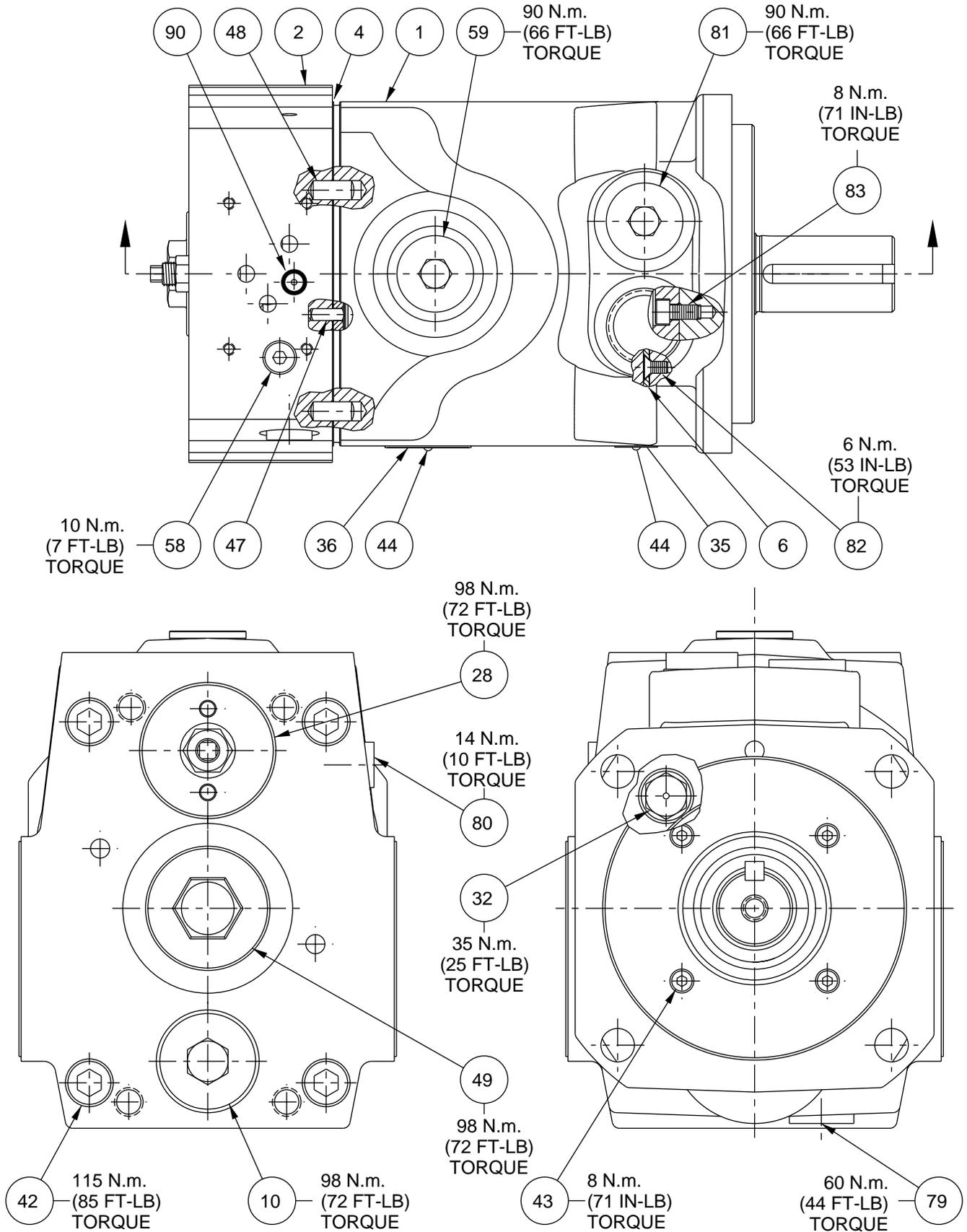
Warning:

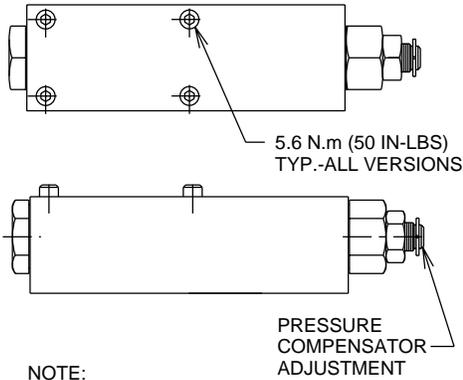
Protective eye wear should be worn during all maintenance procedures.

