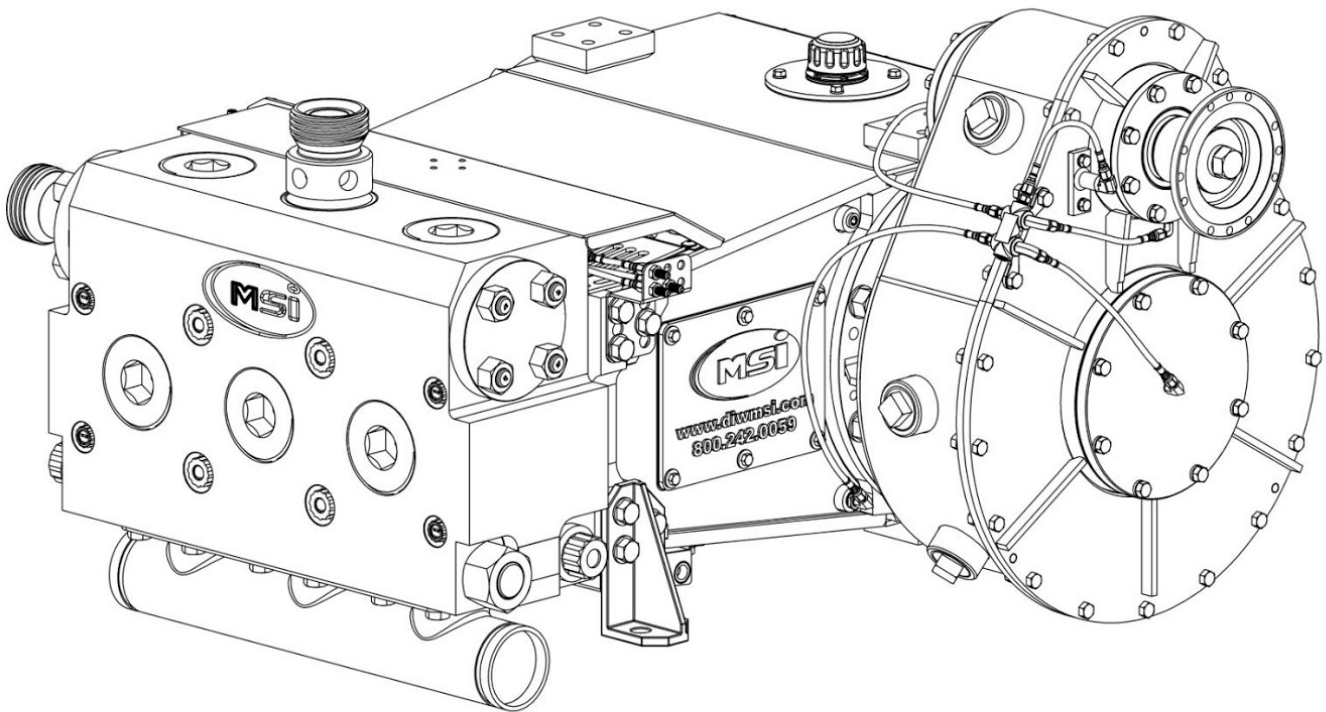




Technical Manual  
MSI Hybrid™ Well Service Pumps



**MSI – A Division of Dixie Iron Works, Ltd.**

**300 W. Main St.**

**Alice, TX 78332**

**www.diwmsi.com**

**(800) 242-0059**

**9.1 Detail Section Drawings, Service Tools**

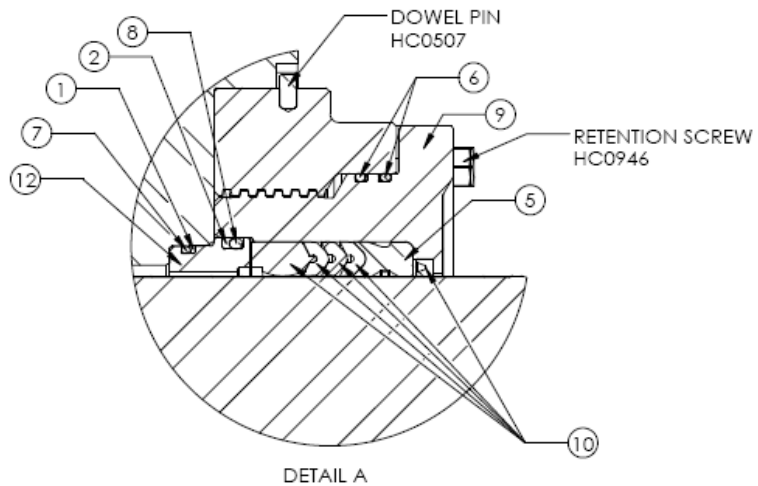
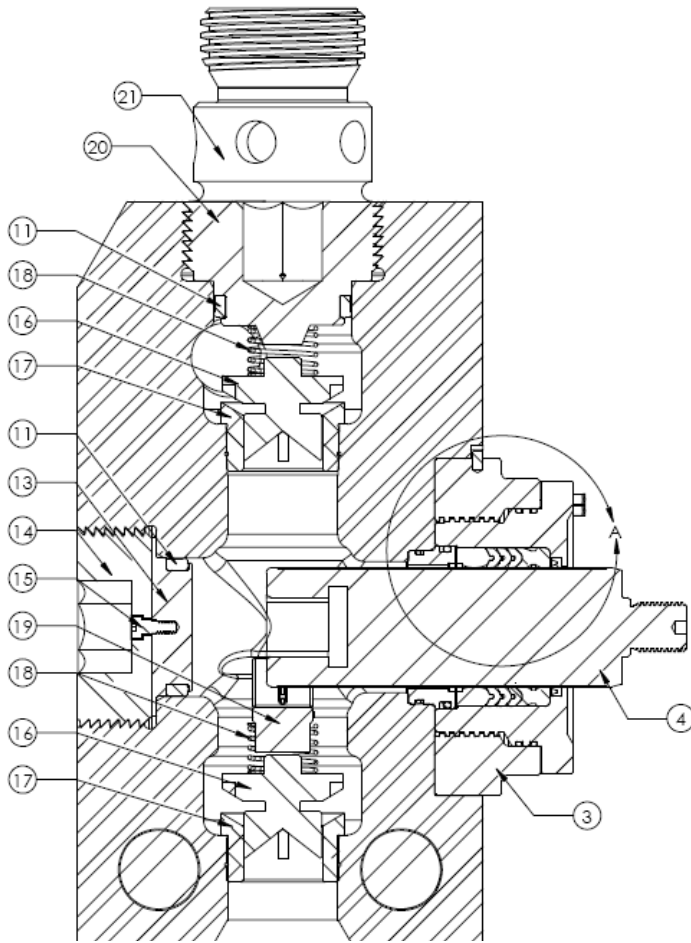
See drawings on following pages.

# FLUID END ASSEMBLY - SECTION

2.75-3.00

ITEM NO.	DESCRIPTION	PART NUMBER	
		2.75"	3.00"
1	BACK-UP RING, SB FE SIDE	OC0077	
2	BACK-UP RING, SB PE SIDE	OC0077	OC0064
3	FLUID END ADAPTER	FEC0402 (600,1000)	FEC0494 (1300)
4	FLUID END PLUNGER	FEC0313	FEC0314
5	LANTERN RING	FEC0353	FEC0354
6	O-RING, PACKING NUT	OC0151	
7	O-RING, SB FE SIDE	OC0076	
8	O-RING, SB PE SIDE	OC0076	OC0085
9	PACKING NUT	FEC0346	FEC0347
10	PACKING SET	FEC0069	FEC0033
11	SEAL, SUCTION/DISCHARGE COVER	FEC0095	
12	STUFFING BOX ADAPTER	FEC0066	FEC0010
13	SUCTION COVER GLAND	FEC0338	
14	SUCTION COVER NUT	FEC0339	
15	SUCTION COVER NUT BOLT	HC0454	
16	VALVE	FEC0504 (INSERT FEC0504-1)	
17	VALVE SEAT	FEC0453	
18	VALVE SPRING	FEC0093	
19	VALVE STOP ASSEMBLY	FEC0382	

