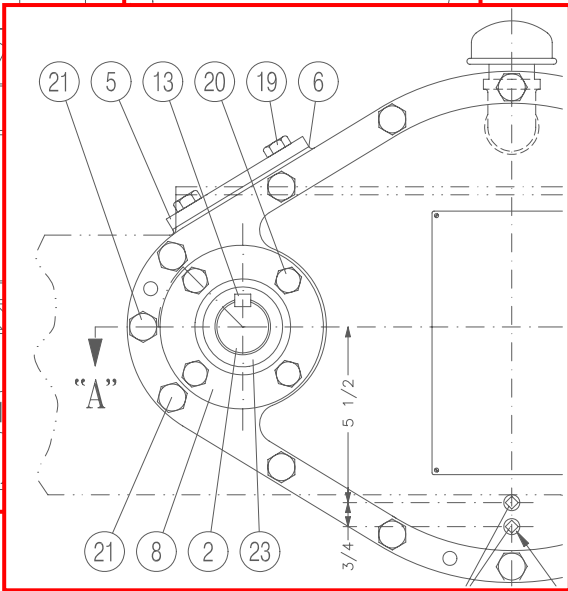
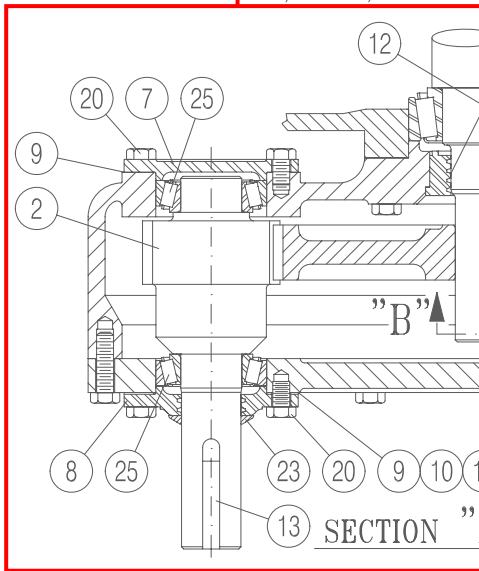
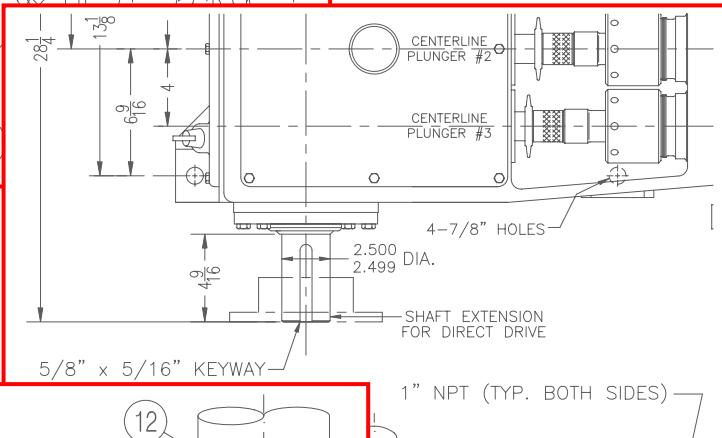
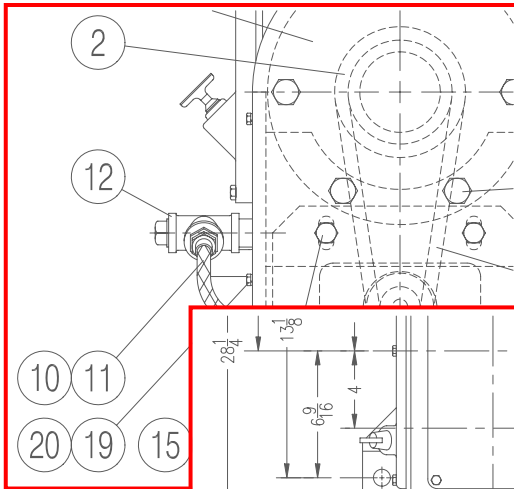
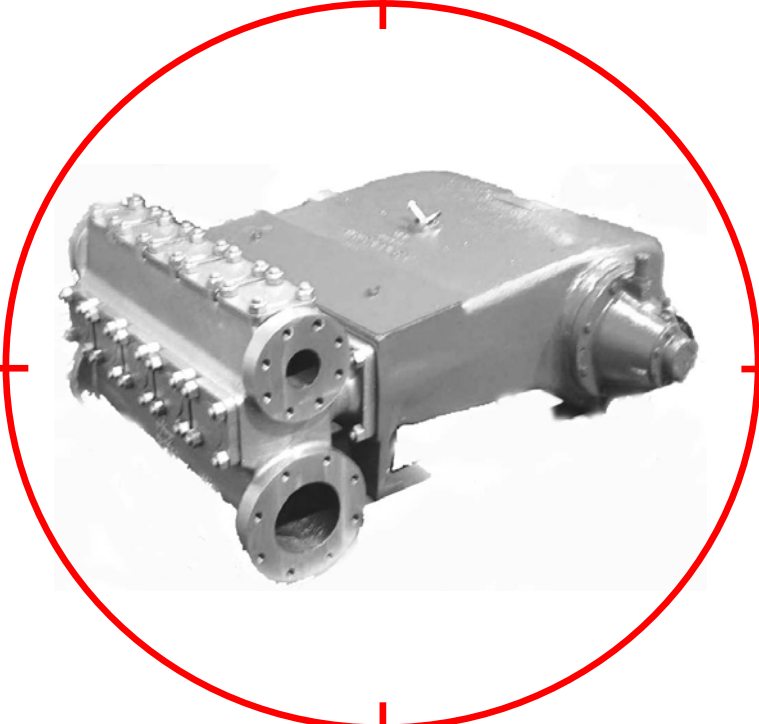


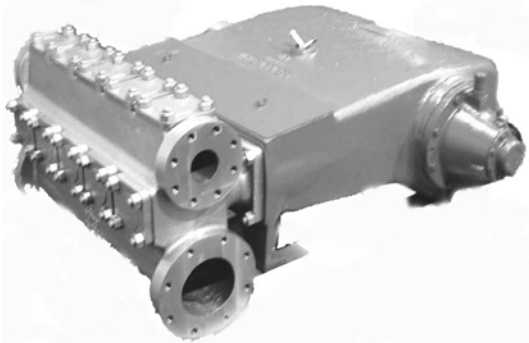
# 217Q-4 Multiplex Plunger Pumps Parts List



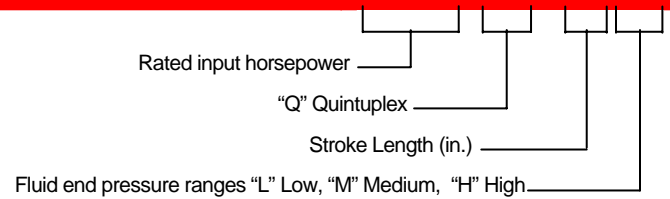
**Types:**  
**217Q-4L**  
**217Q-4M**  
**217Q-4H**

**Sales / Technical Information**

USA Tollfree: 1 (800) 324-4706  
 Phone: 1 (918) 447-4600  
 Fax: 1 (918) 447-4677  
 Internet: <http://www.nov.com>



217Q-4



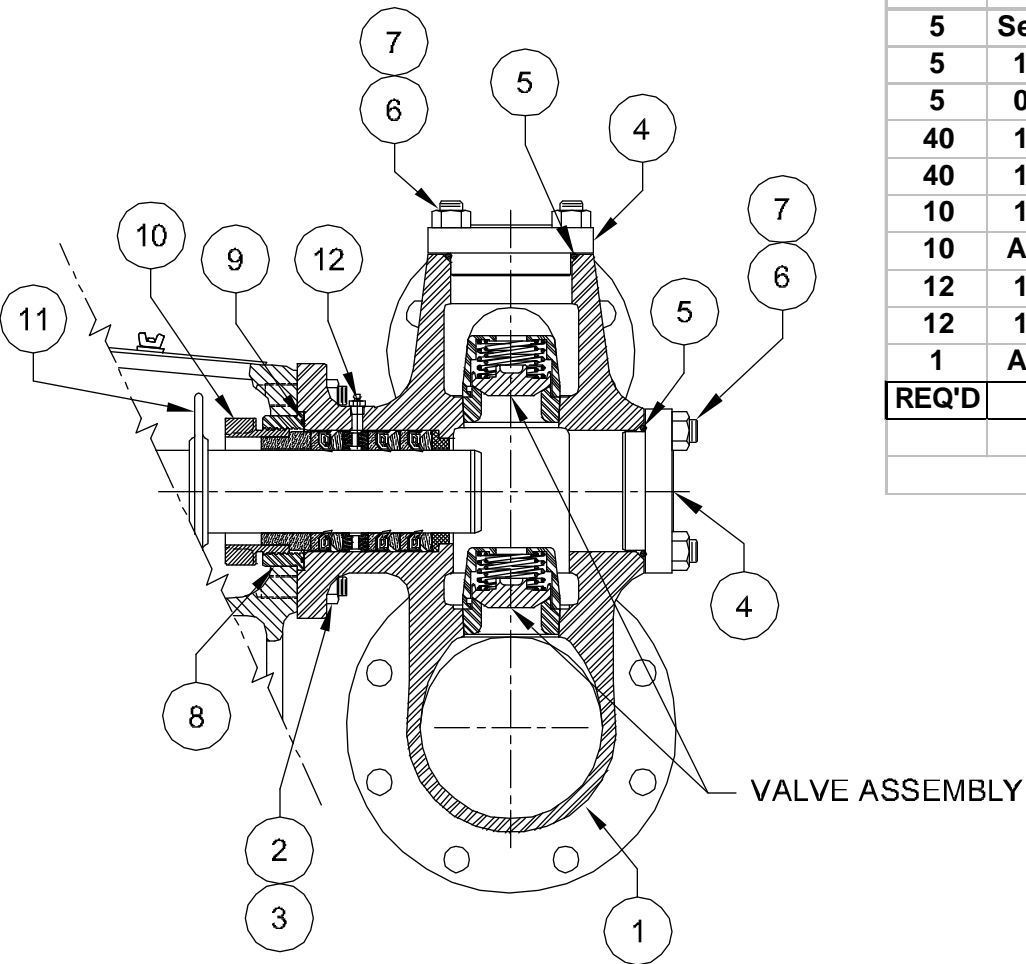
## Index and Check List:

PAGE	DWG. NUMBER	DESCRIPTION	SERIES OF ISSUE	DATE OF ISSUE
1	118563	ASSEMBLY, CAST FLUID END, BRONZE (L)	FIRST	02-02-07
2	118562	ASSEMBLY, CAST FLUID END, STAINLESS STEEL (L)	FIRST	02-02-07
3	118564	ASSEMBLY, CAST FLUID END, DUCTILE IRON (L)	FIRST	02-02-07
4	118565	ASSEMBLY, STEEL BILLET FLUID END (L)	FIRST	02-02-07
5	118567	ASSEMBLY, CAST FLUID END, BRONZE (M) FLANGED CONNECTION	FIRST	02-02-07
6	118566	ASSEMBLY, CAST FLUID END, STAINLESS STEEL (M) FLANGED CONNECTION	FIRST	02-02-07
7	118568	ASSEMBLY, CAST FLUID END, DUCTILE IRON (M) THREADED CONNECTION	FIRST	02-02-07
8	118569	ASSEMBLY, BLOCK FLUID END, STEEL (M) FLANGED CONNECTION	FIRST	02-02-07
9	118570	ASSEMBLY, BLOCK FLUID END, CLAMPED STUFING BOX, STAINLESS STEEL (H) FLANGED	FIRST	02-02-07
10	118571	ASSEMBLY, BLOCK FLUID END, CLAMPED STUFFING BOX, STEEL (H) FLANGED	FIRST	02-02-07
11	118560	ASSEMBLY, POWER END, 217Q-4	FIRST	02-02-07
12	118561	ASSEMBLY, CRANKSHAFT POWER END, 217Q-4	FIRST	02-02-07
13	118572	ASSEMBLY, GEAR REDUCER UNIT, 217Q-4	FIRST	02-02-07
15	118607	ASSEMBLY, GEAR REDUCER UNIT FOR LUBRICATOR, 217Q-4	FIRST	02-02-07
17	118575	ASSEMBLY, SPHERICAL VALVE, (L)	FIRST	02-02-07
18	118576	ASSEMBLY, SPHERICAL VALVE, SEVERE DUTY (L)	FIRST	02-02-07
19	118577	ASSEMBLY, DISC VALVE (L)	FIRST	02-02-07
20	118578	ASSEMBLY, SEVERE DUTY VALVE (L)	FIRST	02-02-07
21	118579	ASSEMBLY, SPHERICAL VALVE (M)	FIRST	02-02-07
22	118580	ASSEMBLY, SPHERICAL VALVE, SEVERE DUTY (M)	FIRST	02-02-07
23	118581	ASSEMBLY, DISC VALVE (M)	FIRST	02-02-07
24	118582	ASSEMBLY, SEVERE DUTY VALVE (M)	FIRST	02-02-07
25	118583	ASSEMBLY, SPHERICAL VALVE (H)	FIRST	02-02-07
26	118585	ASSEMBLY, SPHERICAL VALVE, SEVERE DUTY (H)	FIRST	02-02-07
27	118586	ASSEMBLY, DISC VALVE (H)	FIRST	02-02-07

## Index and Check List Multiplex Plunger Pump (Continued)



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28	118584	ASSEMBLY, SEVERE DUTY VALVE (H)	FIRST	02-02-07
29	118587	TOOL KIT, (L) CLASS FLUID END	FIRST	02-02-07
30	118588	TOOL KIT, (M) CLASS FLUID END	FIRST	02-02-07
31	118589	TOOL KIT, (H) CLASS FLUID END	FIRST	02-02-07
32	118590	ASSEMBLY, PLUNGER KIT 2-3/4" – 3-3/8" J-STYLE PACKING (L) FLUID END	FIRST	02-02-07
37	118591	ASSEMBLY, PLUNGER KIT 2-3/4" – 3-3/8" BRAID STYLE PACKING (L) FLUID END	FIRST	02-02-07
42	118592	ASSEMBLY, PLUNGER KIT 2-3/4" – 3-3/8" SSF-4 STYLE PACKING (L) FLUID END	FIRST	02-02-07
47	118593	ASSEMBLY, PLUNGER KIT 1-5/8" - 2-1/2" J-STYLE PACKING (M) FLUID END	FIRST	02-02-07
55	118594	ASSEMBLY, PLUNGER KIT 1-5/8" – 2-1/2" BRAID STYLE PACKING (M) FLUID END	FIRST	02-02-07
63	118595	ASSEMBLY, PLUNGER KIT 1-5/8" – 2-1/2" SSF-4 STYLE PACKING (M) FLUID END	FIRST	02-02-07
71	118596	ASSEMBLY, PLUNGER KIT 1-1/4" – 1-3/4" J-STYLE PACKING, (H) FLUID END	FIRST	02-02-07
76	118597	ASSEMBLY, PLUNGER KIT 1-1/4" – 1-3/4" BRAID STYLE PACKING, (H) FLUID END	FIRST	02-02-07
81	118598	ASSEMBLY, PLUNGER KIT 1-1/4" – 1-3/4" SSF-4 STYLE PACKING, (H) FLUID END	FIRST	02-02-07
86	118599	PLUNGERS, 2-3/4" THRU 3-3/8", HARD SURFACE (L)	FIRST	02-02-07
87	118600	PLUNGERS, 2-3/4" THRU 3-3/8", CERAMIC (L)	FIRST	02-02-07
88	118601	PLUNGERS, 1-5/8" THRU 2-1/2", HARD SURFACE (M)	FIRST	02-02-07
89	118602	PLUNGERS, 1-5/8" THRU 2-1/2", CERAMIC (M)	FIRST	02-02-07
90	118603	PLUNGERS, 1-1/4" THRU 1-3/4", HARD SURFACE (H)	FIRST	02-02-07
91	118573	ASSEMBLY, PACKING LUBRICATOR, 217Q-4	FIRST	02-02-07
92	118574	ASSEMBLY, PACKING LUBRICATOR, D.O. H. 217Q-4	FIRST	02-02-07
93	118625	ASSEMBLY, PACKING LUBRICATOR WITH GEAR REDUCER, 217Q-4	FIRST	02-02-07
94	118626	ASSEMBLY, PACKING LUBRICATOR WITH GEAR REDUCER, D.O.H., 217Q-4	FIRST	02-02-07
95	118604	GENERAL DIMENSION, RHD, 163Q-4L	FIRST	02-02-07
96	118605	GENERAL DIMENSION, RHD, 163Q-4M	FIRST	02-02-07
97	118606	GENERAL DIMENSION, RHD, 163Q-4H	FIRST	02-02-07
98	118610	GENERAL DIMENSION, LHD, WITH GEAR REDUCER, 217Q-4	FIRST	02-02-07
99	118609	GENERAL DIMENSION, LHD, WITH GEAR REDUCER AND LUBRICATOR, 163Q-4H	FIRST	02-02-07



10	118578	SEVERE DUTY (L) - (AR)	
10	118576	SPHERICAL VALVE (L) - SEVERE DUTY	
10	118575	SPHERICAL VALVE (L)	
10	118577	DISC VALVE (L)	
	<u>DRAWING No:</u>	<u>VALVE ASSEMBLY:</u>	
5	180-165000-220	LUBE FITTING	12
5	001-007986-201	BAFFLE DISC	11
5	See Plunger Kits	GLAND NUT, 2-3/4" THRU 3-3/8"	10
5	110-000246-200	O-RING ( ADAPTER)	9
5	001-024959-316	POWER END / FLUID END ADAPTER	8
40	133-034010-286	NUT	7
40	104-034300-286	STUD ( VALVE COVER / CYLINDER HEAD )	6
10	110-000345-201	O-RING ( VALVE COVER / CYLINDER HEAD )	5
10	AAB-115922-316	CYLINDER HEAD / VALVE COVER	4
12	133-034010-286	NUT	3
12	102-034234-286	STUD	2
1	AAD-115921-316	FLUID END, CAST BRONZE	1
REQ'D	Part No.		ITEM
BILL OF MATERIAL			

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, CAST FLUID END  
BRONZE, 2-3/4" THRU 3-3/8" PLUNGERS  
217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.:

118563

SCALE:

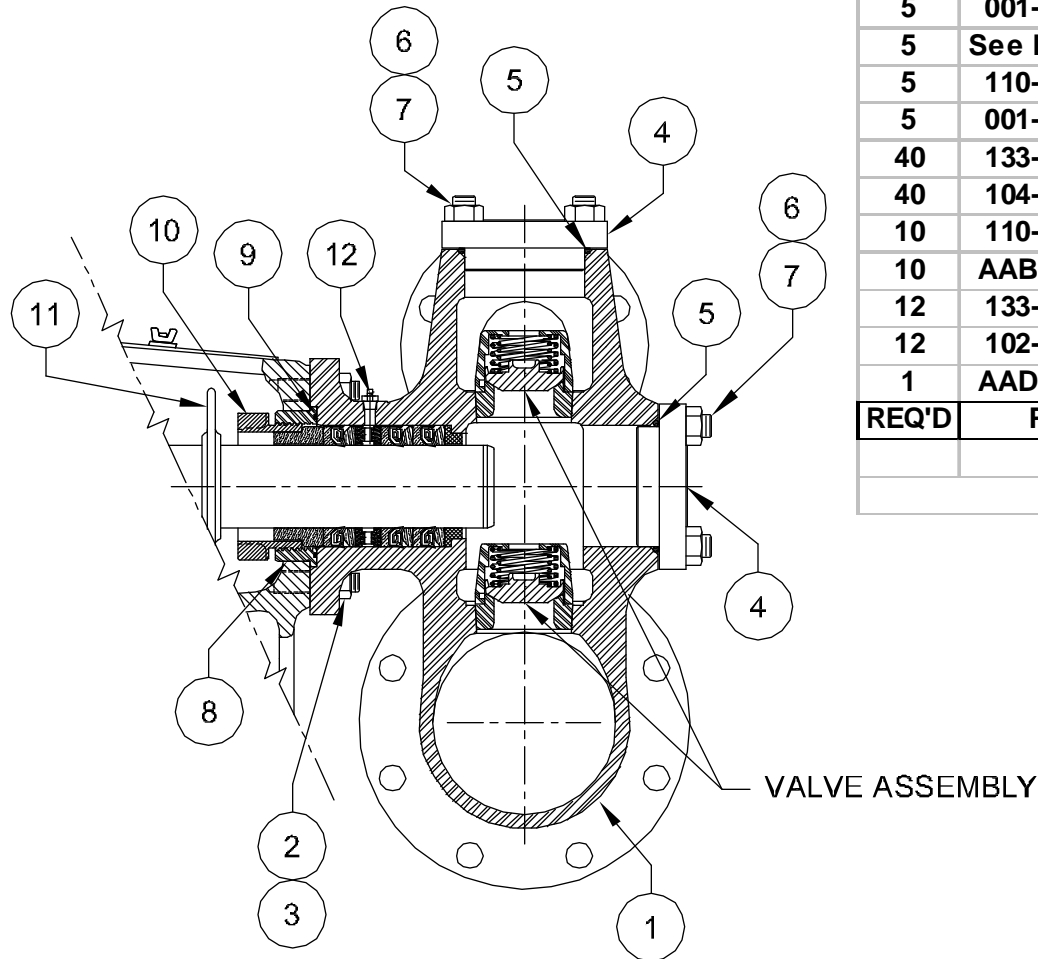
NONE

REV

A

SHT.:

1 OF 1



10	118578	SEVERE DUTY (L) - (AR)	
10	118576	SPHERICAL VALVE (L) - SEVERE DUTY	
10	118575	SPHERICAL VALVE (L)	
10	118577	DISC VALVE (L)	
	<u>DRAWING No:</u>	<u>VALVE ASSEMBLY:</u>	
5	180-165000-220	LUBE FITTING	12
5	001-007986-201	BAFFLE DISC	11
5	See Plunger Kits	GLAND NUT	10
5	110-000246-200	O-RING ( ADAPTER )	9
5	001-024959-278	POWER END / FLUID END ADAPTER	8
40	133-034010-287	NUT	7
40	104-034300-287	STUD ( VALVE COVER / CYLINDER HEAD )	6
10	110-000345-201	O-RING ( VALVE COVER / CYLINDER HEAD )	5
10	AAB-115922-594	CYLINDER HEAD / VALVE COVER	4
12	133-034010-287	NUT	3
12	102-034234-287	STUD	2
1	AAD-115921-594	FLUID END, CAST STAINLESS STEEL	1
REQ'D	Part No.		ITEM
BILL OF MATERIAL			

2

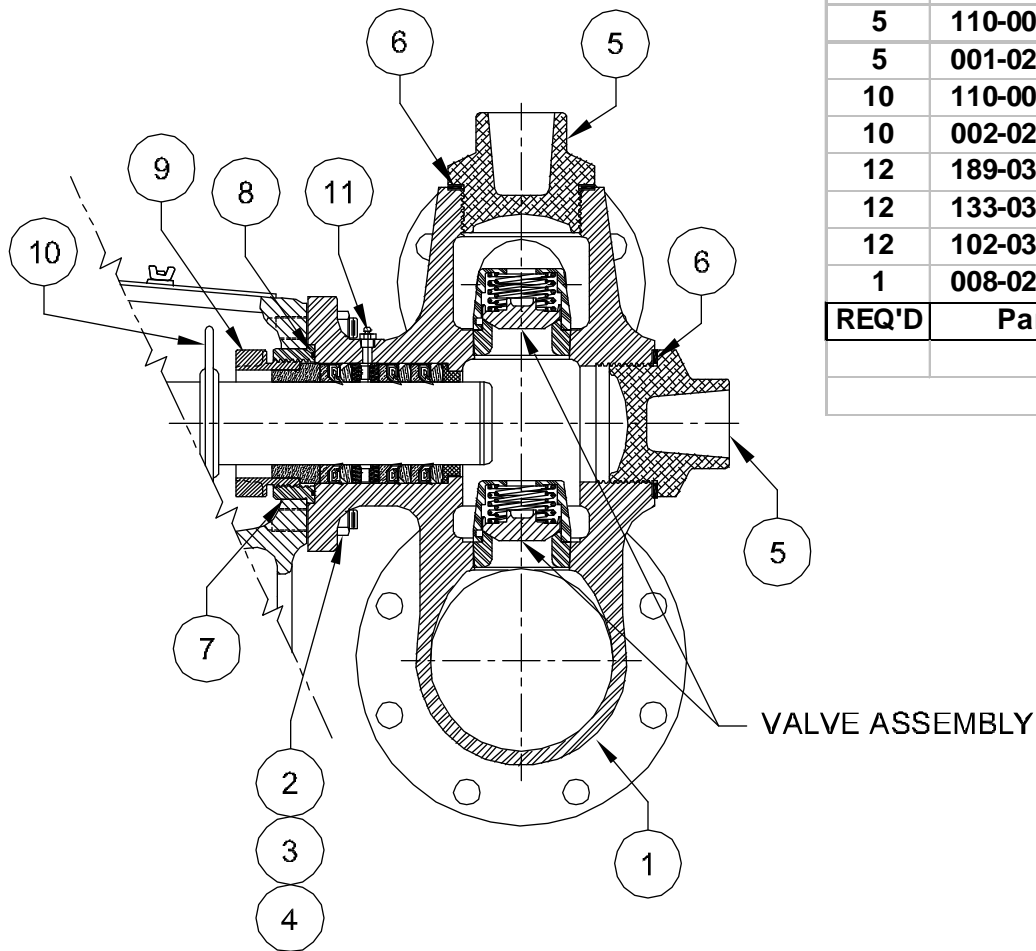


HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, CAST FLUID END, STAINLESS  
 STEEL, 2-3/4" THRU 3-3/8" PLUNGERS  
 217Q-4L, 163Q-4L, ( HP200AL, HP165AL )

DWG No.: 118562	SCALE: NONE	REV A	SHT: 1 OF 1
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10	118578	SEVERE DUTY (L) - (AR)	
10	118576	SPHERICAL VALVE (L) - SEVERE DUTY	
10	118575	SPHERICAL VALVE (L)	
10	118577	DISC VALVE (L)	
	<u>DRAWING No:</u>	<u>VALVE ASSEMBLY:</u>	
5	180-165000-220	LUBE FITTING	11
5	001-007986-201	BAFFLE DISC	10
5	See Plunger Kits	GLAND NUT	9
5	110-000246-200	O-RING ( ADAPTER )	8
5	001-024959-236	POWER END / FLUID END ADAPTER	7
10	110-000244-200	O-RING ( VALVE COVER / CYLINDER HEAD )	6
10	002-028452-351	CYLINDER HEAD / VALVE COVER	5
12	189-034112-220	WASHER	4
12	133-034010-286	NUT	3
12	102-034234-286	STUD	2
1	008-025003-351	FLUID END, CAST DUCTILE IRON	1
<b>REQ'D</b>	<b>Part No.</b>		<b>ITEM</b>



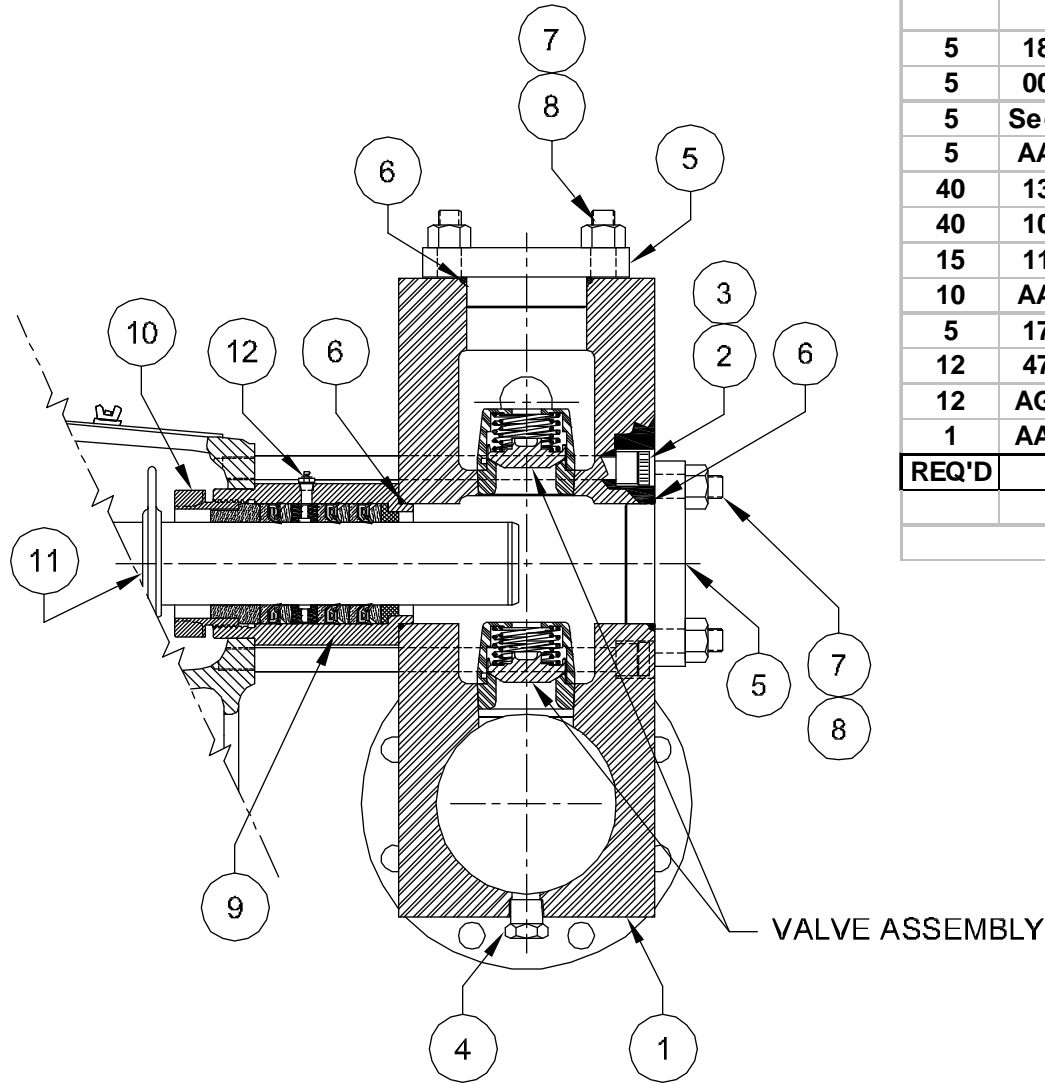
**BILL OF MATERIAL**

3

**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, CAST FLUID END**  
**DUCTILE IRON, 2-3/4" THRU 3-3/8" PLUNGERS**  
**217Q-4L, 163Q-4L ( HP200L, HP165L )**

DWG No.: 118564	SCALE: NONE	REV A	SHT.: 1 OF 1
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10	118578	SEVERE DUTY (L) - (AR)	
10	118576	SPHERICAL VALVE (L) - SEVERE DUTY	
10	118575	SPHERICAL VALVE (L)	
10	118577	DISC VALVE (L)	
	<u>DRAWING No:</u>	<u>VALVE ASSEMBLY:</u>	
5	180-165000-220	LUBE FITTING	12
5	001-007986-201	BAFFLE DISC	11
5	See Plunger Kits	GLAND NUT	10
5	AAB-115660-270	STUFFING BOX	9
40	133-034010-286	NUT (VALVE COVER/CYLINDER HEAD)	8
40	104-034300-286	STUD (VALVE COVER/CYLINDER HEAD)	7
15	110-000345-200	O-RING (VALVE COVER/ CYLINDER HEAD)	6
10	AAB-115133-231	CYLINDER HEAD / VALVE COVER	5
5	170-034002-405	DRAIN PLUG	4
12	471-034010-286	NUT	3
12	AGB-030410-286	STUD	2
1	AAC-115661-H02	FLUID END	1
REQ'D	Part No.		ITEM
BILL OF MATERIAL			

4

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, BILLET FLUID END  
 STEEL, 2-3/4" THRU 3-3/8" PLUNGER  
 217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.:

118565

SCALE:

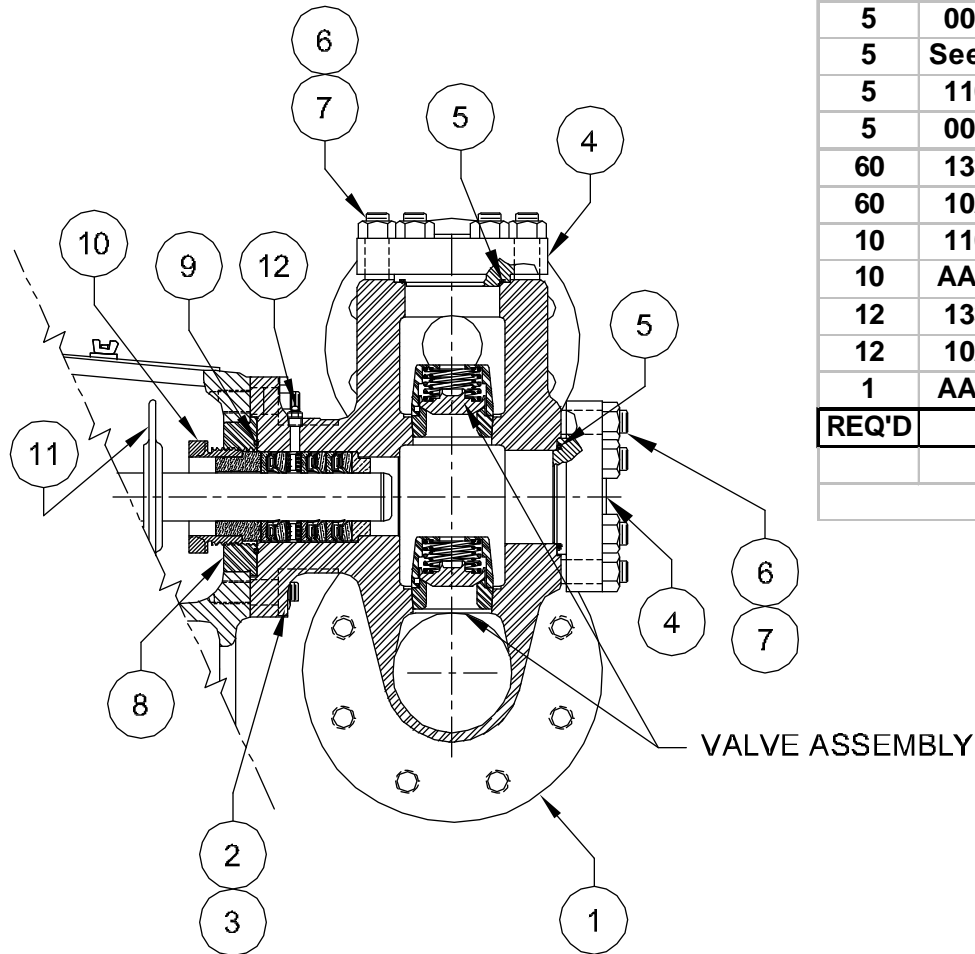
NONE

REV

A

SHT.:

1 OF 1



10	118582	SEVERE DUTY (M) - (AR)	
10	118580	SPHERICAL VALVE (M) - SEVERE DUTY	
10	118579	SPHERICAL VALVE (M)	
10	118581	DISC VALVE (M)	
<b>DRAWING No:</b>		<b>VALVE ASSEMBLY:</b>	
5	180-165000-220	LUBE FITTING	12
5	001-007986-201	BAFFLE DISC	11
5	See Plunger Kits	GLAND NUT	10
5	110-000238-201	O-RING ( ADAPTER )	9
5	001-023574-316	POWER END / FLUID END ADAPTER	8
60	133-034010-286	NUT ( CYLINDER HEAD / VALVE COVER )	7
60	102-034314-286	STUD ( CYLINDER HEAD / VALVE COVER )	6
10	110-000236-200	O-RING ( VALVE COVER / CYLINDER HEAD )	5
10	AAB-029608-316	CYLINDER HEAD / VALVE COVER	4
12	133-034010-286	NUT	3
12	102-034234-286	STUD	2
1	AAD-029613-316	FLUID END, CAST BRONZE	1
<b>REQ'D</b>	<b>Part No.</b>		<b>ITEM</b>
<b>BILL OF MATERIAL</b>			

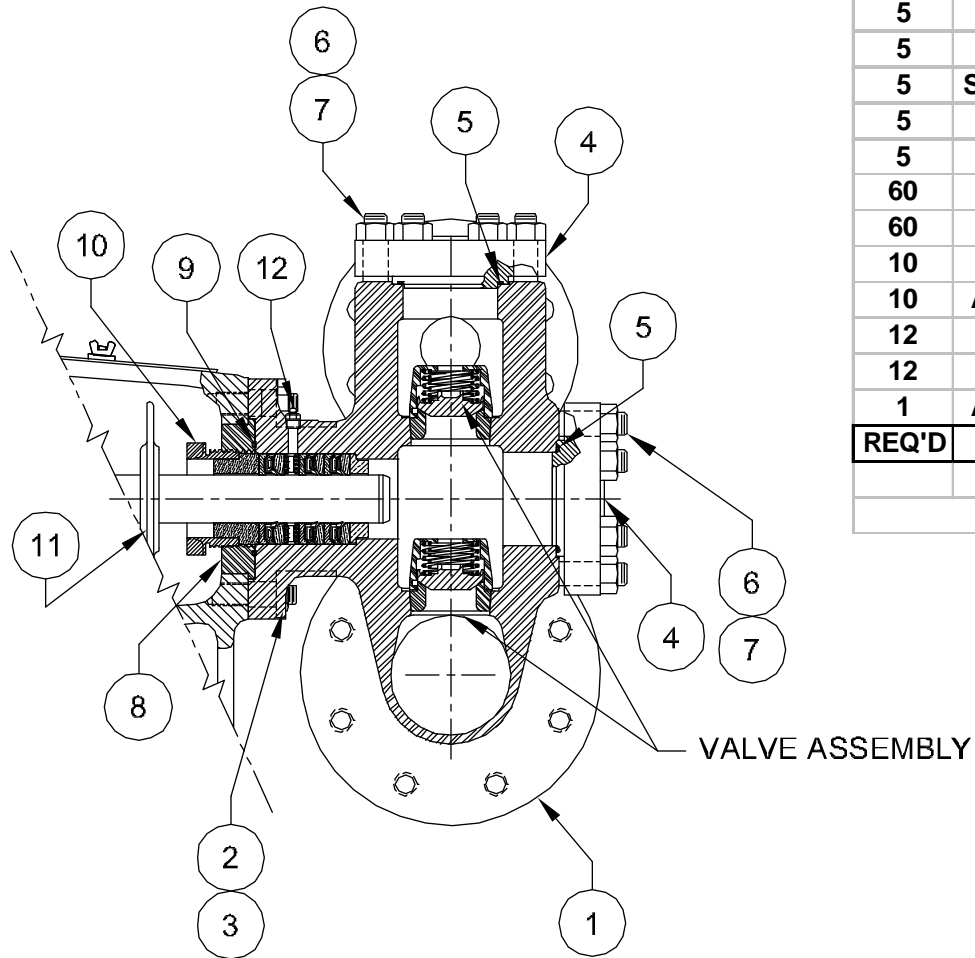
5

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, CAST FLUID END  
 BRONZE, 1-5/8" THRU 2-1/2" PLUNGER  
 217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.: 118567	SCALE: NONE	REV A	SHT.: 1 OF 1
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VALVE ASSEMBLY

10	118582	SEVERE DUTY (M) - (AR)	
10	118580	SPHERICAL VALVE (M) - SEVERE DUTY	
10	118579	SPHERICAL VALVE (M)	
10	118581	DISC VALVE (M)	
	<u>DRAWING No:</u>	<u>VALVE ASSEMBLY:</u>	
5	180-165000-220	LUBE FITTING	12
5	001-007986-201	BAFFLE DISC	11
5	See Plunger Kits	GLAND NUT	10
5	110-000238-201	O-RING ( ADAPTER )	9
5	001-023574-278	POWER END / FLUID END ADAPTER	8
60	133-034010-287	NUT ( CYLINDER HEAD / VALVE COVER )	7
60	102-034314-287	STUD ( CYLINDER HEAD / VALVE COVER )	6
10	110-000236-200	O-RING ( VALVE COVER / CYLINDER HEAD )	5
10	AAB-029608-594	CYLINDER HEAD / VALVE COVER	4
12	133-034010-287	NUT	3
12	102-034234-287	STUD	2
1	AAD-029613-594	FLUID END, CAST - STAINLESS STEEL	1
REQ'D	Part No.		ITEM

BILL OF MATERIAL

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

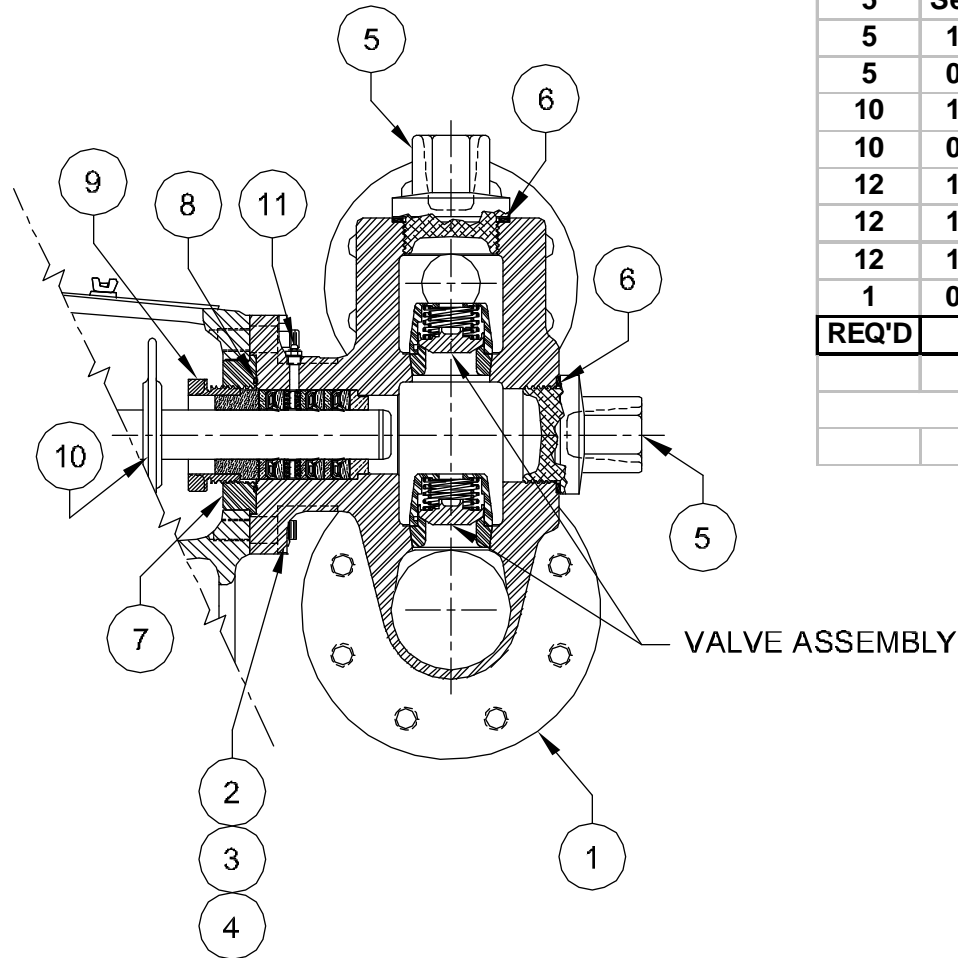
ASSEMBLY, CAST FLUID END  
 STAINLESS STEEL, 1-5/8" THRU 2-1/2" PLUNGER  
 217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.: 118566