Basic Pump Assembly



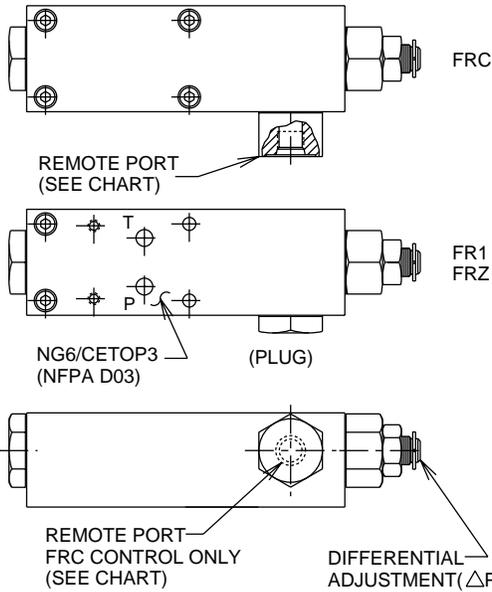
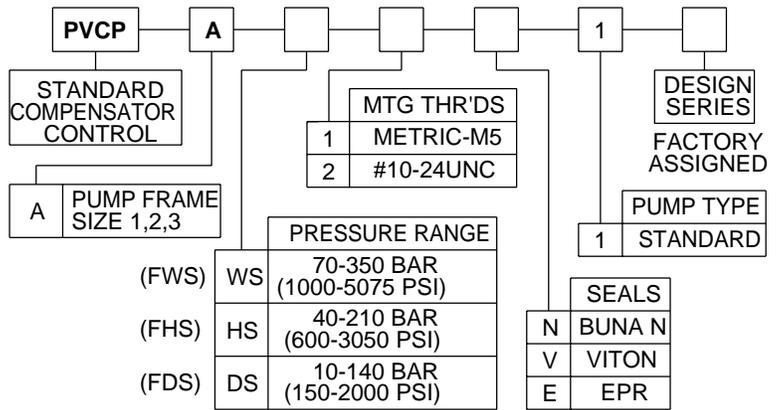
Basic Pump Assembly



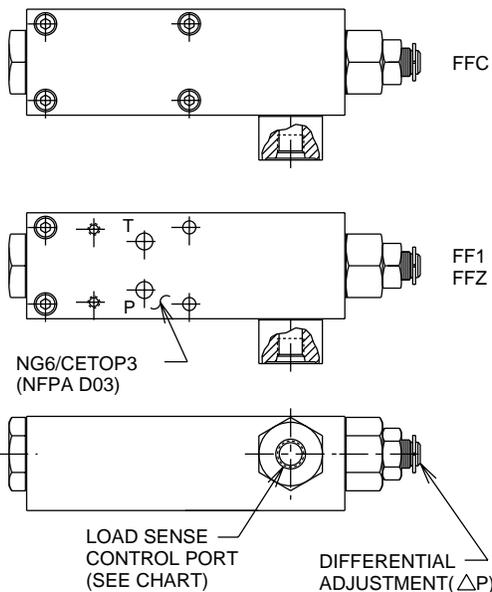
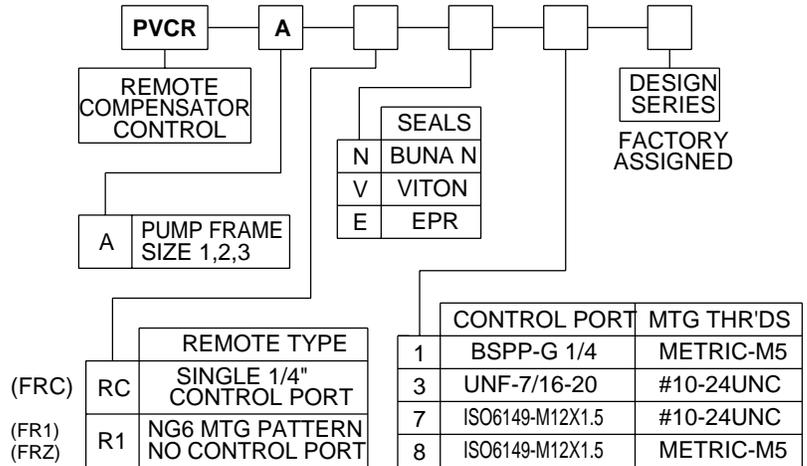


NOTE:
 SPRING P/N'S
 W - 2.032.112
 H - 2.032.168
 D - P.000.040

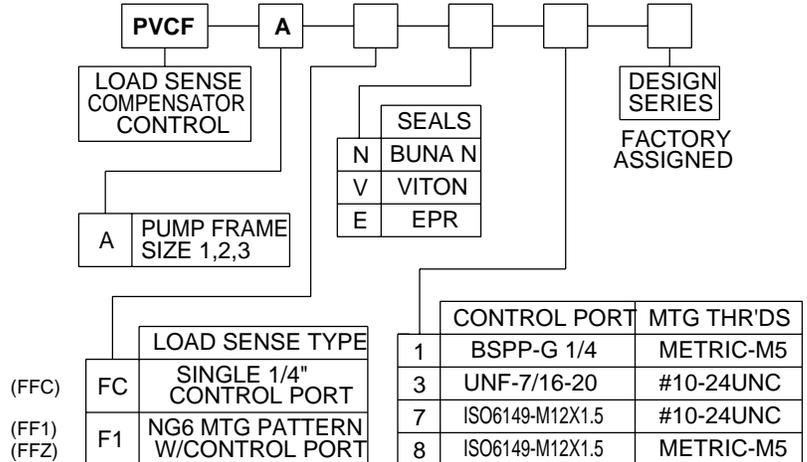
STANDARD PRESSURE COMPENSATOR
 FDS, FHS AND FWS