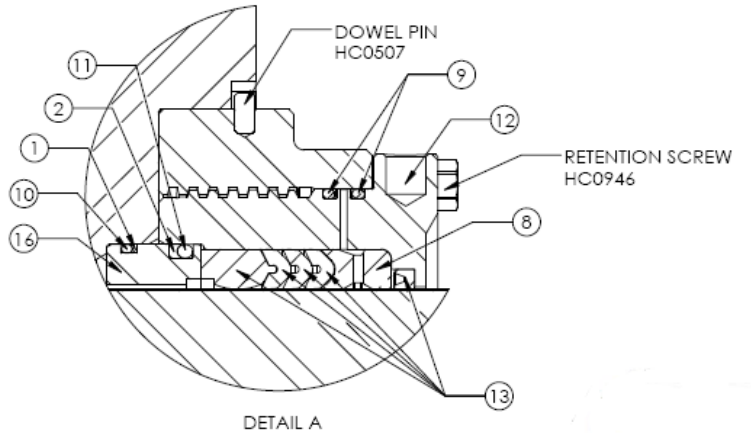
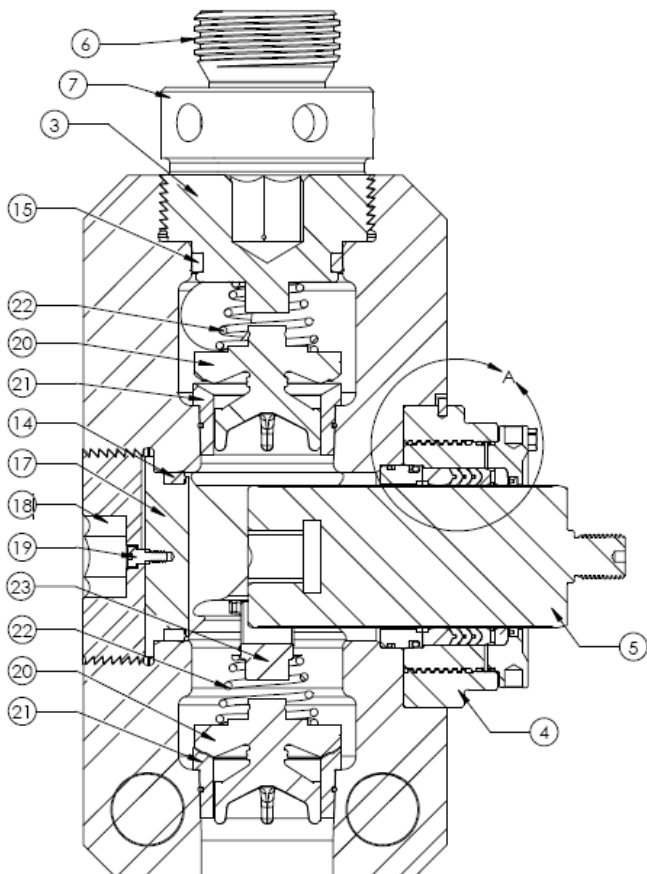
ITEM NO.	DESCRIPTION	PART NUMBER	
		TRIPLEX	QUINTUPLEX
20	DISCHARGE COVER NUT	FEC0089	FEC0149
21	GAUGE CONNECTION	FEC0096	FEC0151



# FLUID END ASSEMBLY - SECTION

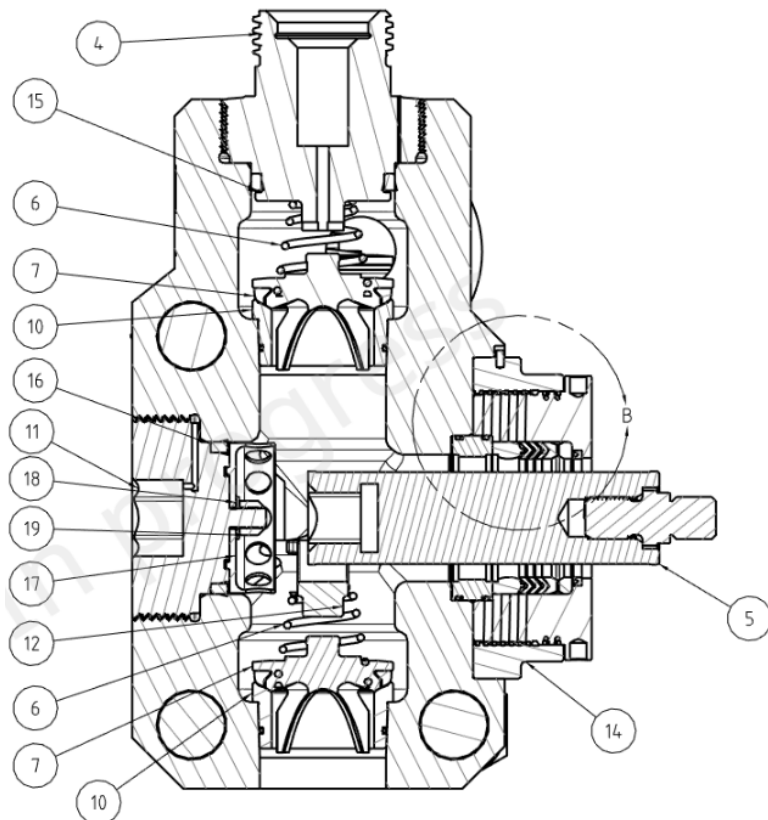
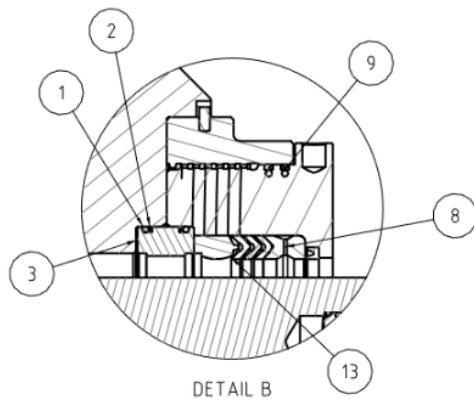
3.25-4.50

ITEM NO.	DESCRIPTION	PART NUMBER			
		3.25"	3.50"	4.00"	4.50"
1	BACK-UP RING, SB FE SIDE	OC0066			
2	BACK-UP RING, SB PE SIDE	OC0139	OC0068	OC0070	OC0072
3	DISCHARGE COVER NUT	FEC0005			
4	FLUID END ADAPTER	FEC0403			
5	FLUID END PLUNGER	FEC0315	FEC0316	FEC0317	FEC0318
6	GAUGE CONNECTION	FEC0011			
7	GAUGE CONNECTION RETAINER NUT	FEC0012			
8	LANTERN RING	FEC0358	FEC0355	FEC0356	FEC0357
9	O-RING, PACKING NUT	OC0150			
10	O-RING, SB FE SIDE	OC0065			
11	O-RING, SB FE SIDE	OC0138	OC0067	OC0069	OC0071
12	PACKING NUT	FEC0351	FEC0348	FEC0349	FEC0350
13	PACKING SET	FEC0258	FEC0054	FEC0055	FEC0040
14	SEAL, SUCTION COVER	FEC0013			
15	SEAL, DISCHARGE COVER	FEC0015			
16	STUFFING BOX ADAPTER	FEC0260	FEC0058	FEC0059	FEC0036
17	SUCTION COVER GLAND	FEC0340			
18	SUCTION COVER NUT	FEC0341			
19	SUCTION COVER NUT BOLT	HC0454			
20	VALVE	FEC0472 (INSERT FEC0472-1)			
21	VALVE SEAT	FEC0473			
22	VALVE SPRING	FEC0003			
23	VALVE STOP ASSEMBLY	FEC0383			