SCALE: NONE

REV: A

SHT.: 1 OF 1



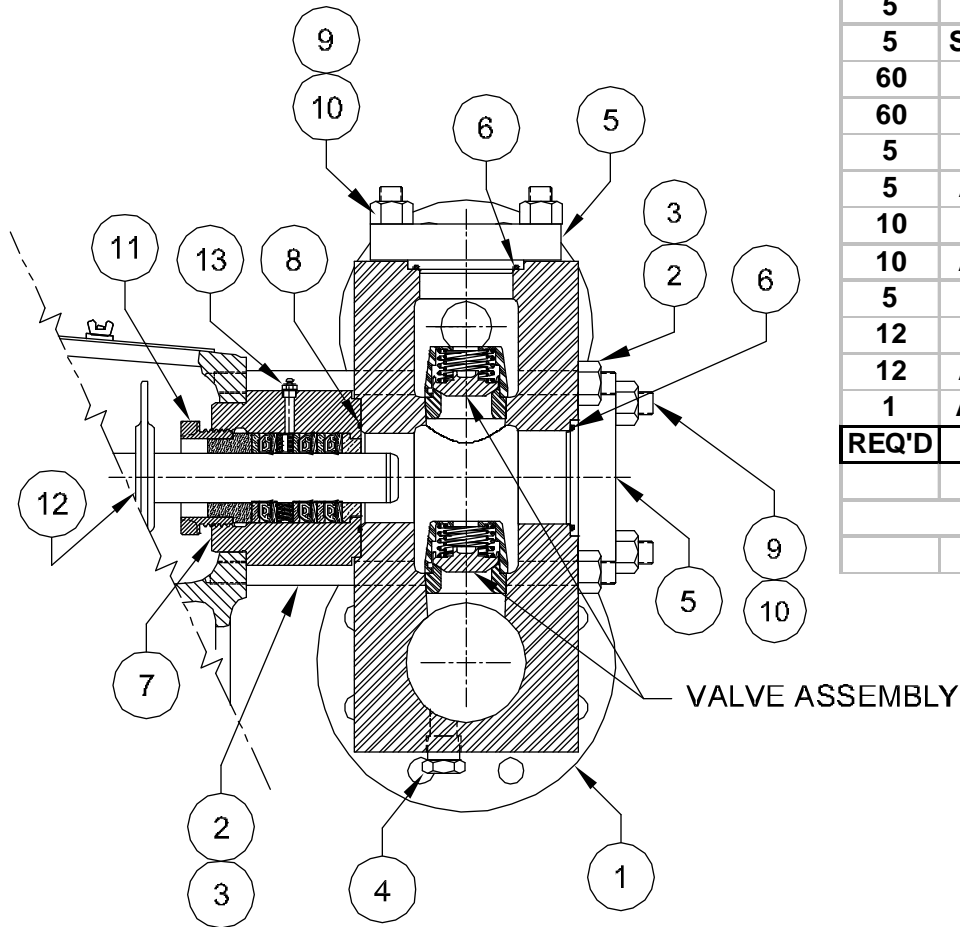
10	118582	SEVERE DUTY (M) - (AR)	
10	118580	SPHERICAL VALVE (M) - SEVERE DUTY	
10	118579	SPHERICAL VALVE (M)	
10	118581	DISC VALVE (M)	
	<u>DRAWING No:</u>	<u>VALVE ASSEMBLY:</u>	
5	180-165000-220	LUBE FITTING	11
5	001-007986-201	BAFFLE DISC	10
5	See Plunger Kits	GLAND NUT	9
5	110-000238-201	O-RING ( ADAPTER )	8
5	001-023574-236	POWER END / FLUID END ADAPTER	7
10	110-000237-200	O-RING ( CYLINDER HEAD / VALVE COVER )	6
10	002-027612-351	CYLINDER HEAD / VALVE COVER	5
12	189-034112-220	WASHER	4
12	133-034010-286	NUT	3
12	102-034234-286	STUD	2
1	008-024255-351	FLUID END, CAST DUCTILE IRON	1
REQ'D	Part No.		ITEM
BILL OF MATERIAL			

7

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A.      ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, CAST FLUID END  
 DUCTILE IRON, 1-5/8" THRU 2-1/2" PLUNGER  
 217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.: 118568	SCALE: NONE	REV A	SHT.: 1 OF 1
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10	118582	SEVERE DUTY (M) - (AR)	
10	118580	SPHERICAL VALVE (M) - SEVERE DUTY	
10	118579	SPHERICAL VALVE (M)	
10	118581	DISC VALVE (M)	
	<u>DRAWING No:</u>	<u>VALVE ASSEMBLY:</u>	
5	180-165000-220	LUBE FITTING	13
5	001-007986-201	BAFFLE DISC	12
5	See Plunger Kits	GLAND NUT	11
60	133-034010-286	NUT ( CYLINDER HEAD / VALVE COVER )	10
60	102-034300-286	STUD ( CYLINDER HEAD / VALVE COVER )	9
5	110-000237-200	O-RING ( STUFFING BOX )	8
5	AAC-116324-270	STUFFING BOX	7
10	110-000236-200	O-RING ( CYLINDER HEAD / VALVE COVER )	6
10	AAB-115123-231	CYLINDER HEAD / VALVE COVER	5
5	170-034002-278	DRAIN PLUG	4
12	133-034010-286	NUT	3
12	AAB-030410-286	STUD	2
1	AAC-116323-H02	FLUID END, PLATE STEEL	1
<b>REQ'D</b>	<b>Part No.</b>		<b>ITEM</b>
<b>BILL OF MATERIAL</b>			

8

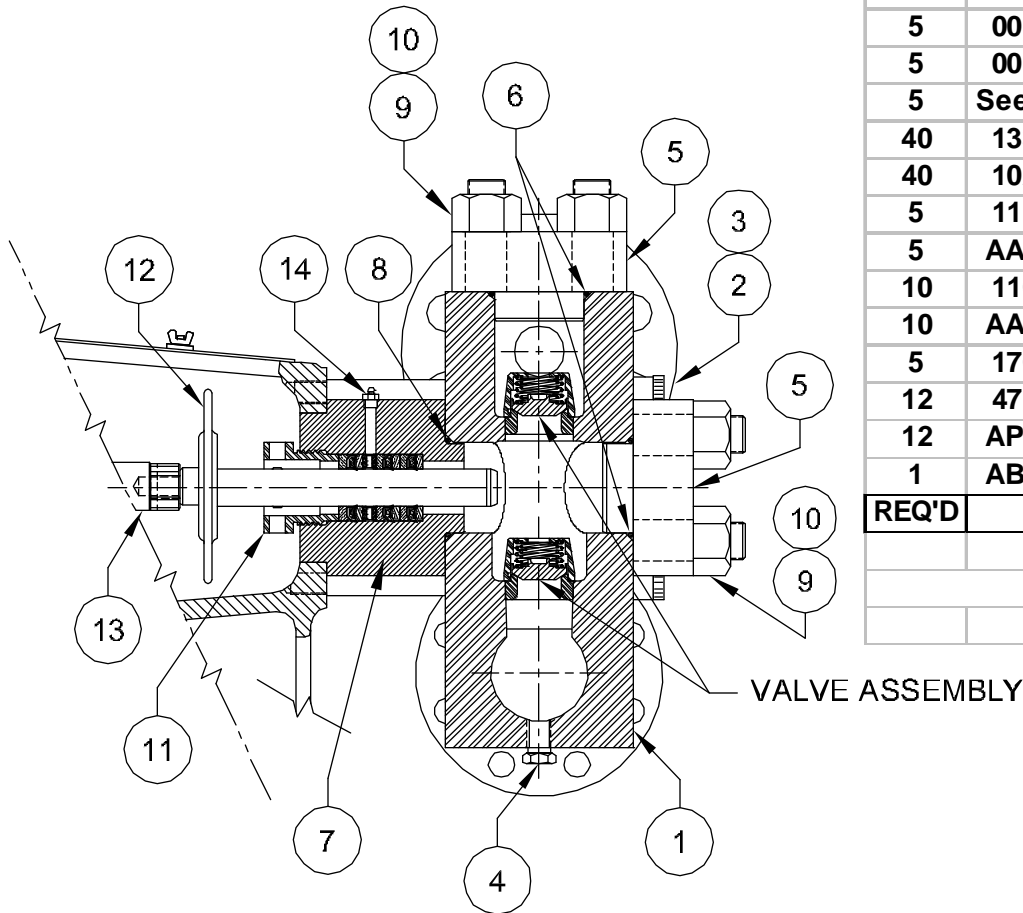
**NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE: **ASSEMBLY, BLOCK FLUID END  
STEEL, 1-5/8" THRU 2-1/2" PLUNGER  
217Q-4M, 163Q-4M ( HP200AM, HP165AM )**

DWG No.: 118569	SCALE: NONE	REV: A	SHT.: 1 OF 1
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10	118584	SEVERE DUTY (H) - (AR)	
10	118585	SPHERICAL VALVE (H) - SEVERE DUTY	
10	118583	SPHERICAL VALVE (H)	
10	118586	DISC VALVE (H)	
	<u>DRAWING No:</u>	<u>VALVE ASSEMBLY:</u>	
5	180-165000-220	LUBE FITTING	14
5	001-028470-402	ADAPTER ROD	13
5	001-007986-201	BAFFLE DISC	12
5	See Plunger Kits	GLAND NUT	11
40	133-114007-287	NUT ( CYLINDER HEAD / VALVE COVER )	10
40	102-114500-287	STUD ( CYLINDER HEAD / VALVE COVER )	9
5	110-000337-200	O-RING ( STUFFING BOX )	8
5	AAC-118464-402	STUFFING BOX	7
10	110-000337-200	O-RING ( CYLINDER HEAD / VALVE COVER )	6
10	AAC-117768-276	CYLINDER HEAD / VALVE COVER	5
5	170-012002-278	DRAIN PLUG	4
12	471-034010-287	NUT	3
12	APB-030410-287	STUD	2
1	ABC-117767-276	FLUID END, FORGED STAINLESS STEEL	1
REQ'D	Part No.		ITEM



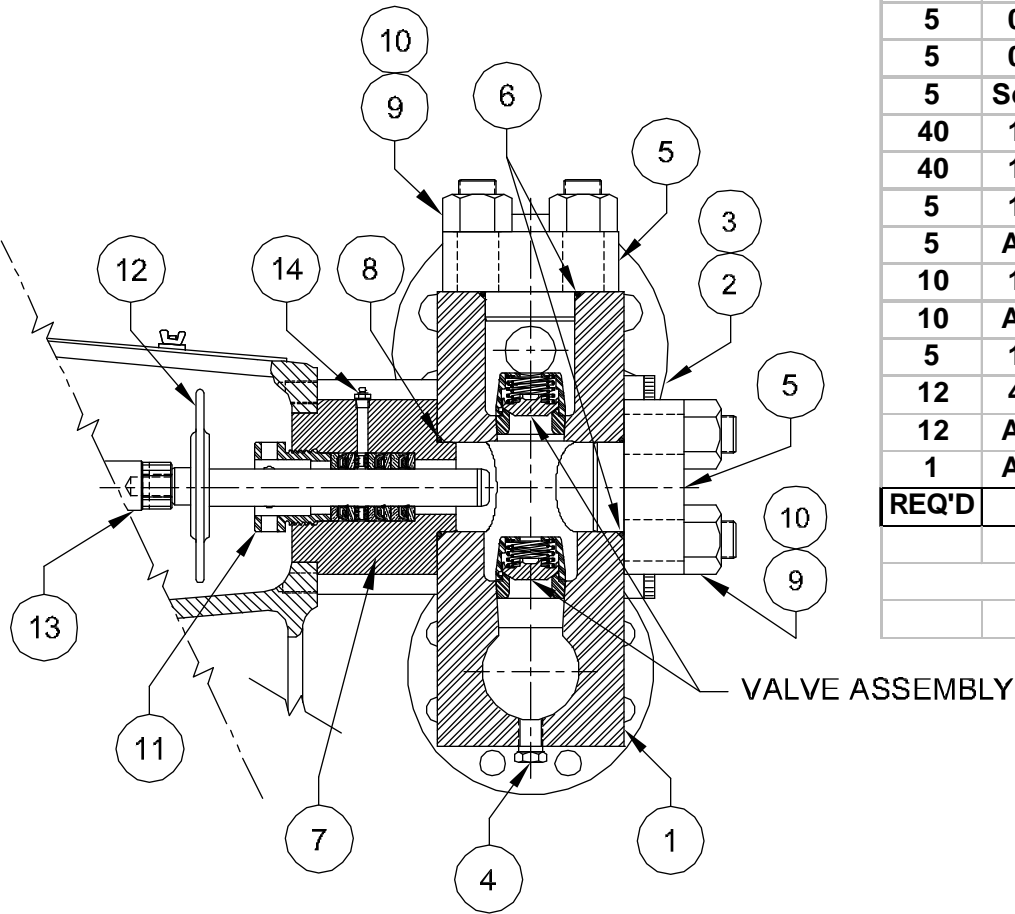
BILL OF MATERIAL



HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, BLOCK FLUID END  
 STAINLESS STEEL, 1-1/4" THRU 1-3/4"  
 PLUNGER, 217Q-4H & 163Q-4H

DWG No.: 118570	SCALE: NONE	REV A	SHT.: 1 of 1
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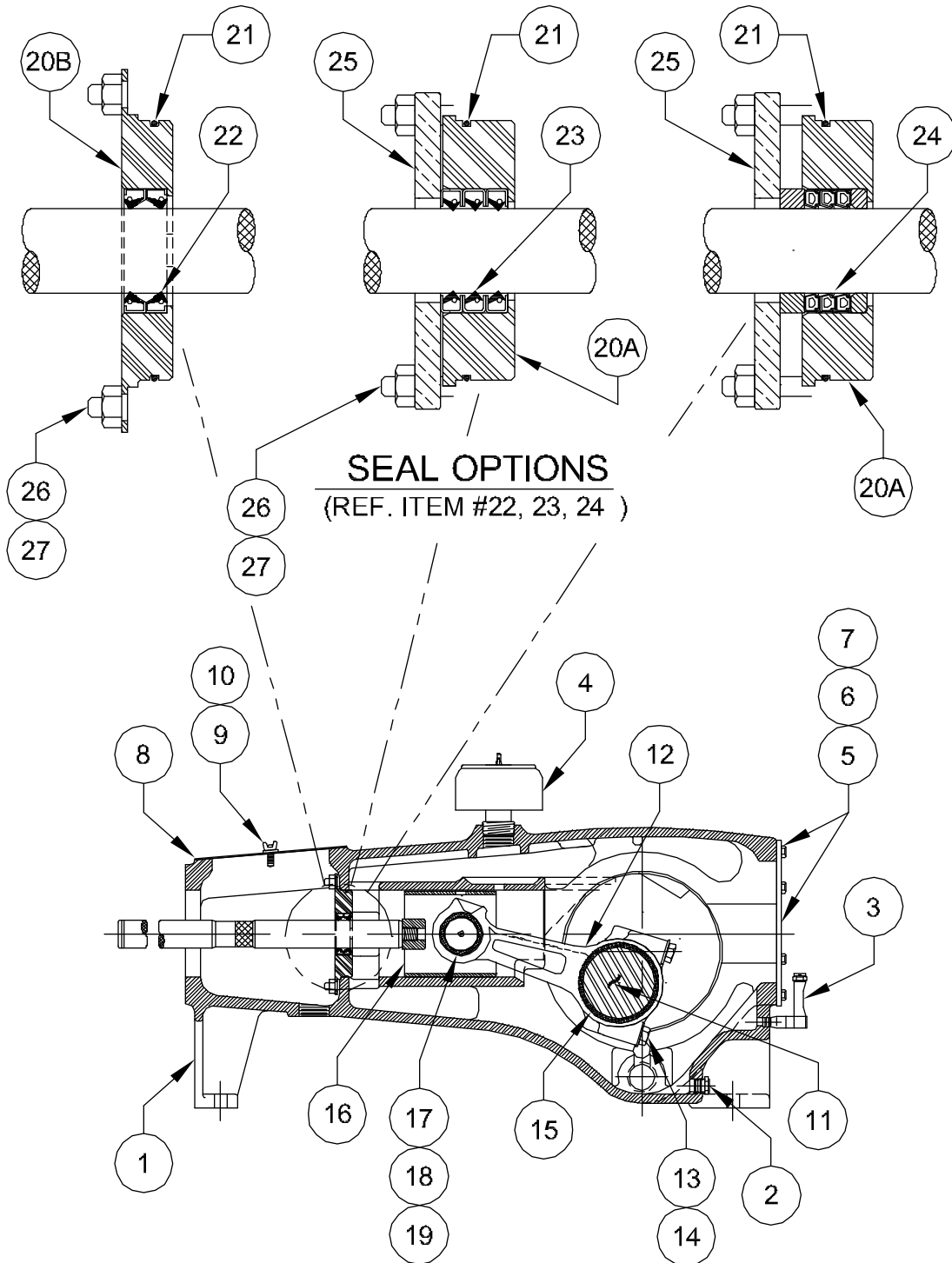
10	118584	SEVERE DUTY (H) - (AR)	
10	118585	SPHERICAL VALVE (H) - SEVERE DUTY	
10	118583	SPHERICAL VALVE (H)	
10	118586	DISC VALVE (H)	
	<u>DRAWING No:</u>	<u>VALVE ASSEMBLY:</u>	
5	180-165000-220	LUBE FITTING	14
5	001-028470-402	ADAPTER ROD	13
5	001-007986-201	BAFFLE DISC	12
5	See Plunger Kits	GLAND NUT	11
40	133-114007-286	NUT ( CYLINDER HEAD / VALVE COVER )	10
40	102-114500-286	STUD ( CYLINDER HEAD / VALVE COVER )	9
5	110-000337-200	O-RING ( STUFFING BOX )	8
5	AAC-118464-270	STUFFING BOX	7
10	110-000337-200	O-RING ( CYLINDER HEAD / VALVE COVER )	6
10	AAC-117768-270	CYLINDER HEAD / VALVE COVER	5
5	170-012002-278	DRAIN PLUG	4
12	471-034010-286	NUT	3
12	APB-030410-286	STUD	2
1	AAD-118242-220	FLUID END, FORGED STEEL	1
REQ'D	Part No.		ITEM
BILL OF MATERIAL			

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**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, BLOCK FLUID END  
 FORGED STEEL, 1-1/4" THRU 1-3/4"  
 PLUNGER, 217Q-4H & 163Q-4H

DWG No.: 118571	SCALE: NONE	REV: A	SHT.: 1 OF 1
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5	150-038016-306	LOCK NUT (GLAND)	27
10	104-038134-287	STUD (GLAND)	26
5	002-025365-231	GLAND	25
5	001-028755-370	PACKING (OPTION)	24
15	145-158238-999	3 - SEAL WIPER BOX (OPTION)	23
10	145-158238-999	2 - SEAL WIPER BOX (OPTION)	22
5	110-000248-201	O-RING (STUFFING BOX)	21
5	002-028308-260	WIPER BOX (2 - SEAL OPTION)-SS	20B
5	002-025366-237	WIPER BOX (3-SEAL / PACKING OPTION)-STL	20A
10	001-028408-263	SNAP RING < * >	19
5	001-023129-302	BUSHING (CONNECTING ROD)	18
5	001-028390-999	WRIST PIN	17
5	004-028404-359	CROSSHEAD	16
5	002-028392-999	SHELL BEARING (CONNECTING ROD)	15
10	154-058108-286	WASHER (CONNECTING ROD)	14
10	100-058314-290	CAP SCREW (CONNECTING ROD)	13
5	998-Q42400-004	CONN. ROD & CAP - COMPLETE (SEE NOTE)	12
1	008-029261-348	CRANKSHAFT	11
2	187-038016-286	WING NUT (CRADLE COVER)	10
2	104-038100-286	STUD (CRADLE COVER)	9
1	AAA-029923-231	CRADLE COVER	8
16	100-038034-290	CAP SCREW (CRANKCASE COVER)	7
1	001-024271-204	GASKET (CRANKCASE COVER)	6
1	001-024270-231	CRANK CASE COVER	5
1	ABB-113766-000	AIR BREATHER	4
1	001-010803-999	OIL LEVEL SITE GLASS	3
1	170-012005-353	DRAIN PLUG	2
1	AAD-029630-356	POWER FRAME	1
REQ'D	Part No.	DESCRIPTION	ITEM

BILL OF MATERIAL

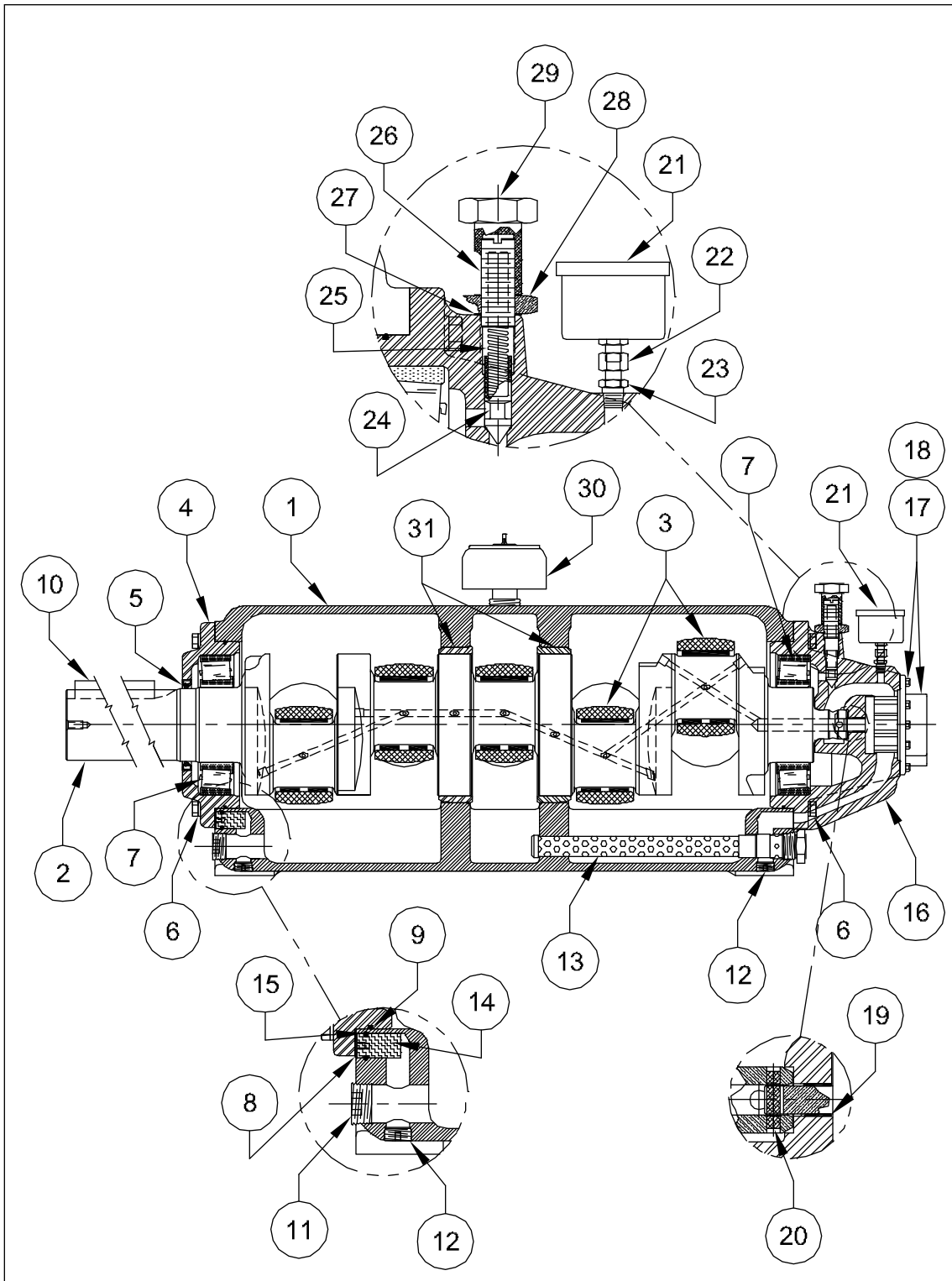
ITEM 12 INCLUDES ITEMS 13,14, & 18  
 < \* > NOT SHOWN



HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, POWER END  
 217Q-4 (HP200)

DWG No:	118560	SCALE:	NONE	REV	A	SHT.:	1 of 1
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5	998-Q42400-022	WIPER BOX KIT ( PACKING ) < * >	BB
5	998-Q42400-003	WIPER BOX KIT ( 3-SEAL - STL ) < * >	FF
5	998-Q42400-001	WIPER BOX KIT ( 2-SEAL - SS ) < * >	EE
5	998-Q42400-002	CONN, ROD w/ NDL BEARING < * >	DD
1	998-HP2000-038	POWER END GASKET KIT < * >	AA
REQ'D	Part No.	DESCRIPTION	OPTION

**OPTIONAL PARTS AND KITS**

2	002-024251-999	MAIN BEARING	31
1	ABB-113766-000	AIR BREATHER	30
1	001-014243-271	CAP (RELIEF VALVE)	29
1	130-078014-243	JAM NUT (RELIEF VALVE)	28
2	001-0144251-206	WASHER / GASKET (RELIEF VALVE)	27
1	001-014242-271	ADJ. SCREW (RELIEF VALVE)	26
1	001-014241-363	SPRING (RELIEF VALVE)	25
1	001-014244-278	BODY (RELIEF VALVE)	24
1	227-014018-405	PIPE BUSHING (PRESSURE GAUGE)	23
1	469-080202-305	ADAPTER (PRESSURE GAUGE)	22
1	AAA-030205-999	PRESSURE GAUGE	21
1	001-014240-220	DRIVE PIN (LUBE PUMP)	20
1	001-011122-999	BUSHING (LUBE PUMP)	19
8	100-516034-290	CAP SCREW (LUBE PUMP)	18
1	001-012157-999	LUBE PUMP	17
1	008-029252-350	BEARING HOUSING (LUBE SIDE)	16
1	110-000210-201	O-RING (PLUG)	15
1	001-016981-237	PLUG	14
1	002-016950-220	LUBE OIL FILTER	13
2	170-034003-220	PIPE PLUG (SOCKET HEAD)	12
1	170-114003-220	PIPE PLUG (SOCKET HEAD)	11
1	146-100900-236	KEY (CRANKSHAFT) < * * >	10
2	110-000272-200	O-RING (BEARING HOUSING)	9
1	998-HP2000-037	SHIM / GASKET KIT (BEARING HOUSING)	8
2	120-450084-999	MAIN BEARING (END BEARING) < * * >	7
16	100-012112-290	CAP SCREW (BEARING HOUSING)	6
1	145-438538-999	OIL SEAL (CRANKSHAFT)	5
1	002-028318-356	BEARING HOUSING (DRIVE SIDE)	4
5	998-Q42400-004	CONNECTING ROD (COMPLETE)	3
1	008-029261-348	CRANKSHAFT < * * >	2
1	AAD-029630-356	POWER FRAME	1
REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

< \* > NOT SHOWN

< \* \* > SEE DRAWING 118572 WHEN USING BOLT ON GEAR REDUCER

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**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.      ENGINEERING, TULSA, OKLAHOMA

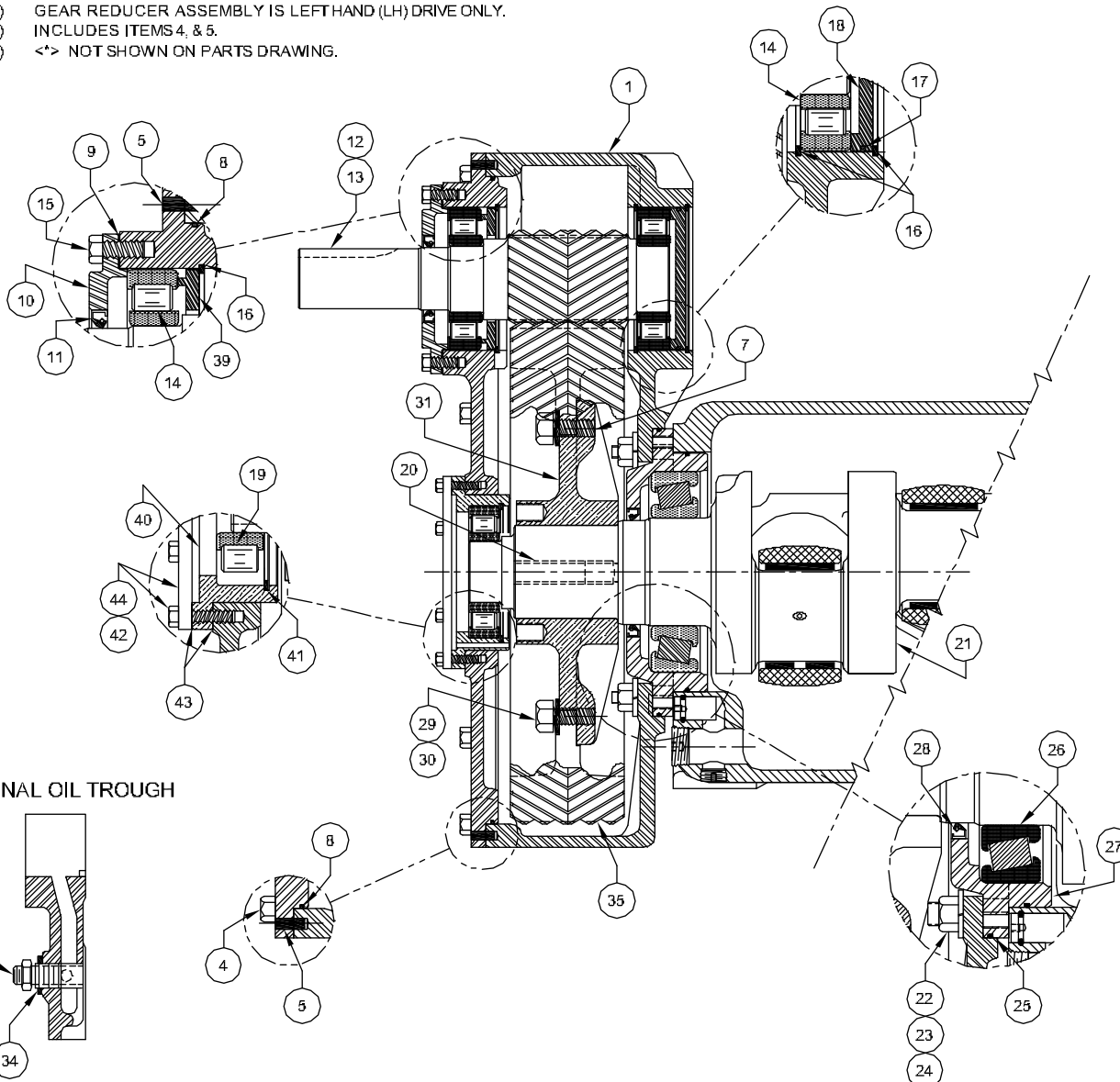
TITLE:

**ASSEMBLY, CRANKSHAFT  
POWER END  
217Q-4 ( HP200 )**

DWG No.:	SCALE:	REV:	SHT.:
118561	NONE	A	1 OF 1

**NOTE:**

- 1.) FOR RATIOS, LUBRICATION INFORMATION, & NOTES SEE SHEET 2 OF 2.
- 2.) GEAR REDUCER ASSEMBLY IS LEFT HAND (LH) DRIVE ONLY.
- 3.) INCLUDES ITEMS 4, & 5.
- 4.) <\*> NOT SHOWN ON PARTS DRAWING.



INTERNAL OIL TROUGH

6	100-038112-290	CAP SCREW	44
2	001-011004-206	GASKET ( CRANKSHAFT COVER )	43
1	001-011008-231	COVER ( CRANKSHAFT )	42
1	177-000550-999	BEARING RETAINER	41
1	004-017140-351	BEARING HOUSING ( OUTER CRANK SHAFT )	40
1	001-014396-231	RETAINER, ( PINION GEAR )	39
6	100-038058-290	CAP SCREW ( ACCESS COVER ) < * >	38
1	001-001873-204	GASKET ( ACCESS COVER ) < * >	37
1	001-013849-220	ACCESS COVER < * >	36
1	-	BULL GEAR < SEE NOTE 1 >	35
1	001-012117-999	THREAD SEAL ( OIL SCOOP )	34
1	170-012002-220	PLUG ( OIL SCOOP )	33
1	001-025629-305	OIL SCOOP	32
1	AAB-115743-351	HUB ( BULL GEAR )	31
8	100-034134-290	CAP SCREW ( BULL GEAR )	30
8	154-034127-220	LOCK WASHER ( BULL GEAR )	29
1	145-438538-999	OIL SEAL ( CRANKSHAFT )	28
1	AAB-028958-356	BEARING HOUSING, MAIN ( CRANKSHAFT )	27
2	120-450084-999	END BEARING ( CRANKSHAFT )	26
1	110-000277-201	O-RING ( BEARING HOUSING, MAIN )	25
8	151-012013-220	NUT ( CASING, GEAR REDUCER )	24
8	102-012234-286	STUD ( CASING, GEAR REDUCER )	23
8	154-012078-220	LOCK WASHER ( GEAR CASE )	22
1	AAC-028957-348	CRANKSHAFT	21
1	ABA-011592-236	KEY ( CRANKSHAFT )	20
1	121-256055-999	BEARING ( OUTER CRANKSHAFT )	19
1	001-013787-231	BEARING RETAINER ( PINION )	18
1	110-000254-201	O-RING ( BEARING RETAINER )	17
3	177-000600-999	RETAINING RING	16
6	100-012114-290	CAP SCREW ( PINION COVER )	15
2	121-275059-999	BEARING ( PINION GEAR )	14
1	146-058312-236	KEY ( PINION GEAR )	13
1	-	PINION GEAR < SEE NOTE 1 >	12
1	145-258358-999	SEAL ( PINION SHAFT )	11
1	002-019883-231	COVER, PINION SHAFT	10
1	001-013788-204	GASKET ( BEARING RETAINER COVER )	9
1	254-260034-201	O-RING ( COVER, GEAR REDUCER )	8
1	147-012100-220	DOWELL PIN	7
1	001-010803-999	OIL LEVEL GAUGE < * >	6
2	147-038100-220	DOWELL PIN ( COVER, GEAR REDUCER )	5
12	100-012114-290	CAP SCREW	4
1	001-011039-999	AIR BREATHER < * >	3
1	170-034005-220	DRAIN PLUG ( CASING ) < * >	2
1	AAC-028959-350	GEAR CASE ASSEMBLY	1
REQ'D	Part No.		ITEM

**BILL OF MATERIAL**

<b>NOV NATIONAL OILWELL VARCO</b>	
<small>HOUSTON, TEXAS, U.S.A.</small>	<small>ENGINEERING, TULSA, OKLAHOMA</small>
TITLE: <b>GEAR REDUCER UNIT POWER END, LEFT HAND DRIVE 217Q-4 ( HP200 )</b>	
DWG No. <b>118572</b>	SCALE: <b>NONE</b>
REV <b>A</b>	SHT.: <b>1</b> of <b>2</b>



5.69:1	22	004-021088-274	125	004-021089-351
5.40:1	23	004-021773-274	124	004-021772-351
5.13:1	24	004-015657-274	123	004-015656-351
4.88:1	25	004-014364-274	122	004-014363-351
4.65:1	26	004-021691-274	121	004-021690-351
4.25:1	28	004-019852-274	119	004-019853-351
4.07:1	29	004-028180-274	118	004-028179-351
3.90:1	30	004-028159-274	117	004-028158-351
3.74:1	31	004-028996-274	116	004-028995-351
3.60:1	32	004-014683-274	115	004-014682-351
2.26:1	45	004-014515-274	102	004-014514-351
2.06:1	48	004-017919-274	99	004-017918-351
GEAR RATIO	No. TEETH	PART No.	No. TEETH	PART No.
	PINION SHAFT		BULL GEAR	
<b>GEAR CHART 163Q-4</b>				

**LUBRICATION:**

- 1.) USE EXTREME PRESSURE GEAR LUBRICANT PER A.G.M.A. STD.. 252.01 AGMA, LUBRICANT No. 4EP YEAR ROUND.
- 2.) LUBRICANT IS SEPARATE FROM PUMP CRANKCASE OIL.
- 3.) PINION SHAFT BEARINGS ARE FED FROM OIL TROUGHS. THE TROUGHS COLLECT OIL FROM GEAR MESH FLOWS.
- 4.) DRAIN FLUSH & REFILL AFTER FIRST TWO WEEKS OF OPERATION, THEN EVERY 6 MONTHS THEREAFTER.

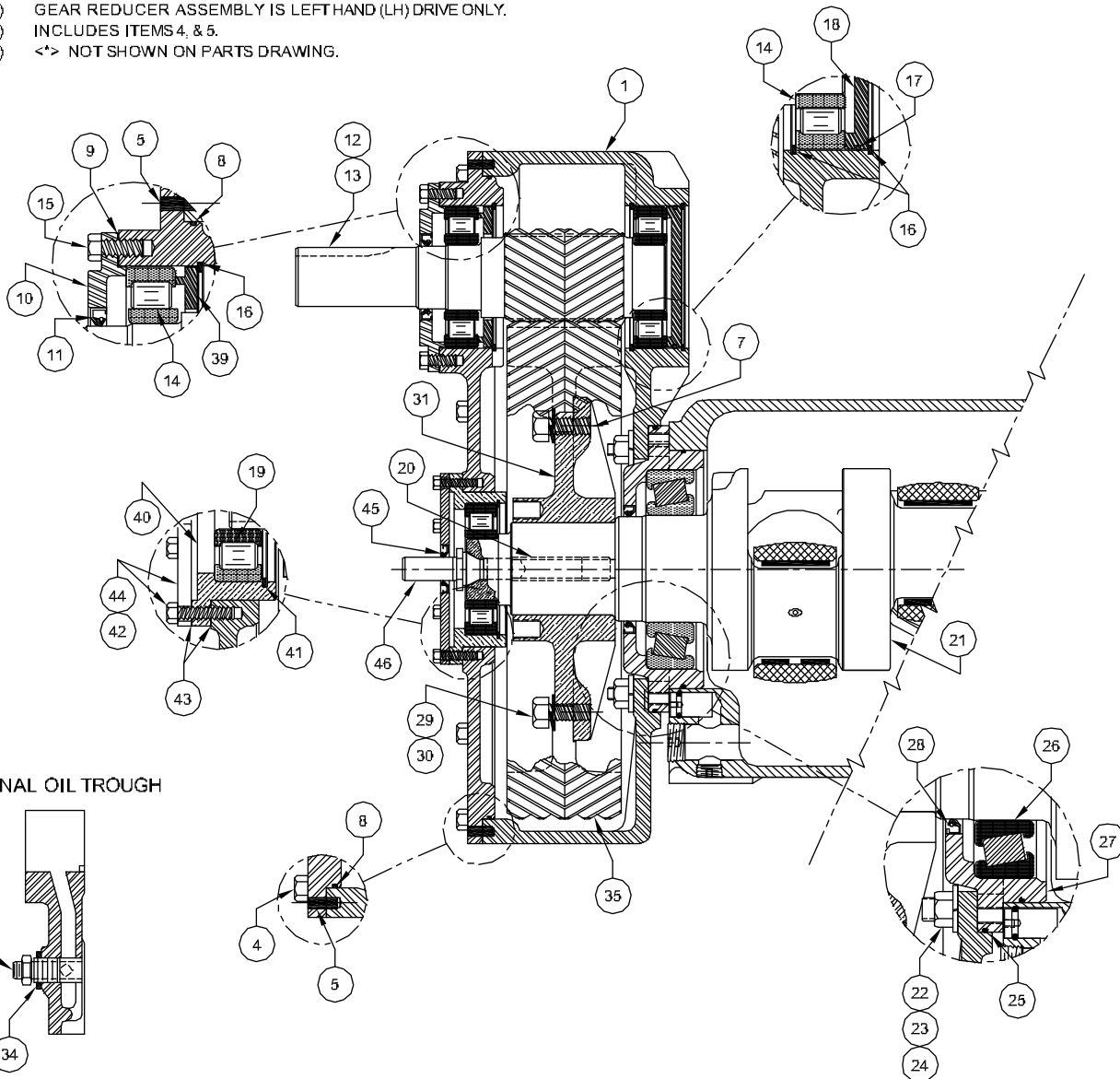
**NOTES:**

- 1.) CRANKSHAFT PART NO.: **AAC-028957-348** MUST BE USED WITH GEAR REDUCER.
- 2.) PINION MAY BE REMOVED IF DESIRED WITHOUT PULLING GEAR OR DISTURBING CRANKSHAFT.
- 3.) PINION SHAFT IS NOT DESIGNED FOR OVERHUNG LOADS.

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS. U.S.A.		ENGINEERING. TULSA, OKLAHOMA	
TITLE:  GEAR RATIO CHART FOR BULL GEAR & PINION GEAR 217Q-4 ( HP200 )			
DWG No.:	118572	SCALE:	NONE
REV:	A	SHT.:	2 OF 2

**NOTE:**

- 1.) FOR RATIOS, LUBRICATION INFORMATION, & NOTES SEE SHEET 2 OF 2.
- 2.) GEAR REDUCER ASSEMBLY IS LEFT HAND (LH) DRIVE ONLY.
- 3.) INCLUDES ITEMS 4, & 5.
- 4.) <\*> NOT SHOWN ON PARTS DRAWING.



1	001-010581-267	EXTENSION, CRANKSHAFT	46
1	145-100200-999	OIL SEAL ( CRANKSHAFT EXTENSION )	45
6	100-038112-290	CAP SCREW	44
2	001-011004-206	GASKET ( CRANKSHAFT COVER )	43
1	AAA-116601-231	COVER ( CRANKSHAFT )	42
1	177-000550-999	BEARING RETAINER	41
1	004-017140-351	BEARING HOUSING ( OUTER CRANKSHAFT )	40
1	001-014396-231	RETAINER, ( PINION GEAR )	39
6	100-038058-290	CAP SCREW ( ACCESS COVER ) < * >	38
1	001-001873-204	GASKET ( ACCESS COVER ) < * >	37
1	001-013849-220	ACCESS COVER < * >	36
1	-	BULL GEAR < SEE NOTE 1 >	35
1	001-012117-999	THREAD SEAL ( OIL SCOOP )	34
1	170-012002-220	PLUG ( OIL SCOOP )	33
1	001-025629-305	OIL SCOOP	32
1	AAB-115743-351	HUB ( BULL GEAR )	31
8	100-034134-290	CAP SCREW ( BULL GEAR )	30
8	154-034127-220	LOCK WASHER ( BULL GEAR )	29
1	145-438538-999	OIL SEAL ( CRANKSHAFT )	28
1	AAB-028958-356	BEARING HOUSING, MAIN ( CRANKSHAFT )	27
2	120-450084-999	END BEARING ( CRANKSHAFT )	26
1	110-000277-201	O-RING ( BEARING HOUSING, MAIN )	25
8	151-012013-220	NUT ( CASING, GEAR REDUCER )	24
8	102-012234-286	STUD ( CASING, GEAR REDUCER )	23
8	154-012078-220	LOCK WASHER ( GEAR CASE )	22
1	AAC-116602-348	CRANKSHAFT	21
1	ABA-011592-236	KEY ( CRANKSHAFT )	20
1	121-256055-999	BEARING ( OUTER CRANKSHAFT )	19
1	001-013787-231	BEARING RETAINER ( PINION )	18
1	110-000254-201	O-RING ( BEARING RETAINER )	17
3	177-000600-999	RETAINING RING	16
6	100-012114-290	CAP SCREW ( PINION COVER )	15
2	121-275059-999	BEARING ( PINION GEAR )	14
1	146-058312-236	KEY ( PINION GEAR )	13
1	-	PINION GEAR < SEE NOTE 1 >	12
1	145-258358-999	SEAL ( PINION SHAFT )	11
1	002-019883-231	COVER, PINION SHAFT	10
1	001-013788-201	GASKET ( BEARING RETAINER COVER )	9
1	254-260034-201	O-RING ( COVER, GEAR REDUCER )	8
1	147-012100-220	DOWELL PIN	7
1	001-010803-999	OIL LEVEL GAUGE < * >	6
2	147-038100-220	DOWELL PIN ( COVER, GEAR REDUCER )	5
12	100-012114-290	CAP SCREW	4
1	001-011039-999	AIR LEVEL GAUGE < * >	3
1	170-034005-220	DRAIN PLUG ( CASING ) < * >	2
1	AAC-028959-350	GEAR CASE ASSEMBLY	1
REQ'D	Part No.		ITEM

**BILL OF MATERIAL**

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A.      ENGINEERING, TULSA, OKLA-HOMA

TITLE:  
**GEAR REDUCER UNIT**  
 LEFT HAND DRIVE, W/LUBRICATOR DRIVE SHAFT  
 217Q-4 ( HP200 )

DWG No: **118607**      SCALE: **NONE**      REV: **A**      SHEET: **1** OF **2**

5.69:1	22	004-021088-274	125	004-021089-351
5.40:1	23	004-021773-274	124	004-021772-351
5.13:1	24	004-015657-274	123	004-015656-351
4.88:1	25	004-014364-274	122	004-014363-351
4.65:1	26	004-021691-274	121	004-021690-351
4.25:1	28	004-019852-274	119	004-019853-351
4.07:1	29	004-028180-274	118	004-028179-351
3.90:1	30	004-028159-274	117	004-028158-351
3.74:1	31	004-028996-274	116	004-028995-351
3.60:1	32	004-014683-274	115	004-014682-351
2.26:1	45	004-014515-274	102	004-014514-351
2.06:1	48	004-017919-274	99	004-017918-351
GEAR RATIO	No. TEETH	PART No.	No. TEETH	PART No.
	PINION SHAFT		BULL GEAR	


**GEAR CHART 163Q-4**

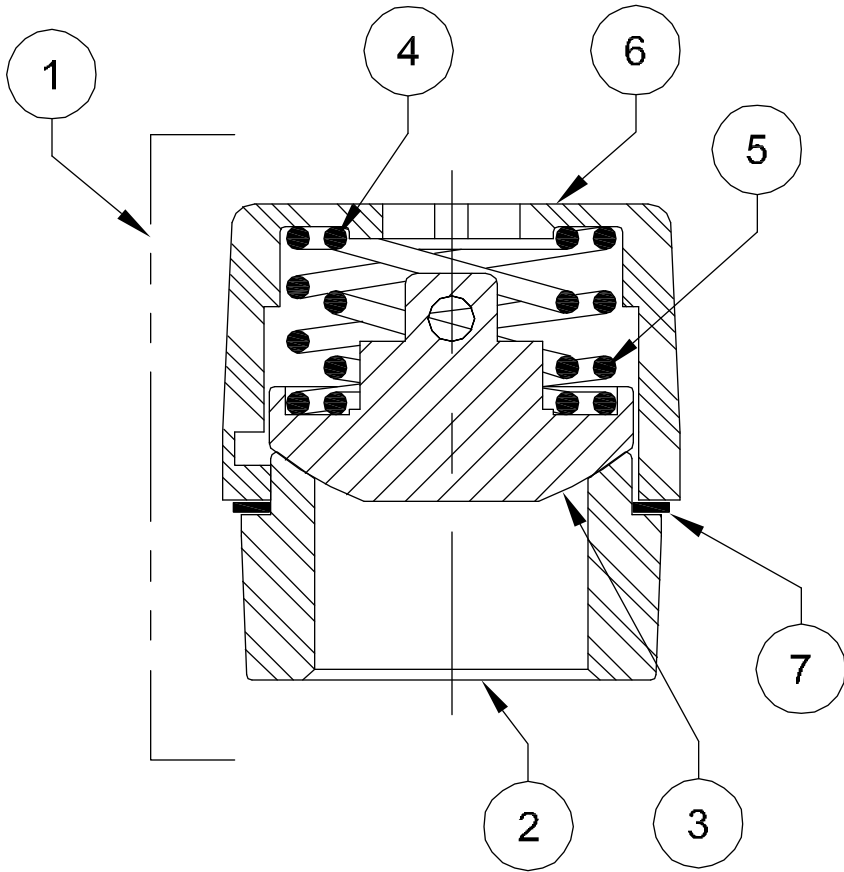
**LUBRICATION:**

- 1.) USE EXTREME PRESSURE GEAR LUBRICANT PER A.G.M.A. STD., 252.01 AGMA, LUBRICANT No. 4EP YEAR ROUND.
- 2.) LUBRICANT IS SEPARATE FROM PUMP CRANKCASE OIL.
- 3.) PINION SHAFT BEARINGS ARE FED FROM OIL TROUGHS. THE TROUGHS COLLECT OIL FROM GEAR MESH FLOWS.
- 4.) DRAIN FLUSH & REFILL AFTER FIRST TWO WEEKS OF OPERATION, THEN EVERY 6 MONTHS THEREAFTER.