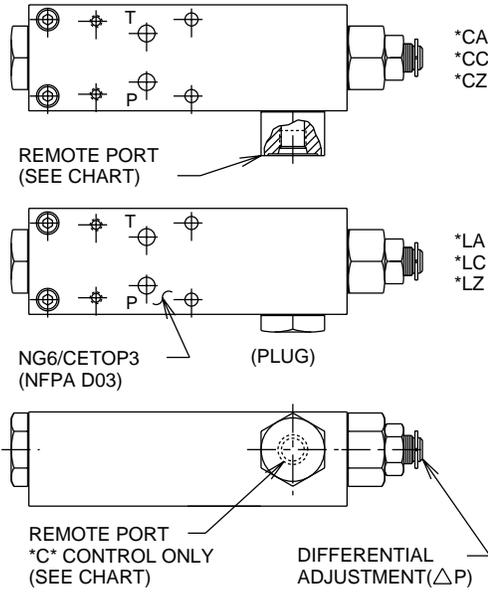
REMOTE PRESSURE COMPENSATOR
 FRC, FR1 AND FRZ



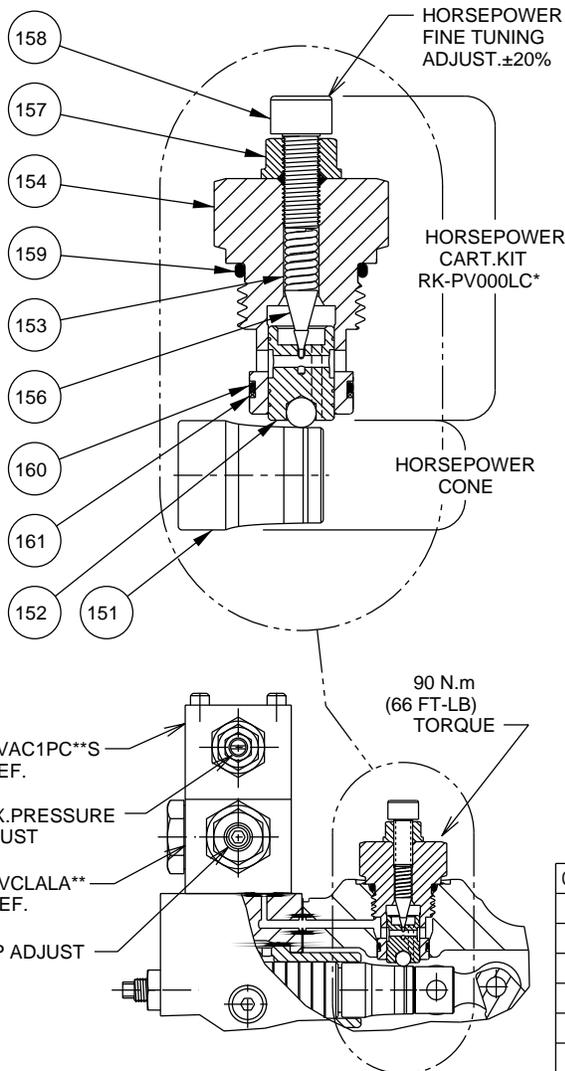
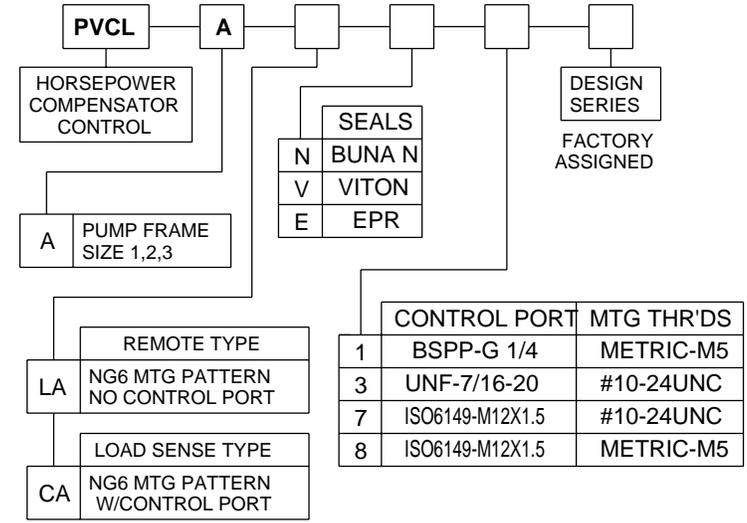
LOAD SENSE COMPENSATOR
 FFC, FF1 AND FFZ