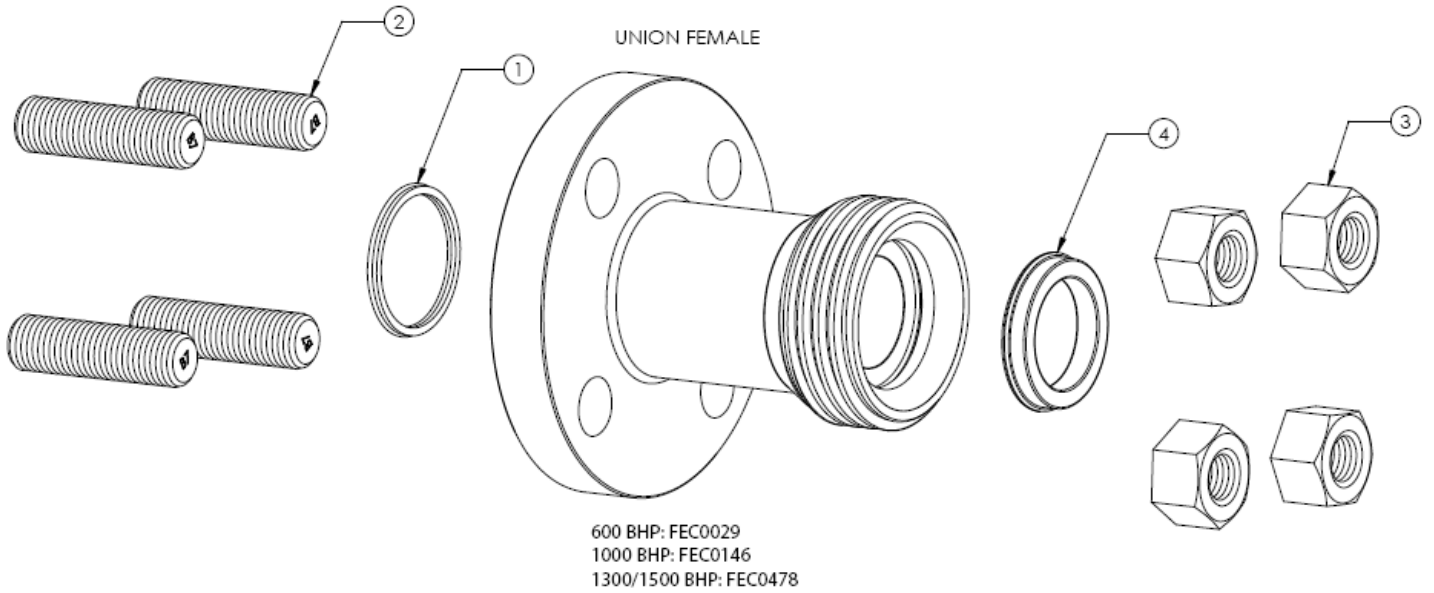
## FLUID END ASSEMBLY - 1500HP

ITEM NO.	DESCRIPTION	PART NUMBER
1	O-RING, (2-247 BUNA 90)	OC0093
2	PAR-BACK, 8-247 PTFE	OC0221
3	STUFFING BOX ADAPTER	FEC-15-001
4	GAGE CONNECTION	FEC-15-007
5	FLUID END PLUNGER	FEC-15-FEP-FEM
6	PONY ROD STUD	FEC0495
7	VALVE SPRING	FEC0003
8	VALVE COMPLETE	FEC0472
9	LANTERN RING	FEC0355
10	O-RING, (2-262 BUNA 90)	OC0220
11	VALVE SEAT	FEC0473
12	SUCTION COVER NUT	FEC-15-005
13	VALVE STOP	FEC0019
14	PACKING SET	FEC0054
15	FLUID END ADAPTER	FEC-15-003
16	DISCHARGE COVER SEAL	FEC0015
17	SUCTION COVER SEAL	FEC-15-008
18	SUCTION COVER CAGE	FEC-15-006
19	BELLEVILLE SPRING	HC1225
20	HEX NUT, 5/8"-18	HC1224



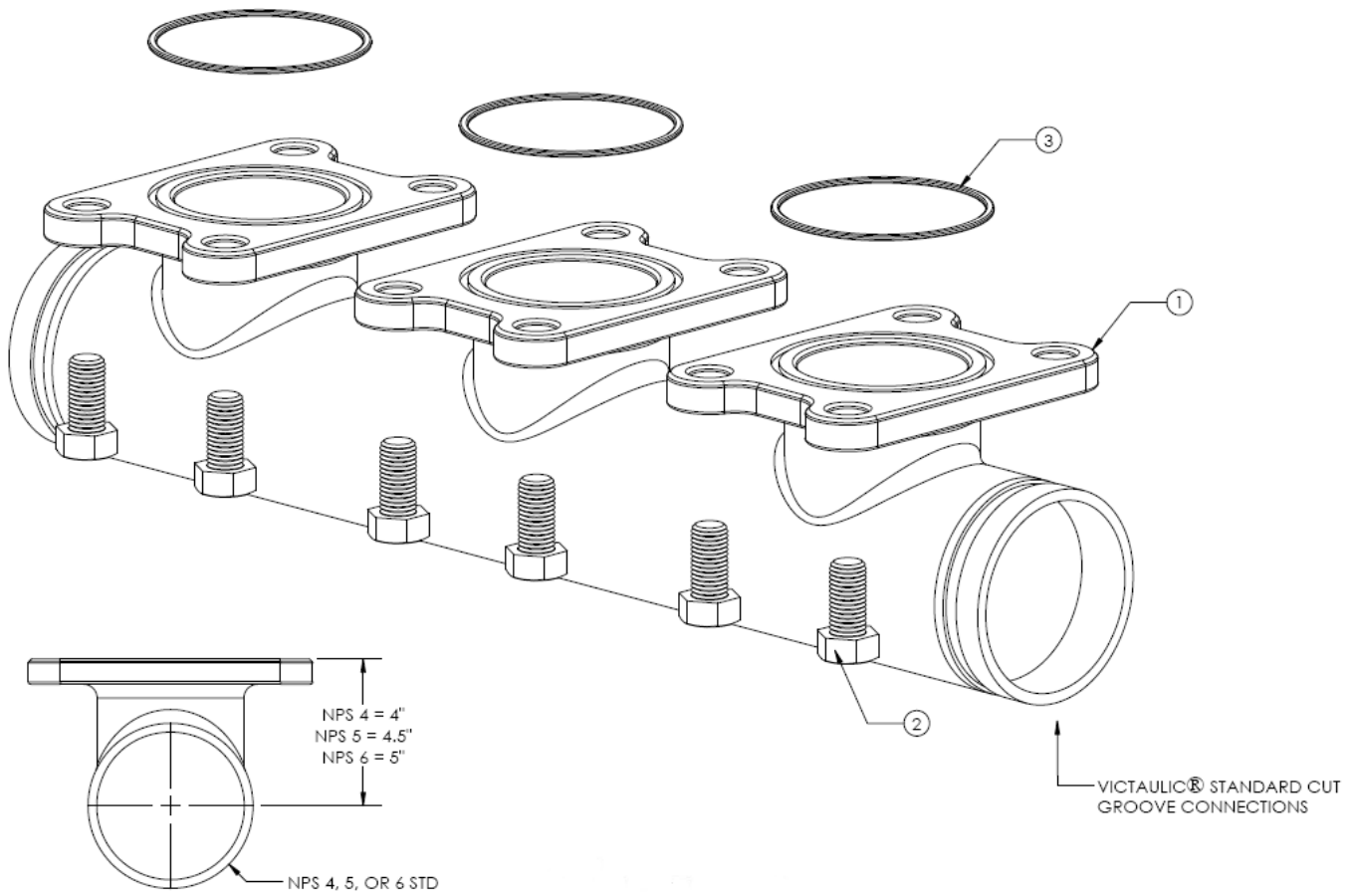
## DISCHARGE FLANGE COMPONENTS

ITEM NO.	DESCRIPTION	PART NUMBER	
		600   1300   1500 BHP	1000 BHP
1	DISCHARGE FLANGE SEAL	FEC0014	FEC0148
2	DISCHARGE FLANGE STUD	HC0091	HC0174
3	DISCHARGE FLANGE NUT	HC0092	HC0085
4	UNION RESILIENT SEAL	UC0011	UC0013



DISCHARGE FLANGES CAN BE PROVIDED WITH MALE OR FEMALE HAMMER UNIONS AN IN STRAIGHT OR ELBOW CONFIGURATIONS.