**NOTES:**

- 1.) CRANKSHAFT PART NO.: AAC-116602-348 MUST BE USED WITH GEAR REDUCER.
- 2.) PINION MAY BE REMOVED IF DESIRED WITHOUT PULLING GEAR OR DISTURBING CRANKSHAFT.
- 3.) PINION SHAFT IS NOT DESIGNED FOR OVERHUNG LOADS.

			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: GEAR RATIO CHART FOR BULL GEAR & PINION GEAR w/ LUBRICATOR SHAFT 217Q-4 ( HP200 )			
DWG No.:	SCALE:	REV	SHT.:
118607	NONE	A	2 OF 2

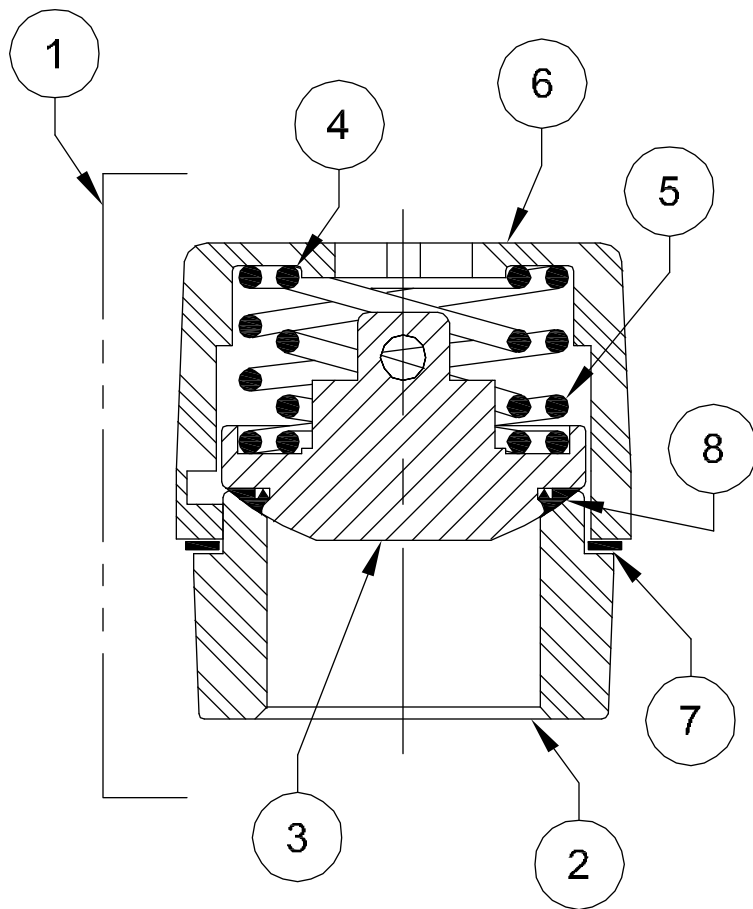


1	9707082	WAVE RING	7
1	17930246WX	RETAINER	6
1	1793025	SPRING, OUTER	5
1	1793026	SPRING, INNER	4
1	179302725	BODY ( VALVE) < * >	3
1	179303725	SEAT < * >	2
1	179303625W	ASSEMBLY, SPHERICAL VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

< \* > NOT SOLD SEPERATELY

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<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, SPHERICAL VALVE 217Q-4L, 163Q-4L ( HP200AL, HP165AL )			
DWG No.:	SCALE:	REV	SHT.:
118575	NONE	A	1 OF 1



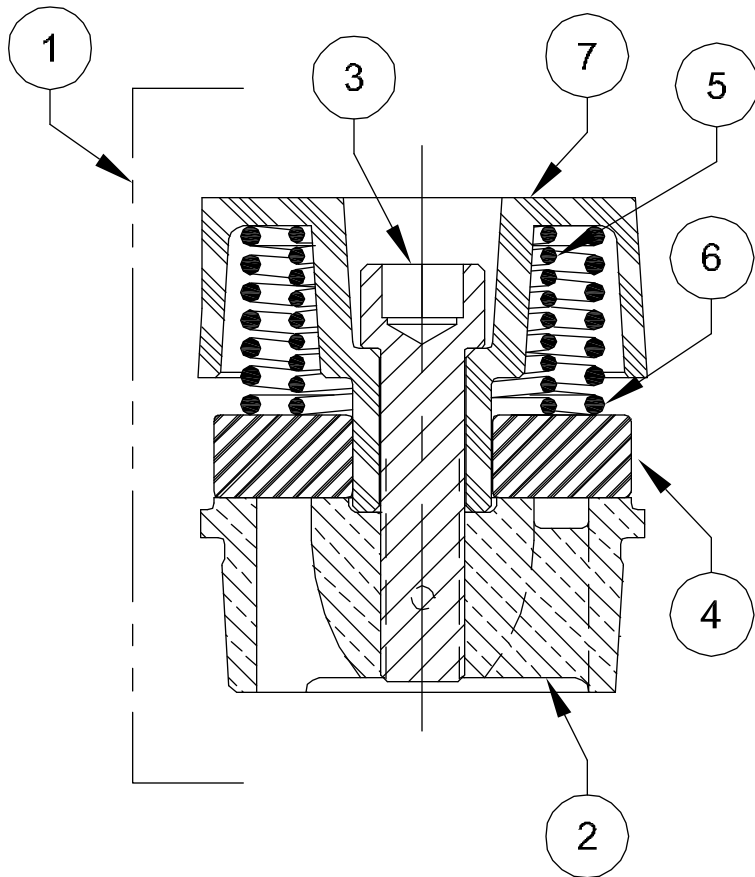
1	9707086	VAVLE INSERT	8
1	9707082	WAVE RING	7
1	17930246WX	RETAINER	6
1	1793025	SPRING, OUTER	5
1	1793026	SPRING, INNER	4
1	179302725SD	BODY ( VALVE )	3
1	179303725	SEAT	2
1	179303625SD	ASSEMBLY, SPHERICAL, SEVERE DUTY	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

18

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, SPHERICAL VALVE  
 SEVERE DUTY  
 217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.: 118576	SCALE: NONE	REV A	SHT.: 1 OF 1
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1	SR01S	RETAINER	7
1	IS011	SPRING, OUTER	6
1	IS022	SPRING, INNER	5
1	TP05	DISC ( TITANIUM )	4
1	38178M	FASTENER	3
1	0010809	SEAT	2
		( TITANIUM )	
1	001TP0809	ASSEMBLY, TI/CF8M DISC VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM
1	SR01S	RETAINER	7
1	IS011	SPRING, OUTER	6
1	IS022	SPRING, INNER	5
1	DP08	DISC ( DELRIN )	4
1	38178M	FASTENER	3
1	0010809	SEAT	2
		( DELRIN )	
1	001DP0809	ASSEMBLY, DEL/CF8M DISC VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

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**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, DISC VALVE  
217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.: 118577

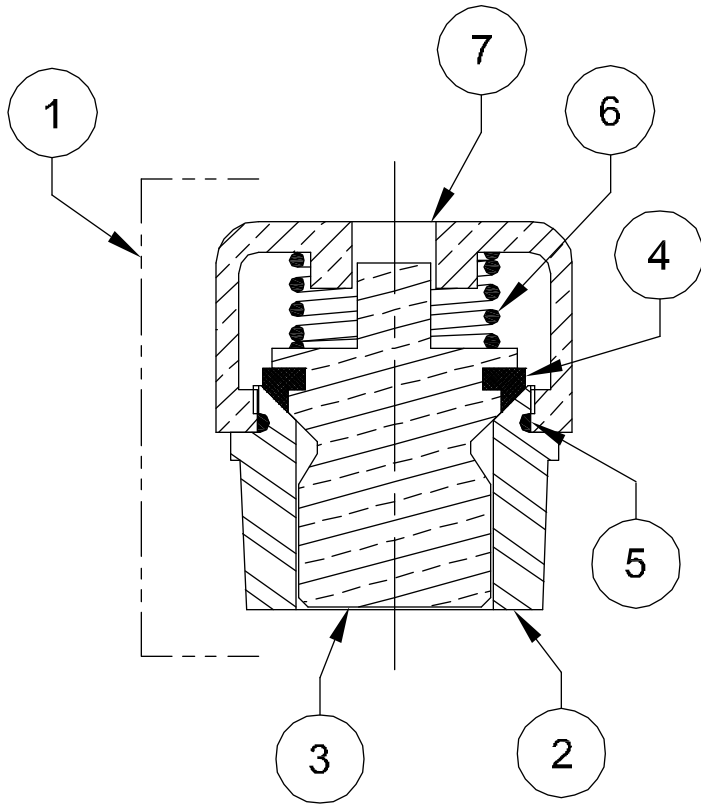
SCALE: NONE

REV A

SHT.: 1 OF 1

1	SDR08	RETAINER	7
1	IS011	SPRING	6
1	SDL09	THREAD LOCK	5
1	SDI08	INSERT	4
1	SD08	VALVE L/INSERT	3
1	1000809	SEAT	2
1	100SD0809	ASSEMBLY, SEVERE DUTY	1
REQ'D	Part No.	DESCRIPTION	ITEM

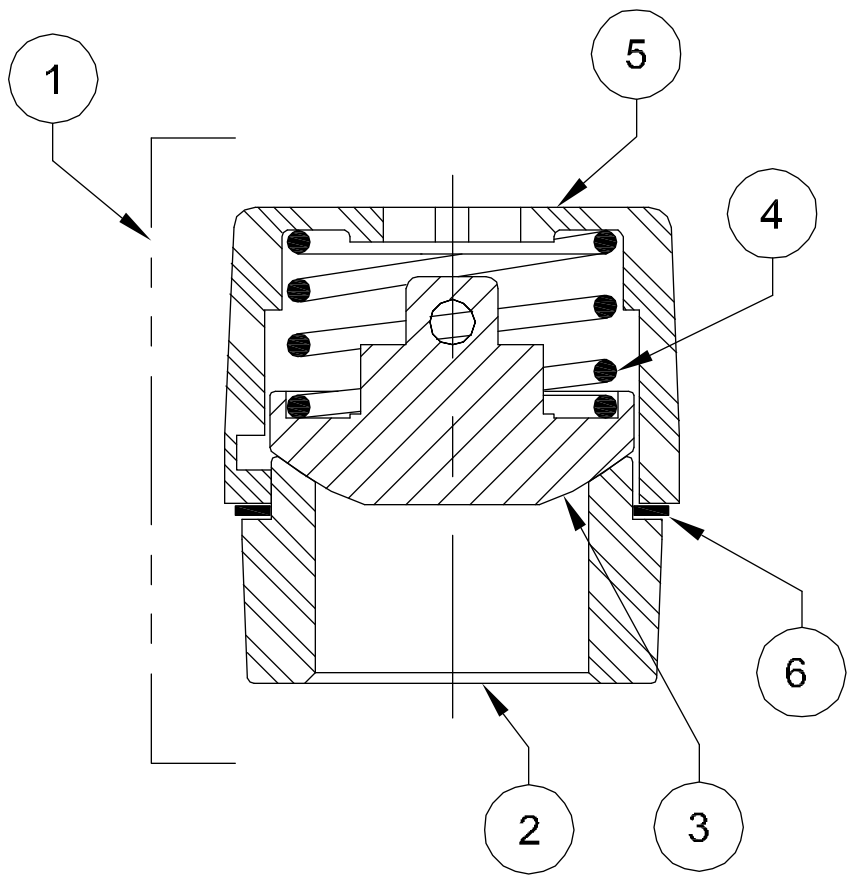
**BILL OF MATERIAL**



20

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, SEVERE DUTY 217Q-4L, 163Q-4L ( HP200AL, HP165AL )			
DWG No.:	SCALE:	REV	SHT.:
118578	NONE	A	1 OF 1

1	9707083	WAVE RING	6
1	17925246W	RETAINER	5
1	1792525	SPRING	4
1	179252725	BODY ( VALVE) < * >	3
1	179253525	SEAT < * >	2
1	179253425W	ASSEMBLY, SPHERICAL VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			



< \* > NOT SOLD SEPERATELY

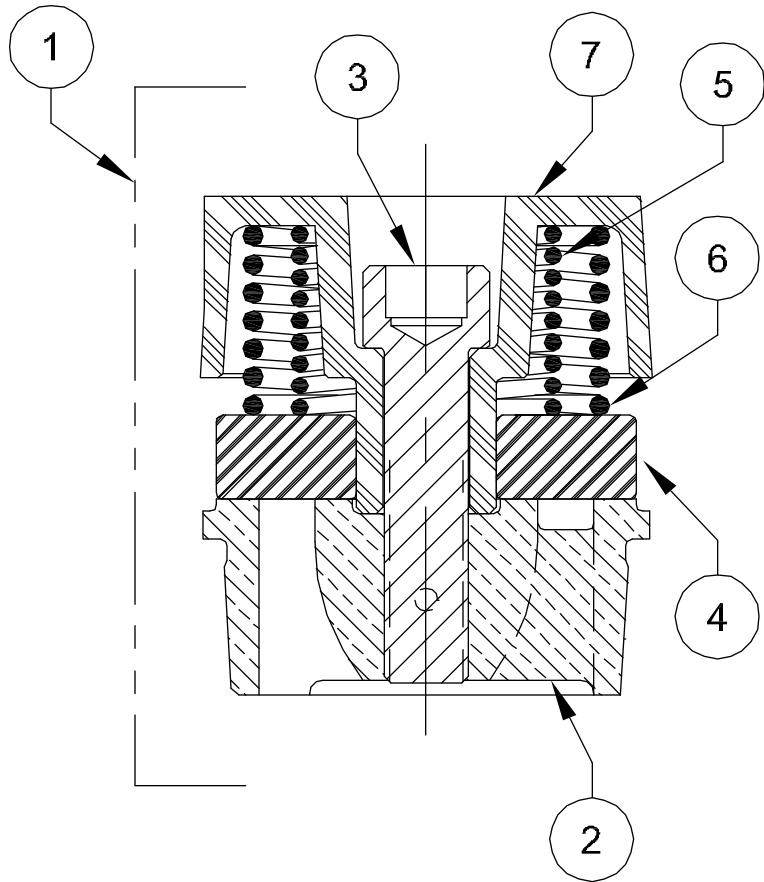
**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
ASSEMBLY, SPHERICAL VALVE  
217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.:	SCALE:	REV	SHT.:
118579	NONE	A	1 OF 1





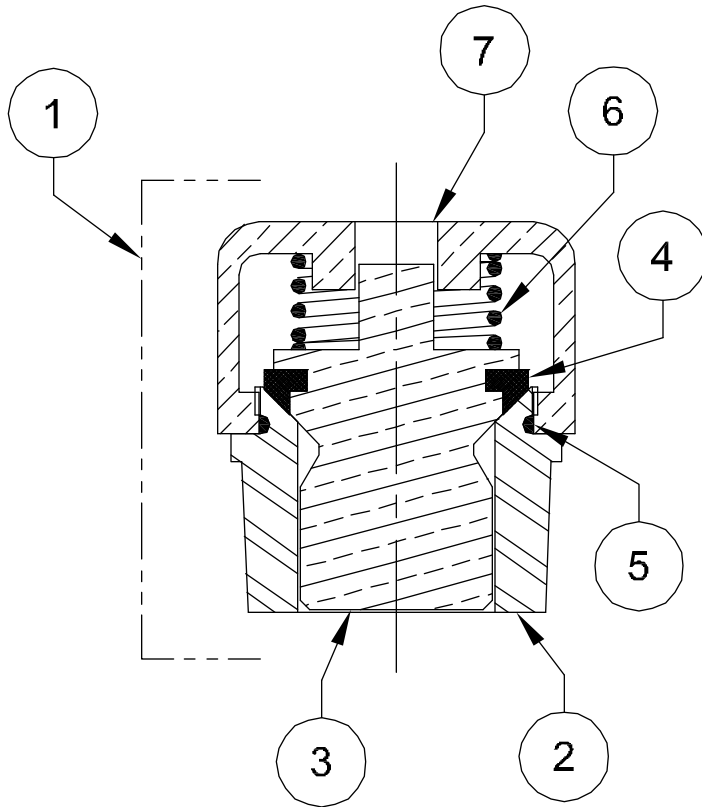


1	SR01S	RETAINER	7
1	IS011	SPRING, OUTER	6
1	IS022	SPRING, INNER	5
1	TP07	DISC - TITANIUM	4
1	38178M	FASTENER	3
1	0010402	SEAT	2
		( TITANIUM )	
1	00ITP0402	ASSEMBLY, TI/CF8M DISC VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM
1	SR01S	RETAINER	7
1	IS011	SPRING, OUTER	6
1	IS022	SPRING, INNER	5
1	DP07	DISC - DELRIN	4
1	38178M	FASTENER	3
1	0010402	SEAT	2
		( DELRIN )	
1	001DP0402	ASSEMBLY, DEL/CF8M DISC VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			

23

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, DISC VALVE 217Q-4M, 163Q-4M ( HP200AM, HP165AM )			
DWG No.:	118581	SCALE:	NONE
REV	A	SHT.:	1 OF 1

1	SDR07	RETAINER	7
1	SDS071	SPRING	6
1	SDL07	THREAD LOCK	5
1	SDI07	INSERT	4
1	SD07	VALVE L/INSERT	3
1	1000402	SEAT	2
1	100SD0402	ASSEMBLY, SEVERE DUTY	1
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			



24

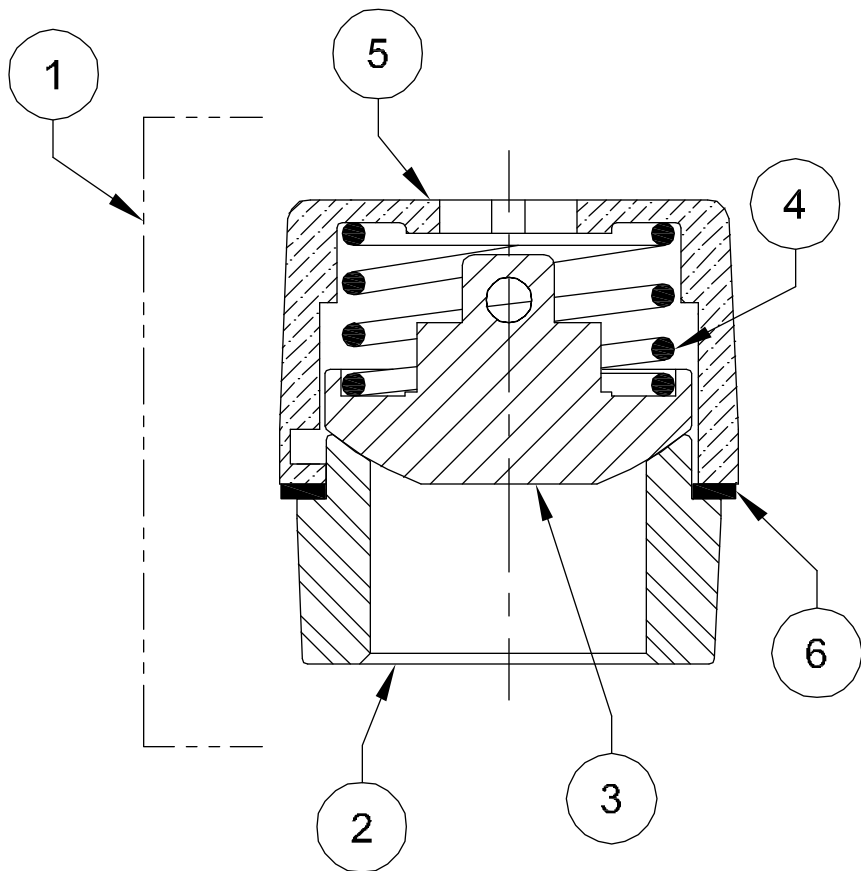
**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, SEVERE DUTY**  
217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.:	SCALE:	REV:	SHT.:
118582	NONE	A	1 OF 1

1	9707072	WAVE RING	6
1	17910036W	RETAINER	5
1	1792525	SPRING	4
1	179100225	BODY ( VALVE ) <*>	3
1	179100125M	SEAT <*>	2
1	179100025M	ASSEMBLY, SPHERICAL VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

<\*> NOT SOLD SEPERATELY



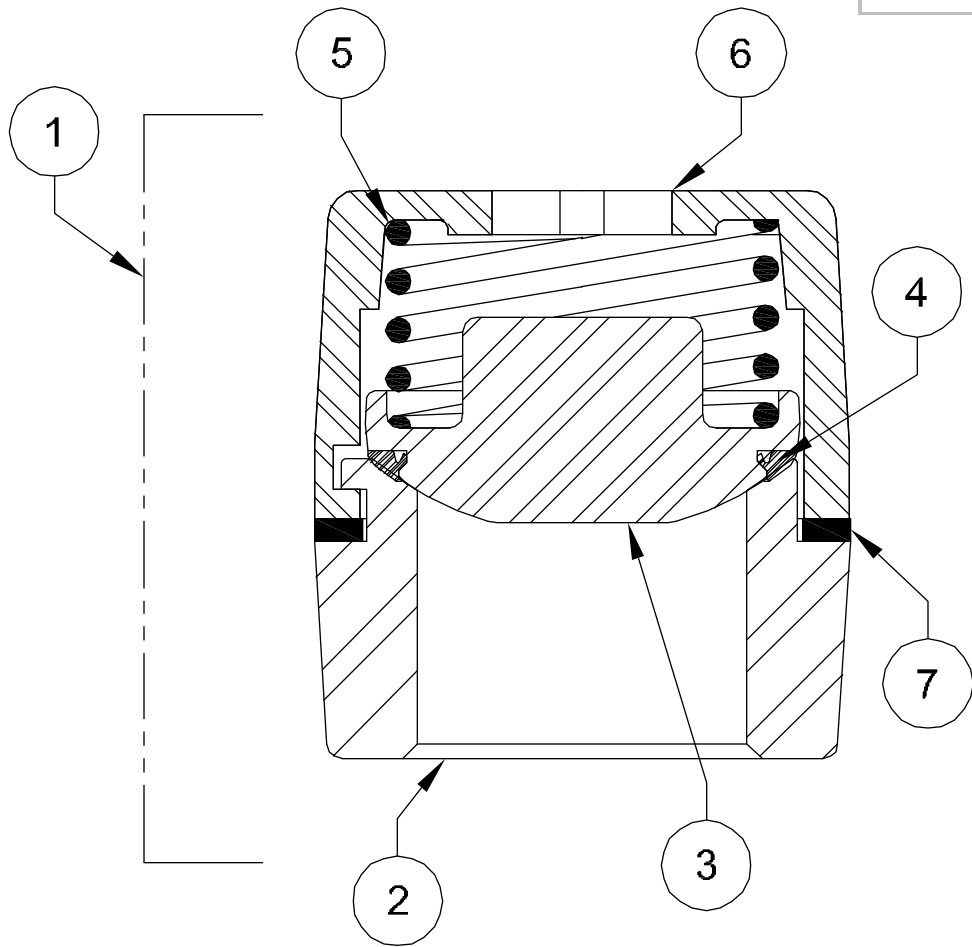
25

**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
ASSEMBLY, SPHERICAL VALVE  
217Q-4H, 163Q-4H

DWG No.: 118583	SCALE: NONE	REV A	SHT.: 1 OF 1
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1	9707072	WAVE RING	7
1	17910036W	RETAINER	6
1	1792525	SPRING	5
1	9707071	VALVE INSERT	4
1	179100225SD	BODY ( VALVE )	3
1	179100125M	SEAT	2
1	179100025SDM	ASSEMBLY, SPHERICAL, SEVERE DUTY	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			



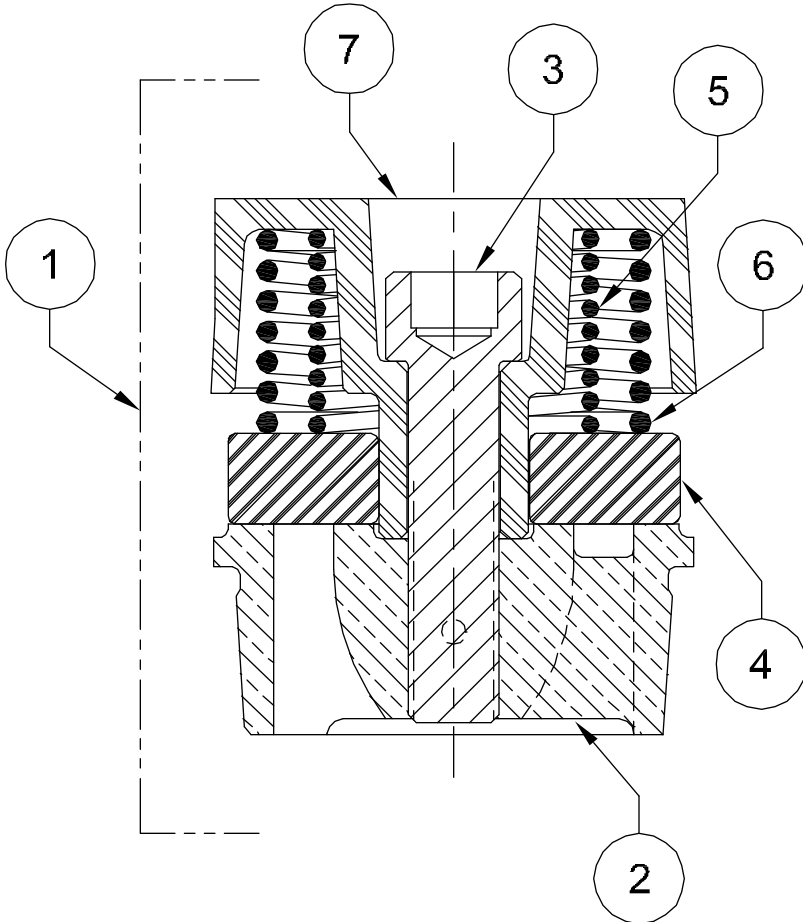
26

**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
ASSEMBLY, SPHERICAL VALVE  
"SEVERE DUTY"  
217Q-4H, 163Q-4H

DWG No.: 118585	SCALE: NONE	REV A	SHT.: 1 OF 1
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1	CAA-RT36S0-000	RETAINER	7
1	IS011	SPRING, OUTER	6
1	IS022	SPRING, INNER	5
1	TP05	DISC ( TITANIUM )	4
1	38178M	FASTENER	3
1	CAA-X5S130-000	SEAT	2
		(TITANIUM)	
1	CAA-X5ST2S-130	ASSEMBLY, TI/CF8M DISC VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			



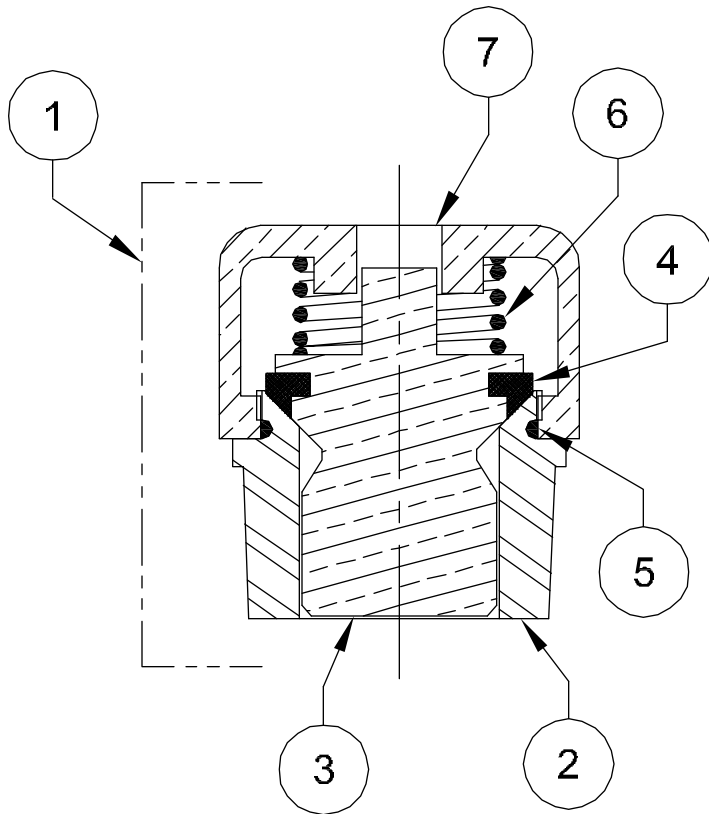
27

**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
ASSEMBLY, DISC VALVE  
217Q-4H, 163Q-4H

DWG No.:	SCALE:	REV	SHT.:
118586	NONE	A	1 OF 1

1	SDR05	RETAINER	7
1	SDS051	SPRING	6
1	SDL05	THREAD LOCK	5
1	SDI05	INSERT	4
1	SD05	VALVE L/INSERT	3
1	1000513	SEAT	2
1	100SD0513	ASSEMBLY, SEVERE DUTY	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

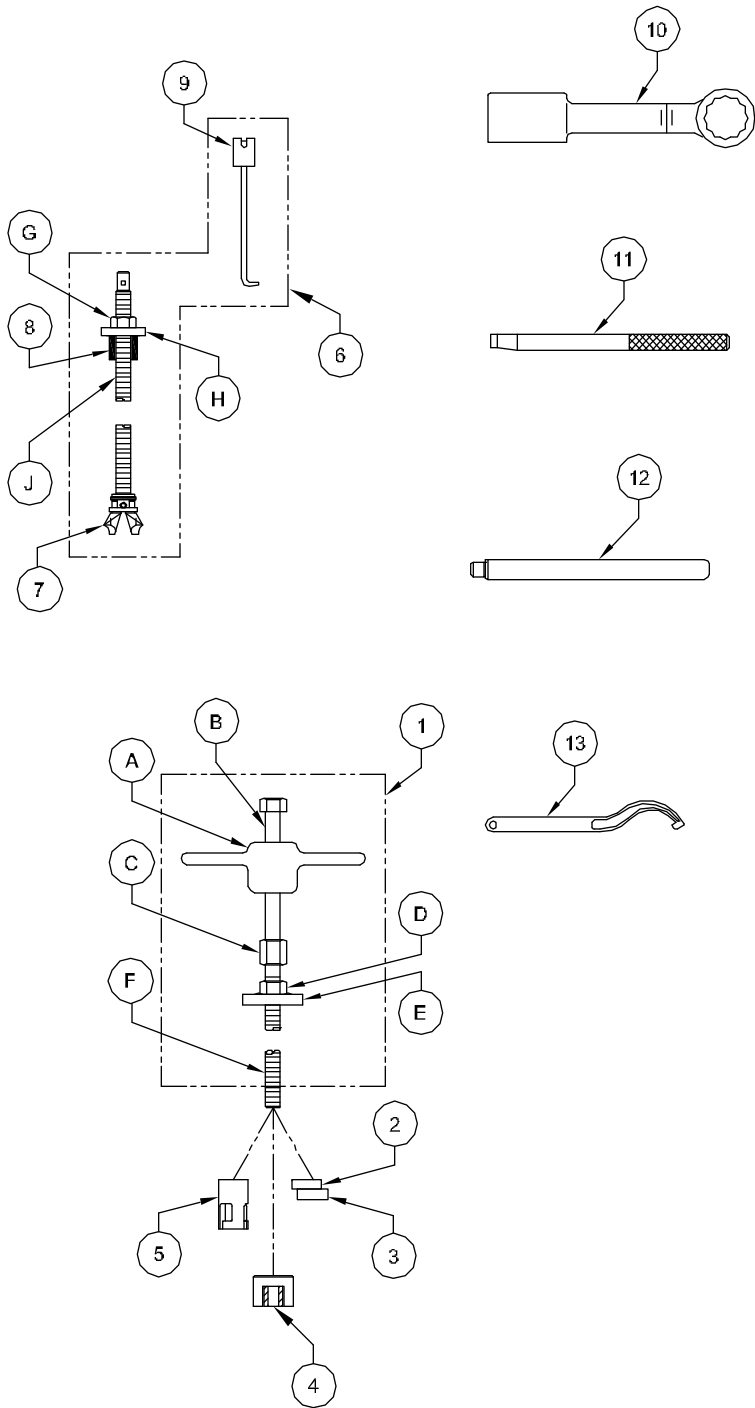


28

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, SEVERE DUTY  
 217Q-4H, 63Q-4H

DWG No.:	118584	SCALE:	NONE	REV	A	SH1.:	1 OF 1
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1	002-025720-231	WRENCH, GLAND NUT ( STD. SPANNER )	13
1	AAB-117875-270	WRENCH, GLAND NUT ( PIN TYPE - 0.750 HOLE )	12
1	AAB-051293-274	WRENCH, GLAND NUT ( PIN TYPE - 0.545 HOLE )	11
1	001-027585-999	WRENCH, VALVE COVER ( HAMMER WRENCH )	10
1	1790034	RETRIEVER	9
1	181205709	SPACER	8
1	181259300	PULLER HEAD	7
1	20220159	PULLER STEM	J
1	20220194	STRONG BACK	H
1	75518308	HOLD DOWN NUT	G
1	180104127	ASSEMBLY, VALVE SEAT PULLER - ( SPHERICAL )	6
1	AAC-011956-275	PULLER HEAD	5
1	008-028546-005	PULLER STEM	F
1	008-028546-035	STRONG BACK	E
1	008-028546-013	HOLD DOWN NUT	D
1	008-028546-016	ADAPTER NUT	C
1	008-028546-002	BUMPER STEM	B
1	008-028546-001	BUMPER	A
1	998-Q4240L-092	ASSEMBLY, VALVE SEAT PULLER - ( DISC VALVE )	1
1	008-028546-044	CAGE TOOL	4
1	008-028546-030	PULLER GUIDE	3
1	008-028546-022	ECCENTRIC, PULLER	2
1	008-028546-005	PULLER STEM	F
1	008-028546-035	STRONG BACK	E
1	008-028546-013	HOLD DOWN NUT	D
1	008-028546-016	ADAPTER NUT	C
1	008-028546-002	BUMPER STEM	B
1	008-028546-001	BUMPER	A
1	998-Q4240L-091	ASSEMBLY, VALVE SEAT PULLER - ( SEVERE DUTY )	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

TOOL SERVICE KIT  
 "L" - CLASS FLUID ENDS  
 217Q-4L, 163Q-4L ( HP200AL , HP165AL )

DWG No.:

118587

SCALE:

NONE

REV

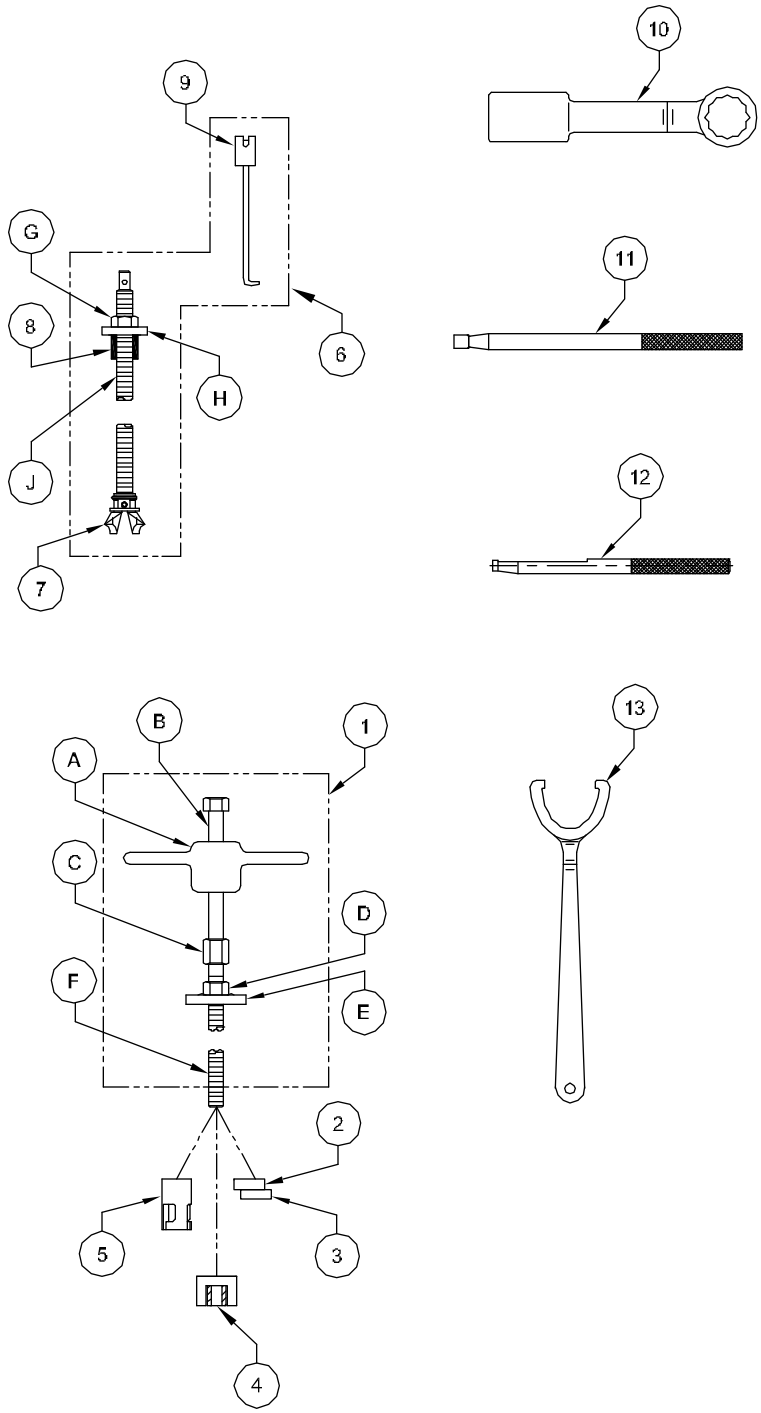
A

SHT.:

1

OF 1



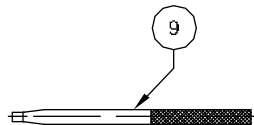
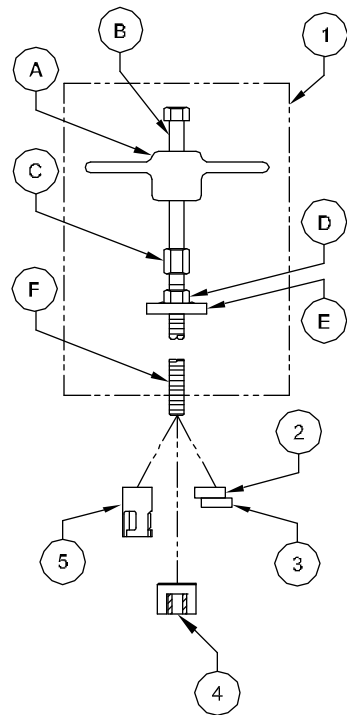
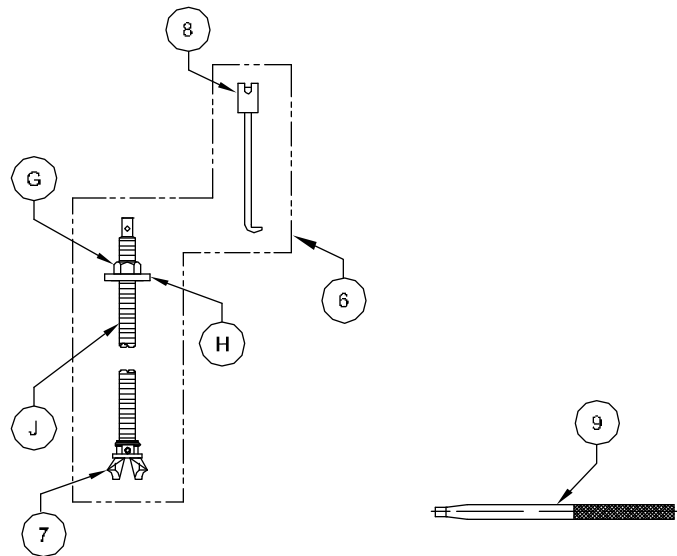


1	002-027780-351	WRENCH, GLAND NUT ( DUCTILE IRON )	13
1	AAB-030945-274	WRENCH, GLAND NUT ( PIN TYPE - 0.531 HOLE )	12
1	002-051293-274	WRENCH, GLAND NUT ( PIN TYPE - 0.545 HOLE )	11
1	001-027584-999	WRENCH, VALVE COVER ( HAMMER WRENCH )	10
1	1790034	RETRIEVER	9
1	181205709	SPACER	8
1	181259250	PULLER HEAD	7
1	20220159	PULLER STEM	J
1	20220194	STRONG BACK	H
1	75518308	HOLD DOWN NUT	G
1	180104119	ASSEMBLY, VALVE SEAT PULLER - ( SPHERICAL )	6
1	001-012497-274	PULLER HEAD	5
1	008-028546-004	PULLER STEM	F
1	008-028546-035	STRONG BACK	E
1	008-028546-012	HOLD DOWN NUT	D
1	008-028546-015	ADAPTER NUT	C
1	008-028546-002	BUMPER STEM	B
1	008-028546-001	BUMPER	A
1	998-Q4240M-092	ASSEMBLY, VALVE SEAT PULLER - ( DISC VALVE )	1
1	008-028546-043	CAGE TOOL	4
1	008-028546-027	PULLER GUIDE	3
1	008-028546-019	ECCENTRIC, PULLER	2
1	008-028546-005	PULLER STEM	F
1	008-028546-035	STRONG BACK	E
1	008-028546-013	HOLD DOWN NUT	D
1	008-028546-016	ADAPTER NUT	C
1	008-028546-002	BUMPER STEM	B
1	008-028546-001	BUMPER	A
1	998-Q4240M-091	ASSEMBLY, VALVE SEAT PULLER - ( SEVERE DUTY )	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**TOOL SERVICE KIT**  
**"M" - CLASS FLUID ENDS**  
**217Q-4M, 163Q-4M ( HP200AM, HP165AM )**

DWG No.: 118588 SCALE: NONE REV: A SHT.: 1 OF 1



1	AAB-030420-274	WRENCH, GLAND NUT ( PIN TYPE - 0.531 HOLE)	9
1	1790034	RETRIEVER	8
1	181259225	PULLER HEAD	7
1	20220331	PULLER STEM	J
1	20220332	STRONG BACK	H
1	75510312	HOLD DOWN NUT	G
1	181259226	ASSEMBLY, VALVE SEAT PULLER - ( SPHERICAL )	6
1	001-019433-274	PULLER HEAD	5
1	008-028546-005	PULLER STEM	F
1	008-028546-035	STRONG BACK	E
1	008-028546-013	HOLD DOWN NUT	D
1	008-028546-016	ADAPTER NUT	C
1	008-028546-002	BUMPER STEM	B
1	008-028546-001	BUMPER	A
1	998-Q3150M-092	ASSEMBLY, VALVE SEAT PULLER - ( DISC VALVE )	1
1	008-028546-043	CAGE TOOL	4
1	008-028546-028	PULLER GUIDE	3
1	008-028546-020	ECCENTRIC, PULLER	2
1	008-028546-004	PULLER STEM	F
1	008-028546-035	STRONG BACK	E
1	008-028546-012	HOLD DOWN NUT	D
1	008-028546-015	ADAPTER NUT	C
1	008-028546-002	BUMPER STEM	B
1	008-028546-001	BUMPER	A
1	998-Q3150M-091	ASSEMBLY, VALVE SEAT PULLER - ( SEVERE DUTY )	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

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**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

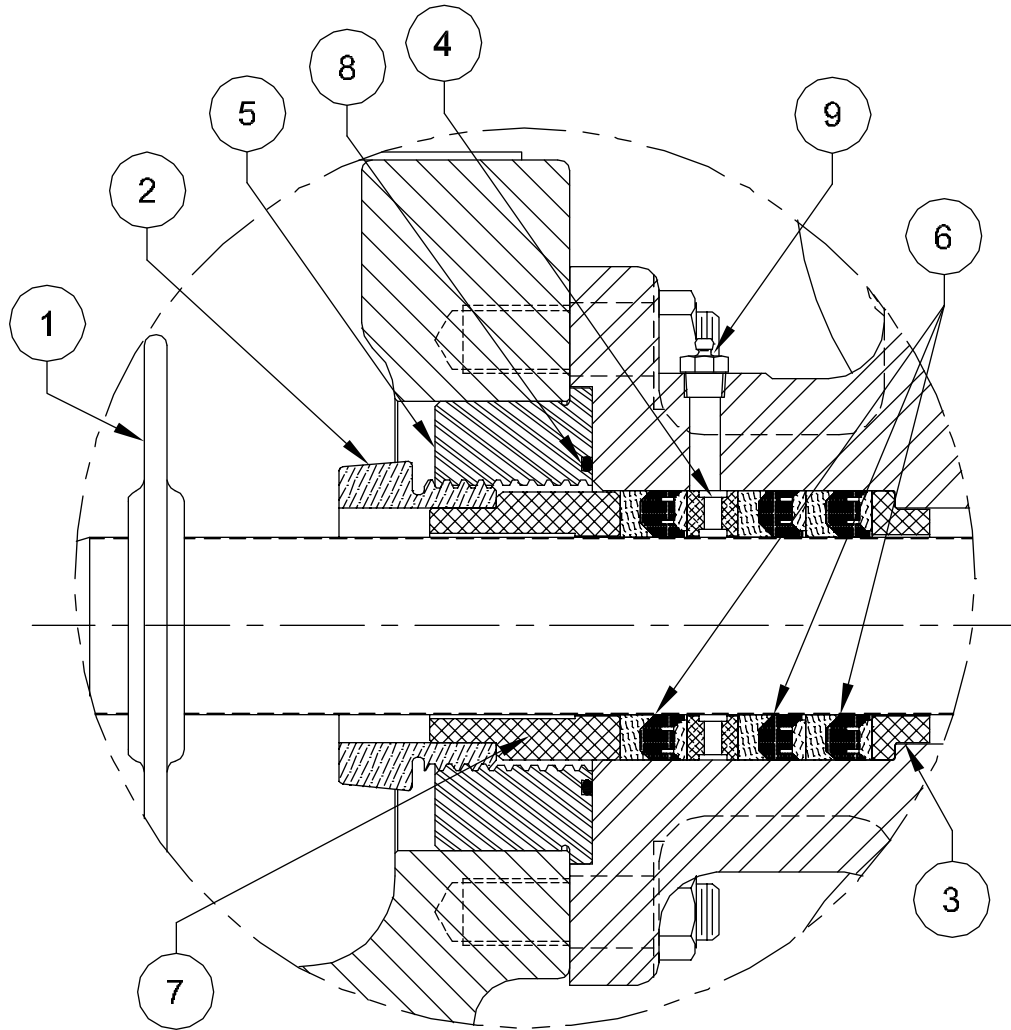
TOOL SERVICE KIT  
"H" - CLASS FLUID ENDS  
217Q-4H, 163Q-4H

DWG No.: 118589

SCALE: NONE

REV A

SHT.: 1 OF 1



**NOTE**

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118590, SHEETS 1 THRU 5.