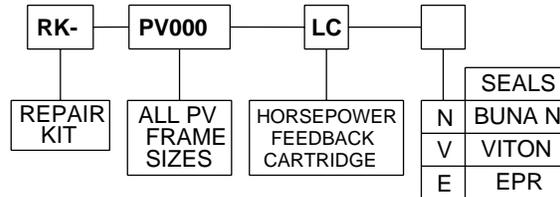
Control Options



HORSEPOWER (REMOTE & LOAD SENSE) COMPENSATOR
 *LA, *LC, *LZ, *CA, *CC, *CZ



HORSEPOWER CARTRIDGE KIT
 *LA, *LC, *LZ, *CA, *CC, *CZ



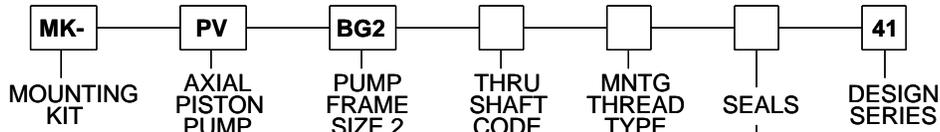
HP CARTRIDGE KIT P/N'S (REF.)

CODE	ITEM	QTY	PART NUMBER	DESCRIPTION
RK-	152	1	L000031	SEAT CARRIER
	153	1	L000025	SPRING - HP CART.
PV	154	1	L000030	BODY - HP CART.
	156	1	L000027	DART(POPPET)HP CART.
LC	157	1	5004299	LOCKNUT M8 X 1
	158	1	5004202	SHCS M8 X 1 DIN 912
N	159	1	5003143	O-RING 3-912-N552-90
	160	1	5000910	O-RING 2-018-N552-90
	161	1	5001127	B/U-RING 8-020-N300-90
V	159	1	3912V747-75	O-RING 3-912-V747-75
	160	1	5001020	O-RING 2-018-V747-75
	161	1	8018V709-90	B/U-RING 8-018-V709-90
E	159	1	3912E548-80	O-RING 3-912-E540-80
	160	1	5002543	O-RING 2-018-E540-80
	161	1	5004301	B/U-RING 8-018-E652-90

HORSEPOWER CONE

CODE	ITEM	QTY	PART NUMBER	DESCRIPTION	1800 rpm	1500 rpm
D	151	1	P046101-4	H.P.CONE 10 HP	8.8 HP	5.5 KW
E		1	P046101-5	H.P.CONE 15 HP	12.07 HP	7.5 KW
G		1	P046101-6	H.P.CONE 20 HP	17.7 HP	11 KW
H		1	P046101-7	H.P.CONE 25 HP	24.14 HP	15 KW
K		1	P046101-8	H.P.CONE 30 HP	29.7 HP	18.5 KW
M		1	P046101-9	H.P.CONE 35 HP	35 HP	22 KW

Thru Shaft Kits and Parts Breakdown



ITEM	PART NUMBER	QTY	DESCRIPTION
BG2	87	5003011	2 LOCATOR PIN
	69	2146 \square -9	1 O-RING

ITEM	PART NUMBER	QTY	DESCRIPTION
A	30	4046071-4S	1 ADAPTER-SAE"A"
	84	2042 \square -9	1 O-RING
B	30	4046071-3S	1 ADAPTER-SAE"B"
	84	2045 \square -9	1 O-RING
C	30	4046071-2S	1 ADAPTER-SAE"C"
	84	2049 \square -9	1 O-RING
G	30	4046070-5	1 ADAPTER- 63 MM
	84	2037 \square -9	1 O-RING
H	30	4046070-4	1 ADAPTER- 80 MM
	84	2042 \square -9	1 O-RING
J	30	4046070-3	1 ADAPTER-100 MM
	84	2045 \square -9	1 O-RING
K	30	4046070-2	1 ADAPTER-125 MM
	84	2049 \square -9	1 O-RING

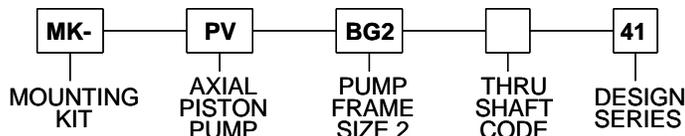
SEALS	
N	BUNA-N
V	FLUOROCARBON
E	ETHYLEN-PROPYLEN

ITEM	PART NUMBER	QTY	TYPE AND DESCRIPTION
M	85	5000144	4 MERTIC THREAD SHCS M12X40 DIN912
S	85	10X293	4 UNC THREAD SHCS 1/2-13UNCX1-1/2"

NOTE:

1. SAE ADAPTER P/N'S REFERENCED WITH UNC THREADS. SAE ADAPTERS ALSO AVAILABLE WITH METRIC THREADS (CONSULT FACTORY).
2. METRIC ADAPTER P/N'S REFERENCED WITH METRIC THREADS. METRIC ADAPTERS ALSO AVAILABLE WITH SAE THREADS (CONSULT FACTORY).
3. SCREWS, WASHERS, ETC. NEEDED TO ATTACH THE SECOND PUMP TO THE ADAPTER ARE NOT INCLUDED IN THE KIT.