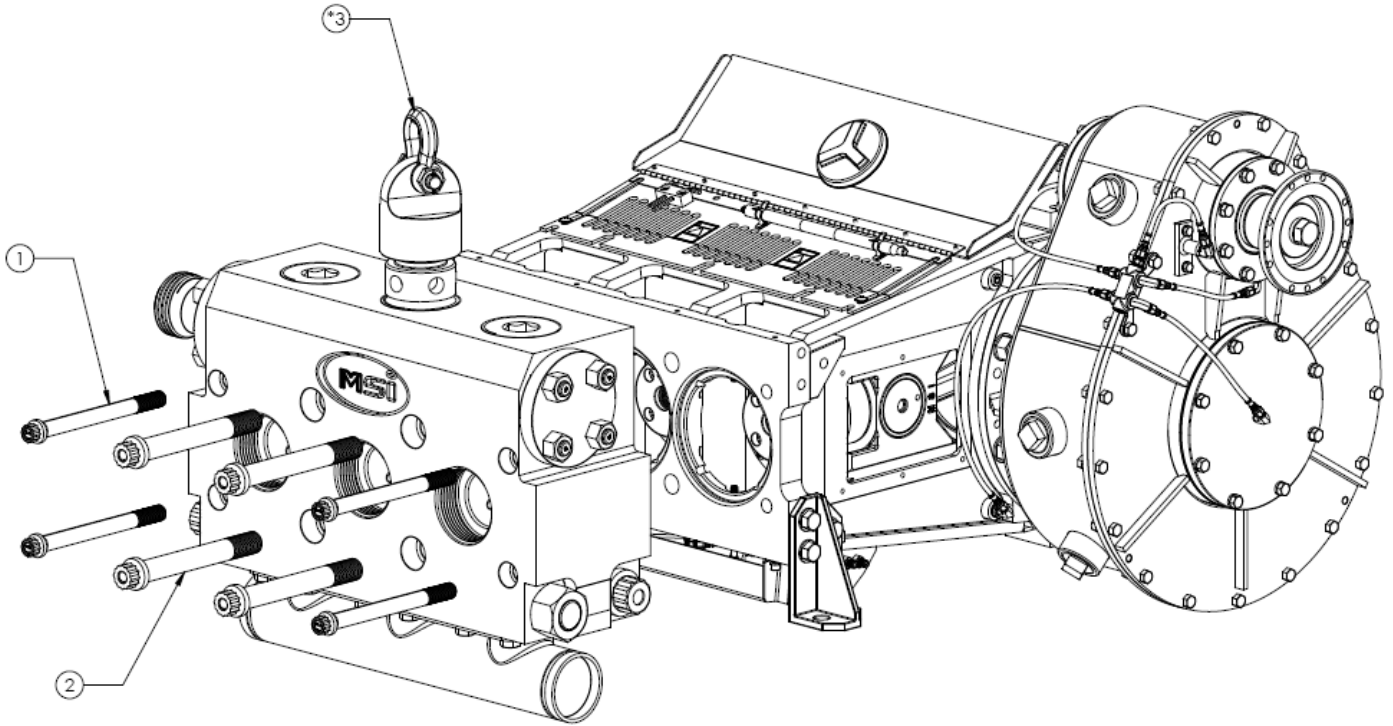
# SUCTION MANIFOLD COMPONENTS - EXPLODED



NOTE:  
MANIFOLD SHOWN IS TYPICAL, OTHER SIZES AND CONFIGURATIONS  
ARE AVAILABLE, CONTACT MSI SALES FOR OPTIONS.

## FLUID END REMOVAL

ITEM NO.	DESCRIPTION	PART NUMBER
1	FLUID END BOLT 1"	HC0135
2	FLUID END BOLT 1 3/8"	HC0136
*3	2"1502 LIFTING SUB	LSA0001



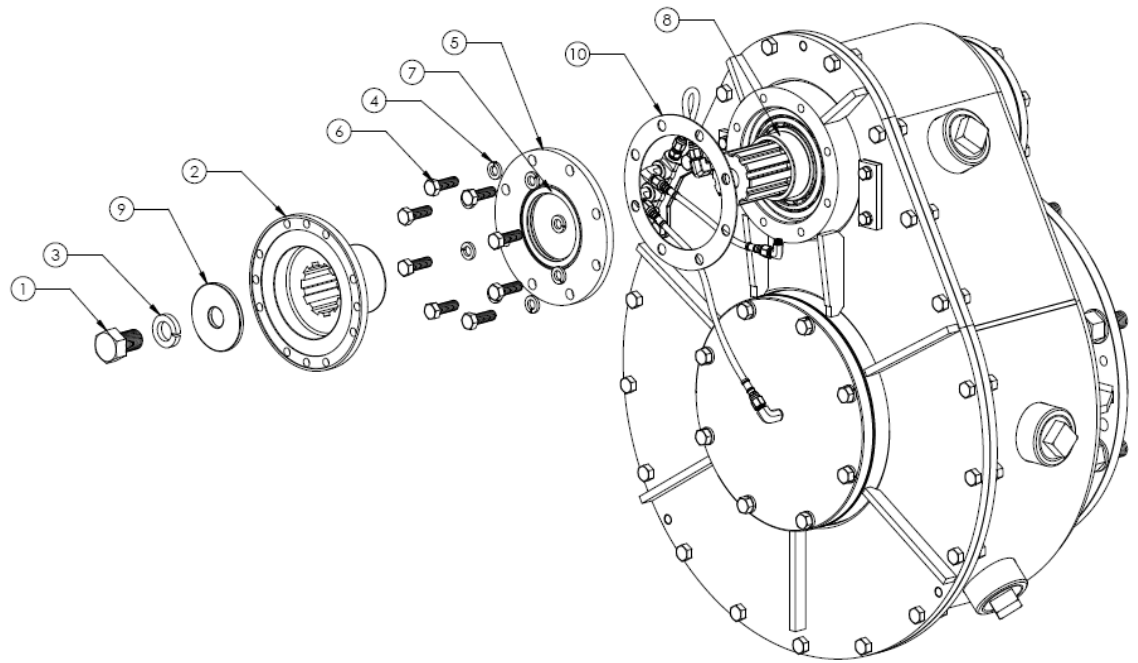
QUINTUPLEX PUMP USES 12 OF THE HC0136 BOLTS.  
1500 PUMP USES HC2002 BOLTS IN PLACE OF THE HC0136 BOLTS.

\*AVAILABLE SEPARATELY



## GEAR REDUCER SHIM ADJUSTMENT

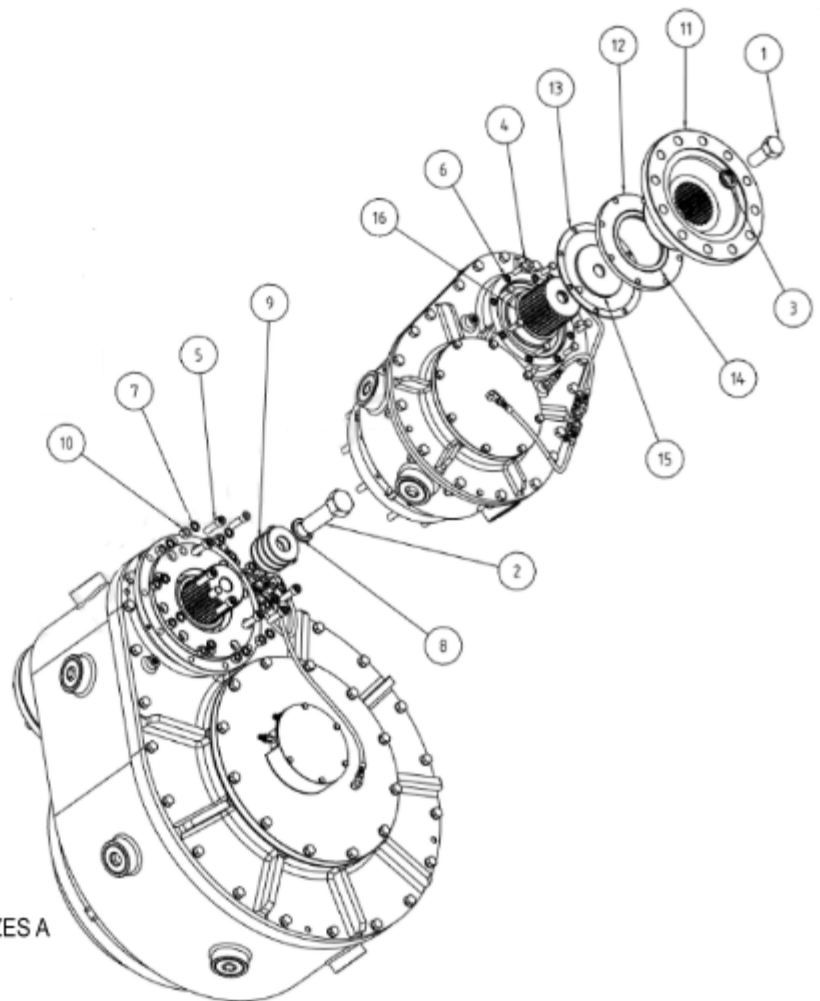
ITEM NO.	DESCRIPTION	PART NUMBER	
		TRIPLEX	QUINTUPLEX
1	FLANGE BOLT	HC0103	
2	*COMPANION FLANGE	GRC0041	GRC0049
3	LOCK WASHER	HC0101	
4	LOCK WASHER	HC0100	
5	PINION CAP	GRC0034	GRC0070
6	PINION CAP BOLT	HC0096	
7	PINION OIL SEAL	GRC0027	GRC0073
8	PINION SPACER	GRC0035	GRC0052
9	RETAINER WASHER	GRC0042	GRC0048
10	SHIM SET	GRC0032	GRC0055



\* THE STANDARD TRIPLEX PUMP COMPANION FLANGE UTILIZES A SPICER SERIES 1810 CONNECTION, THE QUINTUPLEX PUMP UTILIZES A SPICER SERIES 1950 CONNECTION.  
INPUT FLANGE OPTIONS ARE AVAILABLE, CONTACT MSI SALES