5	180-165000-220	LUBE FITTING		9
5	110-000246-200	O-RING		8
5	001-024974-575		(SS)	
5	001-024974-235		(STL)	
5	001-024974-302	FOLLOWER	(BRZ)	7
5	218-234318-477		858	
5	218-234318-374		845	
5	218-234318-386		842	
5	218-234318-370	PACKING	838	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	001-024972-575		(SS)	
5	001-024972-235		(STL)	
5	001-024972-302	LANTERN RING	(BRZ)	4
5	001-024973-575		(SS)	
5	001-024973-235		(STL)	
5	001-024973-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-014155-351		(DI)	
5	001-014155-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1

( 2-3/4" PLUNGER )			
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			

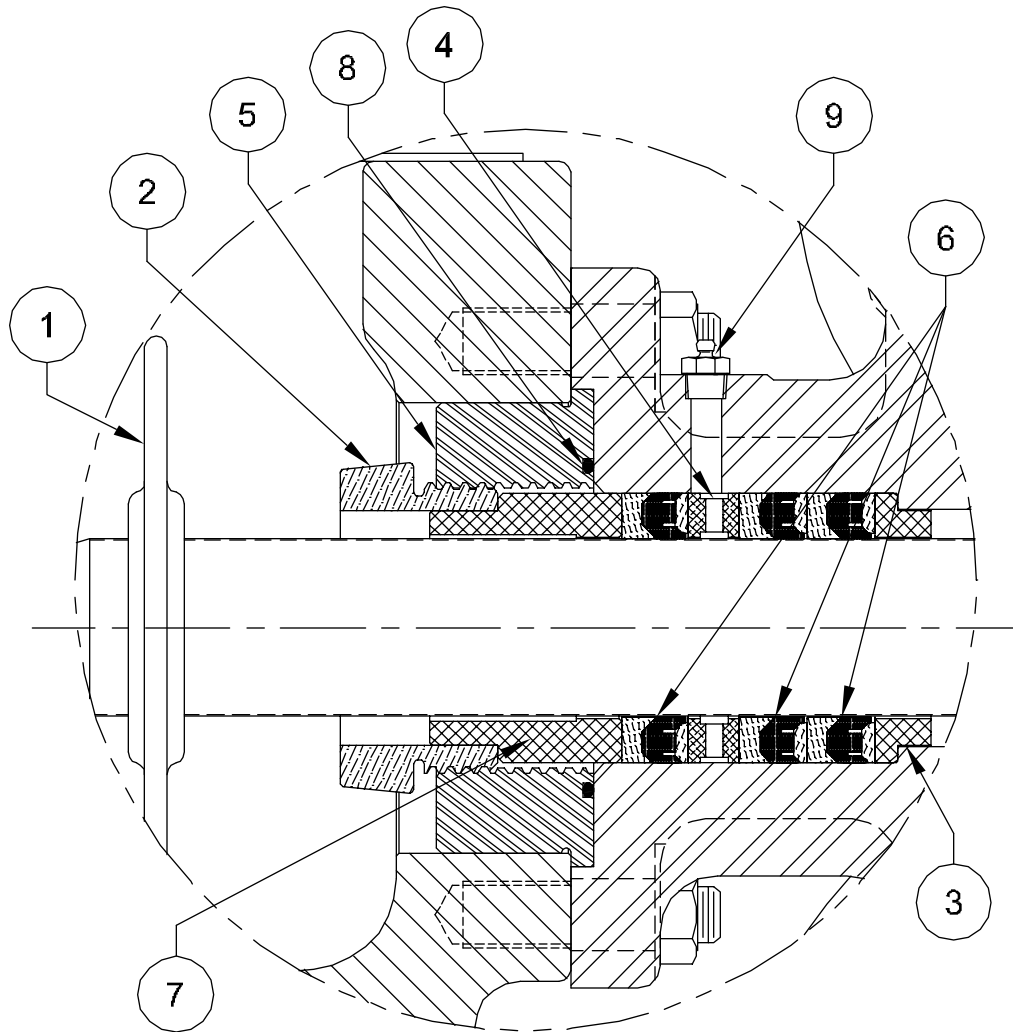
<\*> COATED STAINLESS STEEL



HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
 "J"-STYLE PKG, 2-3/4" THRU 3-3/8" PLUNGER  
 217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.:	SCALE:	REV:	SHT.:
118590	NONE	A	1 OF 5



**NOTE**

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118590, SHEETS 1 THRU 5.

5	180-165000-220	LUBE FITTING		9
5	110-000246-200	O-RING		8
5	BCC-116333-575		(SS)	7
5	001-008353-235		(STL)	
5	001-008353-302	FOLLOWER	(BRZ)	7
5	218-278318-477		858	
5	218-278318-374		845	
5	218-278318-386		842	
5	218-278318-370	PACKING	838	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	001-011194-575		(SS)	
5	001-011194-235		(STL)	
5	001-011194-302	LANTERN RING	(BRZ)	4
5	001-028783-575		(SS)	
5	001-028783-235		(STL)	
5	001-028783-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-014155-351		(DI)	
5	001-014155-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1

( 2-7/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

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**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
"J"-STYLE PKG, 2-3/4" THRU 3-3/8" PLUNGER  
217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.:

118590

SCALE:

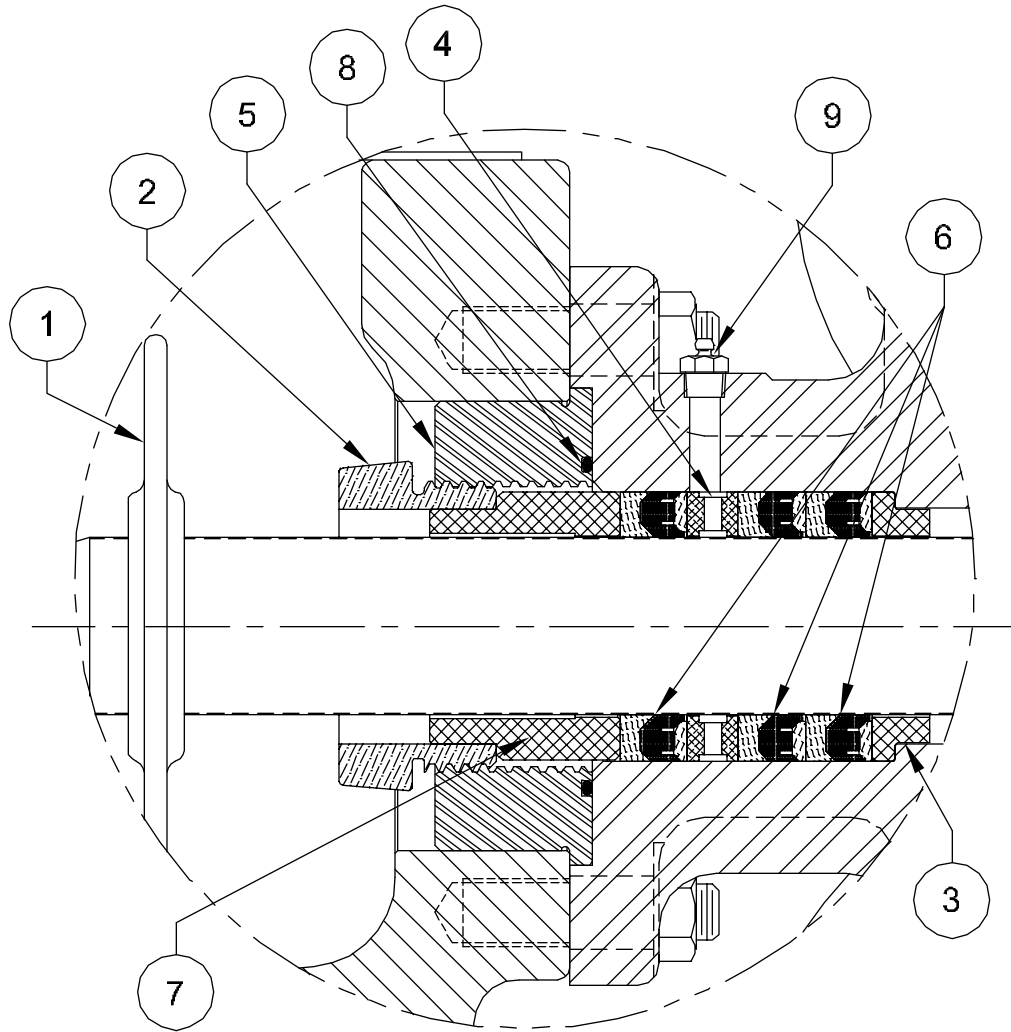
NONE

REV

A

SHT.:

2 OF 5



**NOTE**

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118590, SHEETS 1 THRU 5.

5	180-165000-220	LUBE FITTING		9
5	110-000246-200	O-RING		8
5	BEC-116333-575		(SS)	
5	001-011188-235		(STL)	
5	001-011188-302	FOLLOWER	(BRZ)	7
5	218-300281-477		858	
5	218-300281-374		845	
5	218-300281-386		842	
5	218-300281-370	PACKING	838	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	001-011195-575		(SS)	
5	001-011195-235		(STL)	
5	001-011195-302	LANTERN RING	(BRZ)	4
5	001-025961-575		(SS)	
5	001-025961-235		(STL)	
5	001-025961-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-014155-351		(DI)	
5	001-014155-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1

<b>( 3" PLUNGER )</b>			
REQ'D	Part No.	DESCRIPTION	ITEM

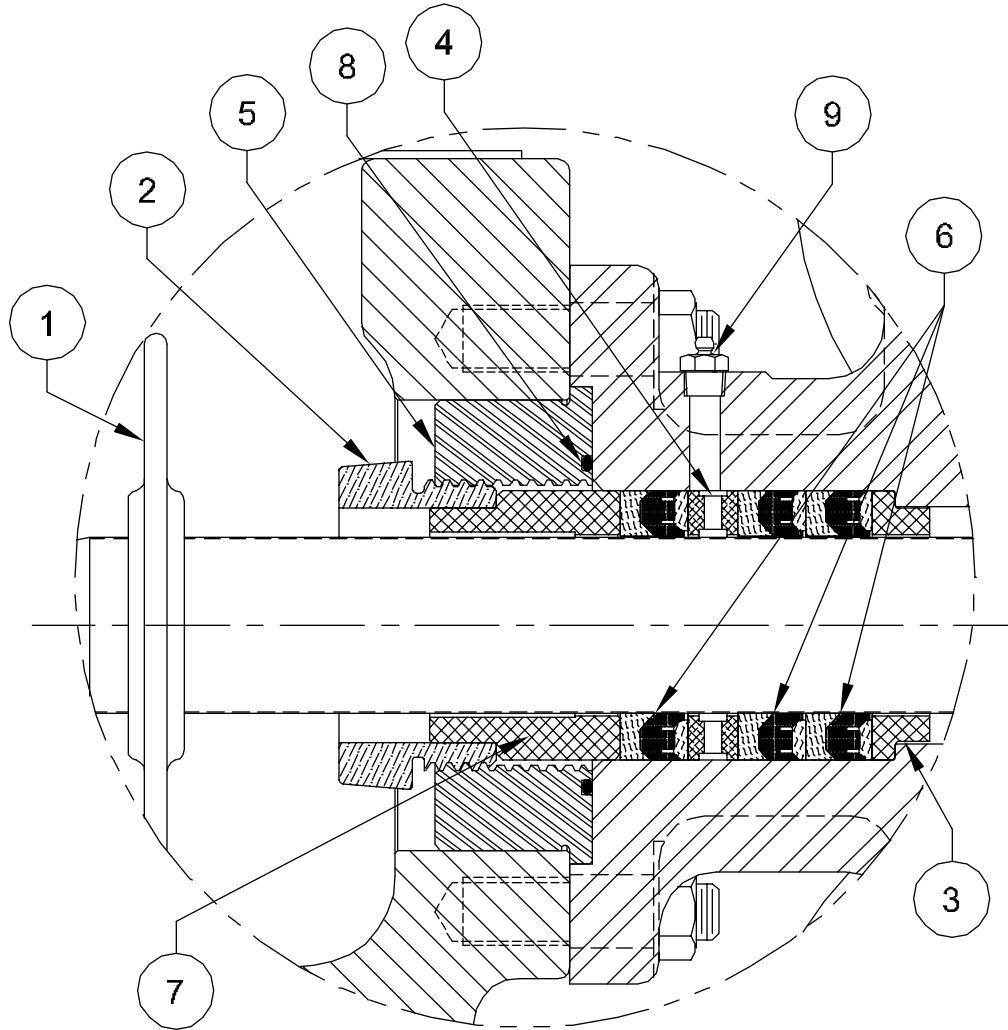
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
**"J"-STYLE PKG, 2-3/4" THRU 3-3/8" PLUNGER**  
**217Q-4L, 163Q-4L ( HP200AL, HP165AL )**

DWG No.: 118590 SCALE: NONE REV A SHT.: 3 OF 5



**NOTE**

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118590, SHEETS 1 THRU 5.

5	180-165000-220	LUBE FITTING		9
5	110-000246-200	O-RING		8
5	BJC-116333-575		(SS)	
5	001-011190-235		(STL)	
5	001-011190-302	FOLLOWER	(BRZ)	7
5	218-314214-477		858	
5	218-314214-374		845	
5	218-314214-386		842	
5	218-314214-370	PACKING	838	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	001-011197-575		(SS)	
5	001-011197-235		(STL)	
5	001-011197-302	LANTERN RING	(BRZ)	4
5	001-025962-575		(SS)	
5	001-025962-235		(STL)	
5	001-025962-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-014155-351		(DI)	
5	001-014155-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 3-1/4" PLUNGER )</b>				
<b>REQ'D</b>	<b>Part No.</b>	<b>DESCRIPTION</b>		<b>ITEM</b>
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL

35

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
 "J"-STYLE PKG, 2-3/4" THRU 3-3/8" PLUNGER  
 217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.:

118590

SCALE:

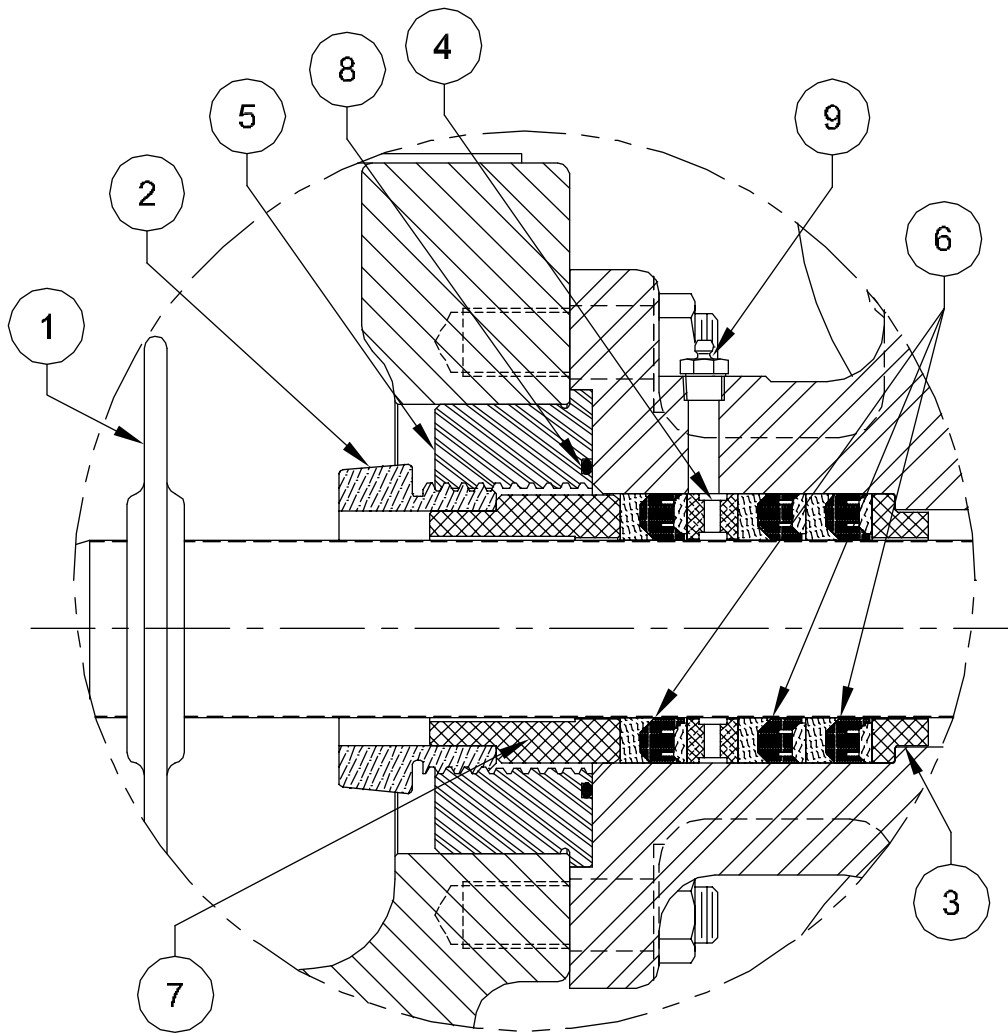
NONE

REV

A

SHT.:

4 OF 5



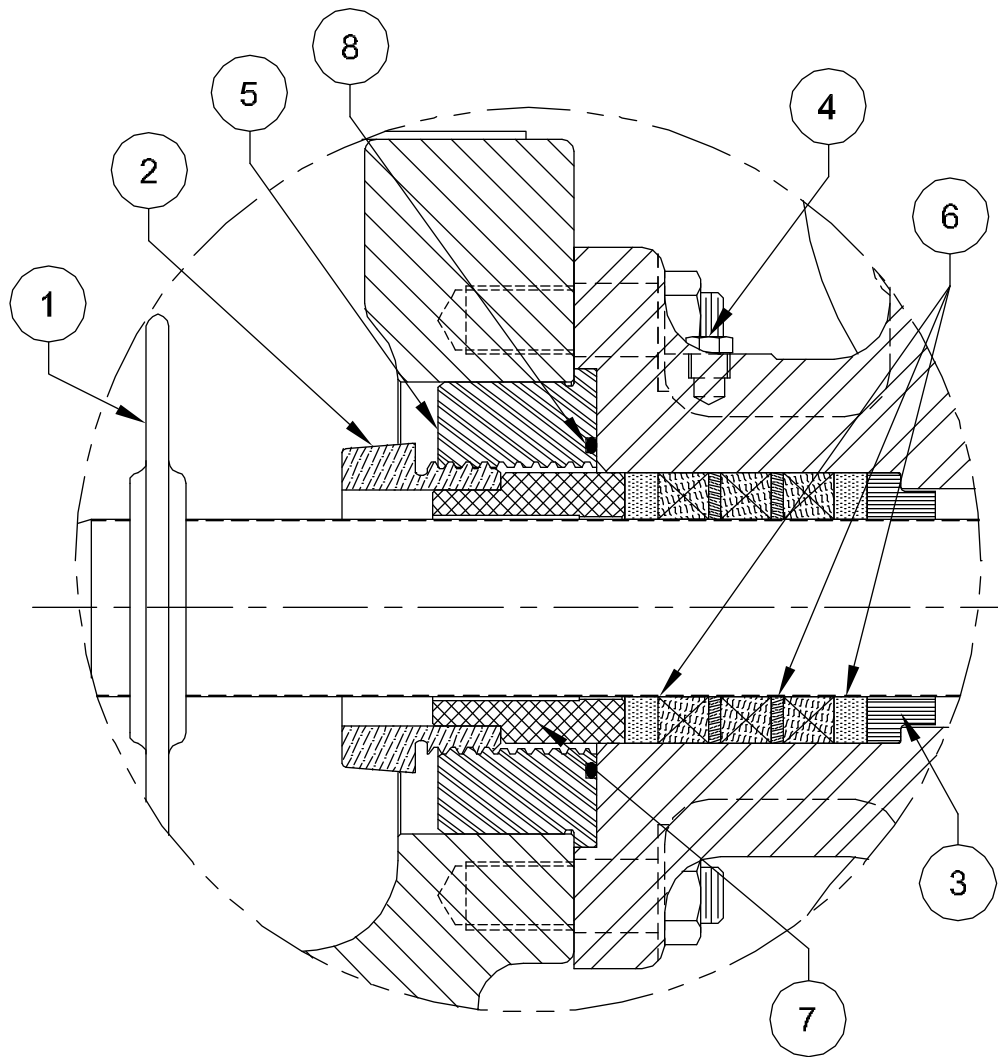
NOTE  
 1) FOR ALL " J " STYLE PACKING SEE DRAWING 118590,  
 SHEETS 1 THRU 5.

5	180-165000-220	LUBE FITTING		9
5	110-000246-200	O-RING		8
5	001-024977-575		(SS)	
5	001-024977-235		(STL)	
5	001-024977-302	FOLLOWER	(BRZ)	7
5	218-338214-477		858	
5	218-338214-374		845	
5	218-338214-386		842	
5	218-338214-370	PACKING	838	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	001-024975-575		(SS)	
5	001-024975-235		(STL)	
5	001-024975-302	LANTERN RING	(BRZ)	4
5	001-024976-575		(SS)	
5	001-024976-235		(STL)	
5	001-024976-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-014155-351		(DI)	
5	001-014155-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1
( 3-3/8" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL

36

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, PLUNGER KIT "J"-STYLE PKG, 2-3/4" THRU 3-3/8" PLUNGER 217Q-4L, 163Q-4L ( HP200AL, HP165AL )			
DWG No.:	118590	SCALE:	NONE
REV	A	SHT.:	5 OF 5



NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118591,  
 SHEETS 1 THRU 5.

5	110-000246-200	O-RING		8
5	001-024974-575		(SS)	
5	001-024974-235		(STL)	
5	001-024974-302	FOLLOWER	(BRZ)	7
5	437-234438-458		8921-K	
5	437-234438-339		249	
5	437-234438-337		241	
5	437-234438-395	PACKING	238	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	170-018002-220		(STL)	
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-024973-575		(SS)	
5	001-027619-235		(STL)	
5	001-024973-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-024095-351		(DI)	
5	001-014155-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1

( 2-3/4" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

BILL OF MATERIAL

<\*> COATED STAINLESS STEEL

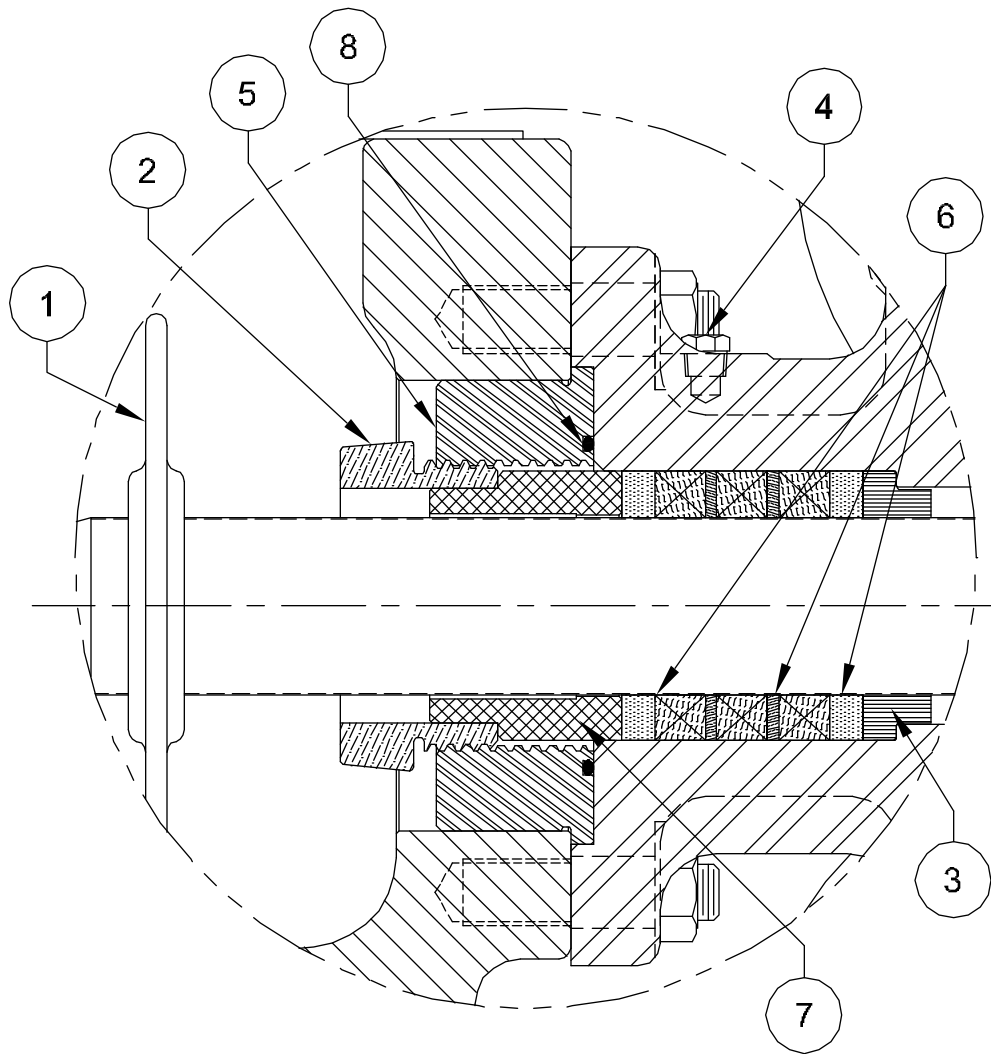
37

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 BRAID STYLE PKG, 2-3/4" - 3-3/8" PLUNGER  
 217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.: 118591	SCALE: NONE	REV A	SHT.: 1 OF 5
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**NOTE**

1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118591, SHEETS 1 THRU 5.

5	110-000246-200	O-RING		8
5	BCC-116333-575		(SS)	
5	001-008358-235		(STL)	
5	001-008358-302	FOLLOWER	(BRZ)	7
5	437-278356-458		8921-K	
5	437-278356-339		249	
5	437-278356-337		241	
5	437-278356-395	PACKING	238	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	170-018002-220		(STL)	
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-028783-575		(SS)	
5	001-028783-235		(STL)	
5	001-028783-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-014155-351		(DI)	
5	001-014155-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1

( 2-7/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

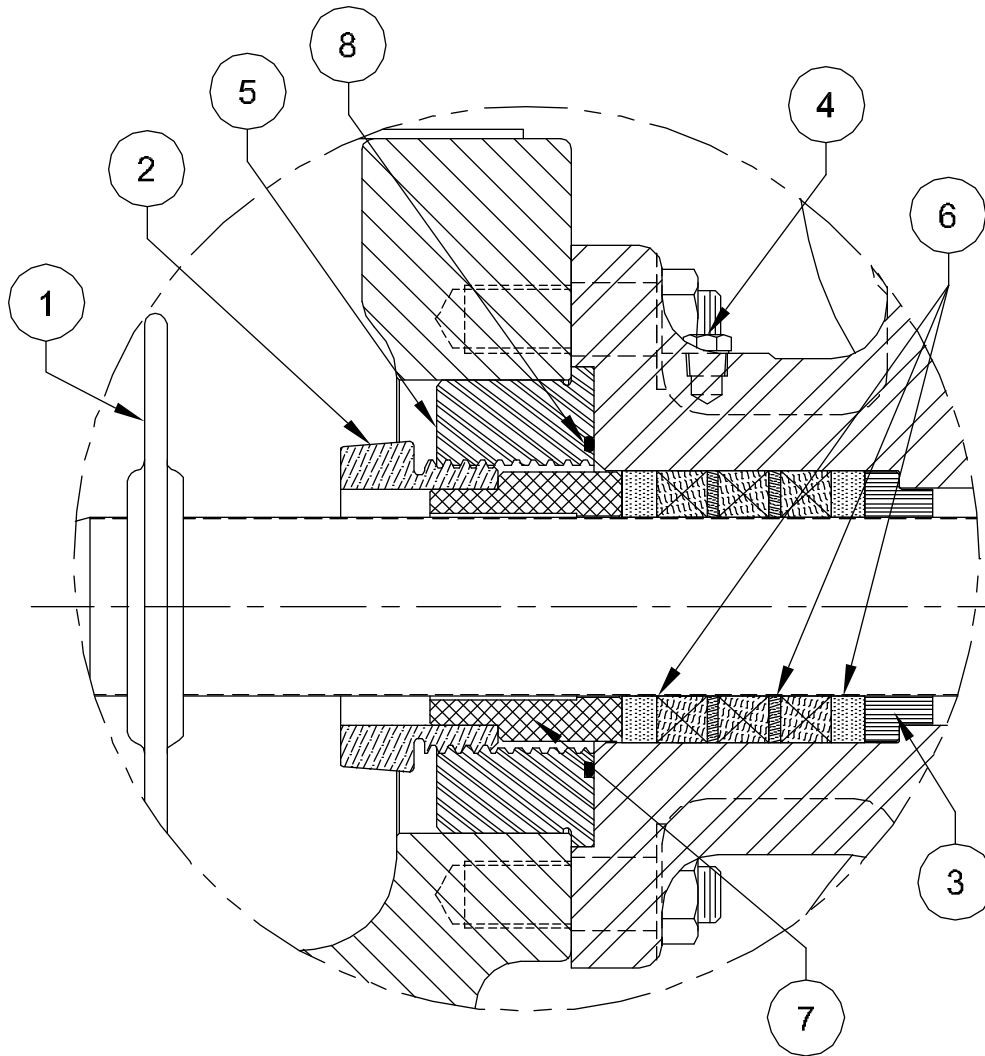
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
**BRAID STYLE PKG, 2-3/4" - 3-3/8" PLUNGER**  
**217Q-4L, 163Q-4L ( HP200AL, HP165AL )**

DWG No.:	SCALE:	REV	SHT.:
118591	NONE	A	2 OF 5



**NOTE**

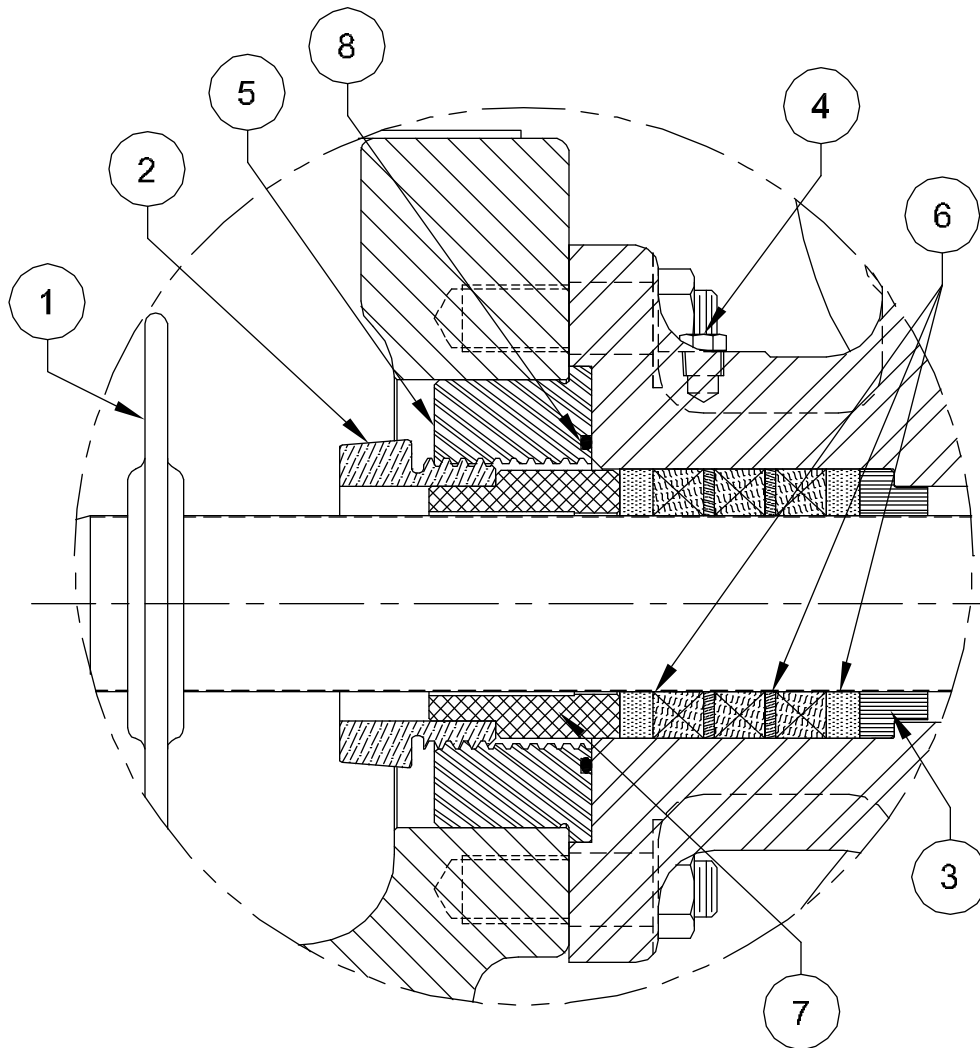
1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118591, SHEETS 1 THRU 5.

5	110-000246-200	O-RING		8
5	BEC-116333-575		(SS)	
5	001-011188-235		(STL)	
5	001-011188-302	FOLLOWER	(BRZ)	7
5	437-300438-458		8921-K	
5	437-300438-339		249	
5	437-300438-337		241	
5	437-300438-395	PACKING	238	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	170-018002-220		(STL)	
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-025961-575		(SS)	
5	001-025961-235		(STL)	
5	001-025961-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-014155-351		(DI)	
5	001-014155-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 3" PLUNGER )</b>				
REQ'D	Part No.	DESCRIPTION		ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, PLUNGER KIT BRAID STYLE PKG, 2-3/4" - 3-3/8" PLUNGER 217Q-4L, 163Q-4L ( HP200AL, HP165AL )			
DWG No.:	SCALE:	REV	SHT.:
118591	NONE	A	3 OF 5



**NOTE**

1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118591, SHEETS 1 THRU 5.

5	110-000246-200	O-RING		8
5	001-011190-575		(SS)	
5	001-011190-235		(STL)	
5	001-011190-302	FOLLOWER	(BRZ)	7
5	437-314312-458		8921-K	
5	437-314312-339		249	
5	437-314312-337		241	
5	437-314312-395	PACKING	238	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	170-018002-220		(STL)	
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-025962-575		(SS)	
5	001-025962-235		(STL)	
5	001-025962-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-014155-351		(DI)	
5	001-024095-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1

( 3-1/4" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

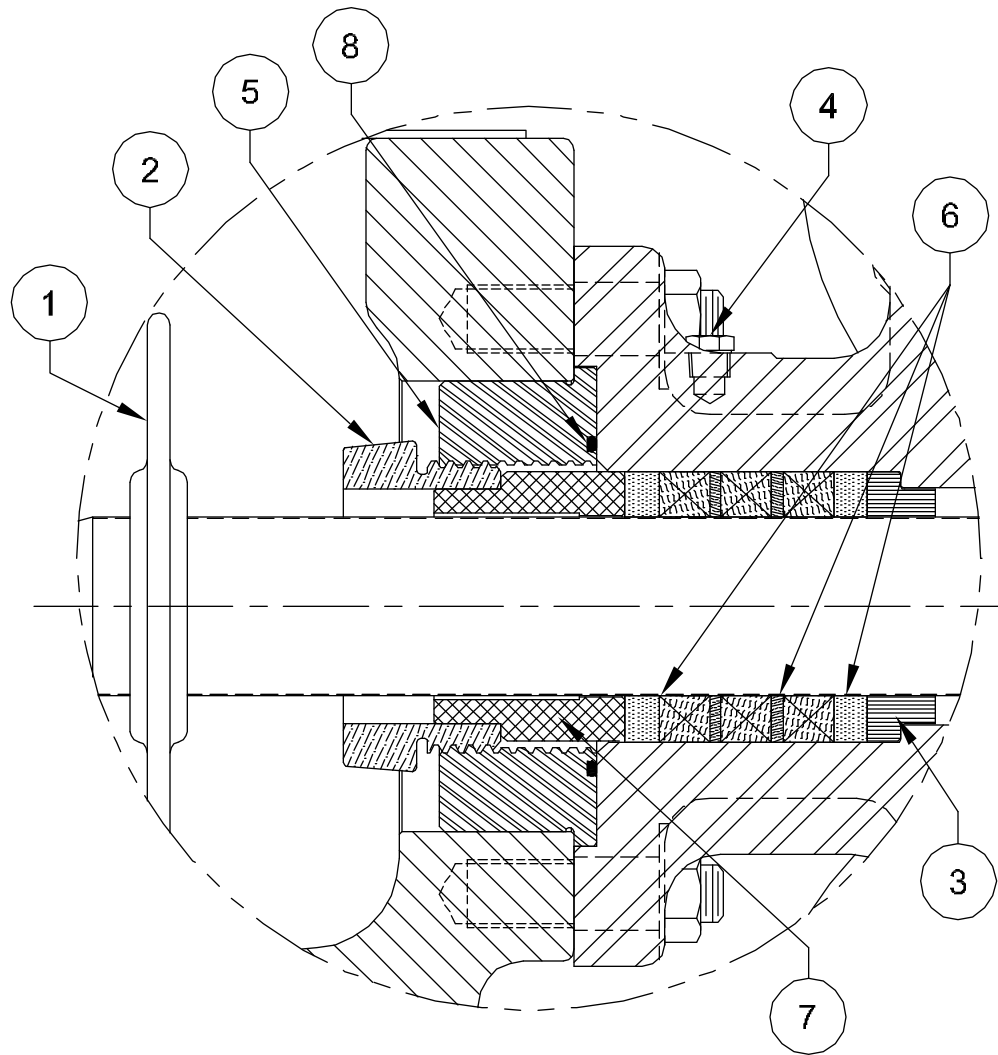
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
**BRAID STYLE PKG, 2-3/4" - 3-3/8" PLUNGER**  
**217Q-4L, 163Q-4L ( HP200AL, HP165AL )**

DWG No.: 118591	SCALE: NONE	REV: A	SHT.: 4 OF 5
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NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118591,  
 SHEETS 1 THRU 5.

5	110-000246-200	O-RING		8
5	001-024977-575		(SS)	
5	001-024977-235		(STL)	
5	001-024977-302	FOLLOWER	(BRZ)	7
5	437-338312-458		8921-K	
5	437-338312-339		249	
5	437-338312-337		241	
5	437-338312-395	PACKING	238	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	170-018002-220		(STL)	
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-024976-575		(SS)	
5	001-024976-235		(STL)	
5	001-024976-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-014155-351		(DI)	
5	001-014155-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 3-3/8" PLUNGER )</b>				
<b>REQ'D</b>	<b>Part No.</b>	<b>DESCRIPTION</b>		<b>ITEM</b>

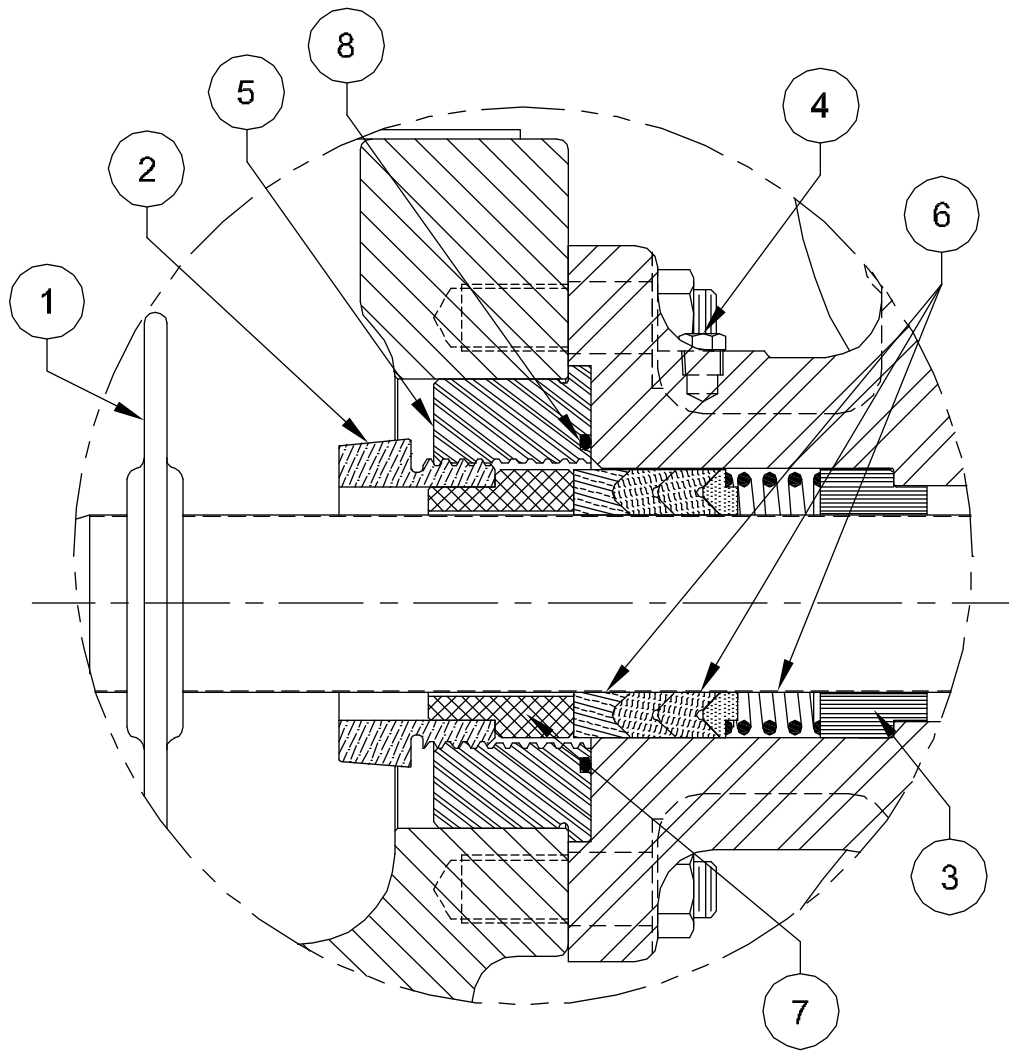
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
**BRAID STYLE PKG, 2-3/4" - 3-3/8" PLUNGER**  
**217Q-4L, 163Q-4L ( HP200AL, HP165AL )**

DWG No.: 118591 SCALE: NONE REV A SHT.: 5 OF 5



NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118592,  
 SHEETS 1 THRU 5.