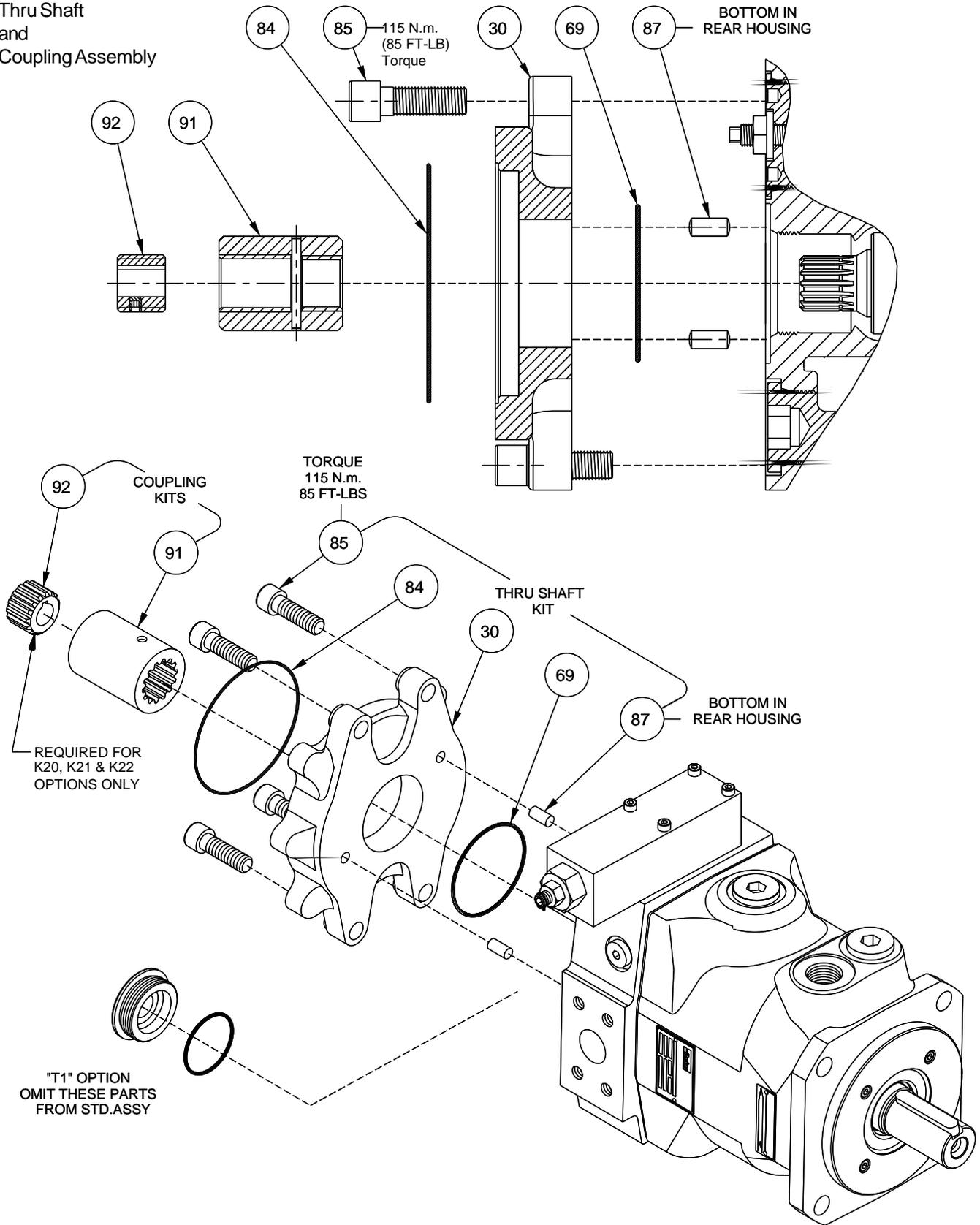
COUPLING KITS FOR THRU SHAFT OPTION

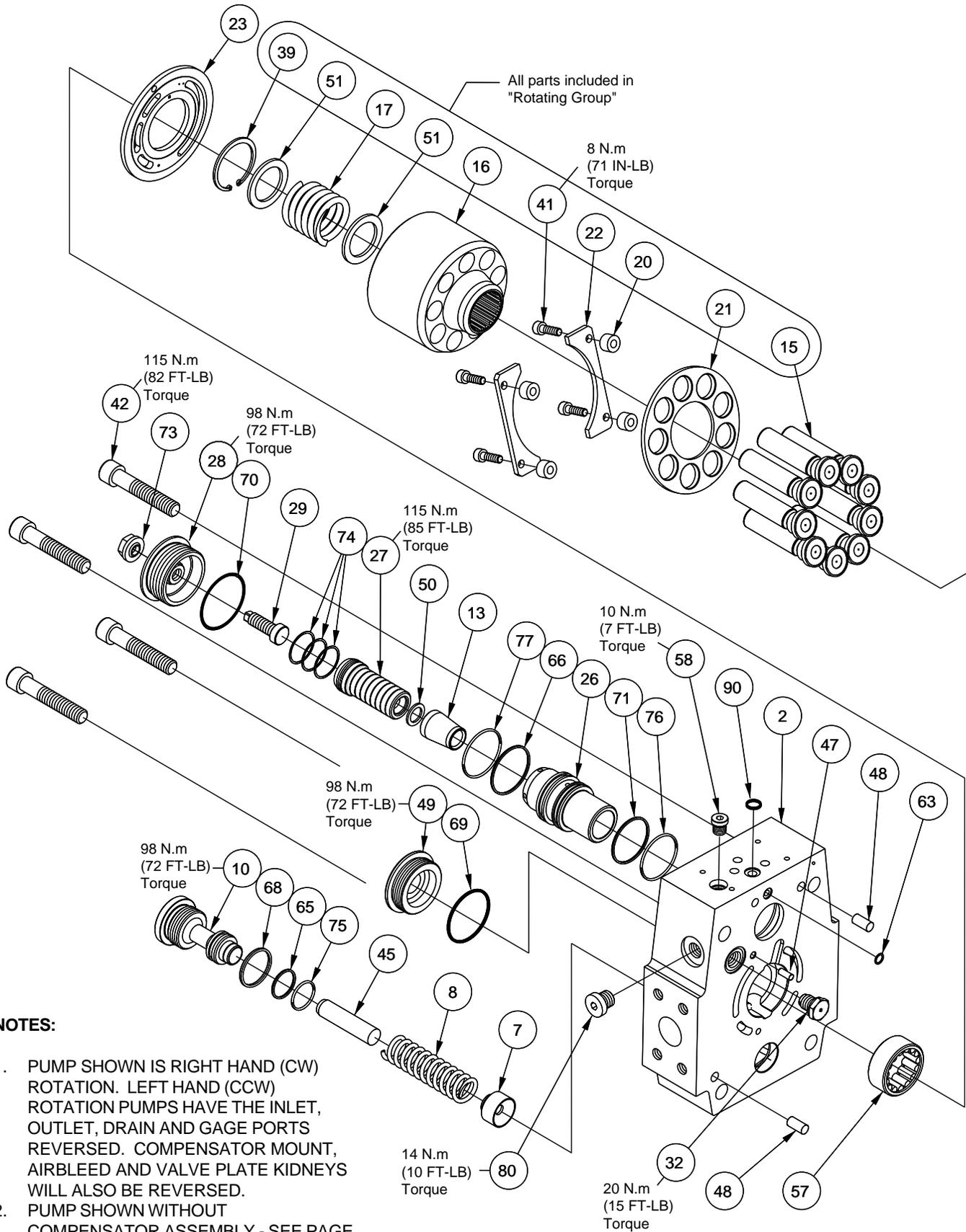


ITEM	PART NUMBER	QTY	SECOND PUMP SHAFT TYPE	
K01	91	3046081-2	1 N25X1.5X15 DIN 5480 - METRIC SPLINE	
K02	91	3046081-1	1 N32X1.5X20 DIN 5480 - METRIC SPLINE	
K11	91	3046082-4	1 9 TOOTH, 16/32 D.P. - SAE "A" SPLINE	
K12	91	3046082-9	1 11TOOTH, 16/32 D.P. - SAE SPLINE	
K13	91	3046082-3	1 13TOOTH, 16/32 D.P. - SAE "B" SPLINE	
K14	91	3046082-2	1 15TOOTH, 16/32 D.P. - SAE "BB" SPLINE	
K15	91	3046082-1	1 14TOOTH, 12/24 D.P. - SAE "C" SPLINE	
*	K20	92	3046083-3	1 12 MM DIA.SHAFT (USED W/ 63 MM PILOT)
*	K21	92	3046083-2	1 16 MM DIA.SHAFT (USED W/ 80 MM PILOT)
*	K22	92	3046082-1	1 18 MM DIA.SHAFT (USED W/ 80 MM PILOT)

* MUST BE IN CONJUNCTION WITH MK-PVBG2K02 (3046081-1).