## GEAR REDUCER SHIM ADJUSTMENT-1500 HP

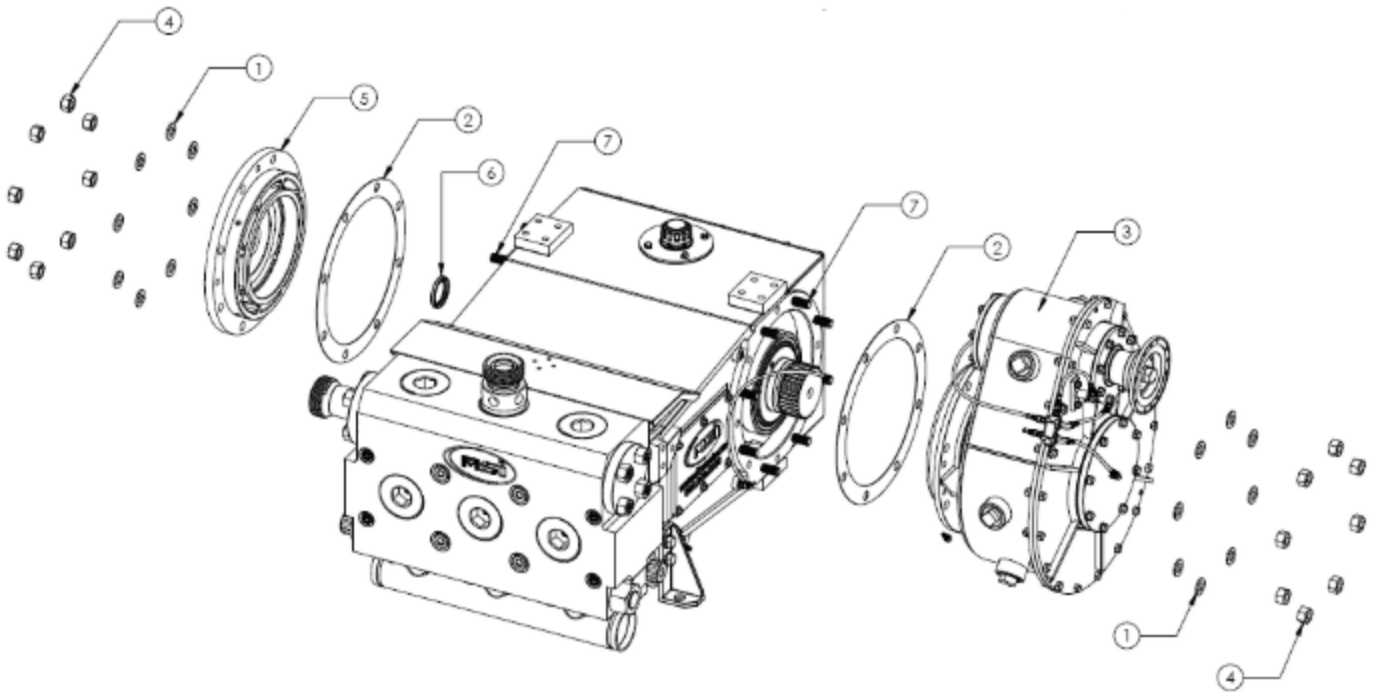
ITEM NO.	DESCRIPTION	PART NUMBER
1	HEX BOLT 1-8 x 2.5"	HC1211
2	HEX BOLT 1-1/4 x 4"	HC1196
3	SPRING LOCK WASHER 1"	HC0101
4	HEX BOLT 3/8-16 x 1.25"	HC0664P
5	SOCKET HEAD 1/2-13 x 1.75"	HC0035
6	LOCK WASHER 3/8"	HC0099
7	LOCK WASHER 1/2"	HC0100
8	SPRING LOCK WASHER 1 1/4"	HC1197
9	FLAT WASHER 1 1/4"	HC0713P
10	HEX NUT 1/2-13	HC0098P
11	INPUT FLANGE	GRC0049
12	PINION BEARING RETAINER	GRC-15A-023
13	PINION GEAR SHIM SET	GRC-15A-024
14	PINION SHAFT OILSEAT	GRC0073
15	RETAINER WASHER	GRC0048
16	PINION SHAFT SPACER	GRC0052



\* THE STANDARD TRIPLEX PUMP COMPANION FLANGE UTILIZES A SPICER SERIES 1810 CONNECTION, THE QUINTUPLEX PUMP UTILIZES A SPICER SERIES 1950 CONNECTION.  
INPUT FLANGE OPTIONS ARE AVAILABLE, CONTACT MSI SALES

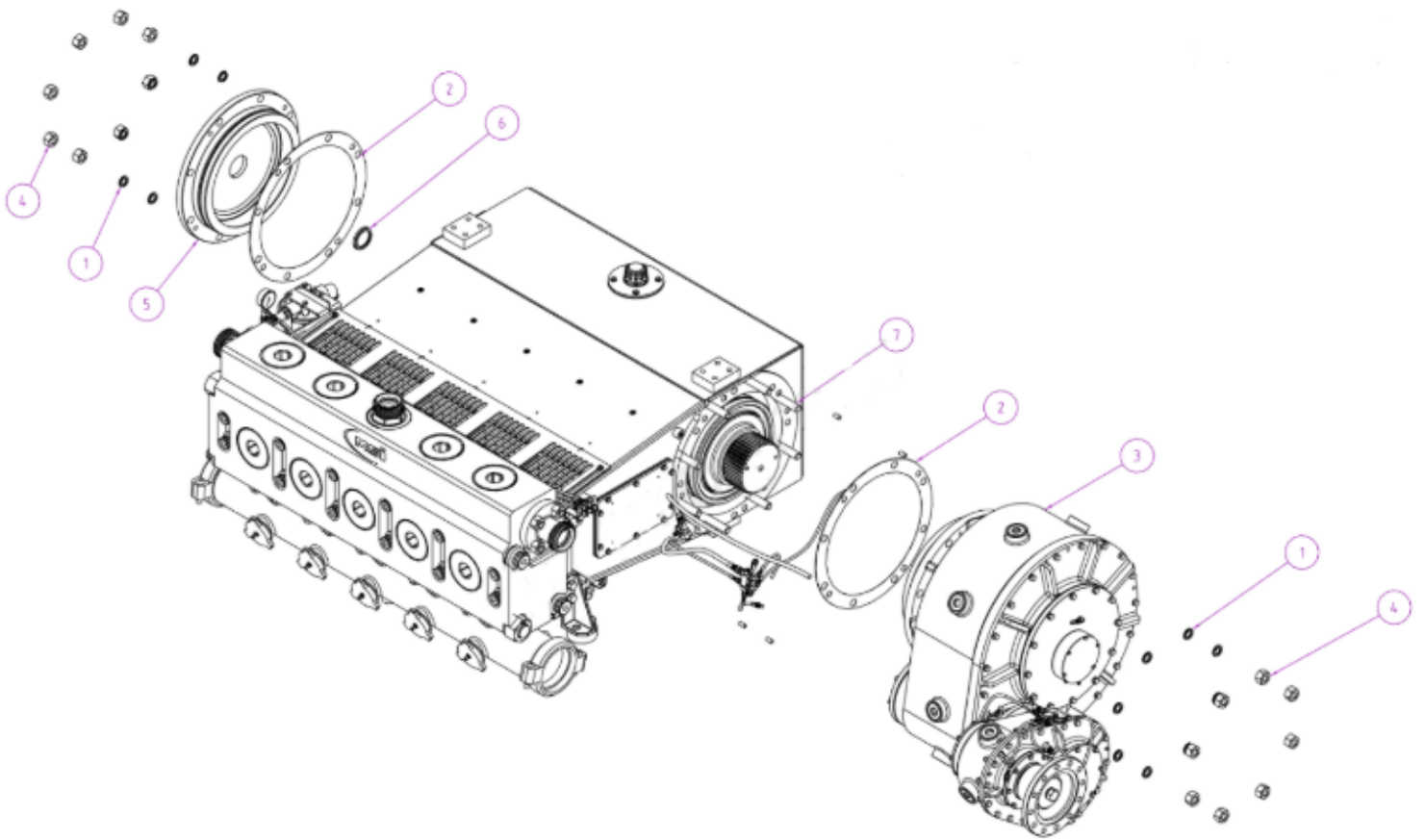
## GEAR REDUCER & BEARING HOUSING REMOVAL

ITEM NO.	DESCRIPTION	PART NUMBER	
		TRIPLEX	QUINTUPLEX
1	FLAT WASHER, HARDENED	HC0087	
2	GASKET	PEC0031	
3	GEAR REDUCER	GRA0001	GRA0003
4	HEX NUT	HC0085	
5	MAIN BEARING HOUSING	PEC0063	
6	BEARING HOUSING SEAL	PEC0061	
7	STUD BOLT	HC0084	