5	110-000246-200	O-RING		8
5	001-024974-575		(SS)	
5	001-024974-235		(STL)	
5	001-024974-302	FOLLOWER	(BRZ)	7
5	430-234378-473		1043-4	
5	430-234378-340	PACKING	1068-4	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	170-018002-220		(STL)	
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-024973-575		(SS)	
5	001-024973-235		(STL)	
5	001-024973-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-024095-351		(DI)	
5	001-024095-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1
( 2-3/4" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM

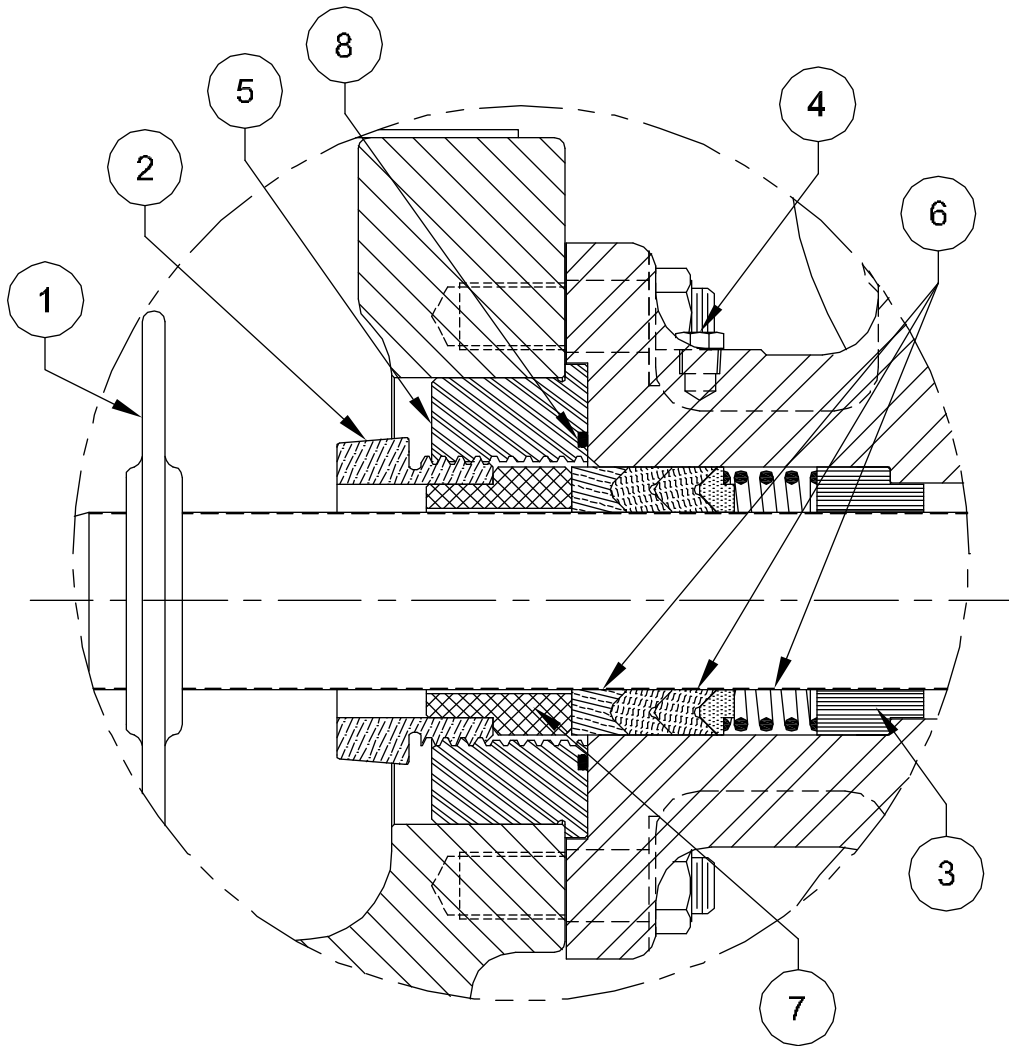
BILL OF MATERIAL

<\*> COATED STAINLESS STEEL

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 "SSF-4" STYLE PKG, 2-3/4" - 3-3/8" PLUNGER  
 217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.: 118592 SCALE: NONE REV A SHT.: 1 OF 5



NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118592,  
 SHEETS 1 THRU 5.

5	110-000246-200	O-RING		8
5	BCC-116333-575		(SS)	
5	001-008353-235		(STL)	
5	001-008353-302	FOLLOWER	(BRZ)	7
5	430-278338-473		1043-4	
5	430-278356-430	PACKING	1068-4	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	170-018002-220		(STL)	
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-028783-575		(SS)	
5	001-028783-235		(STL)	
5	001-028783-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-014155-351		(DI)	
5	001-014155-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1

( 2-7/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			

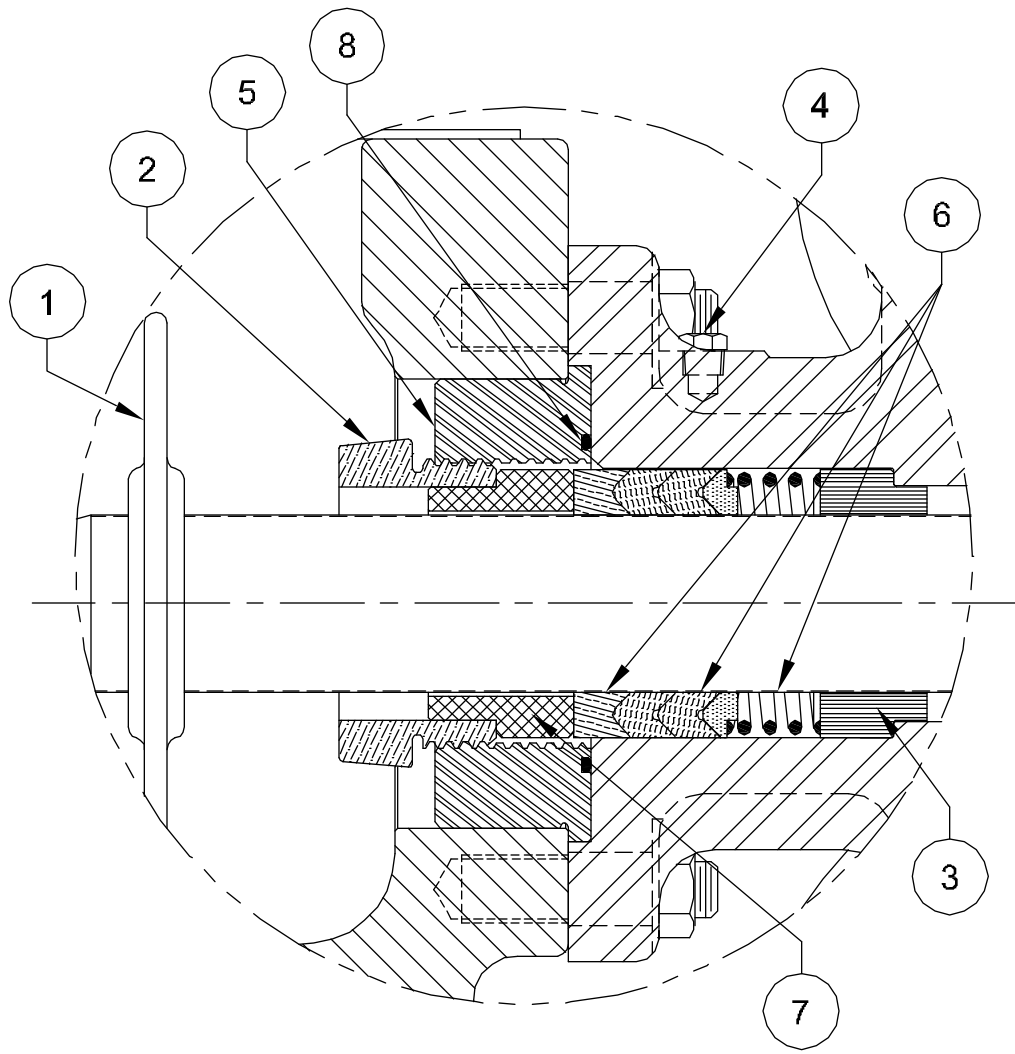
<\*> COATED STAINLESS STEEL



HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 "SSF-4" STYLE PKG, 2-3/4" - 3-3/8" PLUNGER  
 217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.: 118592	SCALE: NONE	REV A	SHT.: 2 OF 5
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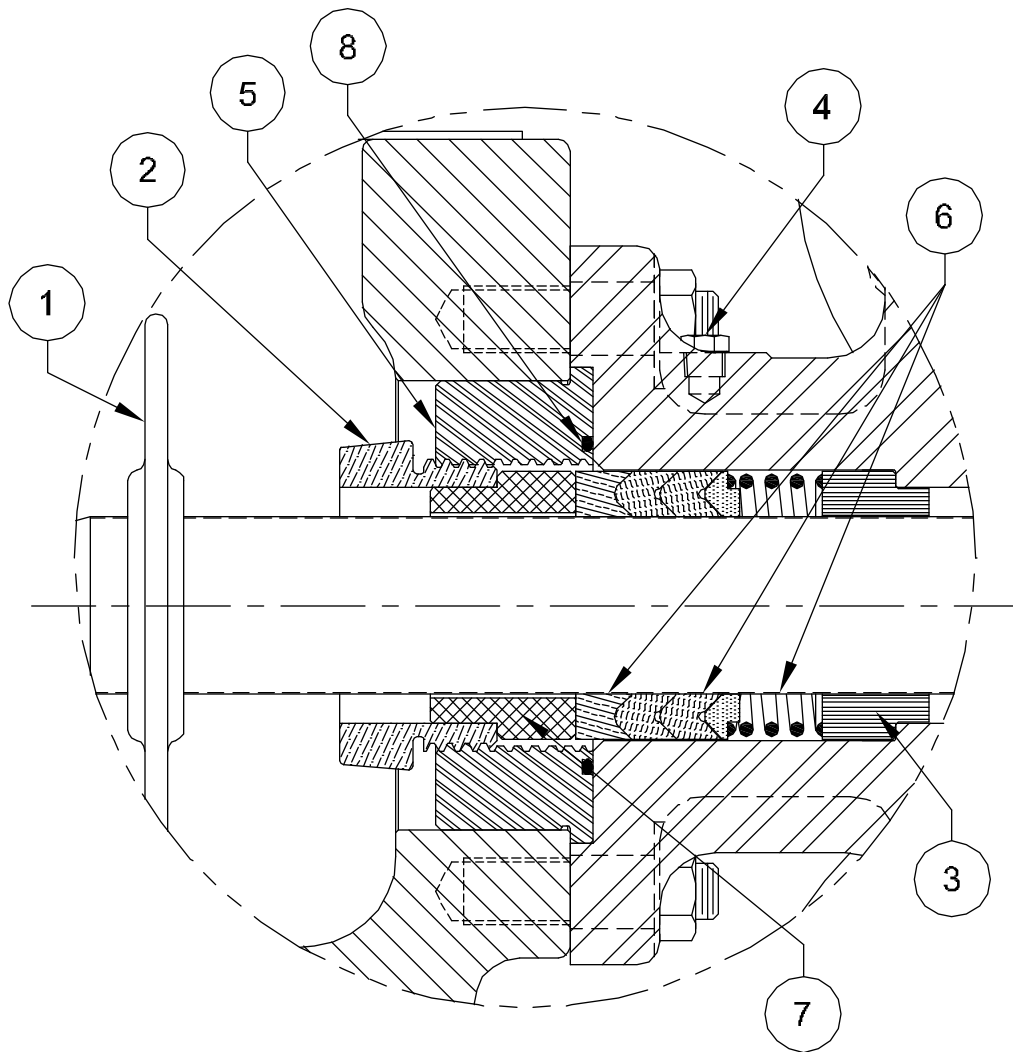


NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118592,  
 SHEETS 1 THRU 5.

5	110-000246-200	O-RING		8
5	001-027717-575		(SS)	
5	001-027717-235		(STL)	
5	001-027717-302	FOLLOWER	(BRZ)	7
5	430-300358-473		1043-4	
5	430-300358-340	PACKING	1068-4	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	170-018002-220		(STL)	
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-025961-575		(SS)	
5	001-025961-235		(STL)	
5	001-025961-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-024095-351		(DI)	
5	001-024095-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1
( 3" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM
BILL OF MATERIAL				

<\*> COATED STAINLESS STEEL

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, PLUNGER KIT "SSF-4" STYLE PKG, 2-3/4" - 3-3/8" PLUNGER 217Q-4L, 163Q-4L ( HP200AL, HP165AL )			
DWG No.:	SCALE:	REV	SHIT.:
118592	NONE	A	3 OF 5



**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118592, SHEETS 1 THRU 5.

5	110-000246-200	O-RING		8
5	BJC-116333-575		(SS)	
5	001-011190-235		(STL)	
5	001-011190-302	FOLLOWER	(BRZ)	7
5	430-314300-473		1043-4	
5	430-314300-340	PACKING	1068-4	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-302	ADAPTER	(BRZ)	5
5	170-018002-220		(STL)	
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-025962-575		(SS)	
5	001-025962-235		(STL)	
5	001-025962-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-024095-351		(DI)	
5	001-024095-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1
( 3-1/4" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
 "SSF-4" STYLE PKG, 2-3/4" - 3-3/8" PLUNGER  
 217Q-4L, 163Q-4L ( HP200AL, HP165AL )

DWG No.:

118592

SCALE:

NONE

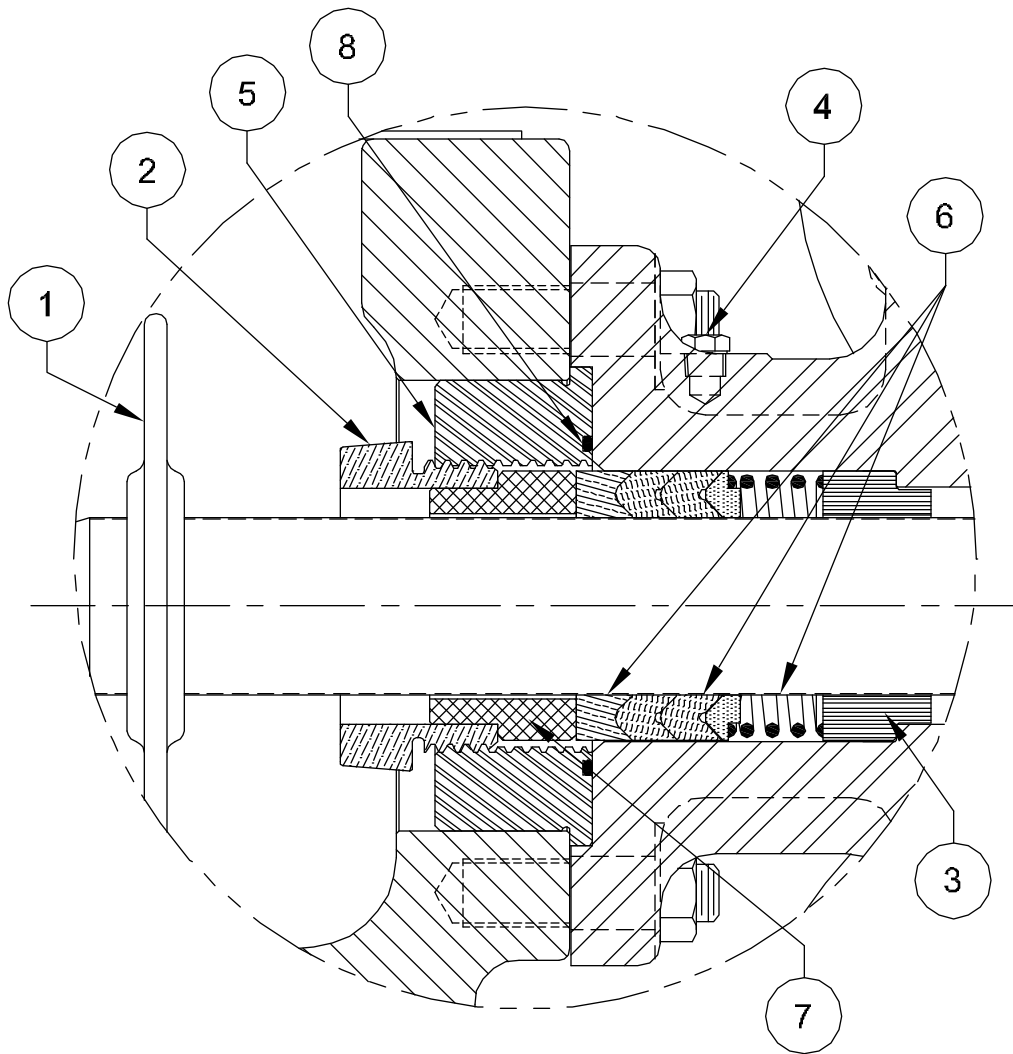
REV

A

SHT.:

4 OF 5





NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118592,  
 SHEETS 1 THRU 5.

5	110-000246-200	O-RING		8
5	001-024976-575		(SS)	
5	001-024976-235		(STL)	
5	001-024976-302	FOLLOWER	(BRZ)	7
5	430-338319-473		1043-4	
5	430-338319-340	PACKING	1068-4	6
5	001-024959-278		(SS)	
5	001-024959-236		(STL)	
5	001-024959-316	ADAPTER	(BRZ)	5
5	170-018002-220		(STL)	
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-024976-575		(SS)	
5	001-024976-235		(STL)	
5	001-024976-302	THROAT BUSHING	(BRZ)	3
5	AAB-030494-E16	<*>	(XSS)	
5	001-024095-351		(DI)	
5	001-024095-310	GLAND NUT	(BRZ)	2
5	001-007986-201	BAFFLE DISC		1

( 3-3/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

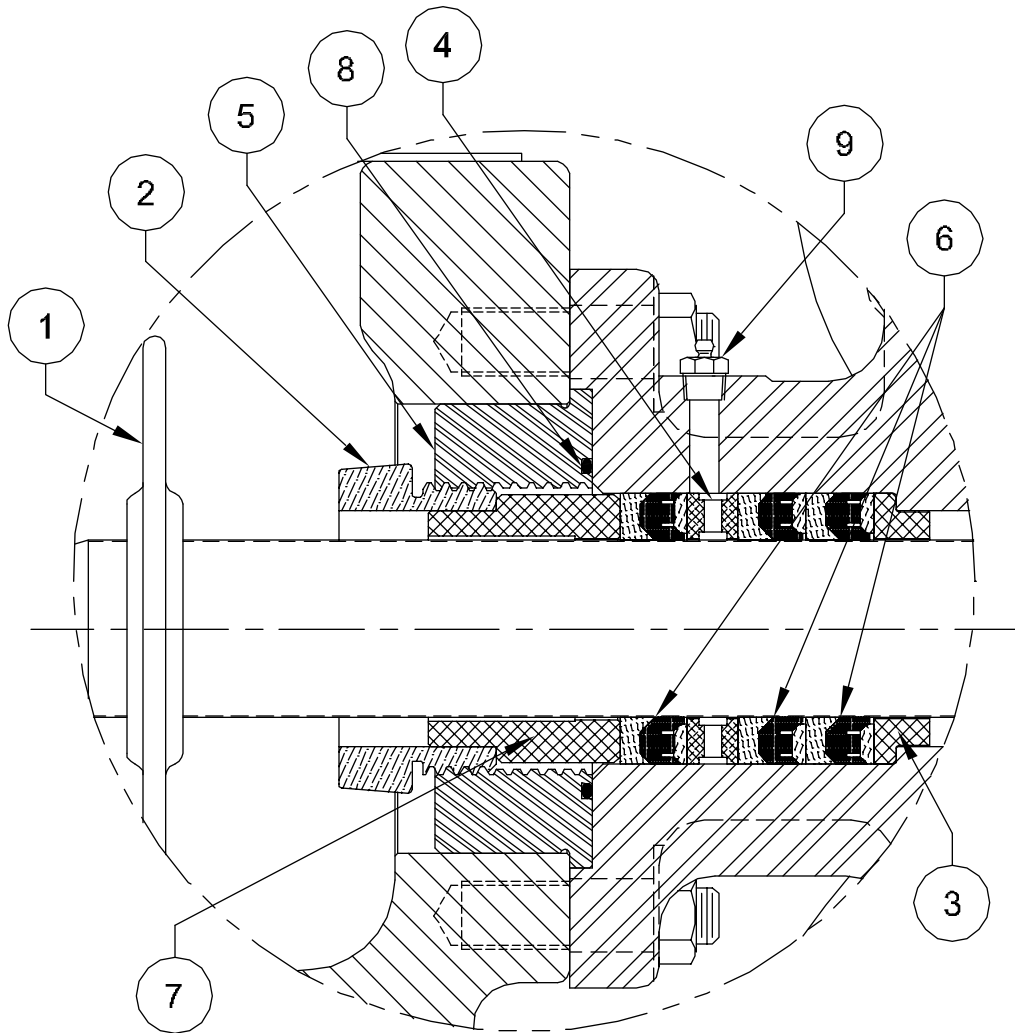
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
**"SSF-4" STYLE PKG, 2-3/4" - 3-3/8" PLUNGER**  
**217Q-4L, 163Q-4L ( HP200AL, HP165AL )**

DWG No.: 118592	SCALE: NONE	REV A	SHT.: 5 OF 5
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NOTE  
 1) FOR ALL " J " STYLE PACKING SEE DRAWING 118593,  
 SHEETS 1 THRU 8.

5	180-165000-220	LUBE FITTING	(STL)	9
5	110-000238-201	O-RING		8
5	001-023661-575		(SS)	
5	001-023661-235		(STL)	
5	001-023661-302	FOLLOWER	(BRZ)	7
5	181-158253-477		858	
5	181-158253-374		845	
5	181-158253-386		842	
5	181-158253-370	PACKING	838	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	001-023663-575		(SS)	
5	001-023663-235		(STL)	
5	001-023663-302	LANTERN RING	(BRZ)	4
5	001-023662-575		(SS)	
5	001-023662-235		(STL)	
5	001-023662-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 1-5/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

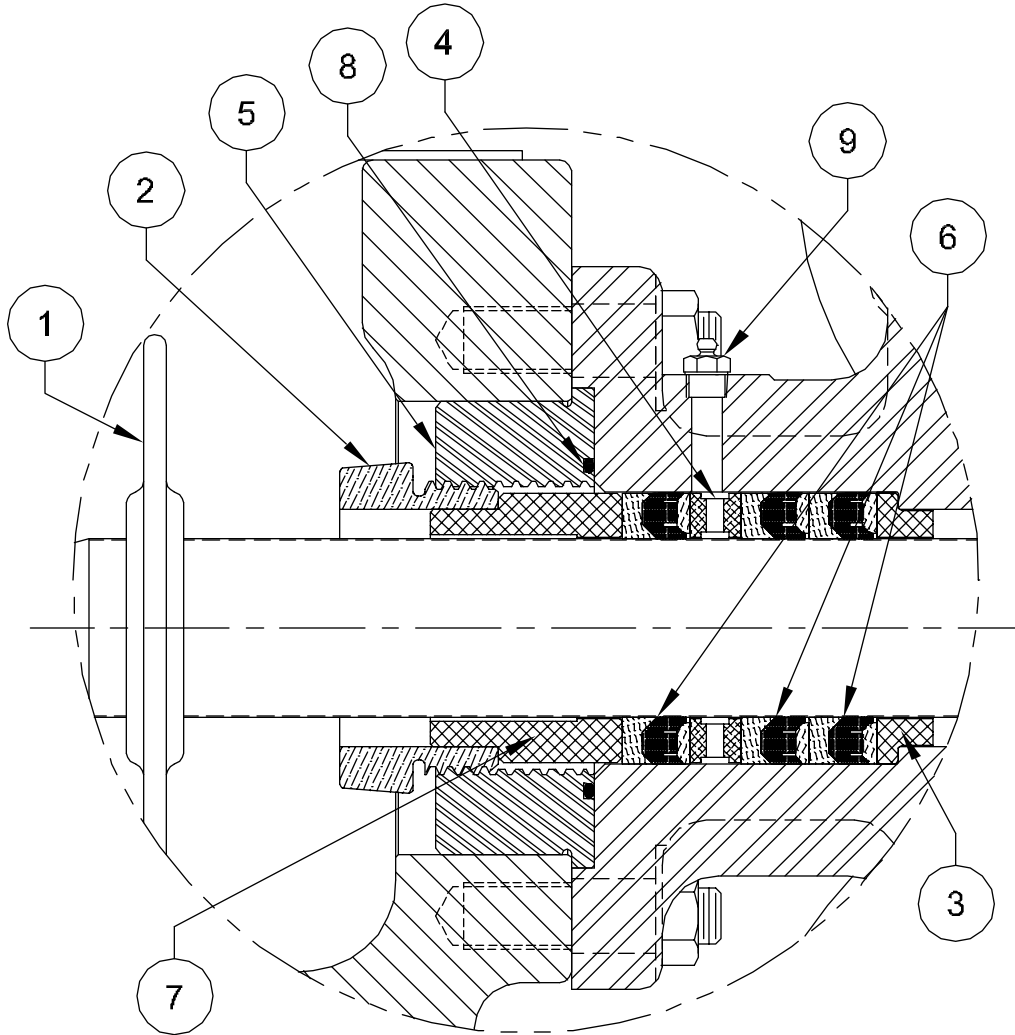
47



HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
 "J"-STYLE PKG, 1-5/8" THRU 2-1/2" PLUNGER  
 217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.: 118593	SCALE: NONE	REV A	SHT.: 1 OF 8
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NOTE  
 1) FOR ALL " J " STYLE PACKING SEE DRAWING 118593,  
 SHEETS 1 THRU 8.

5	180-165000-220	LUBE FITTING	(STL)	9
5	110-000238-201	O-RING		8
5	001-010933-575		(SS)	
5	001-010933-235		(STL)	
5	001-010933-302	FOLLOWER	(BRZ)	7
5	181-134244-477		858	
5	181-134244-374		845	
5	181-134244-386		842	
5	181-134244-370	PACKING	838	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	001-010990-575		(SS)	
5	001-010990-235		(STL)	
5	001-010990-302	LANTERN RING	(BRZ)	4
5	001-010897-575		(SS)	
5	001-010897-235		(STL)	
5	001-010897-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 1-3/4" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM
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**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

48

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
 "J"-STYLE PKG, 1-5/8" THRU 2-1/2" PLUNGER  
 217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.:

118593

SCALE:

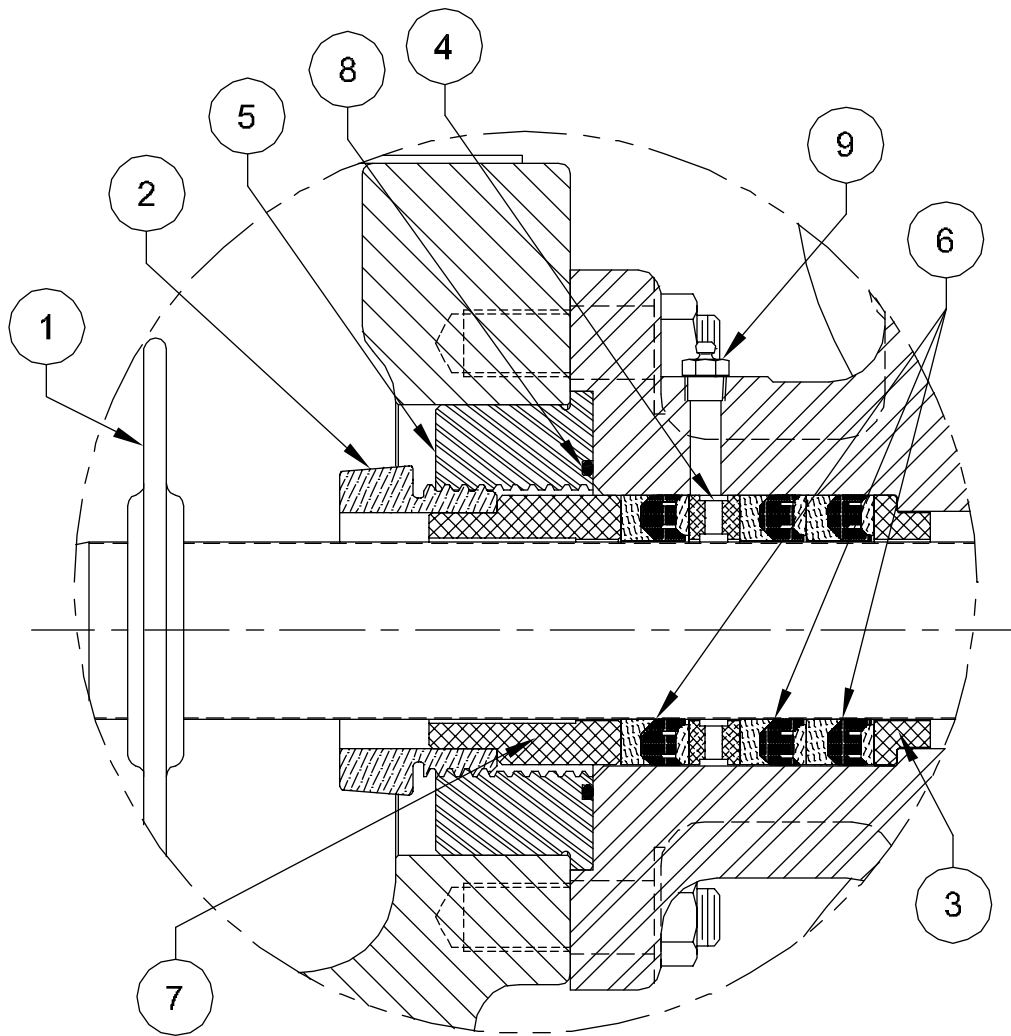
NONE

REV

A

SHT.:

2 OF 8



NOTE  
 1) FOR ALL " J " STYLE PACKING SEE DRAWING 118593,  
 SHEETS 1 THRU 8.

5	180-165000-220	LUBE FITTING	(STL)	9
5	110-000238-201	O-RING		8
5	001-014459-575		(SS)	
5	001-014459-235		(STL)	
5	001-014459-302	FOLLOWER	(BRZ)	7
5	181-178244-477			858
5	181-178244-374			845
5	181-178244-386			842
5	181-178244-370	PACKING		838
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	001-014457-575		(SS)	
5	001-014457-235		(STL)	
5	001-014457-302	LANTERN RING	(BRZ)	4
5	001-010899-575		(SS)	
5	001-010899-235		(STL)	
5	001-010899-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 1-7/8" PLUNGER )</b>				
REQ'D	Part No.	DESCRIPTION		ITEM
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
 "J"-STYLE PKG, 1-5/8" THRU 2-1/2" PLUNGER  
 217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.:

118593

SCALE:

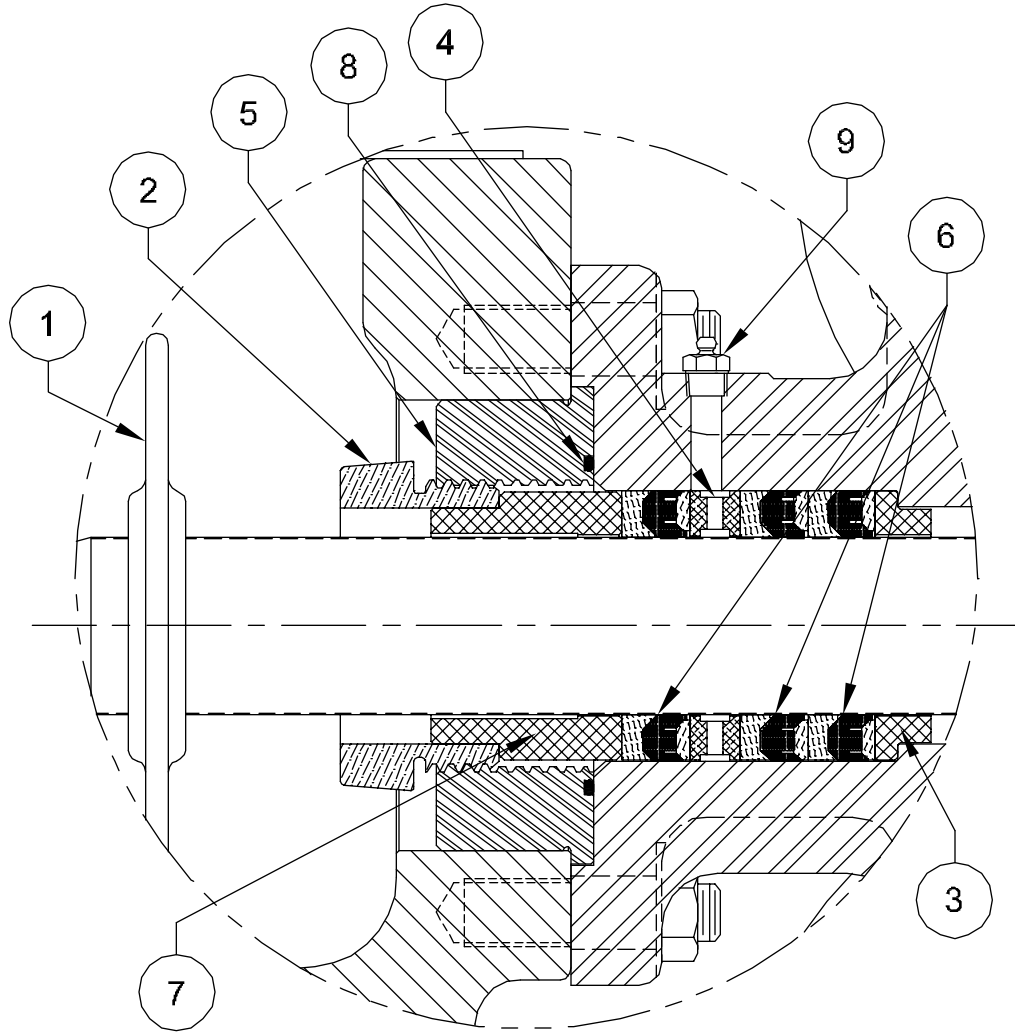
NONE

REV

A

SHT.:

3 OF 8



NOTE  
 1) FOR ALL " J " STYLE PACKING SEE DRAWING 118593,  
 SHEETS 1 THRU 8.

5	180-165000-220	LUBE FITTING	(STL)	9
5	110-000238-201	O-RING		8
5	001-010931-575		(SS)	
5	001-010931-235		(STL)	
5	001-010931-302	FOLLOWER	(BRZ)	7
5	181-200214-477		858	
5	181-200214-374		845	
5	181-200214-386		842	
5	181-200214-370	PACKING	838	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	001-010991-575		(SS)	
5	001-010991-235		(STL)	
5	001-010991-302	LANTERN RING	(BRZ)	4
5	001-010901-575		(SS)	
5	001-010901-235		(STL)	
5	001-010901-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 2" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL

50

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT

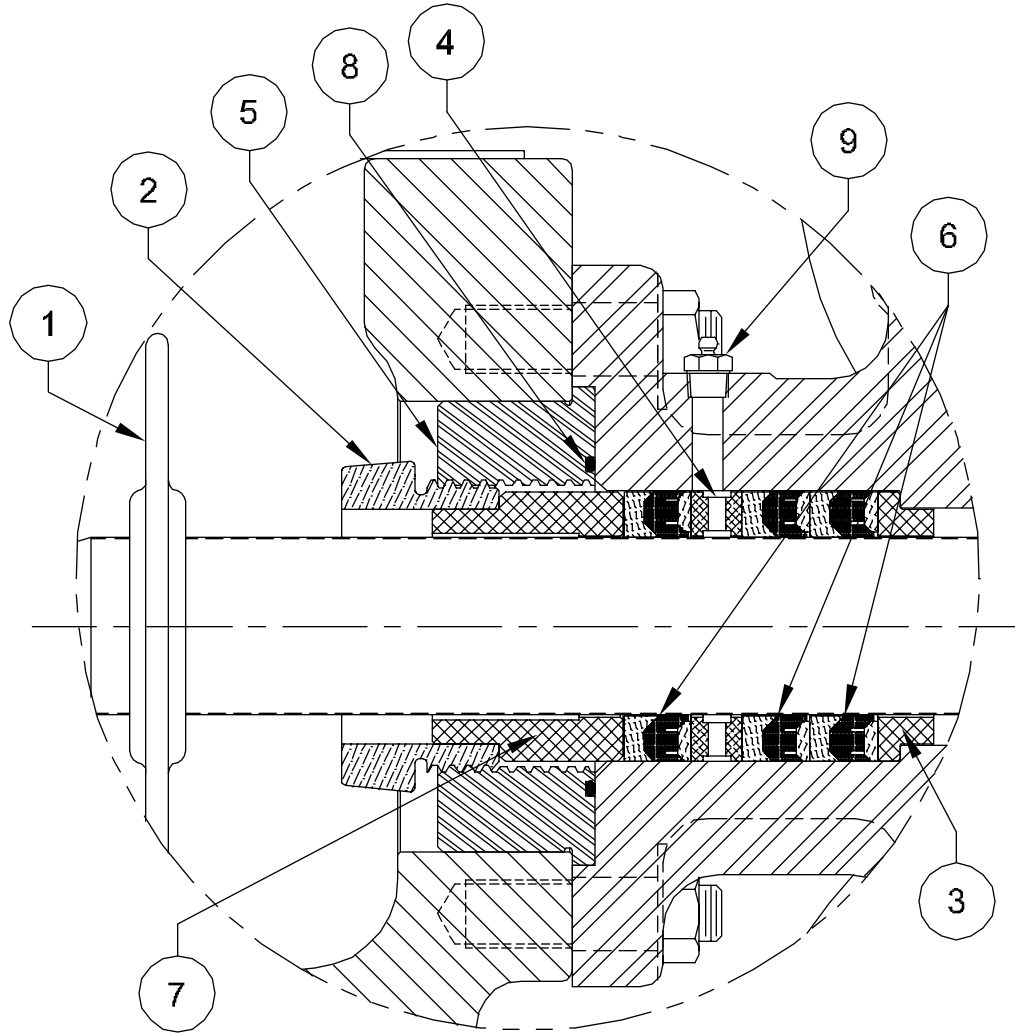
"J"-STYLE PKG, 1-5/8" THRU 2-1/2" PLUNGER  
 217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.: 118593

SCALE: NONE

REV A

SHT.: 4 OF 8



NOTE  
 1) FOR ALL " J " STYLE PACKING SEE DRAWING 118593,  
 SHEETS 1 THRU 8.

5	180-165002-220	LUBE FITTING	(STL)	9
5	110-000238-201	O-RING		8
5	001-014458-575		(SS)	
5	001-014458-235		(STL)	
5	001-014458-302	FOLLOWER	(BRZ)	7
5	181-218214-477		858	
5	181-218214-374		845	
5	181-218214-386		842	
5	181-218214-370	PACKING	838	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	001-014456-575		(SS)	
5	001-014456-235		(STL)	
5	001-014456-302	LANTERN RING	(BRZ)	4
5	001-010902-575		(SS)	
5	001-010902-235		(STL)	
5	001-010902-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 2-1/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

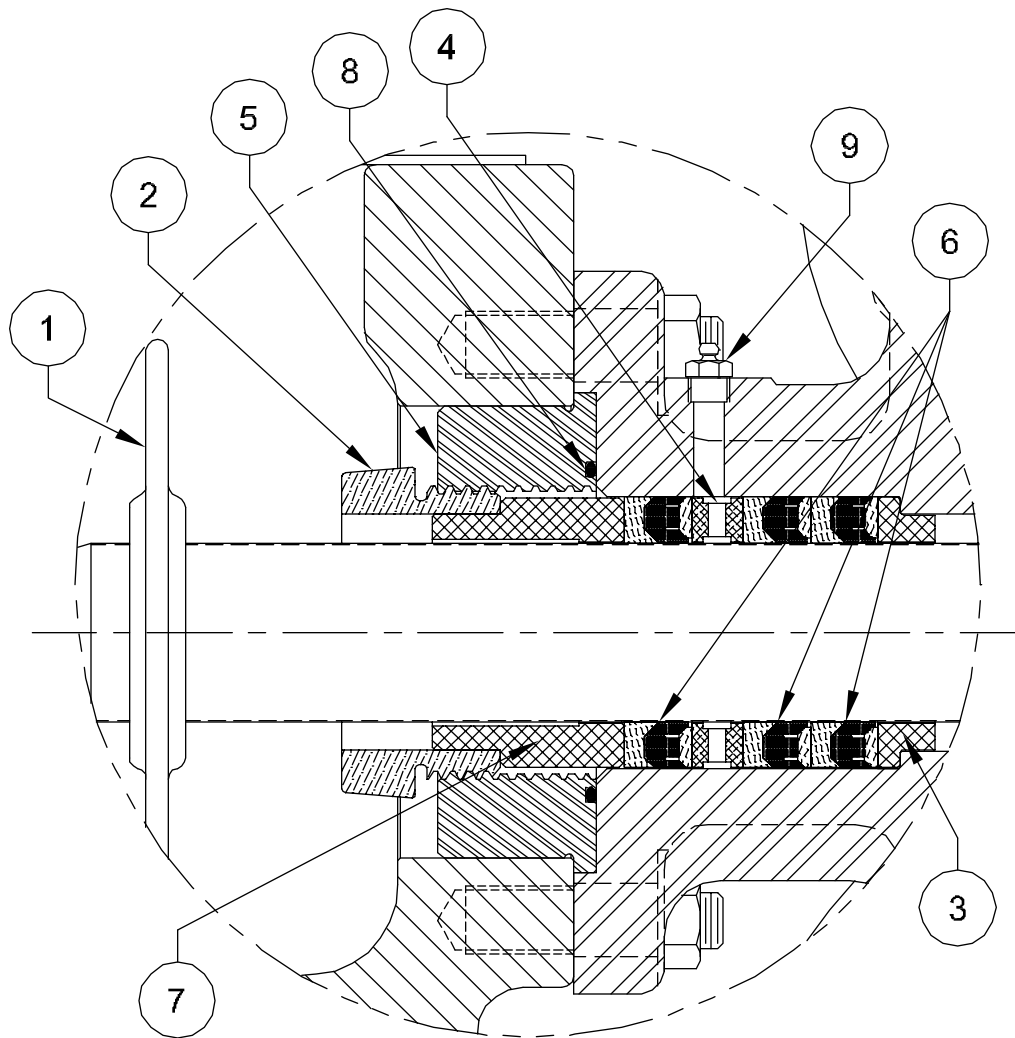
51



HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 "J"-STYLE PKG, 1-5/8" THRU 2-1/2" PLUNGER  
 217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.: 118593	SCALE: NONE	REV A	SHT.: 5 OF 8
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**NOTE**

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118593, SHEETS 1 THRU 8.