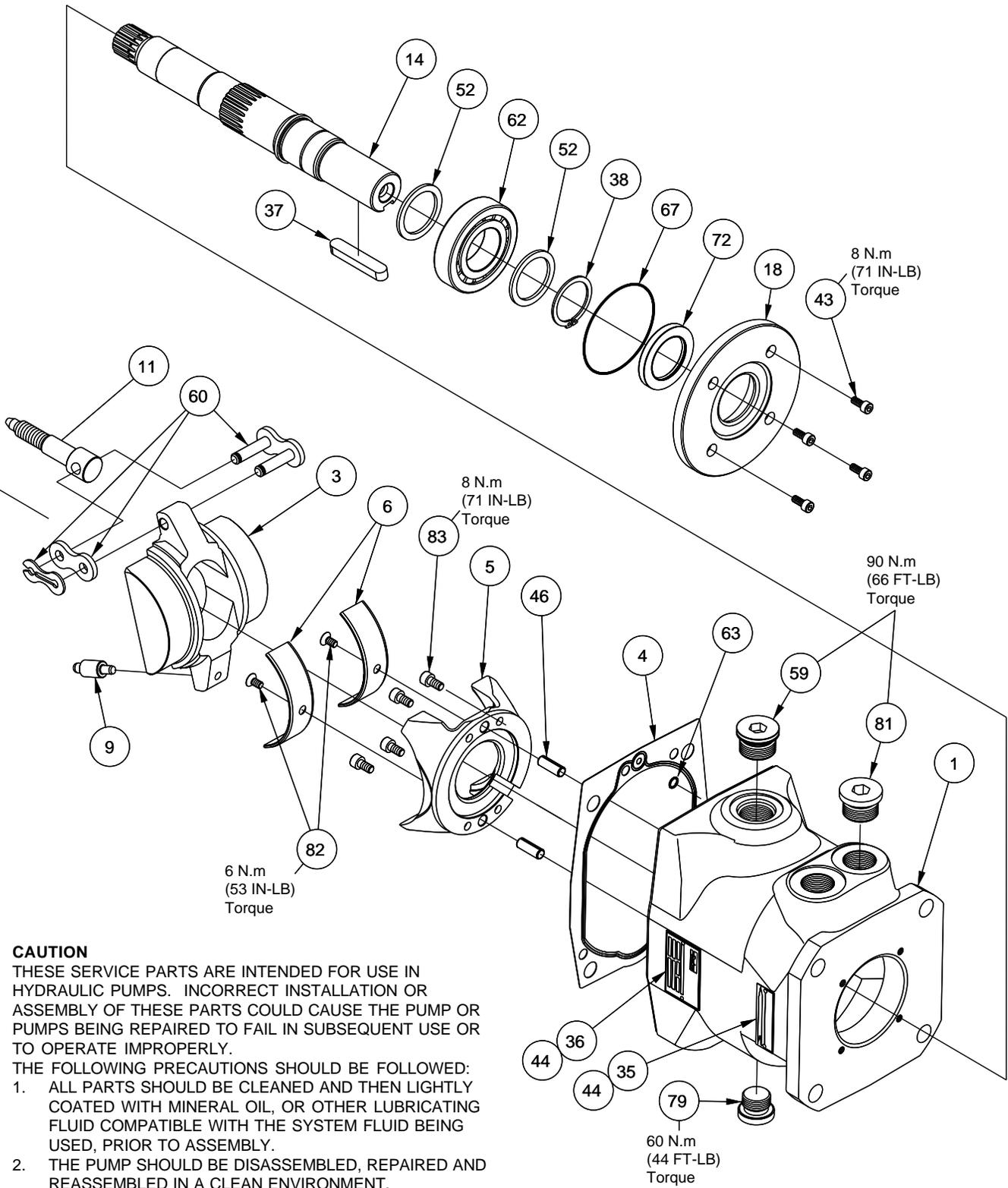
Thru Shaft and Coupling Assembly





NOTES:

1. PUMP SHOWN IS RIGHT HAND (CW) ROTATION. LEFT HAND (CCW) ROTATION PUMPS HAVE THE INLET, OUTLET, DRAIN AND GAGE PORTS REVERSED. COMPENSATOR MOUNT, AIRBLEED AND VALVE PLATE KIDNEYS WILL ALSO BE REVERSED.
2. PUMP SHOWN WITHOUT COMPENSATOR ASSEMBLY - SEE PAGE 6 AND 7 FOR AVAILABLE COMPENSATOR OPTIONS.