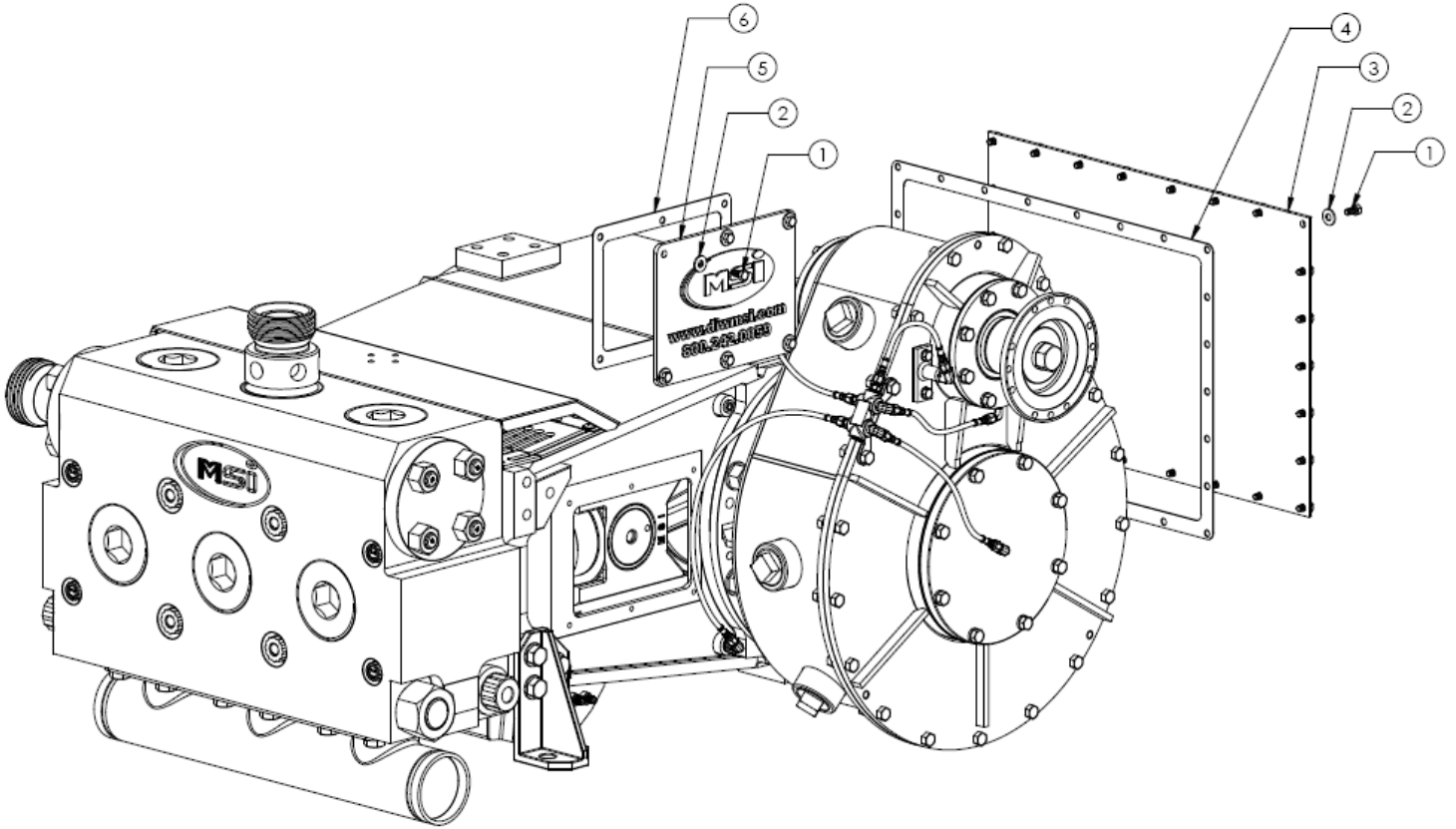
## GEAR REDUCER & BEARING HOUSING REMOVAL- 1500HP

ITEM NO.	DESCRIPTION	PART NUMBER
1	FLAT WASHER, HARDENED	HC0101
2	GASKET	PEC-15-0035
3	GEAR REDUCER	GRA-15-001
4	HEX NUT	HC0092
5	MAIN BEARING HOUSING	PEC-15-0036
6	BEARING HOUSING SEAL	PEC0061
7	STUD BOLT	HC2022



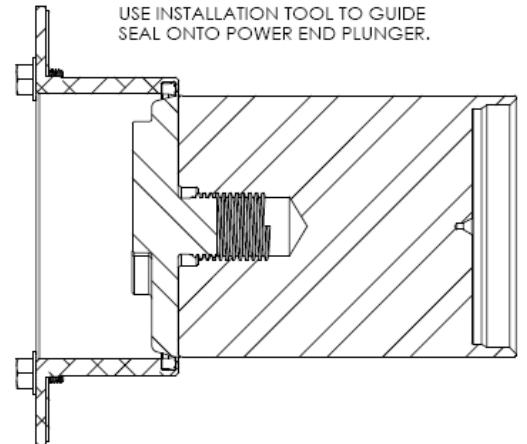
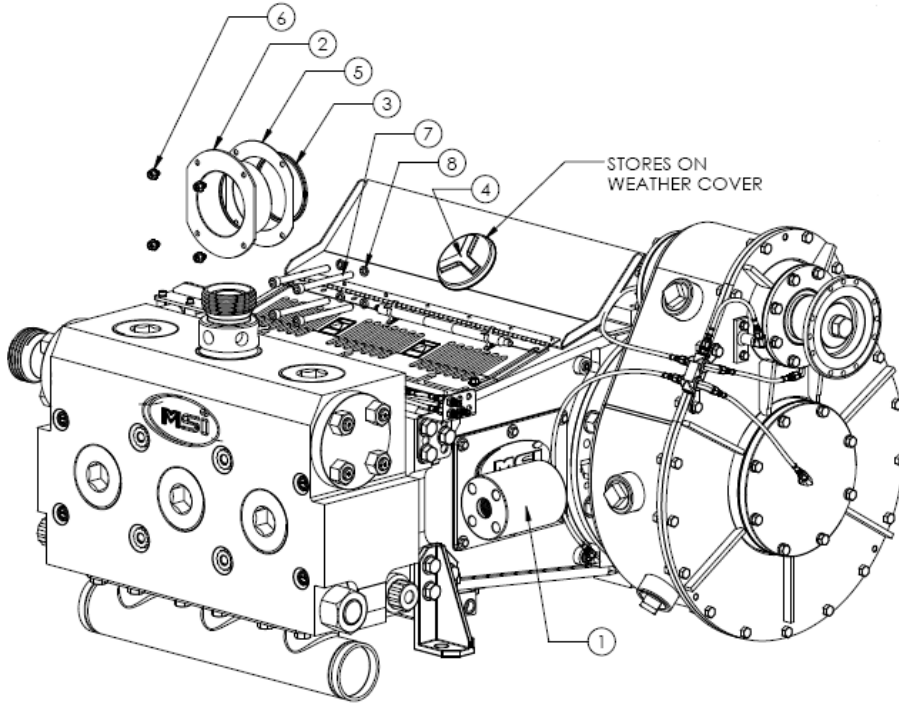
## POWER END ACCESS PANELS

ITEM NO.	DESCRIPTION	PART NUMBER		
		TRIPLEX	QUINTUPLEX	1500HP
1	ACCESS COVER BOLT	HC0004		
2	ACCESS COVER WASHER	HC0002		
3	REAR ACCESS COVER	PEC0077	PEC0095	PEC-15-0039
4	REAR ACCESS GASKET	PEC0080	PEC0096	PEC-15-0040
5	SIDE ACCESS COVER	PEC0078		PEC-15-0037
6	SIDE ACCESS GASKET	PEC0079		PEC-15-0038