5	180-165000-220	LUBE FITTING	(STL)	9
5	110-000238-201	O-RING		8
5	001-007983-575		(SS)	
5	001-007983-235		(STL)	
5	001-007983-302	FOLLOWER	(BRZ)	7
5	181-214214-477		858	
5	181-214214-374		845	
5	181-214214-386		842	
5	181-214214-370	PACKING	838	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	001-010266-575		(SS)	
5	001-010266-235		(STL)	
5	001-010266-302	LANTERN RING	(BRZ)	4
5	001-007979-575		(SS)	
5	001-007979-235		(STL)	
5	001-007979-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 2-1/4" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM
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**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

52



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT

"J"-STYLE PKG, 1-5/8" THRU 2-1/2" PLUNGER  
217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.:

118593

SCALE:

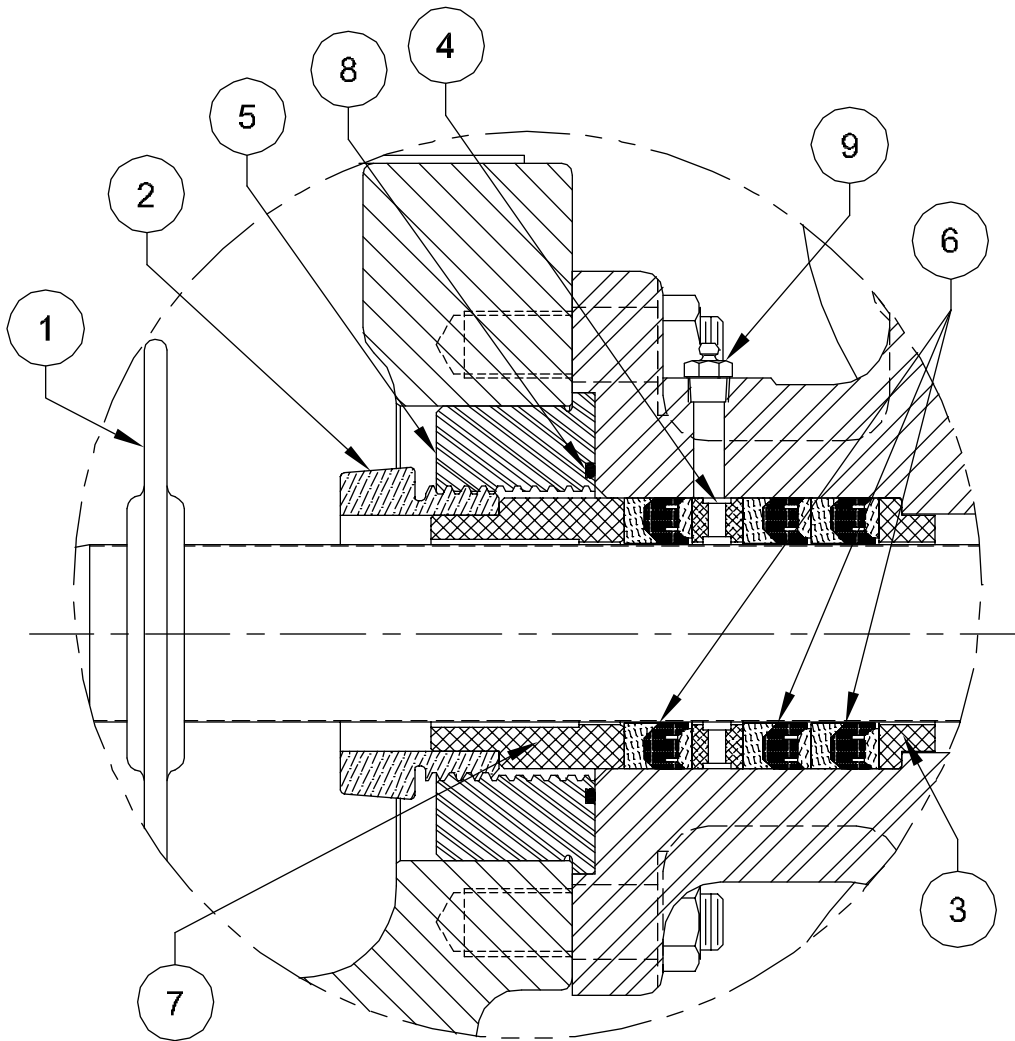
NONE

REV

A

SHT.:

6 of 8



NOTE  
1) FOR ALL " J " STYLE PACKING SEE DRAWING 118593,  
SHEETS 1 THRU 8.

5	180-165000-220	LUBE FITTING	(STL)	9
5	110-000238-201	O-RING		8
5	001-024393-575		(SS)	
5	001-024393-235		(STL)	
5	001-024393-302	FOLLOWER	(BRZ)	7
5	181-238258-477		858	
5	181-238258-374		845	
5	181-238258-386		842	
5	181-238258-370	PACKING	838	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	001-028072-575		(SS)	
5	001-028072-235		(STL)	
5	001-028072-302	LANTERN RING	(BRZ)	4
5	001-024394-575		(SS)	
5	001-024394-235		(STL)	
5	001-024394-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 2-3/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

53

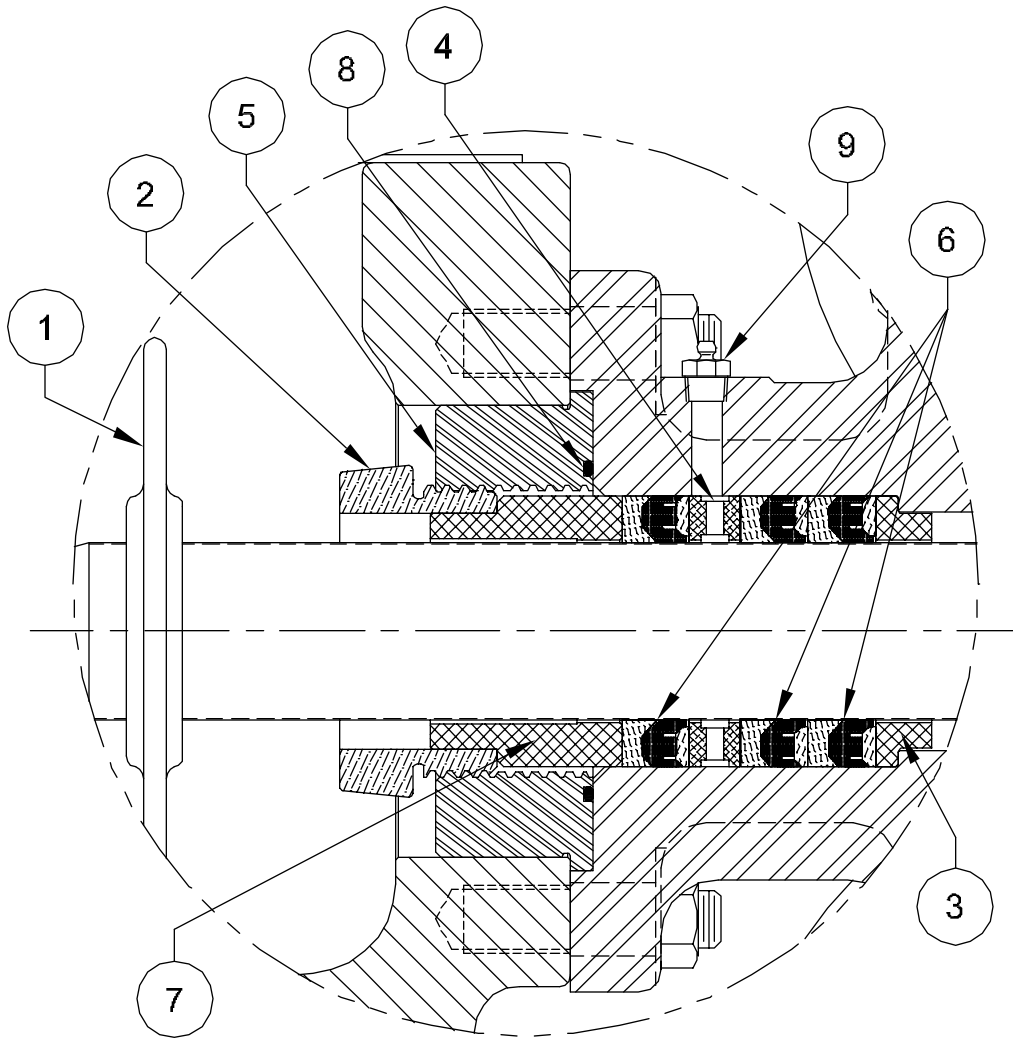


HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
ASSEMBLY, PLUNGER KIT  
"J"-STYLE PKG, 1-5/8" THRU 2-1/2" PLUNGER  
217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.: 118593	SCALE: NONE	REV A	SHT.: 7 OF 8
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**NOTE**

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118593, SHEETS 1 THRU 8.

5	180-165000-220	LUBE FITTING	(STL)	9
5	110-000238-201	O-RING		8
5	001-008745-575		(SS)	
5	001-008745-235		(STL)	
5	001-008745-302	FOLLOWER	(BRZ)	7
5	181-212178-477		858	
5	181-212178-374		845	
5	181-212178-386		842	
5	181-212178-370	PACKING	838	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	001-010904-575		(SS)	
5	001-010904-235		(STL)	
5	001-010904-302	LANTERN RING	(BRZ)	4
5	001-025918-575		(SS)	
5	001-025918-235		(STL)	
5	001-025918-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 2-1/2" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

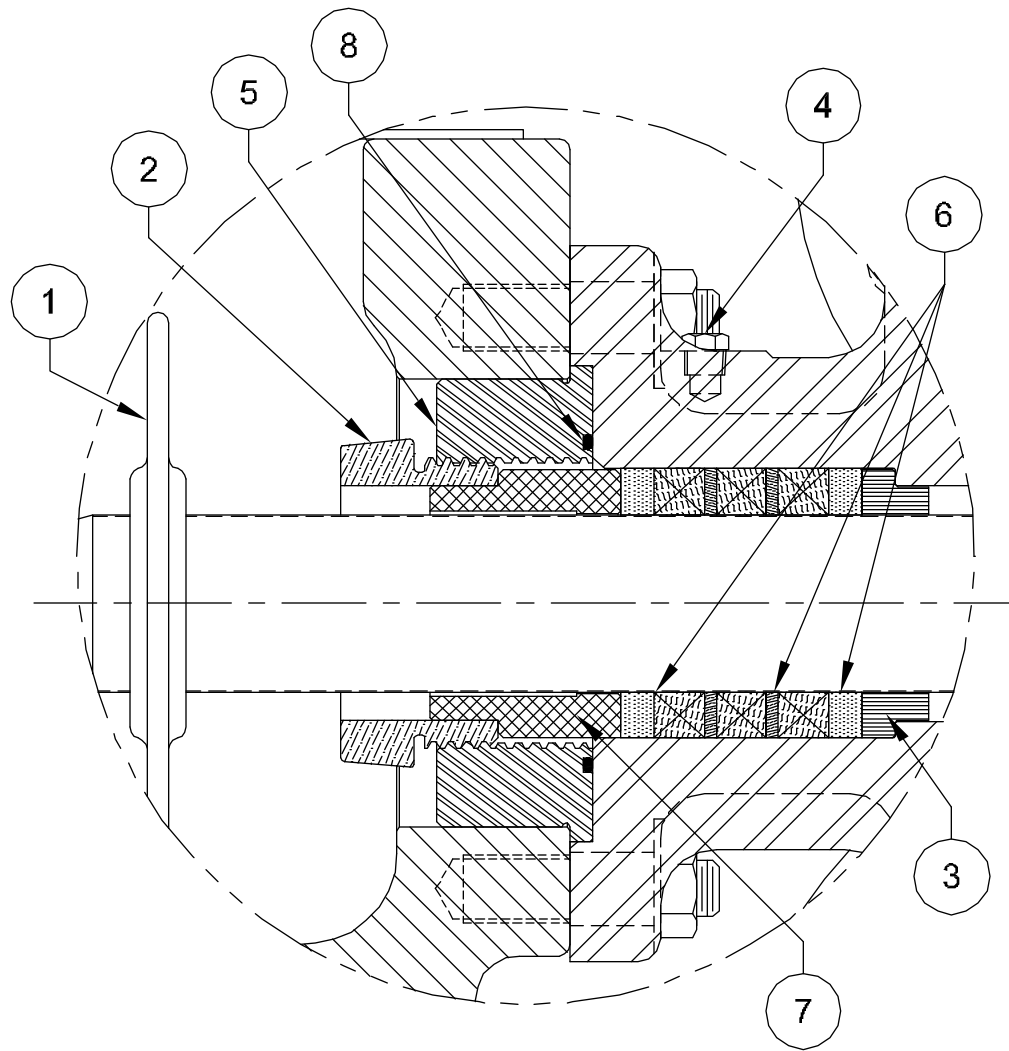
<\*> COATED STAINLESS STEEL



HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 "J"-STYLE PKG, 1-5/8" THRU 2-1/2" PLUNGER  
 217Q-4M, 163Q-4M ( HP200AM, HP165AM )

DWG No.:	118593	SCALE:	NONE	REV:	A	SHT.:	8 OF 8
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NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118594,  
 SHEETS 1 THRU 8.

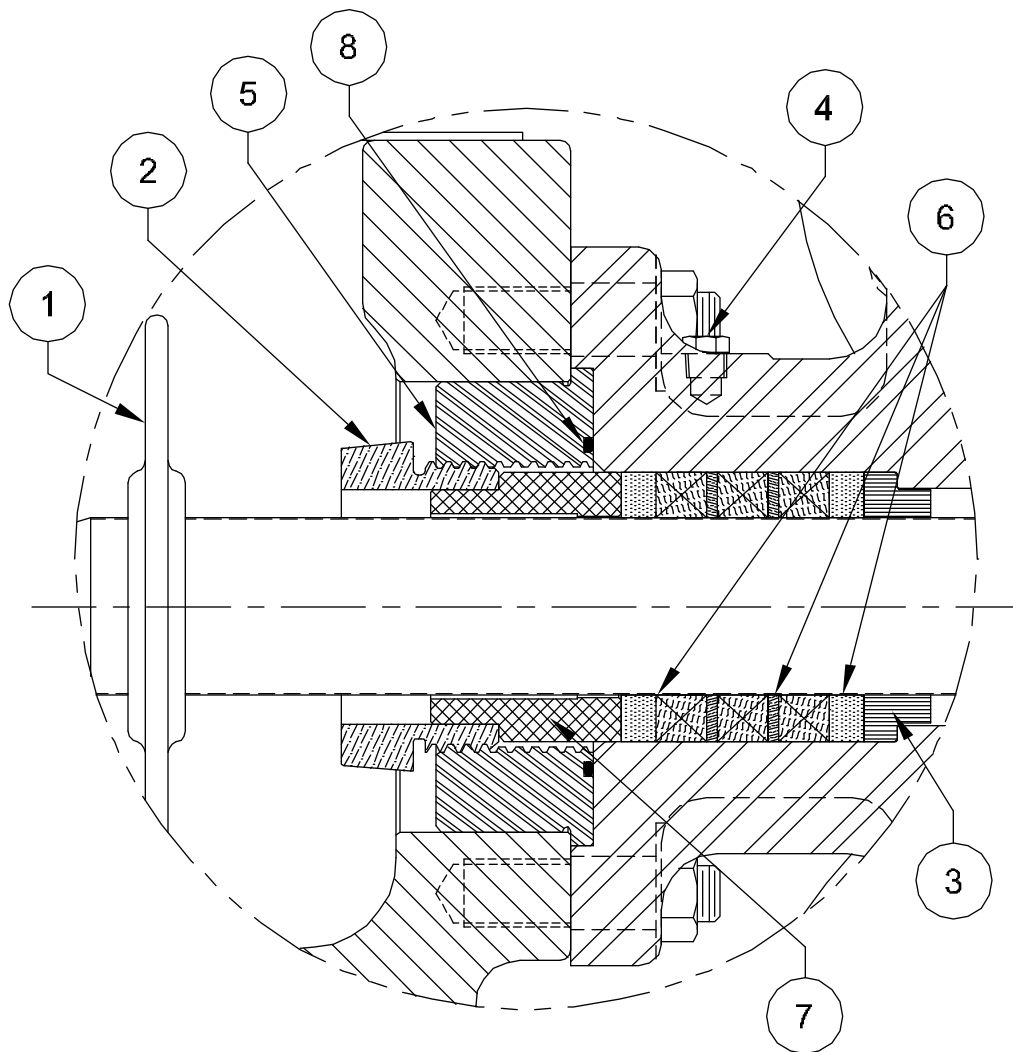
5	110-000238-201	O-RING		8
5	001-023661-575		(SS)	
5	001-023661-235		(STL)	
5	001-023661-302	FOLLOWER	(BRZ)	7
5	288-158234-458		8921-K	
5	288-158234-339		249	
5	288-158234-337		241	
5	288-158234-395	PACKING		6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-023662-575		(SS)	
5	001-023662-235		(STL)	
5	001-023662-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 1-5/8" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

55

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, PLUNGER KIT BRAID STYLE PKG, 1-5/8" THRU 2-1/2" PLGR 217Q-4M, 163Q-4M ( HP200AM , HP165AM )			
DWG No.:	118594	SCALE:	NONE
REV:	A	SHIT.:	1 OF 8



NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118594,  
 SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-010933-575		(SS)	
5	001-010933-235		(STL)	
5	001-010933-302	FOLLOWER	(BRZ)	7
5	288-134258-458		8921-K	
5	288-134258-339		249	
5	288-134258-337		241	
5	288-134258-395	PACKING	238	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010897-575		(SS)	
5	001-010897-235		(STL)	
5	001-010897-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 1-3/4" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM
BILL OF MATERIAL				

<\*> COATED STAINLESS STEEL

56

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
 BRAID STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
 217Q-4M, 163Q-4M ( HP200AM , HP165AM )

DWG No.:

118594

SCALE:

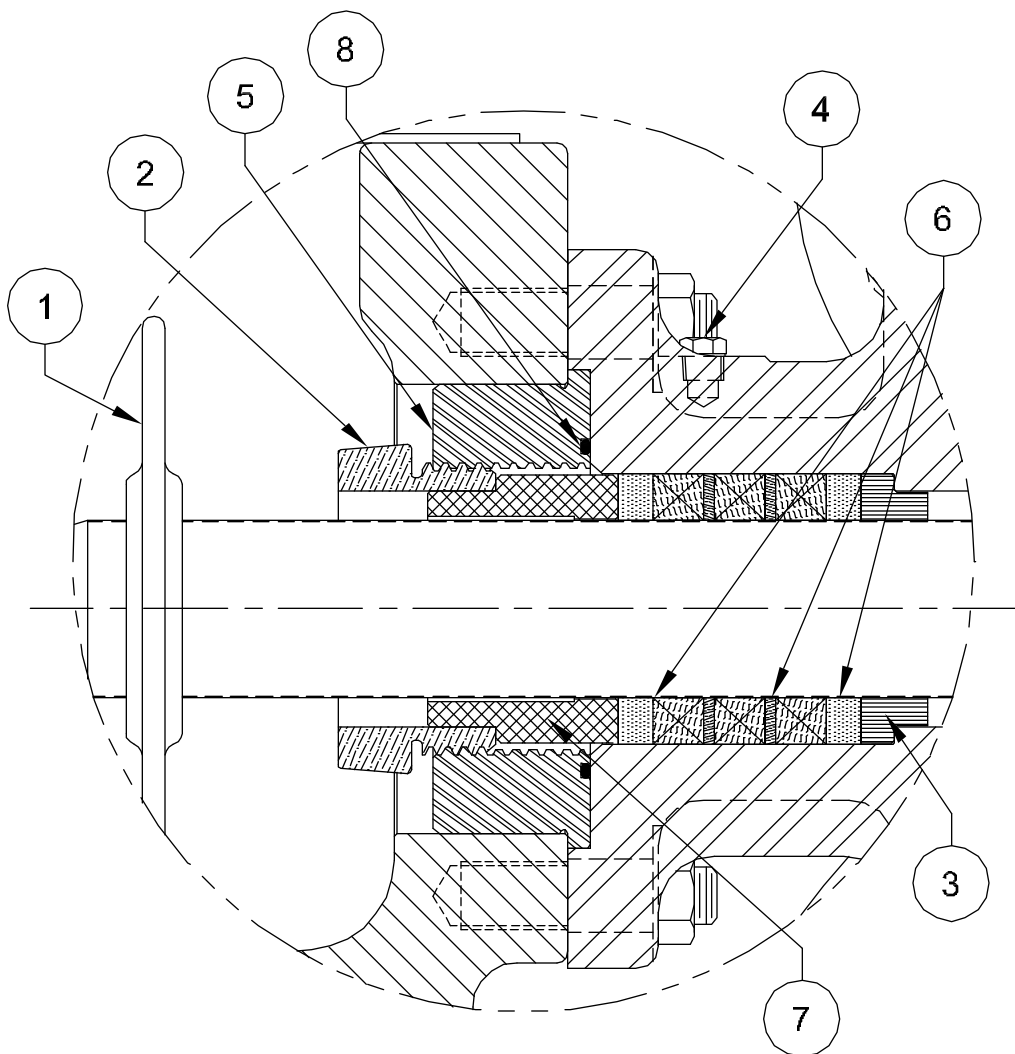
NONE

REV

A

SHT.:

2 OF 8



NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118594,  
 SHEETS 1 THRU 8.

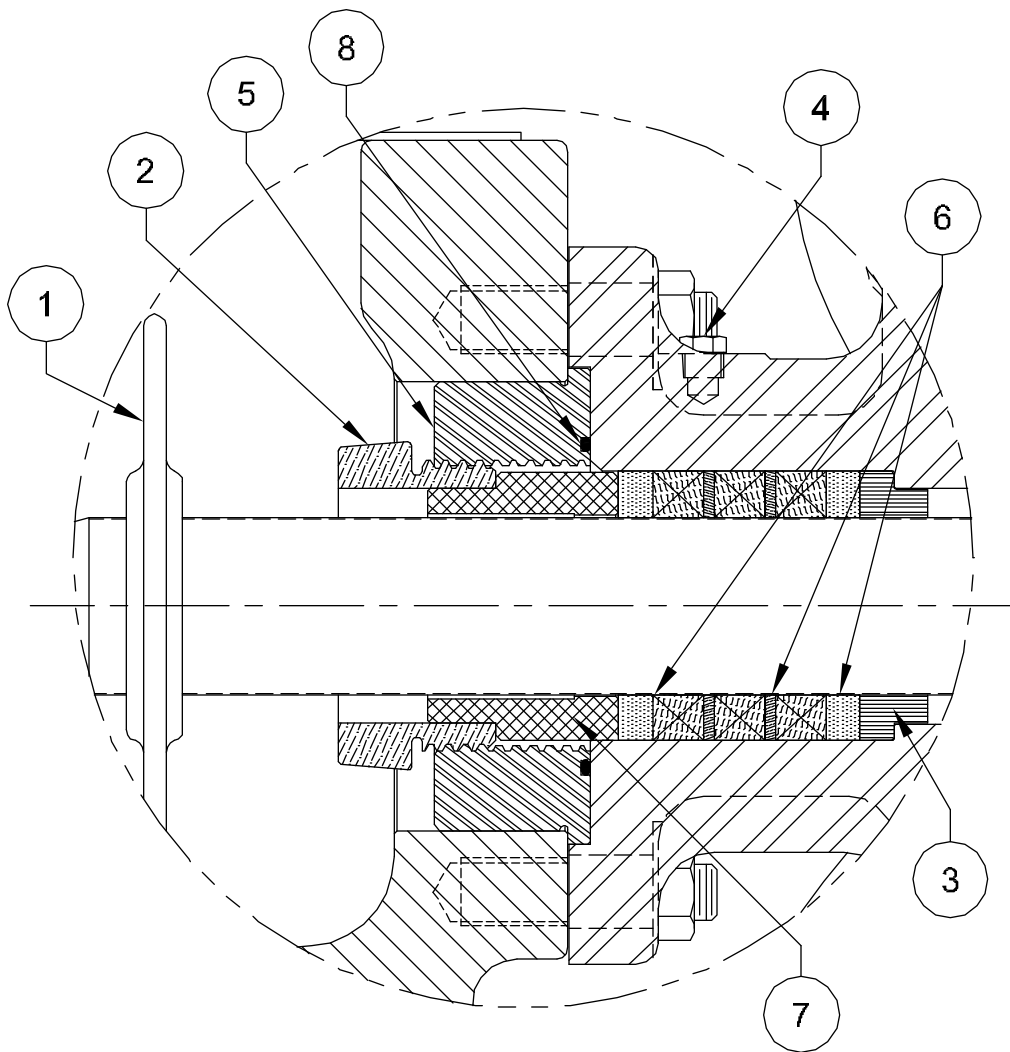
5	110-000238-201	O-RING		8
5	001-014459-575		(SS)	
5	001-014459-235		(STL)	
5	001-014459-302	FOLLOWER	(BRZ)	7
5	288-178234-458		8921-K	
5	288-178234-339		249	
5	288-178234-337		241	
5	288-178234-395	PACKING	238	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010899-575		(SS)	
5	001-010899-235		(STL)	
5	001-010899-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 1-7/8" PLUNGER )</b>				
REQ'D	Part No.	DESCRIPTION		ITEM
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A.      ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
 BRAID STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
 217Q-4M, 163Q-4M ( HP200AM , HP165AM )

DWG No.:	118594	SCALE:	NONE	REV	A	SHT.:	3	OF	8
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**NOTE**

1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118594, SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-010931-575		(SS)	
5	001-010931-235		(STL)	
5	001-010931-302	FOLLOWER	(BRZ)	7
5	288-200258-458		8921-K	
5	288-200258-339		249	
5	288-200258-337		241	
5	288-200258-395	PACKING	238	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010901-575		(SS)	
5	001-010901-235		(STL)	
5	001-010901-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 2" PLUNGER )</b>				
<b>DDA</b>	<b>Part No.</b>	<b>DESCRIPTION</b>		<b>ITEM</b>
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL



HOUSTON, TEXAS, U.S.A.

ENGINEERING. TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
 BRAID STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
 217Q-4M, 163Q-4M ( HP200AM , HP165AM )

DWG No.:

118594

SCALE:

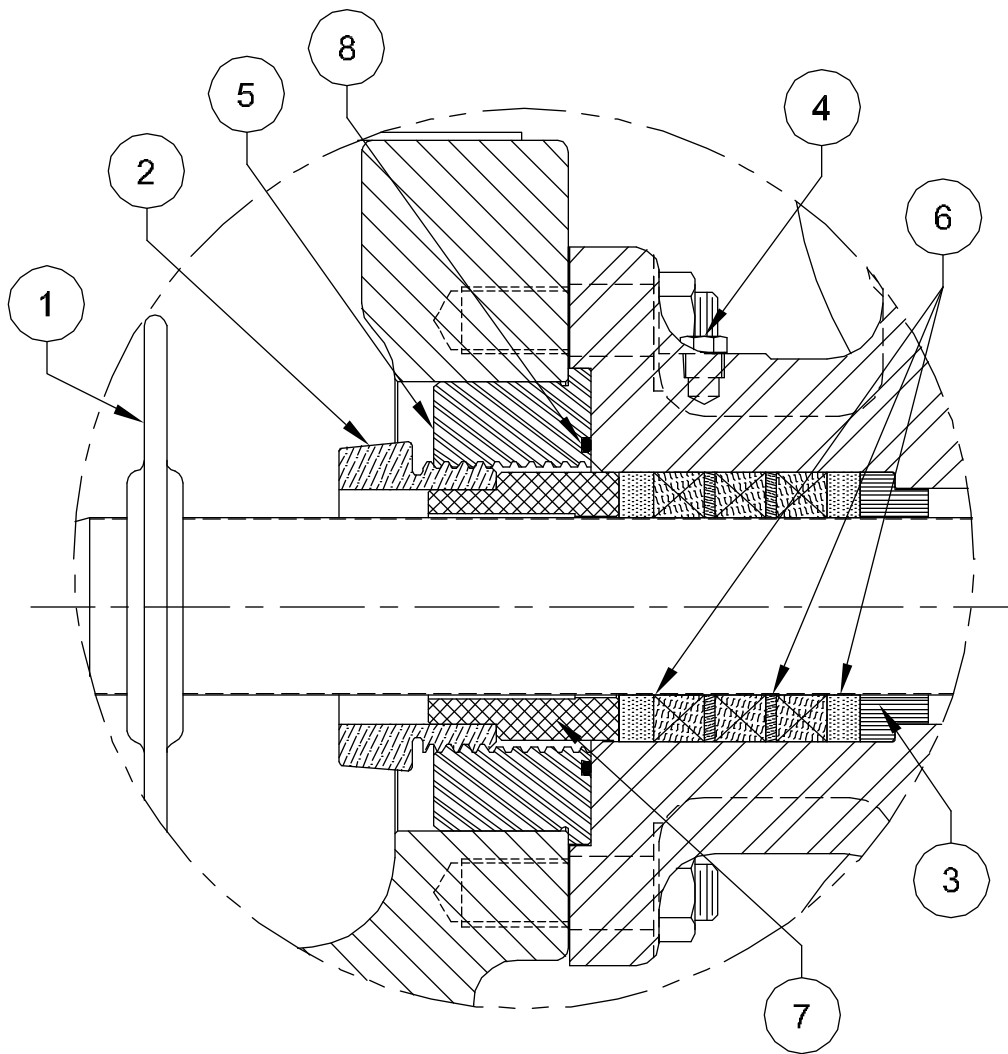
NONE

REV

A

SHT.:

4 OF 8



**NOTE**

1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118594, SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-014458-575		(SS)	
5	001-014458-235		(STL)	
5	001-014458-302	FOLLOWER	(BRZ)	7
5	288-218234-458		8921-K	
5	288-218234-339		249	
5	288-218234-337		241	
5	288-218234-395	PACKING	238	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010902-575		(SS)	
5	001-010902-235		(STL)	
5	001-010902-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 2-1/8" PLUNGER )				
DDA	Part No.	DESCRIPTION		ITEM
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
BRAID STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
217Q-4M, 163Q-4M ( HP200AM , HP165AM )

DWG No.:

118594

SCALE:

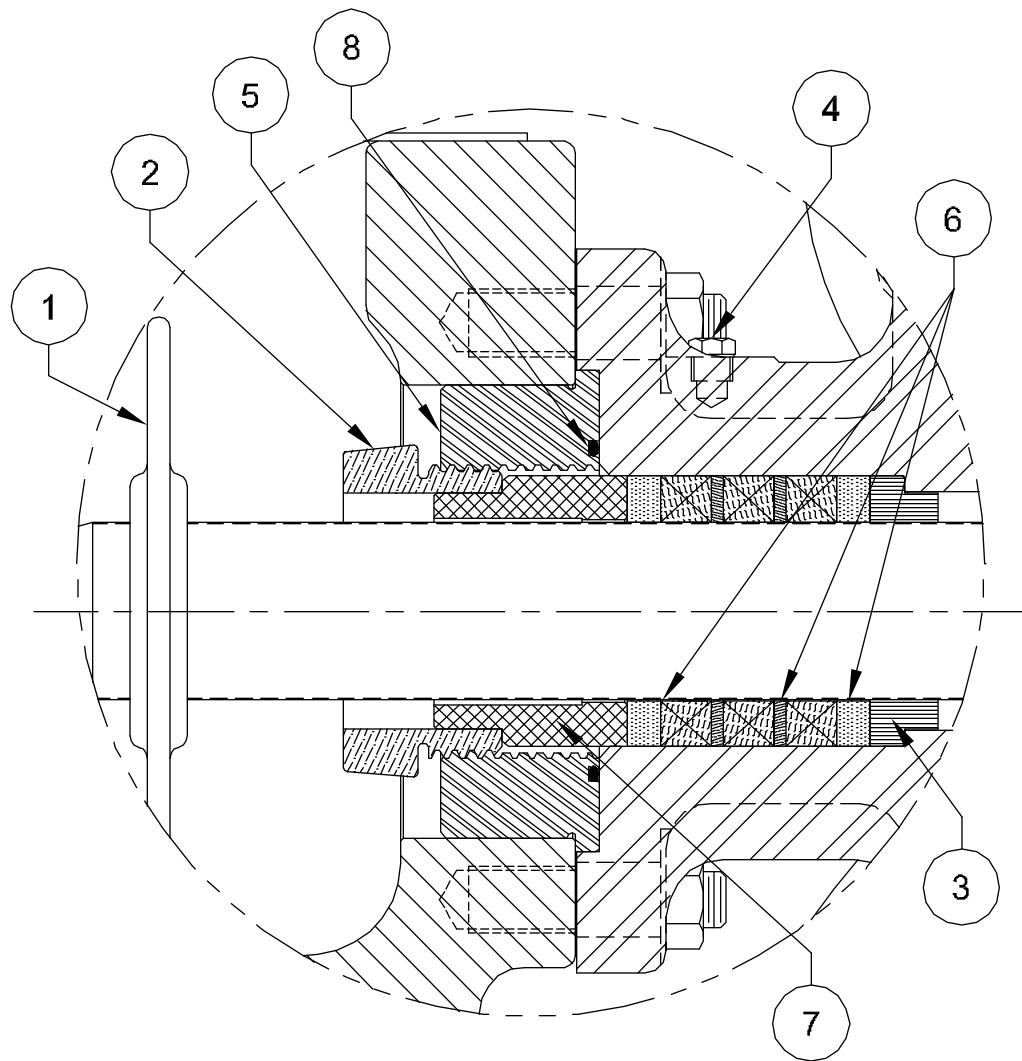
NONE

REV

A

SHT.:

5 OF 8



**NOTE**

1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118594, SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-007983-575		(SS)	
5	001-007983-235		(STL)	
5	001-007983-302	FOLLOWER	(BRZ)	7
5	288-214234-458		8921-K	
5	288-214234-339		249	
5	288-214234-337		241	
5	288-214234-395	PACKING	238	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-007979-575		(SS)	
5	001-007979-235		(STL)	
5	001-007979-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 2-1/4" PLUNGER )</b>				
<b>DDA</b>	<b>Part No.</b>	<b>DESCRIPTION</b>		<b>ITEM</b>
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL

60



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT

BRAID STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
217Q-4M, 163Q-4M ( HP200AM , HP165AM )

DWG No.:

118594

SCALE:

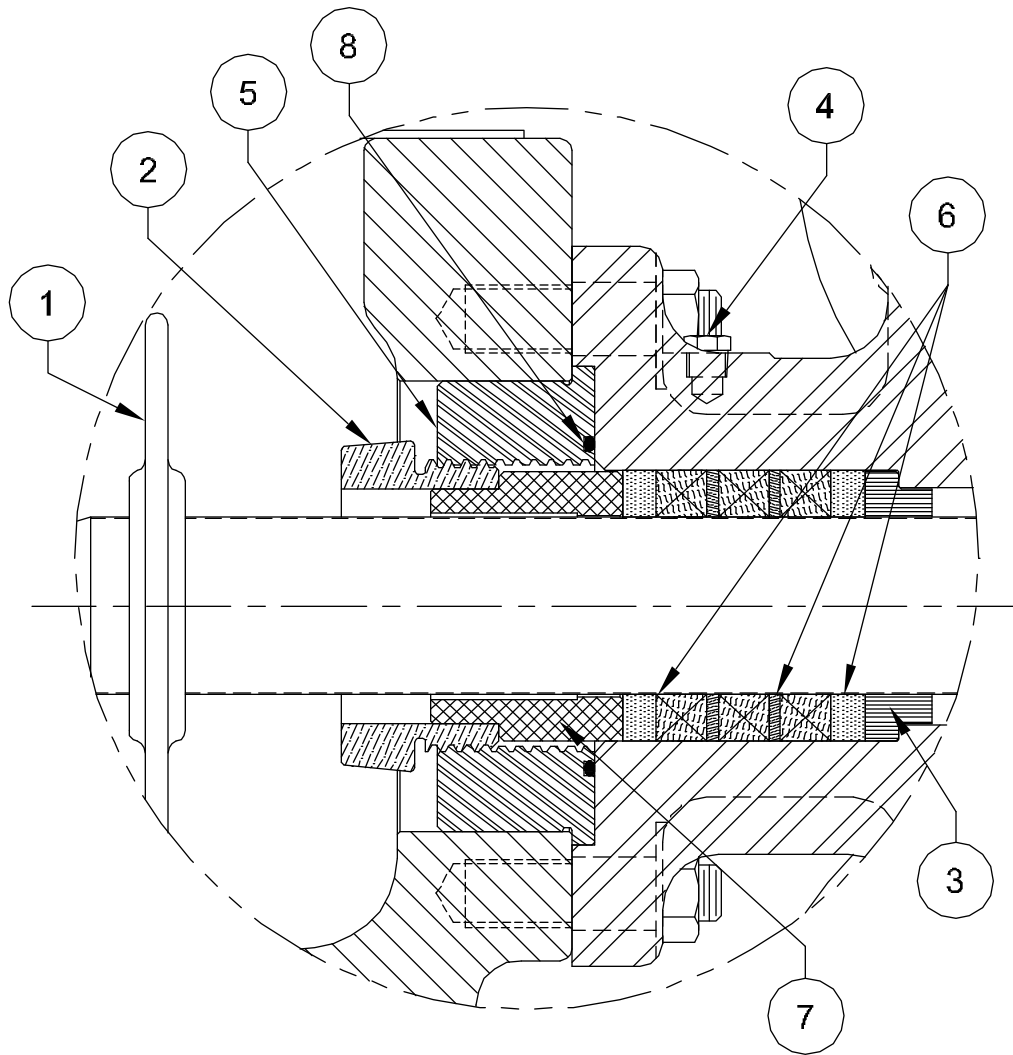
NONE

REV

A

SHT.:

6 OF 8



NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118594,  
 SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-024393-575		(SS)	
5	001-024393-235		(STL)	
5	001-024393-302	FOLLOWER	(BRZ)	7
5	288-238234-458		8921-K	
5	288-238234-339		249	
5	288-238234-337		241	
5	288-238234-395	PACKING	238	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-024394-575		(SS)	
5	001-024394-235		(STL)	
5	001-024394-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 2-3/8" PLUNGER )				
DDA	Part No.	DESCRIPTION		ITEM

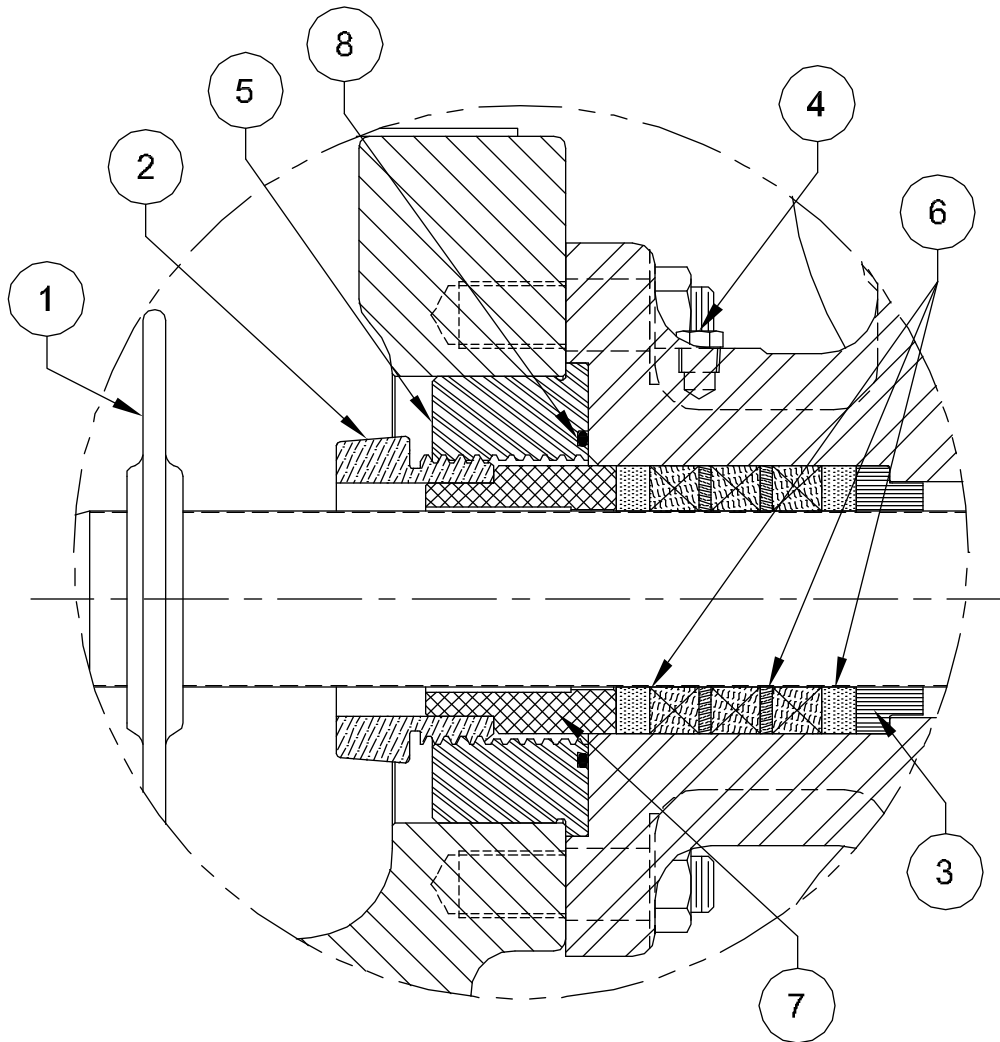
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

61

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, PLUNGER KIT BRAID STYLE PKG, 1-5/8" - 2-1/2" PLGR 217Q-4M, 163Q-4M ( HP200AM , HP165AM )			
DWG No.:	SCALE:	REV	SHT.:
118594	NONE	A	7 OF 8





**NOTE**

1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118594, SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-008745-575		(SS)	
5	001-008745-235		(STL)	
5	001-008745-302	FOLLOWER	(BRZ)	7
5	288-212234-458		8921-K	
5	288-212234-339		249	
5	288-212234-337		241	
5	288-212234-395	PACKING	238	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-025918-575		(SS)	
5	001-025918-235		(STL)	
5	001-025918-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 2-1/2" PLUNGER )</b>				
<b>DDA</b>	<b>Part No.</b>	<b>DESCRIPTION</b>	<b>ITEM</b>	
<b>BILL OF MATERIAL</b>				

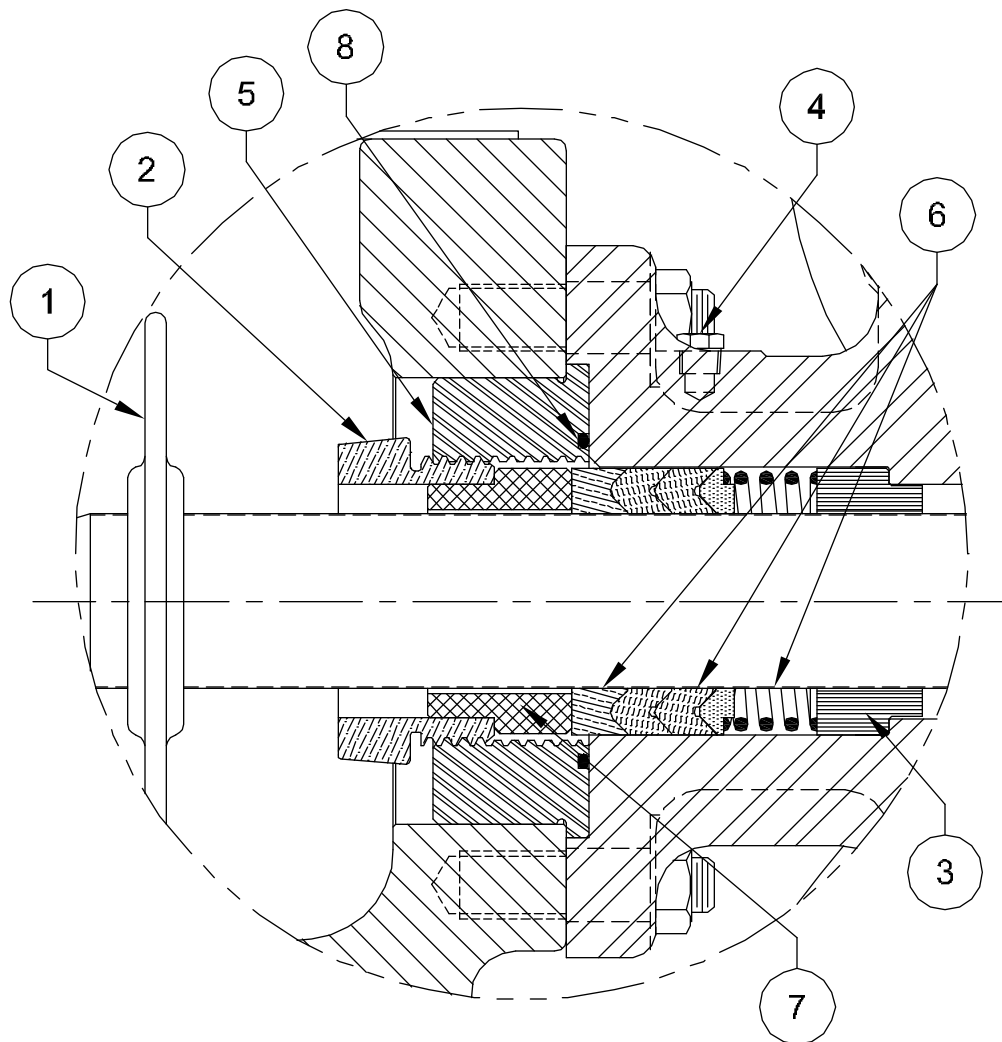
<\*> COATED STAINLESS STEEL

62

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 BRAID STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
 217Q-4M, 163Q-4M ( HP200AM , HP165AM )