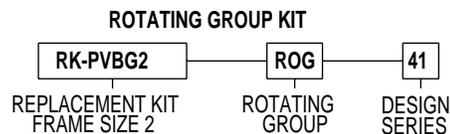
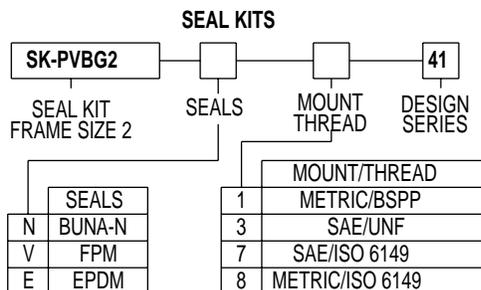
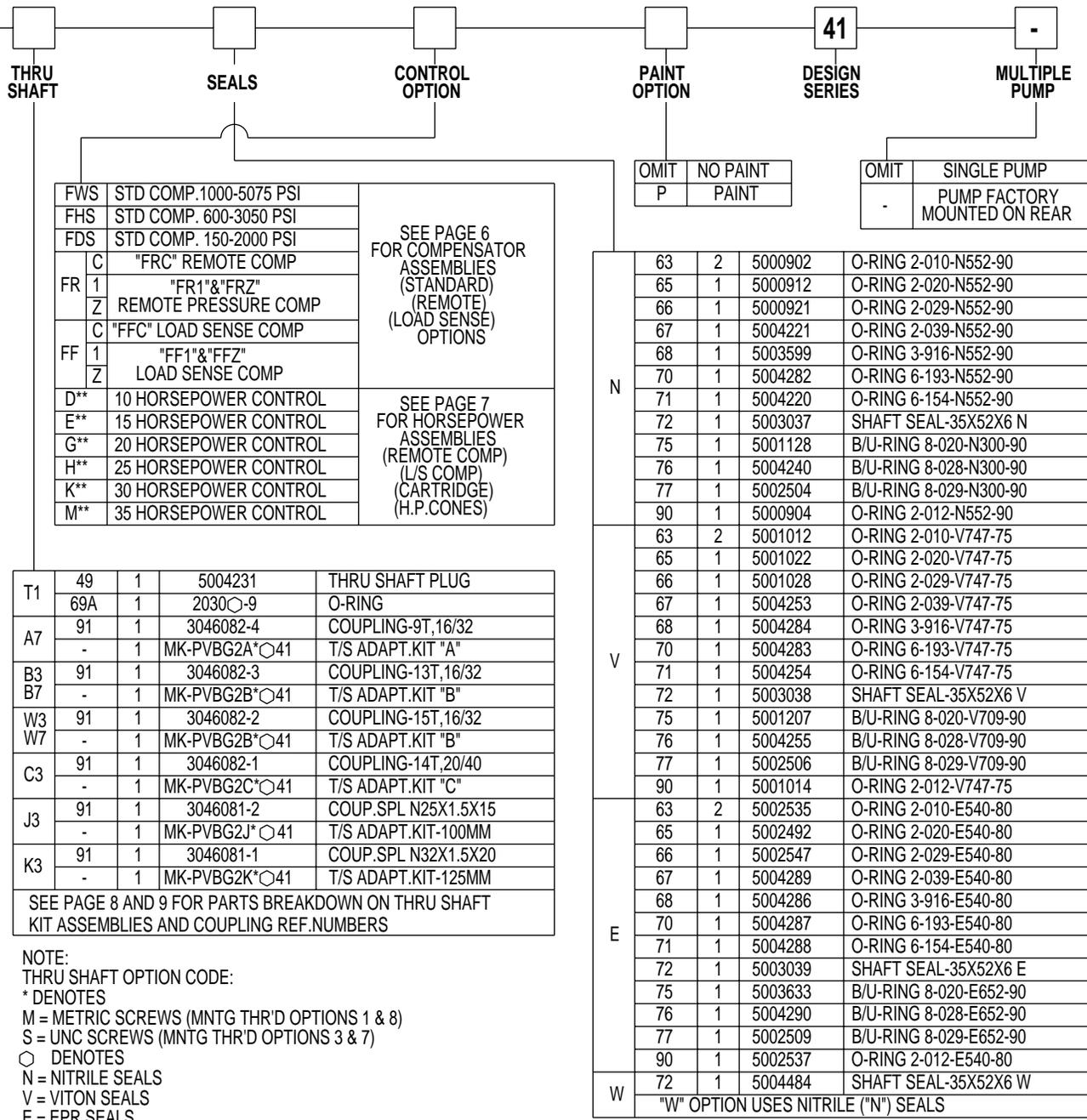
CAUTION

THESE SERVICE PARTS ARE INTENDED FOR USE IN HYDRAULIC PUMPS. INCORRECT INSTALLATION OR ASSEMBLY OF THESE PARTS COULD CAUSE THE PUMP OR PUMPS BEING REPAIRED TO FAIL IN SUBSEQUENT USE OR TO OPERATE IMPROPERLY.

THE FOLLOWING PRECAUTIONS SHOULD BE FOLLOWED:

1. ALL PARTS SHOULD BE CLEANED AND THEN LIGHTLY COATED WITH MINERAL OIL, OR OTHER LUBRICATING FLUID COMPATIBLE WITH THE SYSTEM FLUID BEING USED, PRIOR TO ASSEMBLY.
2. THE PUMP SHOULD BE DISASSEMBLED, REPAIRED AND REASSEMBLED IN A CLEAN ENVIRONMENT.
3. USE PROPER TOOLS TO DISASSEMBLE AND REASSEMBLE THE PUMP.
4. IF YOU ARE UNCERTAIN HOW TO INSTALL THESE PARTS, YOU SHOULD OBTAIN ASSISTANCE EITHER FROM A PARKER HANNIFIN DISTRIBUTOR OR FROM THE HYDRAULIC PUMP/MOTOR DIVISION.





NOTE:
 1. VALVE PLATE (ITEM 23) MUST BE ORDERED AS A SEPARATE ITEM.
 2. △ = ALL PARTS INCLUDED IN "ROTATING GROUP" KIT

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 its 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**

- △ Pump should prime within 30 seconds. If it does not, **STOP**.
- △ Check for proper drive rotation.
- △ Make sure pump shaft is turning (i.e. key at coupling hubs is engaged).
- △ 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

- △ Make sure pump is primed.
- △ 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

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

Pump Will Not Compensate

- △ Differential spring over-compressed (i.e. spring guide dislocated).
- △ Pressure control stem vent hole is plugged.
- △ Control spool travel is hindered.
- △ 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 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.**

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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 specification for 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 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 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.



Parker Hannifin Corporation
Hydraulic Pump/Motor Division
2745 Snapps Ferry Road
Greeneville, TN 37745 USA
Tel. (423) 639-8151
FAX (423) 787-2418
www.parker.com/pumpmotor

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