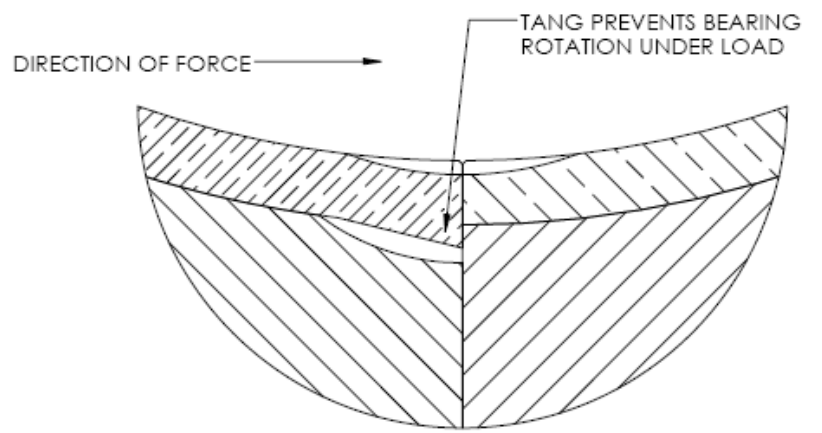
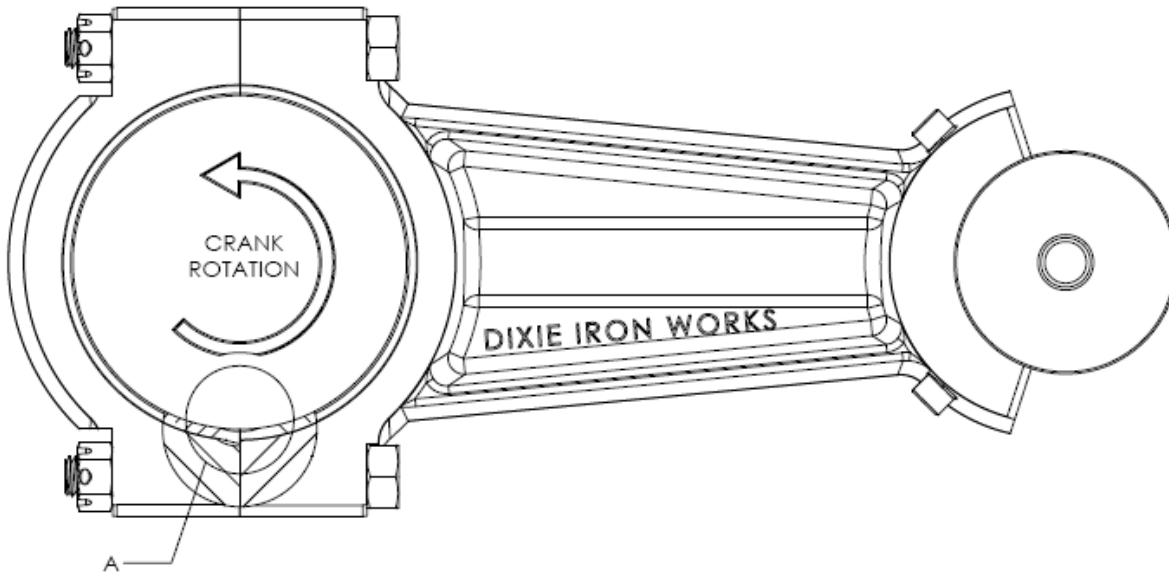


# POWER END PLUNGER SERVICE

ITEM NO.	DESCRIPTION	PART NUMBER	
		TRIPLEX/ QUINTUPLEX	1500 HP
1	POWER END PLUNGER	PEC00220	PEC-15-0042
2	POWER END PLUNGER SEAL HOUSING	PEC00221	PEC-15-0043
3	POWER END PLUNGER SEAL	PEC00222	PEC-15-0044
4	POWER END PLUNGER SEAL INSTALLATION TOOL	PEC00232	PEC-15-0061
5	POWER END PLUNGER SEAL HOUSING GASKET	PEC00237	PEC-15-0046
6	POWER END PLUNGER SEAL HOUSING SCREW	HC0945	HC0945P
7	POWER END PLUNGER SCREW	HC0467	HC1214
8	POWER END PLUNGER LOCK WASHER	HC0023	



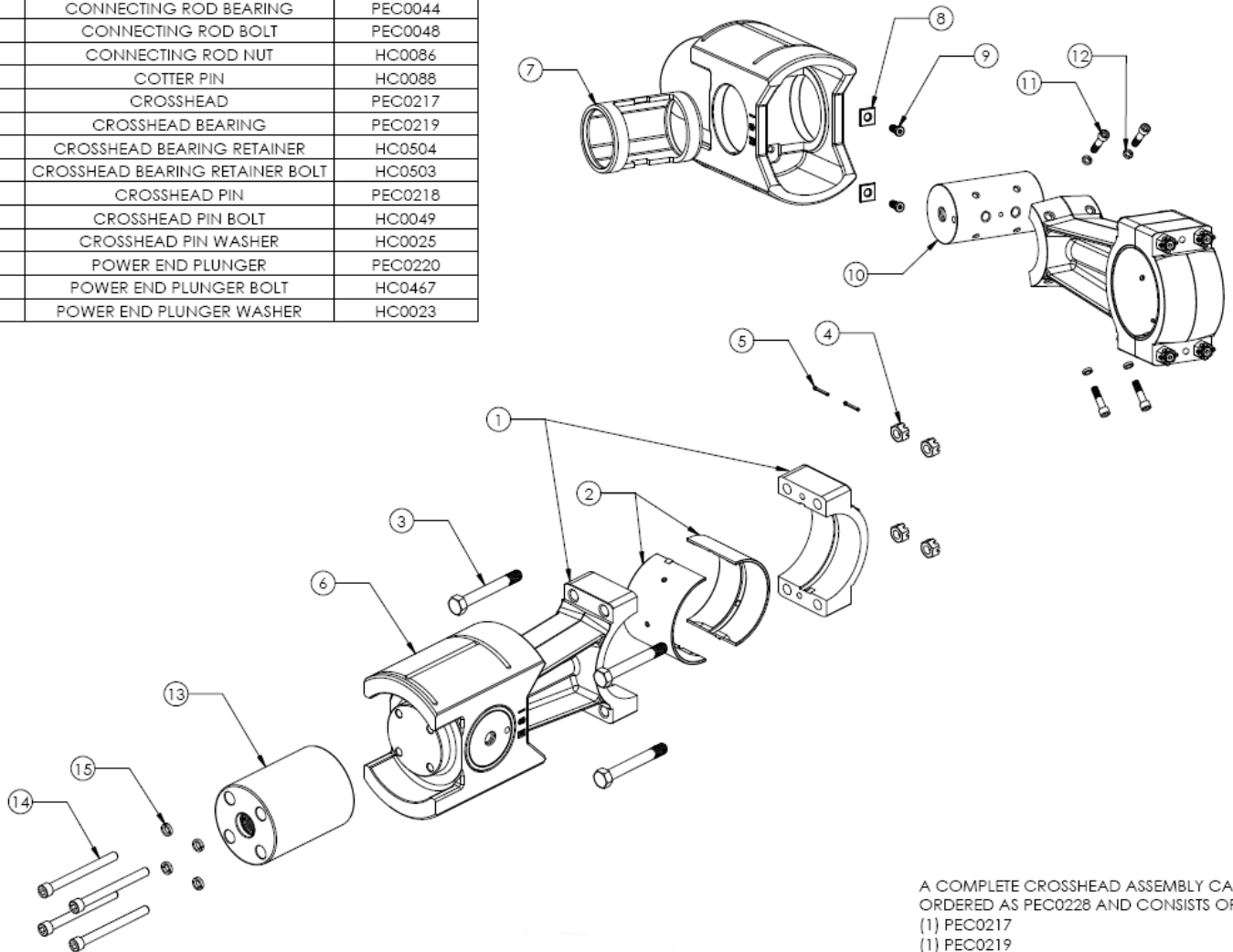
# CONNECTING ROD INSTALLATION



DETAIL A

## RECIPROCATING ASSEMBLY - EXPLODED

ITEM NO.	DESCRIPTION	PART NUMBER
1	CONNECTING ROD	PEC0216
2	CONNECTING ROD BEARING	PEC0044
3	CONNECTING ROD BOLT	PEC0048
4	CONNECTING ROD NUT	HC0086
5	COTTER PIN	HC0088
6	CROSSHEAD	PEC0217
7	CROSSHEAD BEARING	PEC0219
8	CROSSHEAD BEARING RETAINER	HC0504
9	CROSSHEAD BEARING RETAINER BOLT	HC0503
10	CROSSHEAD PIN	PEC0218
11	CROSSHEAD PIN BOLT	HC0049
12	CROSSHEAD PIN WASHER	HC0025
13	POWER END PLUNGER	PEC0220
14	POWER END PLUNGER BOLT	HC0467
15	POWER END PLUNGER WASHER	HC0023