DWG No.: 118594 SCALE: NONE REV A SHT.: 8 OF 8



**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118595, SHEETS 1 THRU 8.

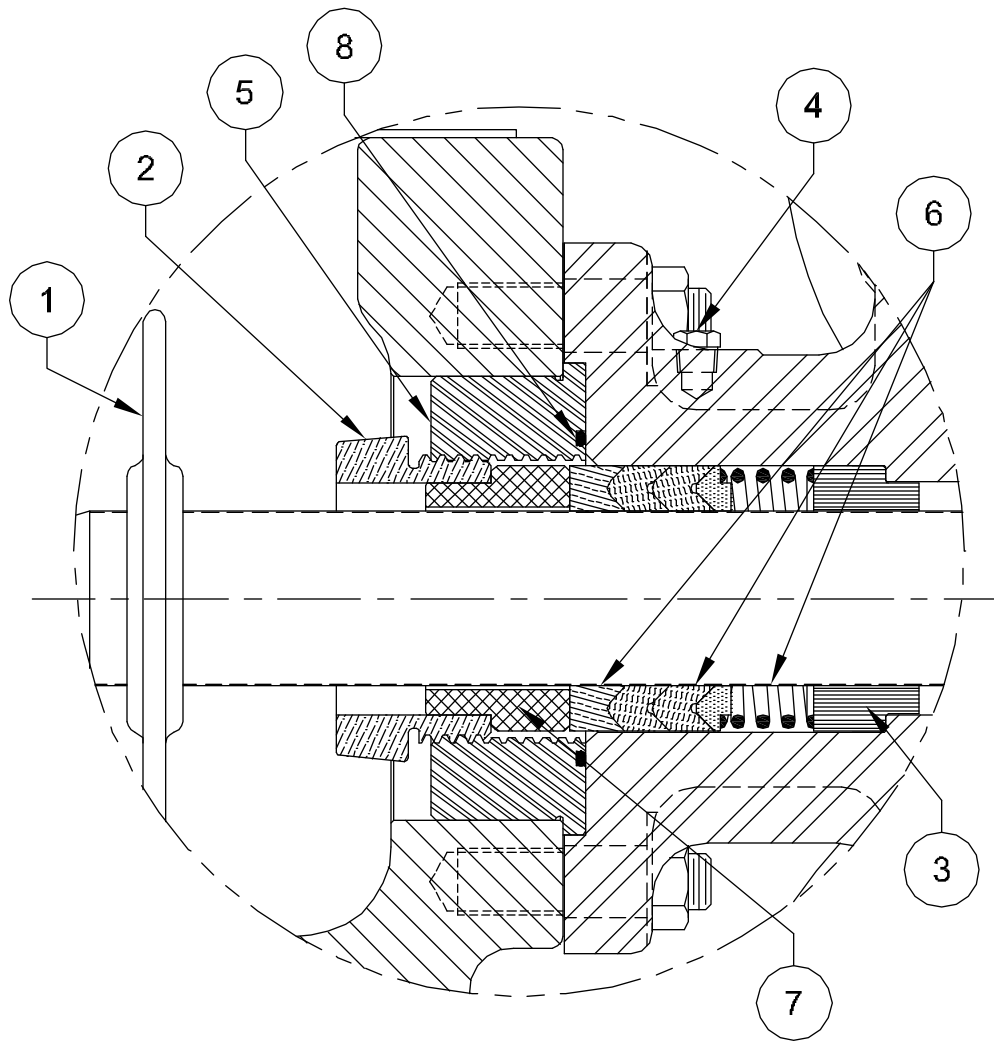
5	110-000238-201	O-RING		8
5	001-023661-575		(SS)	
5	001-023661-235		(STL)	
5	001-023661-302	FOLLOWER	(BRZ)	7
5	428-158212-473		1043-4	
5	428-158212-340	PACKING	1068-4	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-023662-575		(SS)	
5	001-023662-235		(STL)	
5	001-023662-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 1-5/8" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

63

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, PLUNGER KIT "SSF-4" STYLE PKG, 1-5/8" THRU 2-1/2" PLGR 217Q-4M, 163Q-4M ( HP200AM , HP165AM )			
DWG No.:	SCALE:	REV:	SHT.:
118595	NONE	A	1 OF 8



**NOTE**

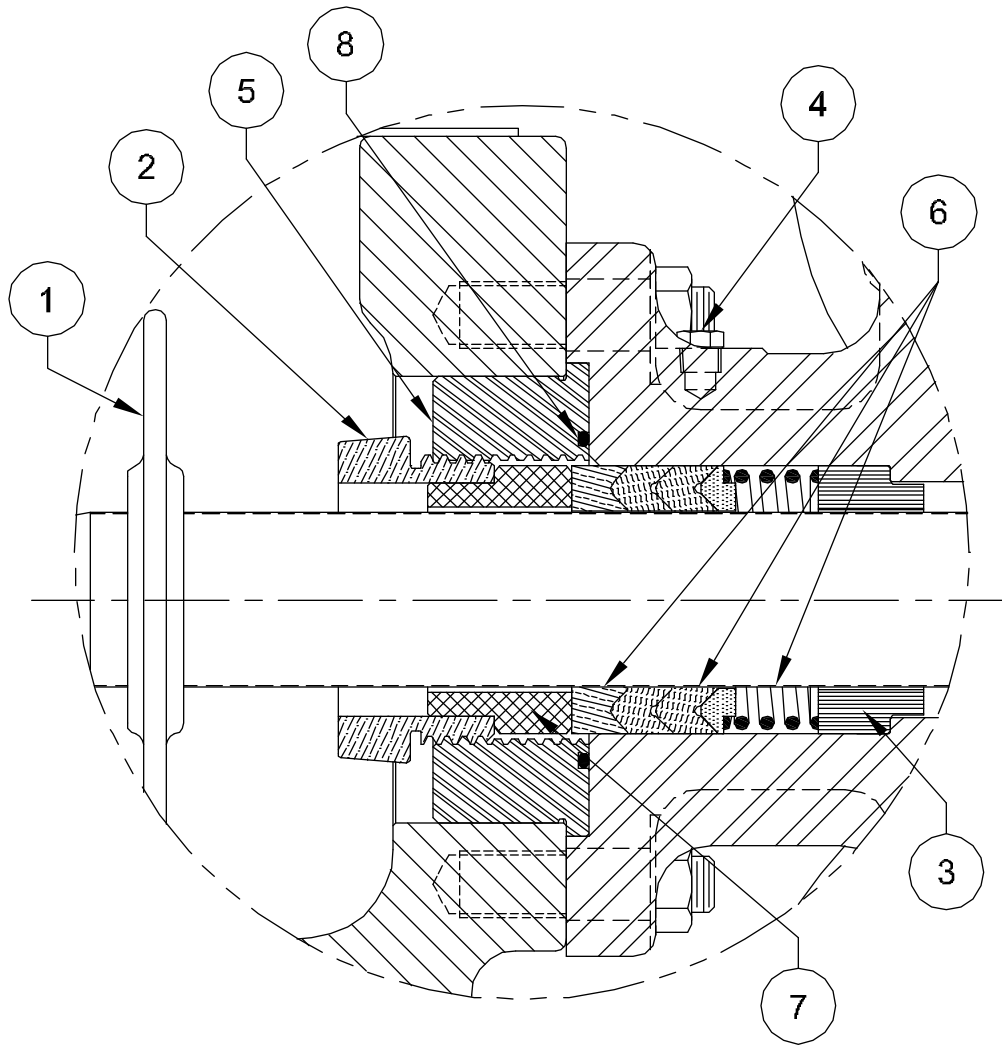
1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118595, SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-010933-575			
5	001-010933-235		(STL)	
5	001-010933-302	FOLLOWER	(BRZ)	7
5	428-134212-473		1043-4	
5	428-134212-340	PACKING	1068-4	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010897-575		(SS)	
5	001-010897-235		(STL)	
5	001-010897-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 1-3/4" PLUNGER )</b>				
<b>REQ'D</b>	<b>Part No.</b>	<b>DESCRIPTION</b>		<b>ITEM</b>
<b>BILL OF MATERIAL</b>				

<\*> COATES STAINLESS STEEL

64

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, PLUNGER KIT "SSF-4" STYLE PKG, 1-5/8" THRU 2-1/2" PLGR 217Q-4M, 163Q-4M ( HP200AM , HP165AM )			
DWC No.:	SCALE:	REV	SHT.:
118595	NONE	A	2 OF 8



**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118595, SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-014459-575		(SS)	
5	001-014459-235		(STL)	
5	001-014459-302	FOLLOWER	(BRZ)	7
5	428-178212-473		1043-4	
5	428-178212-340	PACKING	1068-4	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010899-575		(SS)	
5	001-010899-235		(STL)	
5	001-010899-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 1-7/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM
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**BILL OF MATERIAL**

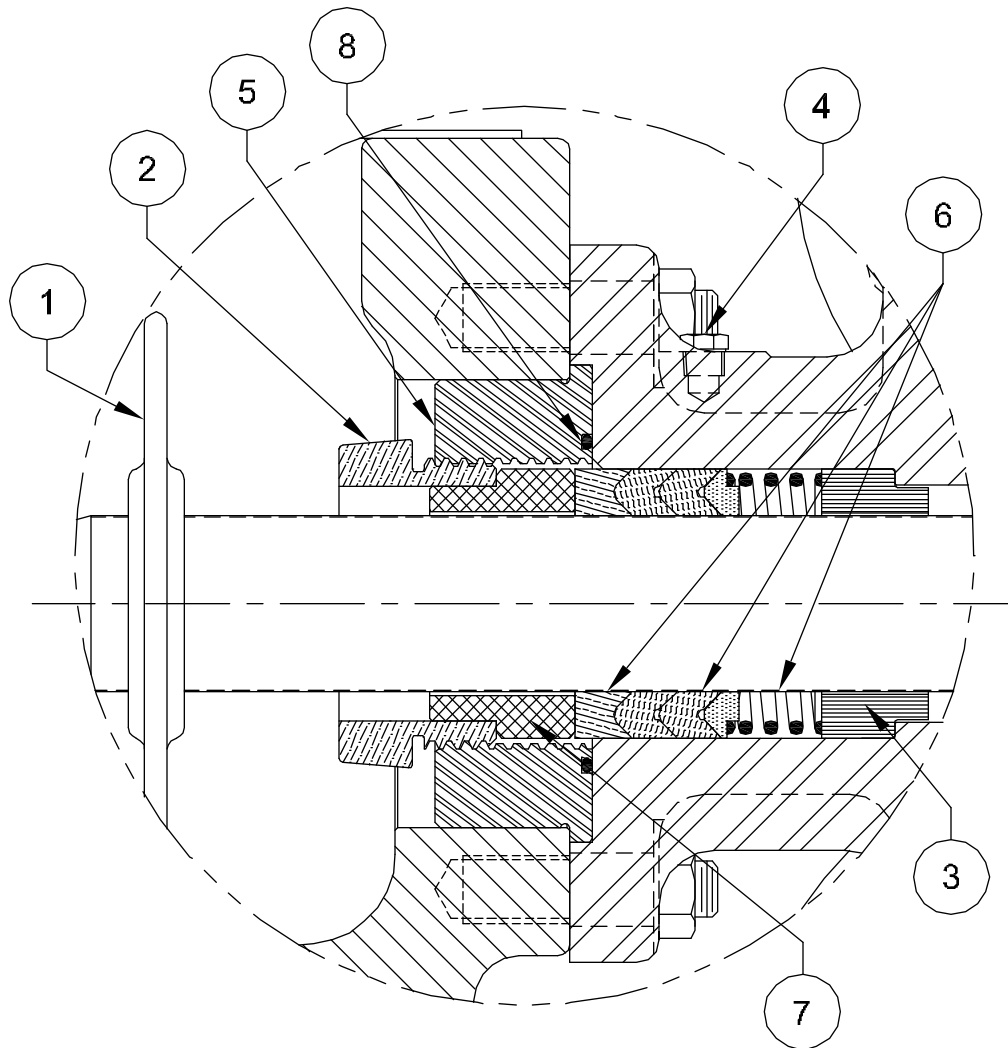
<\*> COATED STAINLESS STEEL

65

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 "SSF-4" STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
 217Q-4M, 163Q-4M ( HP200AM , HP165AM )

DWG No.: 118595 SCALE: NONE REV A SHT.: 3 OF 8



NOTE  
 1) FOR ALL "SSF-4" STYLE PACKING SEE DRAWING 118595,  
 SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-010931-575		(SS)	
5	001-010931-235		(STL)	
5	001-010931-302	FOLLOWER	(BRZ)	7
5	428-200238-473		1043-4	
5	428-200238-340	PACKING	1068-4	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010901-575		(SS)	
5	001-010901-235		(STL)	
5	001-010901-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 2" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

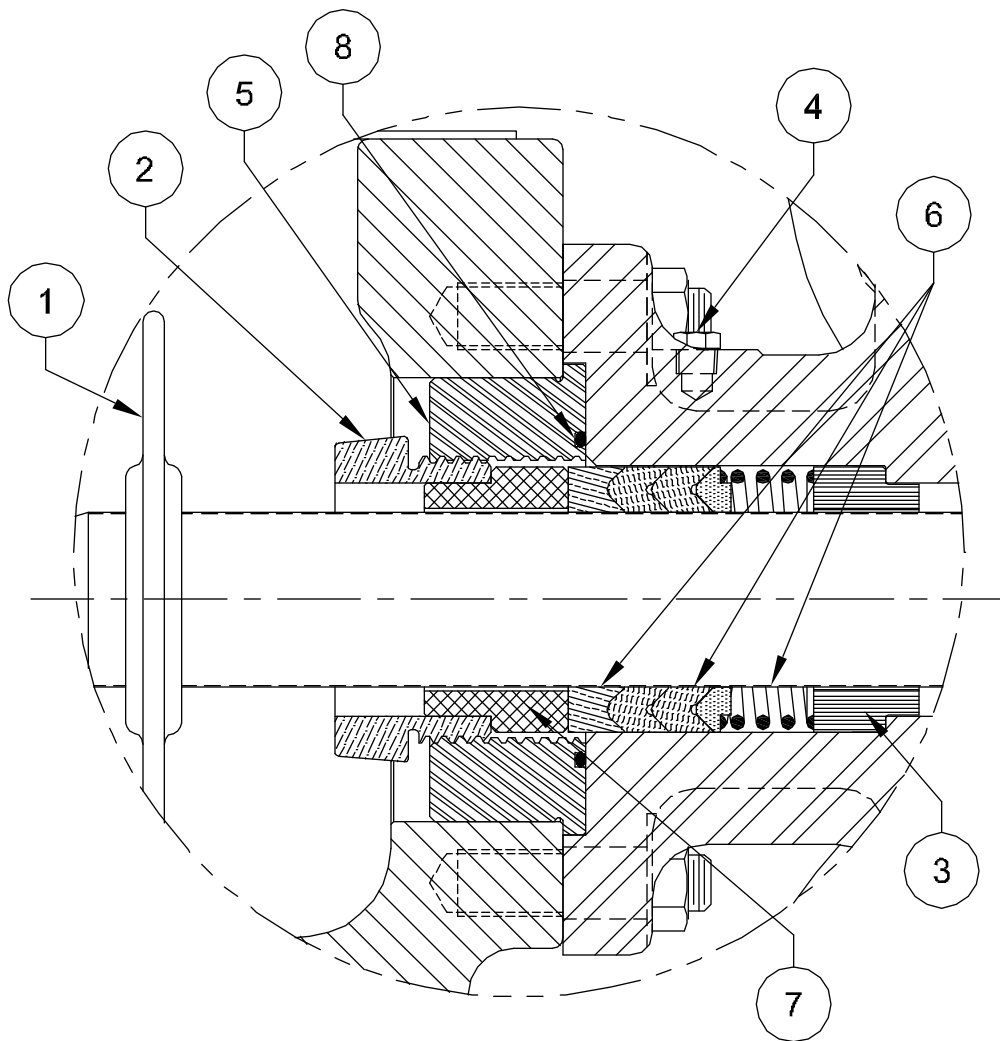
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
**"SSF-4" STYLE PKG, 1-5/8" THRU 2-1/2" PLGR**  
**217Q-4M, 163Q-4M ( HP200AM , HP165AM )**

DWG No.: 118595	SCALE: NONE	REV A	SHT.: 4 OF 8
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**NOTE**

1) FOR ALL "SSF-4" STYLE PACKING SEE DRAWING 118595, SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-014458-575		(SS)	
5	001-014458-235		(STL)	
5	001-014458-302	FOLLOWER	(BRZ)	7
5	428-218212-473		1043-4	
5	428-218212-340	PACKING	1068-4	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010902-575		(SS)	
5	001-010902-235		(STL)	
5	001-010902-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 2-1/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM
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**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

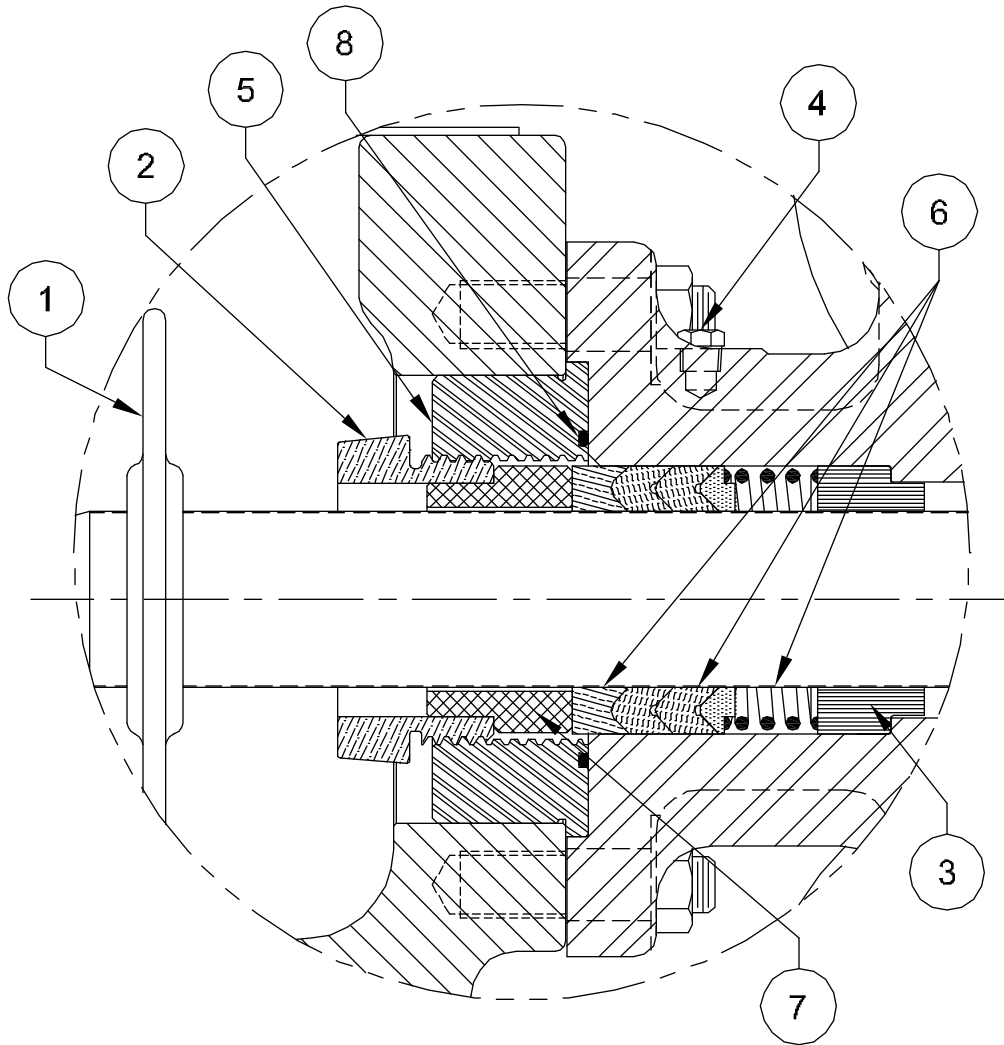
67



HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 "SSF-4" STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
 217Q-4M, 163Q-4M ( HP200AM , HP165AM )

DWG No.:	118595	SCALE:	NONE	REV:	A	SHT.:	5	OF	8
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**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118595, SHEETS 1 THRU 8.

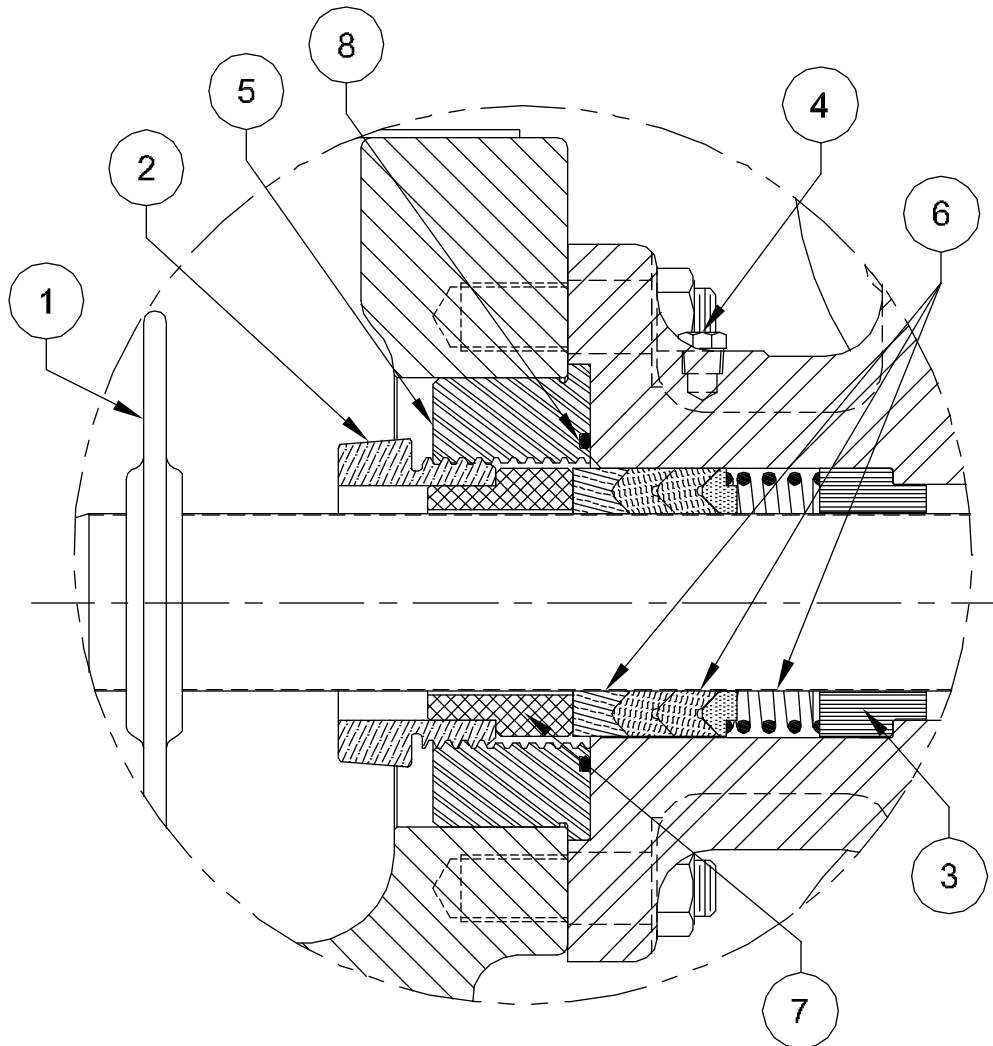
5	110-000238-201	O-RING		8
5	001-007983-575		(SS)	
5	001-007983-235		(STL)	
5	001-007983-302	FOLLOWER	(BRZ)	7
5	428-214212-473		1043-4	
5	428-214212-340	PACKING	1068-4	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-007979-575		(SS)	
5	001-007979-235		(STL)	
5	001-007979-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 2-1/4" PLUNGER )</b>				
REQ'D	Part No.	DESCRIPTION		ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

68

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, PLUNGER KIT "SSF-4" STYLE PKG, 1-5/8" THRU 2-1/2" PLGR 217Q-4M, 163Q-4M ( HP200AM , HP165AM )			
DWG No.:	118595	SCALE:	NONE
REV:	A	SHT.:	6 OF 8



NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118595,  
 SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-024393-575		(SS)	
5	001-024393-235		(STL)	
5	001-024393-302	FOLLOWER	(BRZ)	7
5	428-238212-473		1043-4	
5	428-238212-340	PACKING	1068-4	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-024394-575		(SS)	
5	001-024394-235		(STL)	
5	001-024394-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 2-3/8" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

69

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT

"SSF-4" STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
 217Q-4M, 163Q-4M ( HP200AM , HP165AM )

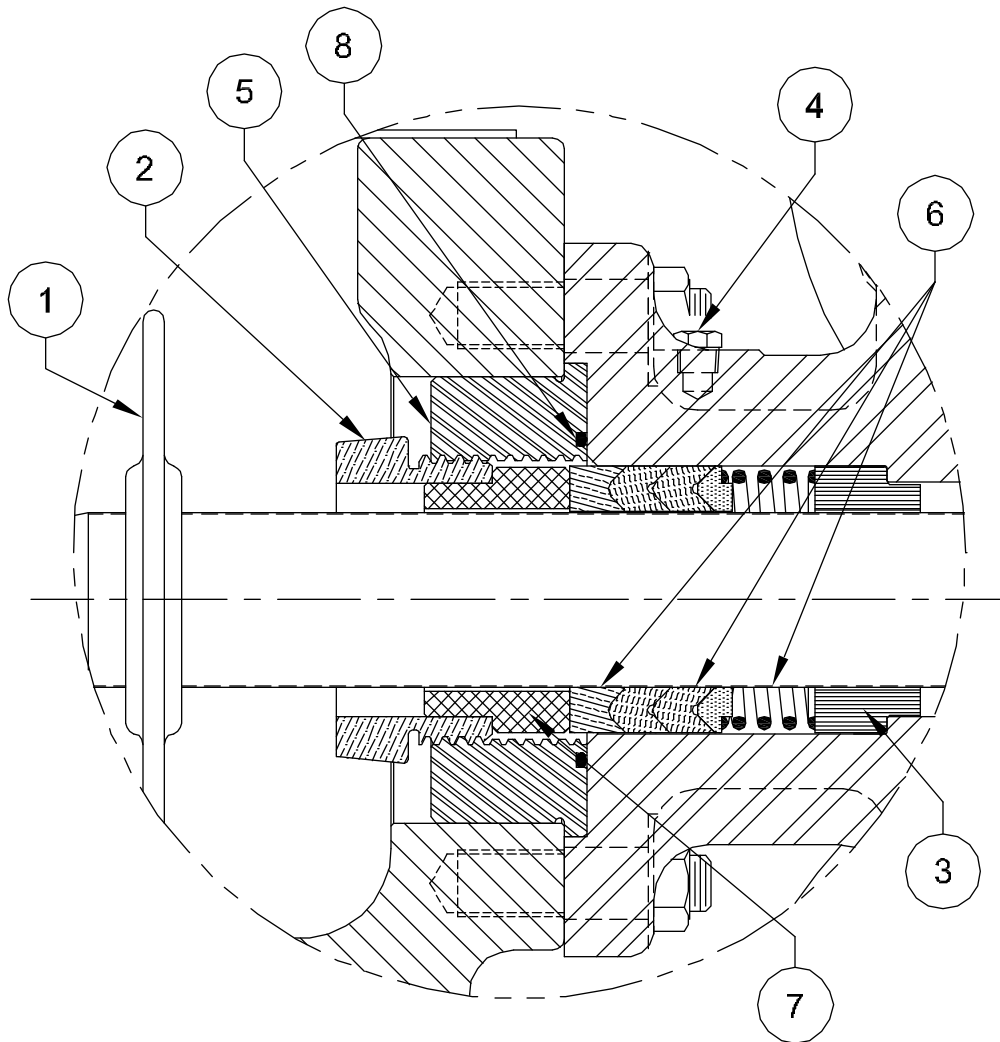
DWG No.: 118595

SCALE: NONE

REV A

SHT.: 7 OF 8





**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118595, SHEETS 1 THRU 8.

5	110-000238-201	O-RING		8
5	001-008745-575		(SS)	
5	001-008745-235		(STL)	
5	001-008745-302	FOLLOWER	(BRZ)	7
5	428-212244-473		1043-4	
5	428-212244-340	PACKING	1068-4	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-025918-575		(SS)	
5	001-025918-235		(STL)	
5	001-025918-302	THROAT BUSHING	(BRZ)	3
5	002-007977-E16	<*>	(XSS)	
5	001-007977-351		(DI)	
5	002-007977-261	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 2-1/2" PLUNGER )</b>				
<b>REQ'D</b>	<b>Part No.</b>	<b>DESCRIPTION</b>		<b>ITEM</b>

**BILL OF MATERIAL**

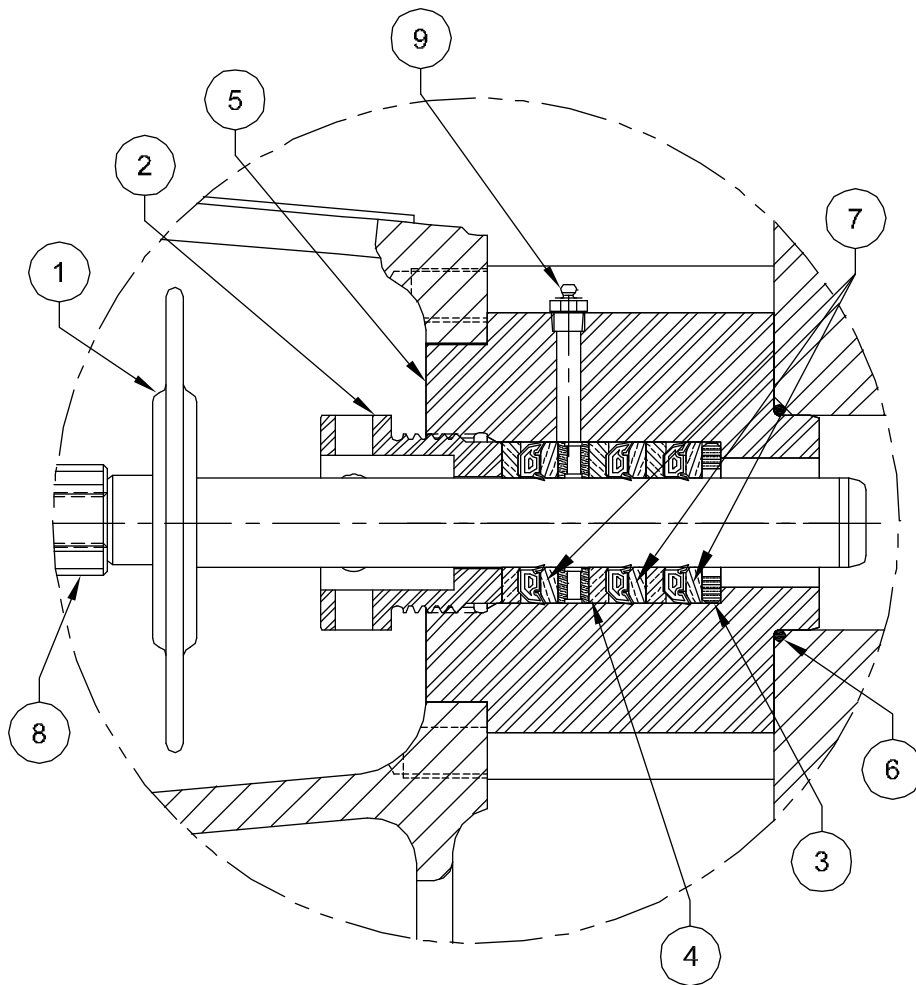
<\*> COATED STAINLESS STEEL

70

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE: ASSEMBLY, PLUNGER KIT  
 "SSF-4" STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
 217Q-4M, 163Q-4M ( HP200AM , HP165AM )

DWG No.: 118595 SCALE: NONE REV A SHT.: 8 OF 8



NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118596,  
 SHEETS 1 THRU 5.

5	180-165000-220	LUBE FITTING		9
5	001-028470-402	ADAPTER ROD	(SS)	8
5	182-114214-477		858	
5	182-114214-374		845	
5	182-114214-386		842	
5	182-114214-370	PACKING	838	7
5	110-000337-200	SEAL		6
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	5
5	001-011212-575		(SS)	
5	001-011212-235		(STL)	
5	001-011212-302	LANTERN RING	(BRZ)	4
5	001-010950-575		(SS)	
5	001-010950-235		(STL)	
5	001-010950-302	THROAT BUSHING	(BRZ)	3
5	AEC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 1-1/4" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

71



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
 "J" STYLE PACKING, 1-1/4" THRU 1-3/4"  
 217Q-4H & 163Q-4H

DWG No.:

118596

SCALE:

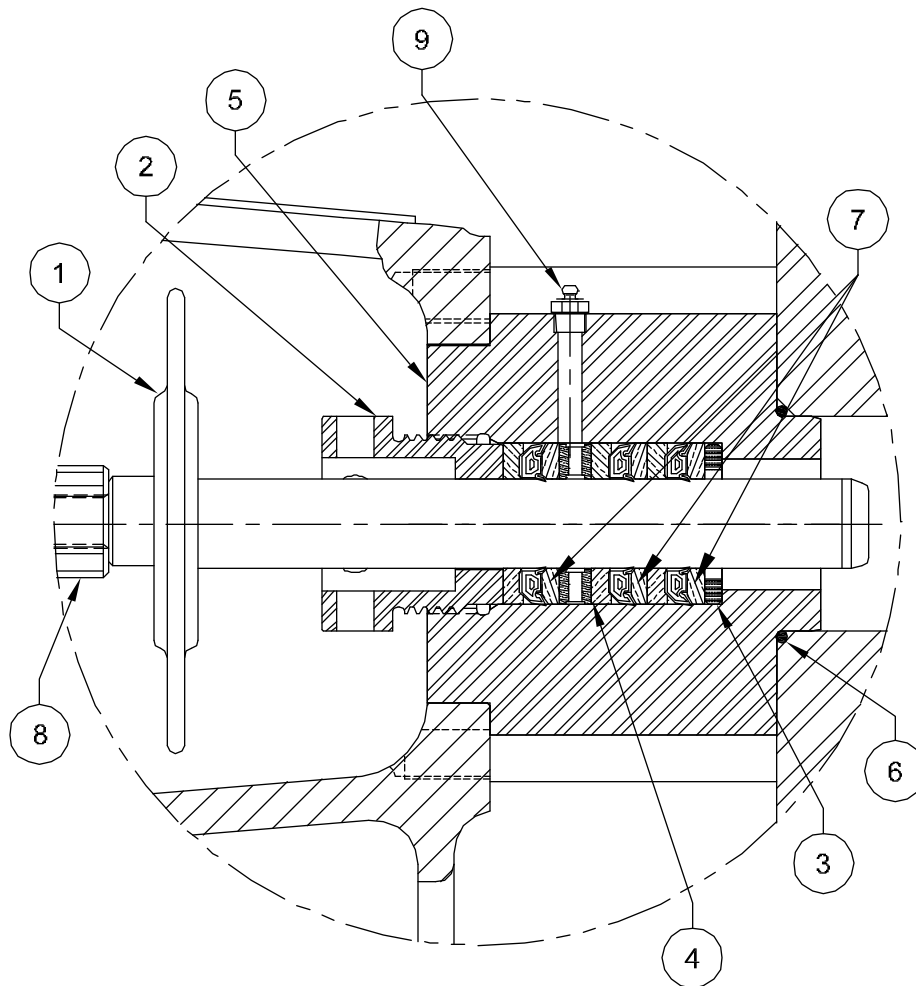
NONE

REV

A

SHT.:

1 OF 5



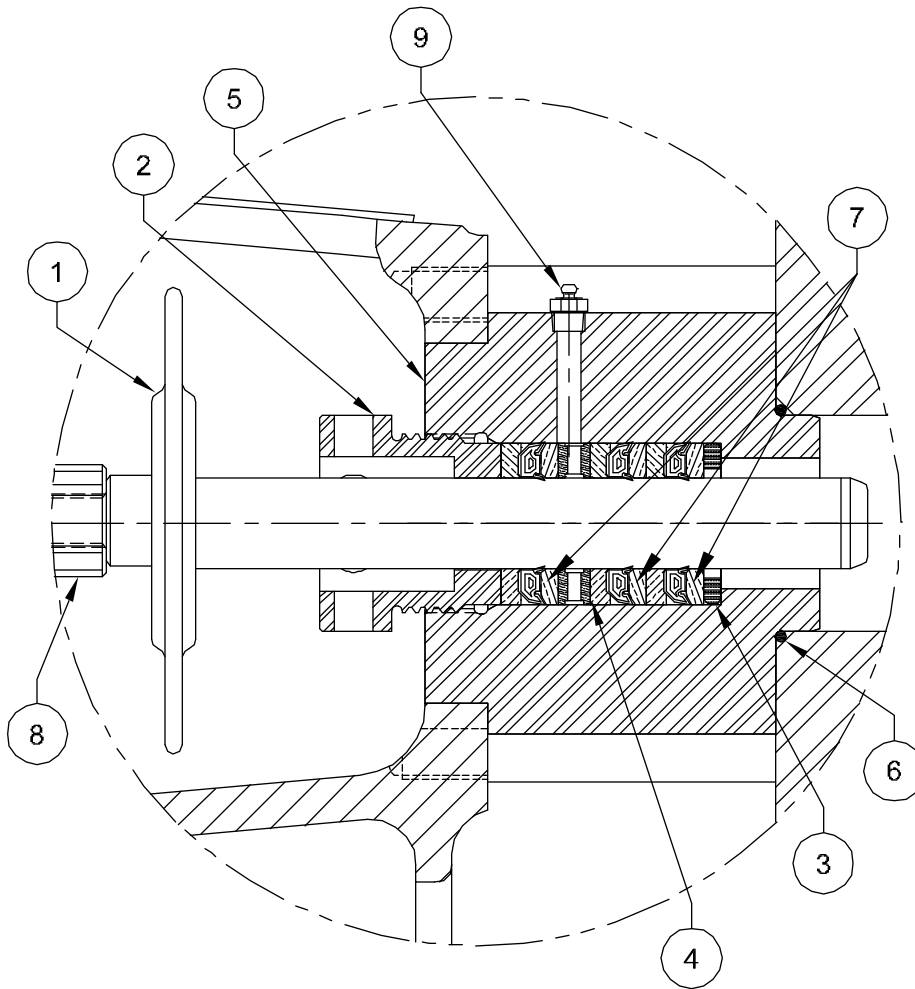
NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118596,  
 SHEETS 1 THRU 5.

5	180-165000-220	LUBE FITTING		9
5	001-028470-402	ADAPTER ROD	(SS)	8
5	182-138214-477		858	
5	182-138214-374		845	
5	182-138214-386		842	
5	182-138214-370	PACKING	838	7
5	110-000337-200	SEAL		6
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	5
5	001-011221-575		(SS)	
5	001-011221-235		(STL)	
5	001-011221-302	LANTERN RING	(BRZ)	4
5	001-008913-575		(SS)	
5	001-008913-235		(STL)	
5	001-008913-302	THROAT BUSHING	(BRZ)	3
5	ADC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 1-3/8" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM

BILL OF MATERIAL

72

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, PLUNGER KIT "J" STYLE PACKING, 1-1/4" THRU 1-3/4" 217Q-4H & 163Q-4H			
DWG No.:	118596	SCALE:	NONE
REV	A	SHT.:	2 OF 5



NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118596,  
 SHEETS 1 THRU 5.

5	180-165000-220	LUBE FITTING		9
5	001-028470-402	ADAPTER ROD	(SS)	8
5	182-112214-477		858	
5	182-112214-374		845	
5	182-112214-386		842	
5	182-112214-370	PACKING	838	7
5	110-000337-200	SEAL		6
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	5
5	001-011218-575		(SS)	
5	001-011218-235		(STL)	
5	001-011218-302	LANTERN RING	(BRZ)	4
5	001-010949-575		(SS)	
5	001-010949-235		(STL)	
5	001-010949-302	THROAT BUSHING	(BRZ)	3
5	ACC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 1-1/2" PLUNGER )

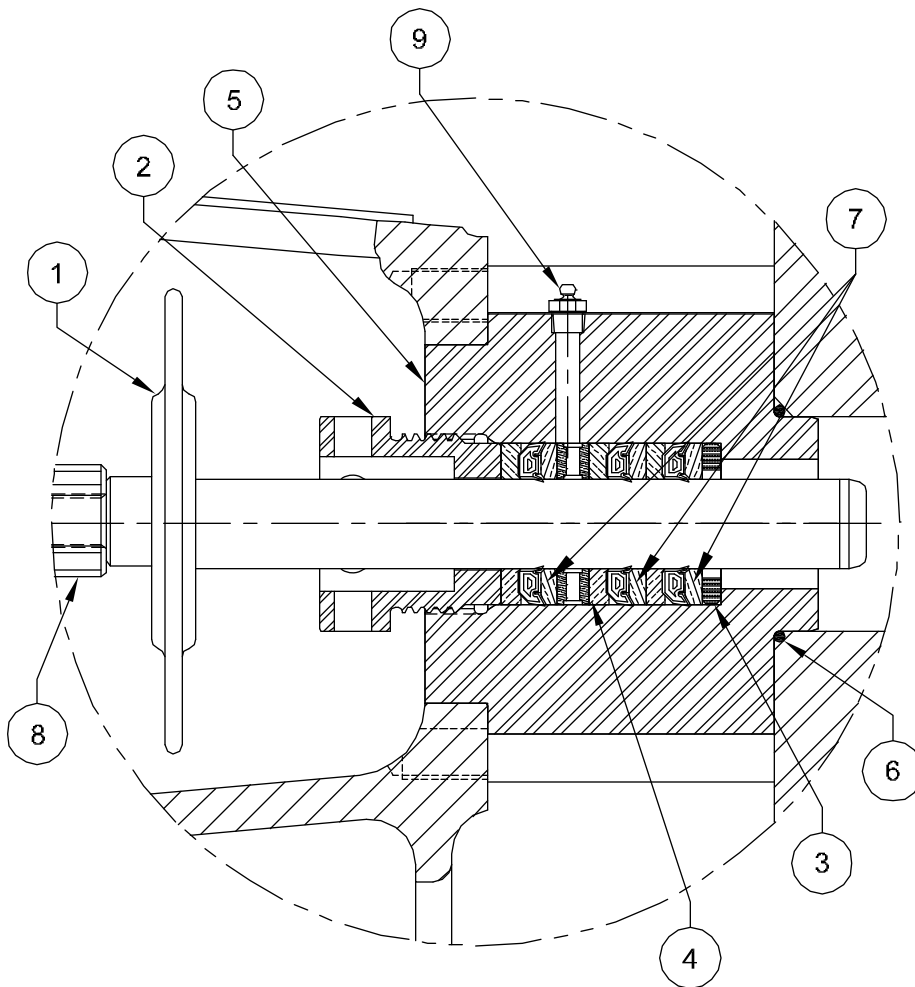
REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 "J" STYLE PACKING, 1-1/4" THRU 1-3/4"  
 217Q-4H & 163Q-4H

DWG No.: 118596 SCALE: NONE REV A SHT.: 3 OF 5



**NOTE**

1) FOR ALL "J" STYLE PACKING SEE DRAWING 118596, SHEETS 1 THRU 5.