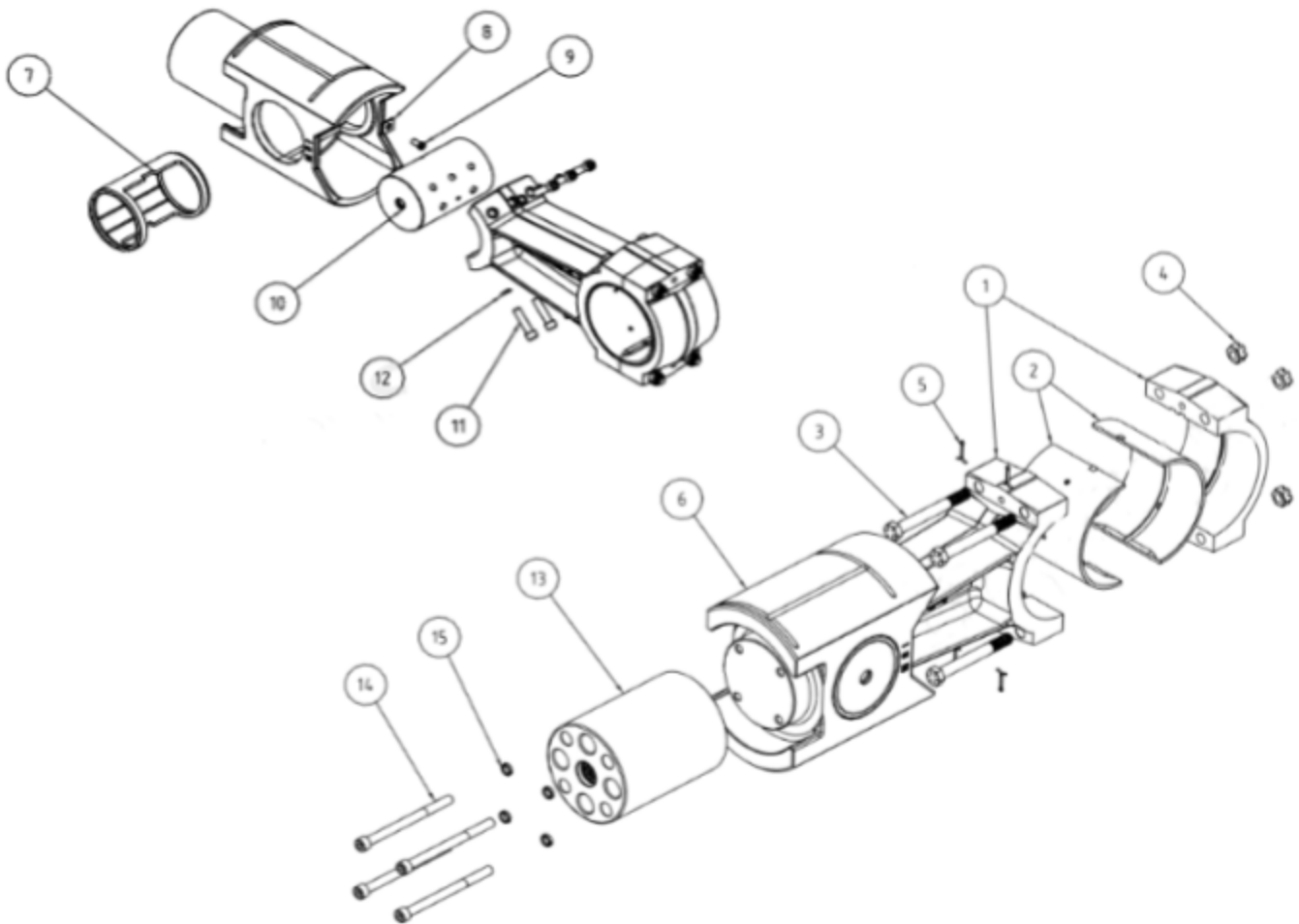


A COMPLETE CROSSHEAD ASSEMBLY CAN BE ORDERED AS PEC0228 AND CONSISTS OF:  
 (1) PEC0217  
 (1) PEC0219  
 (2) HC0503  
 (2) HC0504



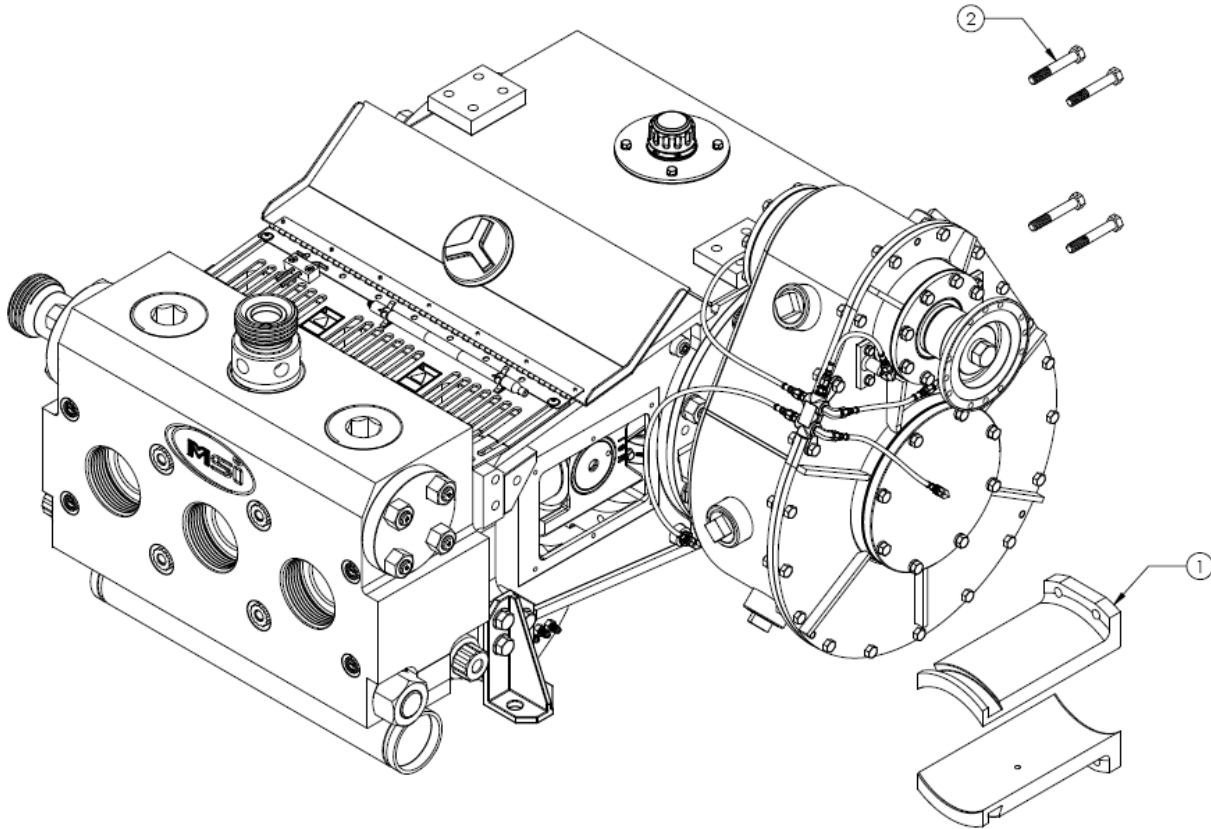
**RECIPROCATING ASSEMBLY -  
EXPLODED-1500 HP**

ITEM NO.	DESCRIPTION	PART NUMBER
1	CONNECTING ROD	PEC-15-0002
2	CONNECTING ROD BEARING	PEC-15-0003
3	CONNECTING ROD BOLT	PEC-15-0048
4	CONNECTING ROD NUT	HC0086
5	COTTER PIN	HC0088
6	CROSSHEAD	PEC-15-0047
7	CROSSHEAD BEARING	PEC-15-0049
8	CROSSHEAD BEARING RETAINER	HC0504
9	CROSSHEAD BEARING RETAINER BOLT	HC0503
10	CROSSHEAD PIN	PEC-15-0041
11	CROSSHEAD PIN BOLT	HC0250P
12	CROSSHEAD PIN WASHER	HC0023
13	POWER END PLUNGER	PEC-15-0042
14	POWER END PLUNGER BOLT	HC1214
15	POWER END PLUNGER WASHER	HC0023



# CROSSHEAD SLIDE REMOVAL

ITEM NO.	DESCRIPTION	PART NUMBER
1	CROSSHEAD GUIDE	PEC0056
2	CROSSHEAD GUIDE BOLT	HC0083



# CROSSHEAD SLIDE REMOVAL

## 1500HP

ITEM NO.	DESCRIPTION	PART NUMBER
1	CROSSHEAD GUIDE	PEC-15-0027
2	CROSSHEAD GUIDE BOLT	HC1216