5	180-165000-220	LUBE FITTING		9
5	001-028470-402	ADAPTER ROD	(SS)	8
5	182-158214-477		858	
5	182-158214-374		845	
5	182-158214-386		842	
5	182-158214-370	PACKING	838	7
5	110-000337-200	SEAL		6
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	5
5	001-005305-575		(SS)	
5	001-005305-235		(STL)	
5	001-005305-302	LANTERN RING	(BRZ)	4
5	001-010962-575		(SS)	
5	001-010962-235		(STL)	
5	001-010962-302	THROAT BUSHING	(BRZ)	3
5	ABC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 1-5/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
 "J" STYLE PACKING, 1-1/4" THRU 1-3/4"  
 217Q-4H & 163Q-4H

DWG No.:

118596

SCALE:

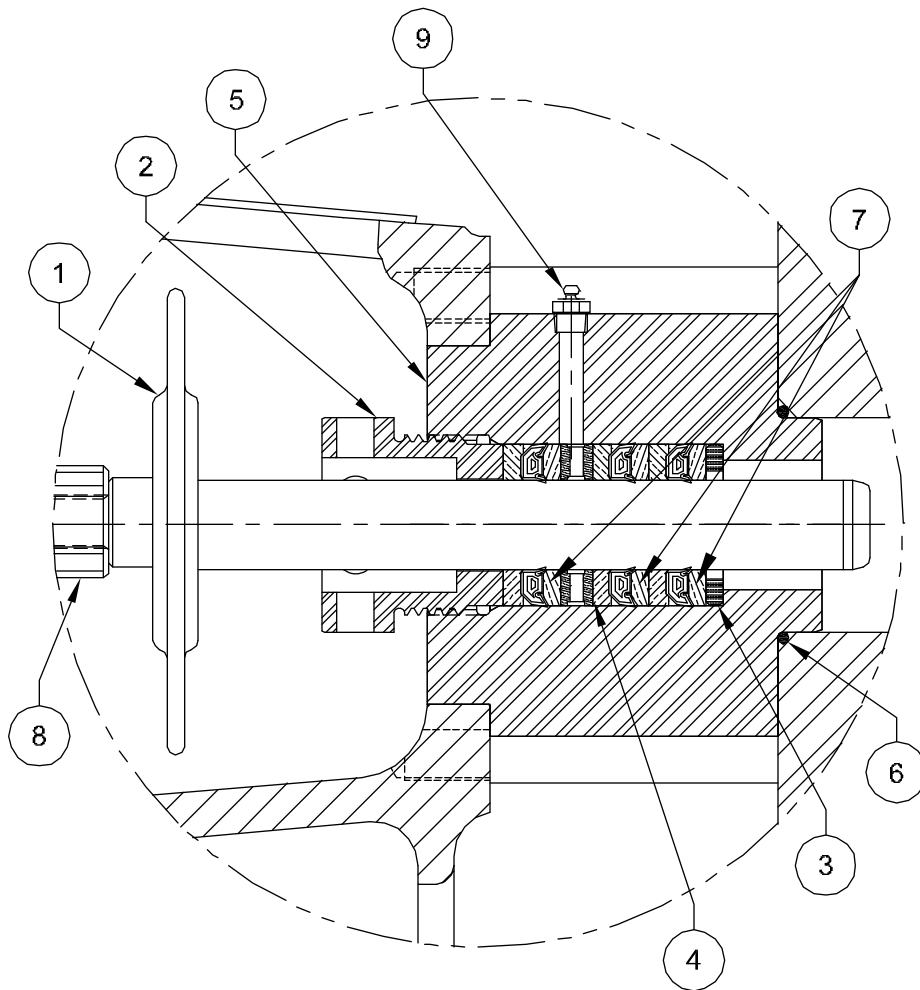
NONE

REV

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SHT.:

4 OF 5



**NOTE**

1) FOR ALL "J" STYLE PACKING SEE DRAWING 118596, SHEETS 1 THRU 5.

5	180-165000-220	LUBE FITTING		9
5	001-028470-402	ADAPTER ROD	(SS)	8
5	182-134178-477		858	
5	182-134178-374		845	
5	182-134178-386		842	
5	182-134178-370	PACKING	838	7
5	110-000337-200	SEAL		6
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	5
5	001-011220-575		(SS)	
5	001-011220-235		(STL)	
5	001-011220-302	LANTERN RING	(BRZ)	4
5	001-010894-575		(SS)	
5	001-010894-235		(STL)	
5	001-010894-302	THROAT BUSHING	(BRZ)	3
5	AAC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
<b>( 1-3/4" PLUNGER )</b>				
REQ'D	Part No.	DESCRIPTION		ITEM

**BILL OF MATERIAL**

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HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PLUNGER KIT  
"J" STYLE PACKING, 1-1/4" THRU 1-3/4"  
217Q-4H & 163Q-4H

DWG No.:

118596

SCALE:

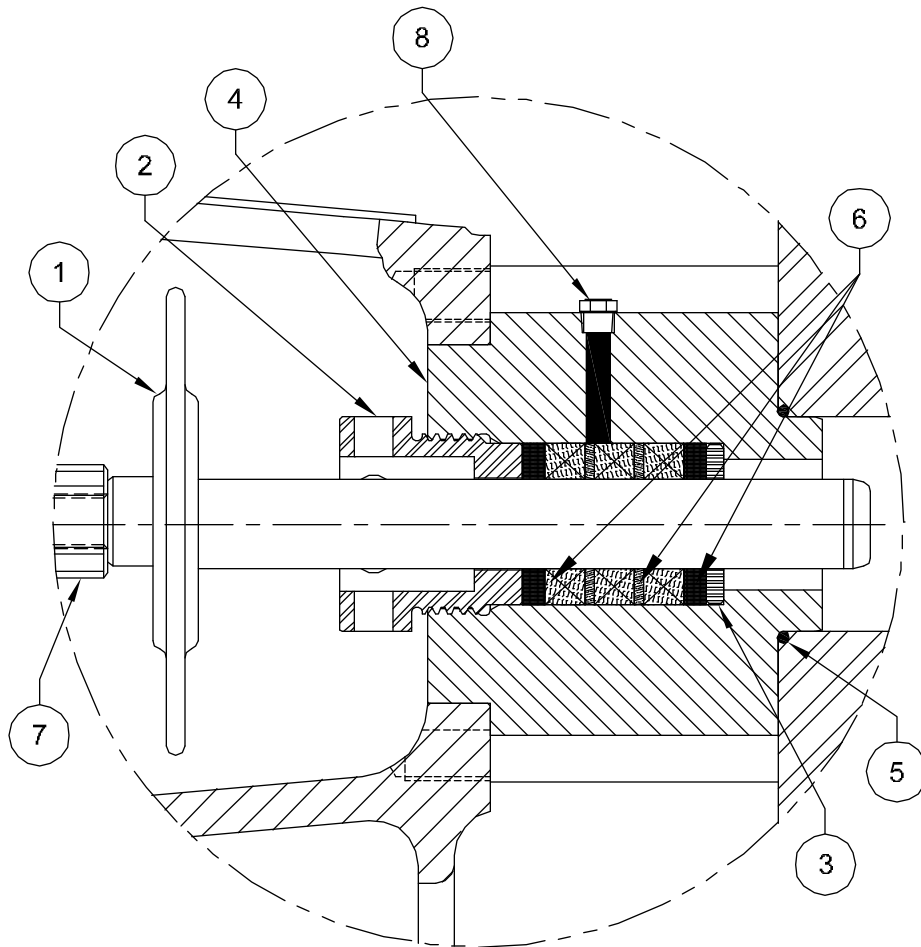
NONE

REV

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SHT.:

5 OF 5



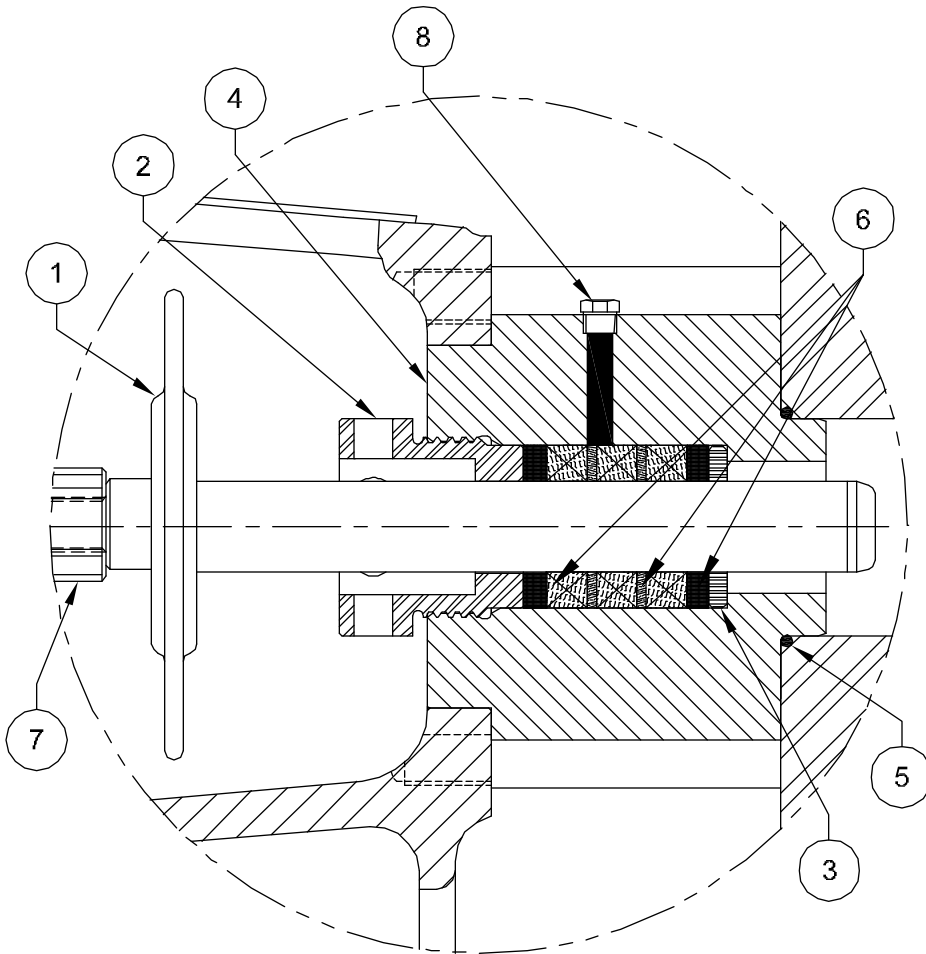
NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118597,  
 SHEETS 1 THRU 5.

5	170-018002-278	PIPE PLUG		8
5	001-028470-402	ADAPTER ROD	(SS)	7
5	287-114234-458		8921-K	
5	287-114234-339		249	
5	287-114234-337		241	
5	287-114234-395	PACKING	238	6
5	110-000337-200	SEAL		5
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	4
5	001-010950-575		(SS)	
5	001-010950-235		(STL)	
5	001-010950-302	THROAT BUSHING	(BRZ)	3
5	AEC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 1-1/4" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM
BILL OF MATERIAL				

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A.      ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
**BRAID STYLE PACKING, 1-1/4" THRU 1-3/4"**  
**217Q-4H & 163Q-4H**

DWG No.: 118597	SCALE: NONE	REV A	SHT.: 1 OF 5
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NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118597,  
 SHEETS 1 THRU 5.

5	170-018002-278	PIPE PLUG		8
5	001-028470-402	ADAPTER ROD	(SS)	7
5	287-138234-458		8921-K	
5	287-138234-339		249	
5	287-138234-337		241	
5	287-138234-395	PACKING	238	6
5	110-000337-200	SEAL		5
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	4
5	001-008913-575		(SS)	
5	001-008913-235		(STL)	
5	001-008913-302	THROAT BUSHING	(BRZ)	3
5	ADC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 1-3/8" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM
BILL OF MATERIAL				

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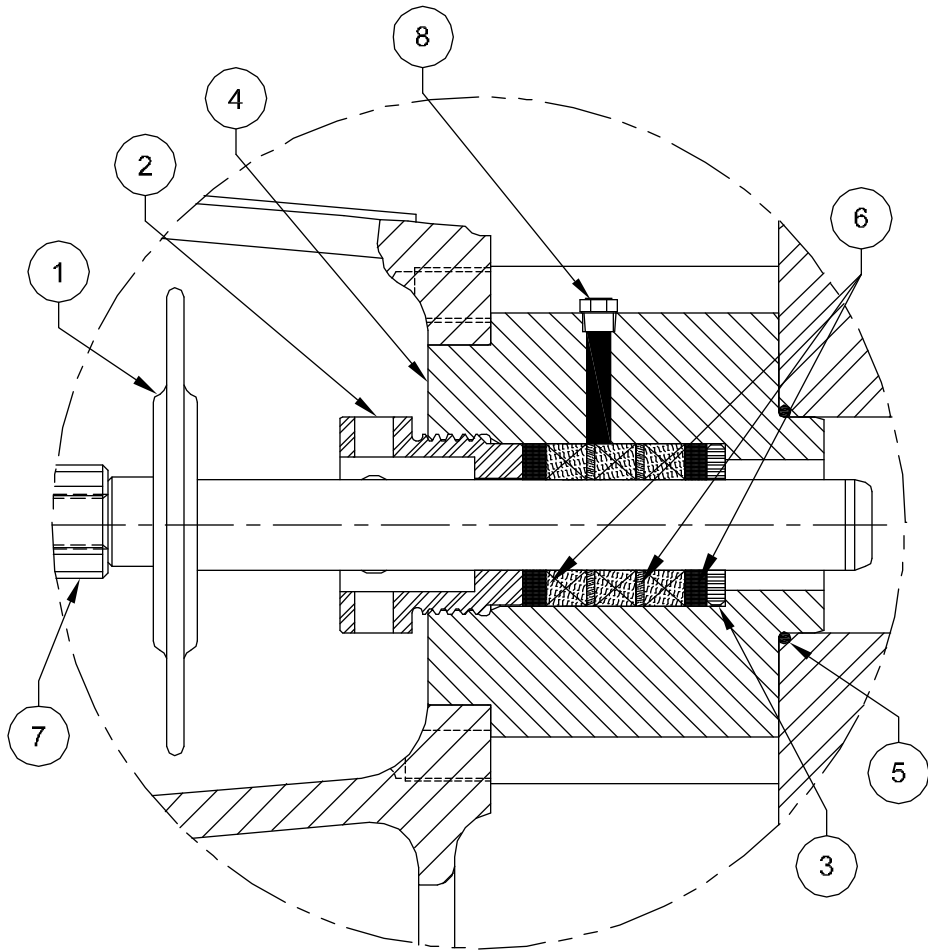
**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 BRAID STYLE PACKING, 1-1/4" THRU 1-3/4"  
 217Q-4H & 163Q-4H

DWG No.: 118597	SCALE: NONE	REV A	SHT.: 2 OF 5
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NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118597,  
 SHEETS 1 THRU 5.

5	170-018002-278	PIPE PLUG		8
5	001-028470-402	ADAPTER ROD	(SS)	7
5	287-158234-458		8921-K	
5	287-158234-339		249	
5	287-158234-337		241	
5	287-158234-395	PACKING	238	6
5	110-000337-200	SEAL		5
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	4
5	001-010962-575		(SS)	
5	001-010962-235		(STL)	
5	001-010962-302	THROAT BUSHING	(BRZ)	3
5	ABC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 1-5/8" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM
BILL OF MATERIAL				

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**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

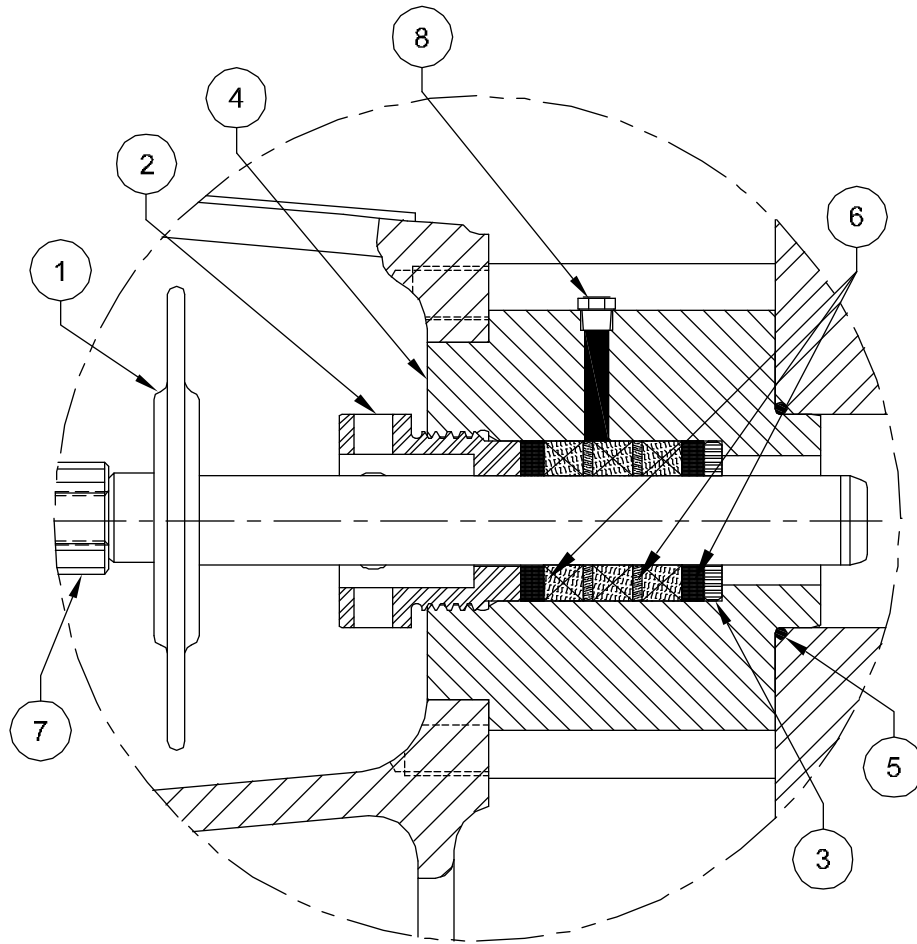
ASSEMBLY, PLUNGER KIT  
 BRAID STYLE PACKING, 1-1/4" THRU 1-3/4"  
 217Q-4H & 163Q-4H

DWG No.: 118597

SCALE: NONE

REV A

SHT.: 4 OF 5



NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118597,  
 SHEETS 1 THRU 5.

5	170-018002-278	PIPE PLUG		8
5	001-028470-402	ADAPTER ROD	(SS)	7
5	287-134234-458		8921-K	
5	287-134234-339		249	
5	287-134234-337		241	
5	287-134234-395	PACKING	238	6
5	110-000337-200	SEAL		5
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	4
5	001-024096-575		(SS)	
5	001-024096-235		(STL)	
5	001-024096-302	THROAT BUSHING	(BRZ)	3
5	AAC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1
( 1-3/4" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM
BILL OF MATERIAL				

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

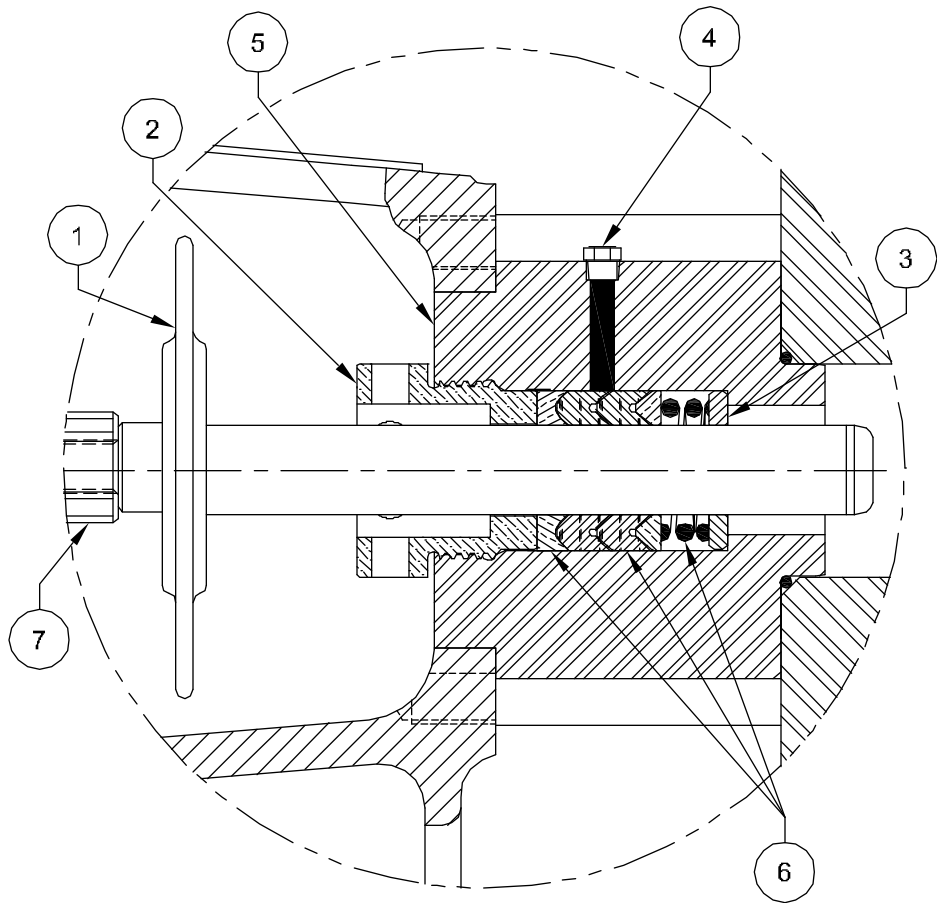
TITLE:  
 ASSEMBLY, PLUNGER KIT  
 BRAID STYLE PACKING, 1-1/4" THRU 1-3/4"  
 217Q-4H & 163Q-4H

DWG No.: 118597	SCALE: NONE	REV A	SHT.: 5 OF 5
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5	001-028470-402	ADAPTER ROD	(SS)	7
5	432-114238-473		1043-4	
5	432-114238-340	PACKING	1068-4	6
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010950-575		(SS)	
5	001-010950-235		(STL)	
5	001-010950-302	THROAT BUSHING	(BRZ)	3
5	AEC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 1-1/4" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			



**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118598, SHEETS 1 THRU 5.

**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
**"SSF-4" STYLE PKG, 1-1/4" THRU 1-3/4" PLGR**  
**217Q-4H & 163Q-4H**

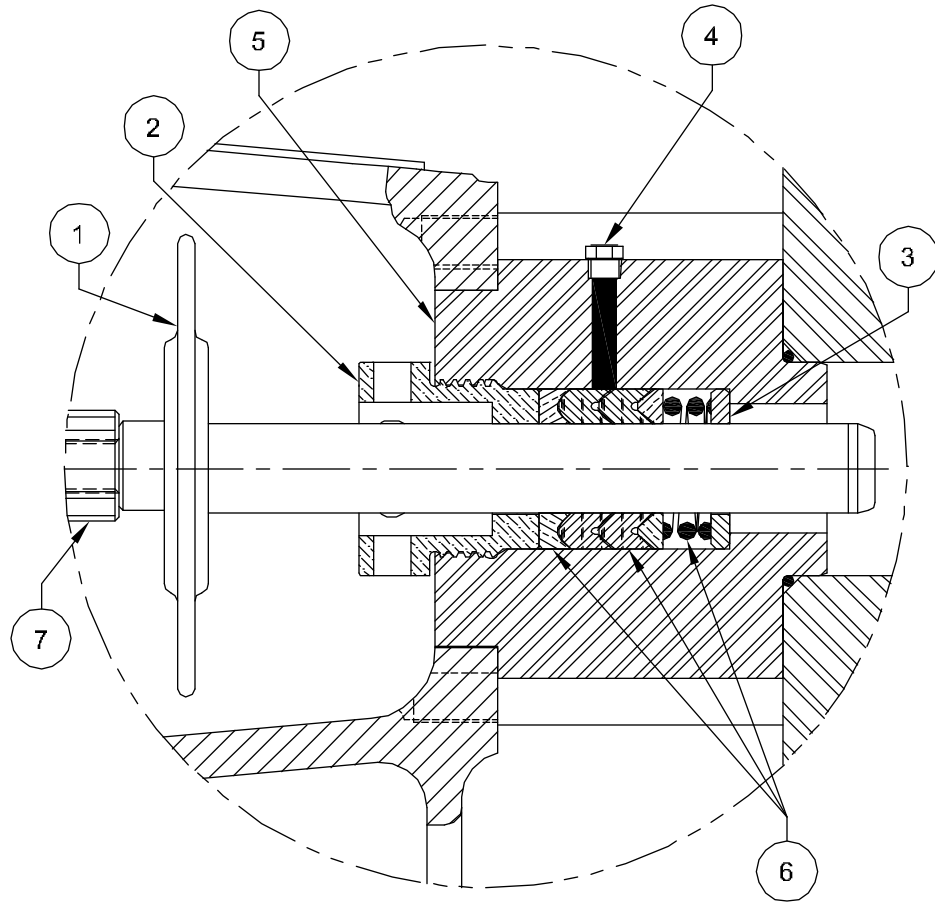
DWG No.: 118598	SCALE: NONE	REV A	SHT.: 1 OF 5
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5	001-028470-402	ADAPTER ROD	(SS)	7
5	432-138238-473		1043-4	
5	432-138238-340	PACKING	1068-4	6
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-008913-575		(SS)	
5	001-008913-235		(STL)	
5	001-008913-302	THROAT BUSHING	(BRZ)	3
5	ADC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 1-3/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**



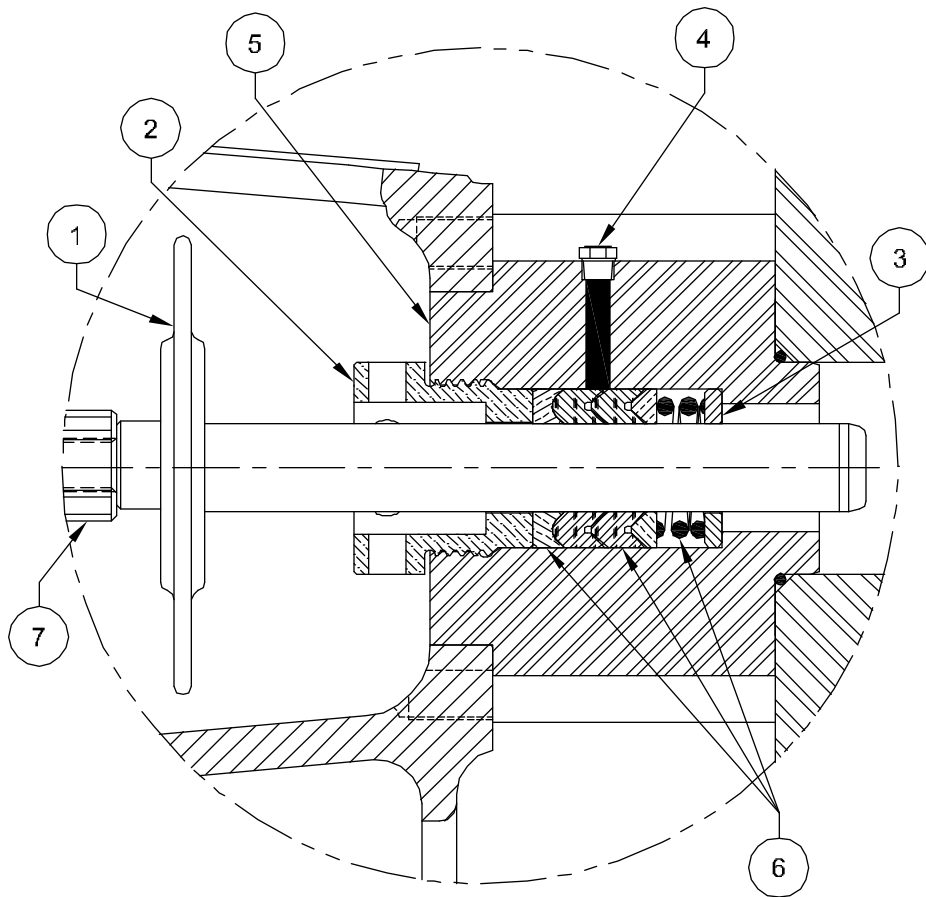
**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118598, SHEETS 1 THRU 5.

**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PLUNGER KIT**  
**"SSF-4" STYLE PKG, 1-1/4" THRU 1-3/4" PLGR**  
**217Q-4H & 163Q-4H**

DWG No.: 118598	SCALE: NONE	REV A	SHT.: 2 OF 5
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5	001-028470-402	ADAPTER ROD	(SS)	7
5	432-112238-473	PACKING	1043-4	
5	432-112238-340	PACKING	1068-4	6
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010949-575		(SS)	
5	001-010949-235		(STL)	
5	001-010949-302	THROAT BUSHING	(BRZ)	3
5	ACC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 1-1/2" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118598, SHEETS 1 THRU 5.

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE: ASSEMBLY, PLUNGER KIT  
 "SSF-4" STYLE PKG, 1-1/4" THRU 1-3/4" PLGR  
 217Q-4H & 163Q-4H

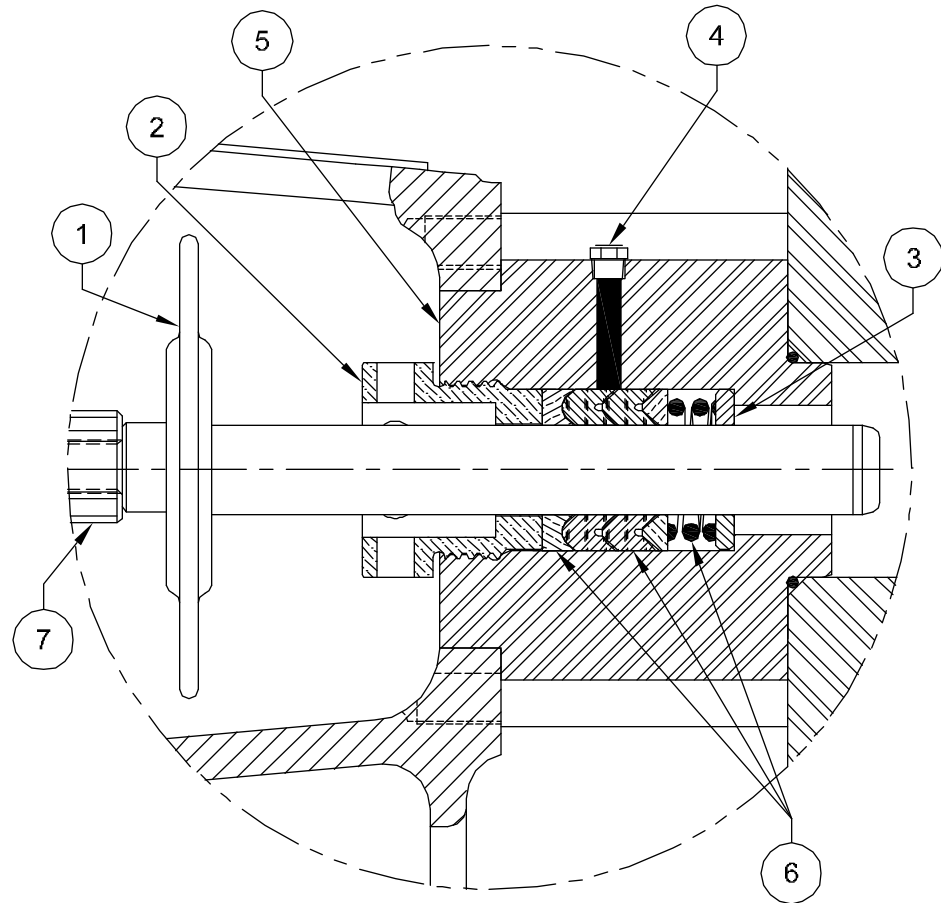
DWG No.: 118598	SCALE: NONE	REV A	SHT.: 3 OF 5
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5	001-028470-402	ADAPTER ROD	(SS)	7
5	432-158238-473		1043-4	
5	432-158238-340	PACKING	1068-4	6
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010962-575		(SS)	
5	001-010962-235		(STL)	
5	001-010962-302	THROAT BUSHING	(BRZ)	3
5	ABC-013800-E16	GLAND NUT	(SS)	2
5	001-007986-201	BAFFLE DISC		1

( 1-5/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM
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**BILL OF MATERIAL**



**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118598, SHEETS 1 THRU 5.

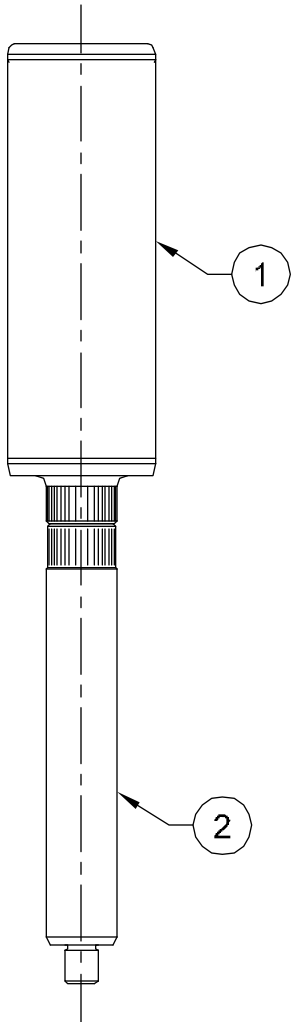
**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

**TITLE:**  
ASSEMBLY, PLUNGER KIT  
"SSF-4" STYLE PKG, 1-1/4" THRU 1-3/4" PLGR  
217Q-4H & 163Q-4H

DWG No.: 118598	SCALE: NONE	REV A	SHT.: 4 OF 5
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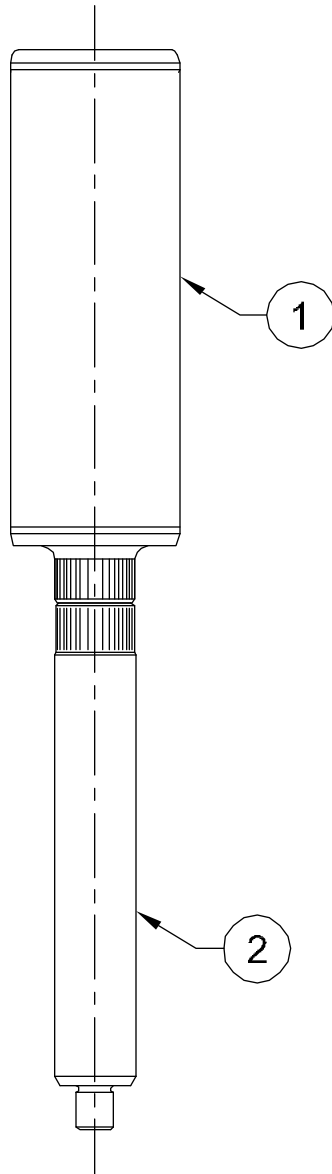




5	001-028470-402	ADAPTER ROD	2
5	002-028499-E24	3-3/8" DIA. PLUNGER, CHROME OXIDE	
5	AGB-028496-E23	3-3/8" DIA. PLUNGER, COBALT	
5	002-028499-999	3-3/8" DIA. PLUNGER, TUNGSTEN	
5	002-028499-E26	3-3/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>3-3/8" DIA. PLUNGERS</b>			
5	002-028498-E24	3-1/4" DIA. PLUNGER, CHROME OXIDE	
5	002-028498-E23	3-1/4" DIA. PLUNGER, COBALT	
5	002-028498-999	3-1/4" DIA. PLUNGER, TUNGSTEN	
5	002-028498-E26	3-1/4" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>3-1/4" DIA. PLUNGERS</b>			
5	AEB-028496-E24	3" DIA. PLUNGER, CHROME OXIDE	
5	AEB-028496-E23	3" DIA. PLUNGER, COBALT	
5	AEB-028496-E22	3" DIA. PLUNGER, TUNGSTEN	
5	AEB-028496-E26	3" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>3-1/8" DIA. PLUNGERS</b>			
5	002-028497-E24	3" DIA. PLUNGER, CHROME OXIDE	
5	002-028497-E23	3" DIA. PLUNGER, COBALT	
5	002-028479-999	3" DIA. PLUNGER, TUNGSTEN	
5	002-028497-E26	3" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>3" DIA. PLUNGERS</b>			
5	002-028782-E24	2-7/8" DIA. PLUNGER, CHROME OXIDE	
5	002-028782-E23	2-7/8" DIA. PLUNGER, COBALT	
5	002-028782-999	2-7/8" DIA. PLUNGER, TUNGSTEN	
5	002-028782-E26	2-7/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-7/8" DIA. PLUNGERS</b>			
5	002-028496-E24	2-3/4" DIA. PLUNGER, CHROME OXIDE	
5	002-028496-E23	2-3/4" DIA. PLUNGER, COBALT	
5	002-028496-999	2-3/4" DIA. PLUNGER, TUNGSTEN	
5	002-028496-E26	2-3/4" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-3/4" DIA. PLUNGERS</b>			
<b>REQ'D</b>	<b>Part No.</b>	<b>DESCRIPTION</b>	<b>ITEM</b>
<b>BILL OF MATERIAL</b>			

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<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: PLUNGERS 2-3/4" THRU 3-3/8" HARD SURFACE 217Q-4L (HP200-AL)			
DWG No.:	SCALE:	REV:	SHT.:
118599	NONE	A	1 OF 1

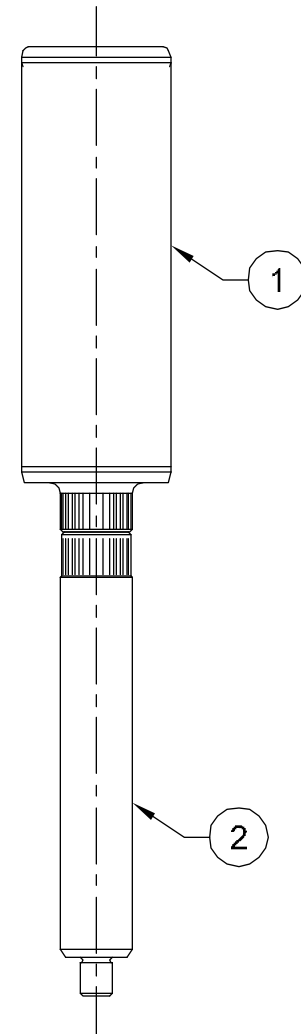


5	001-028470-402	ADAPTER ROD	2
5	002-028503-999	3-3/8" DIA. PLUNGER, CERAMIC	1
		3-3/8" DIA. PLUNGERS	
5	002-028502-999	3-1/4" DIA. PLUNGER, CERAMIC	1
		3-1/4" DIA. PLUNGERS	
5	AEB-028500-E33	3-1/8" DIA. PLUNGER, CERAMIC	1
		3-1/8" DIA. PLUNGERS	
5	002-028501-999	3" DIA. PLUNGER, CERAMIC	1
		3" DIA. PLUNGERS	
5	ACB-028500-E33	2-7/8" DIA. PLUNGER, CERAMIC	1
		2-7/8" DIA. PLUNGERS	
5	002-028500-999	2-3/4" DIA. PLUNGER, CERAMIC	1
		2-3/4" DIA. PLUNGERS	
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			

87

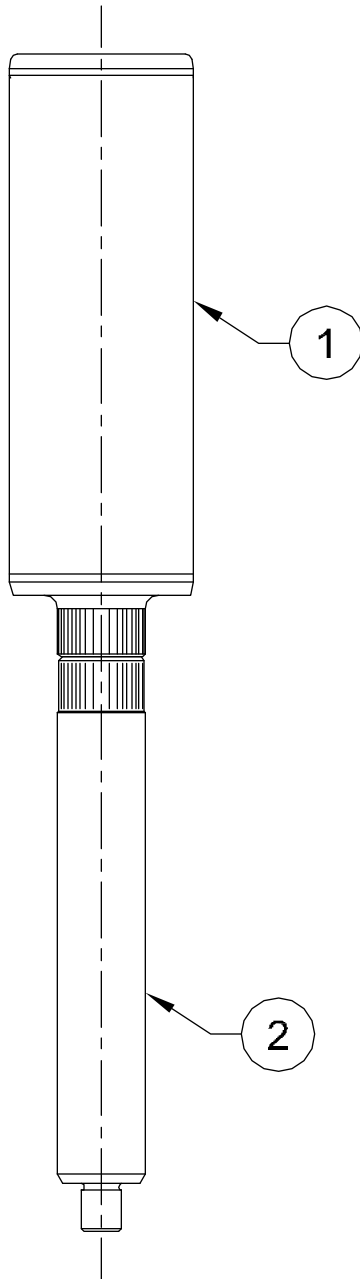
<b>NOV NATIONAL OILWELL VARCO</b>			
<small>HOUSTON, TEXAS, U.S.A.</small>		<small>ENGINEERING, TULSA, OKLAHOMA</small>	
TITLE: PLUNGERS 2-3/4" THRU 3-3/8" CERAMIC 217Q-4L (HP200-AL)			
DWG No:	118600	SCALE:	NONE
REV	A	SHT:	1 of 1

5	002-028470-402	ADAPTER ROD	2
5	002-028859-999	2-1/2" DIA. PLUNGER, CHROME OXIDE	
5	002-028478-E23	2-1/2" DIA. PLUNGER, COBALT	
5	002-028478-999	2-1/2" DIA. PLUNGER, TUNGSTEN	
5	002-028478-E26	2-1/2" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-1/2" DIA. PLUNGER</b>			
5	002-028858-999	2-3/8" DIA. PLUNGER, CHROME OXIDE	
5	002-028477-E23	2-3/8" DIA. PLUNGER, COBALT	
5	002-028477-999	2-3/8" DIA. PLUNGER, TUNGSTEN	
5	002-028477-E26	2-3/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-3/8" DIA. PLUNGER</b>			
5	002-028857-999	2-1/4" DIA. PLUNGER, CHROME OXIDE	
5	002-028476-E23	2-1/4" DIA. PLUNGER, COBALT	
5	002-028476-999	2-1/4" DIA. PLUNGER, TUNGSTEN	
5	002-028476-E26	2-1/4" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-1/4" DIA. PLUNGER</b>			
5	002-028856-999	2-1/8" DIA. PLUNGER, CHROME OXIDE	
5	002-028475-E23	2-1/8" DIA. PLUNGER, COBALT	
5	002-028475-999	2-1/8" DIA. PLUNGER, TUNGSTEN	
5	002-028475-E26	2-1/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-1/8" DIA. PLUNGER</b>			
5	002-028855-999	2" DIA. PLUNGER, CHROME OXIDE	
5	002-028474-E23	2" DIA. PLUNGER, COBALT	
5	002-028474-999	2" DIA. PLUNGER, TUNGSTEN	
5	002-028474-E26	2" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2" DIA. PLUNGER</b>			
5	002-028854-999	1-7/8" DIA. PLUNGER, CHROME OXIDE	
5	002-028473-E23	1-7/8" DIA. PLUNGER, COBALT	
5	002-028473-999	1-7/8" DIA. PLUNGER, TUNGSTEN	
5	002-028473-E26	1-7/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-7/8" DIA. PLUNGER</b>			
5	002-028853-999	1-3/4" DIA. PLUNGER, CHROME OXIDE	
5	002-028472-E23	1-3/4" DIA. PLUNGER, COBALT	
5	002-028472-999	1-3/4" DIA. PLUNGER, TUNGSTEN	
5	002-028472-E26	1-3/4" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-3/4" DIA. PLUNGER</b>			
5	002-028852-999	1-5/8" DIA. PLUNGER, CHROME OXIDE	
5	002-028471-E23	1-5/8" DIA. PLUNGER, COBALT	
5	002-028471-999	1-5/8" DIA. PLUNGER, TUNGSTEN	
5	002-028471-E26	1-5/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-5/8" DIA. PLUNGER</b>			
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			



88

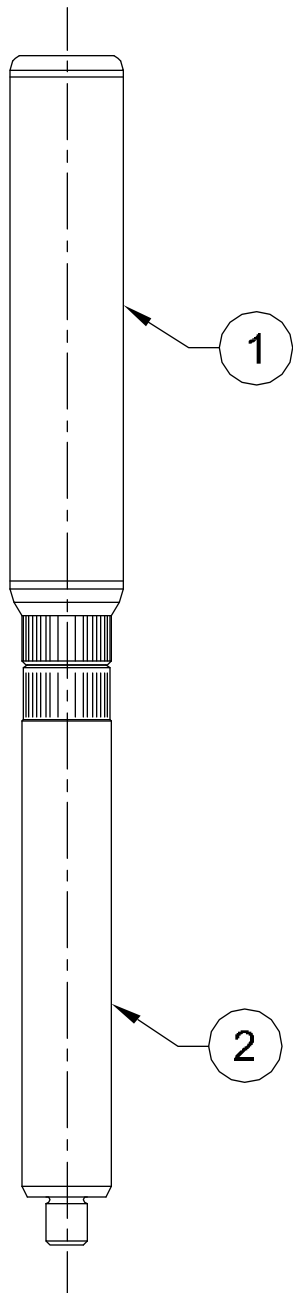
<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE:			
PLUNGERS 1-5/8" THRU 2-1/2" HARD SURFACE 217Q-4M ( HP200-4M )			
DWG No.:	SCALE:	REV	SH1.:
118601	NONE	A	1 OF 1



5	002-028470-402	ADAPTER ROD	2
5	002-028490-999	2-1/2" DIA. PLUNGER, CERAMIC	1
2-1/2" DIA. PLUNGERS			
5	002-028489-999	2-3/8" DIA. PLUNGER, CERAMIC	1
2-3/8" DIA. PLUNGERS			
5	002-028488-999	2-1/4" DIA. PLUNGER, CERAMIC	1
2-1/4" DIA. PLUNGERS			
5	002-028487-999	2-1/8" DIA. PLUNGER, CERAMIC	1
2-1/8" DIA. PLUNGERS			
5	002-028486-999	2" DIA. PLUNGER, CERAMIC	1
2" DIA. PLUNGERS			
5	002-028485-999	1-7/8" DIA. PLUNGER, CERAMIC	1
1-7/8" DIA. PLUNGERS			
5	002-028484-999	1-3/4" DIA. PLUNGER, CERAMIC	1
1-3/4" DIA. PLUNGERS			
5	002-028483-999	1-5/8" DIA. PLUNGER, CERAMIC	1
1-5/8" DIA. PLUNGERS			
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			

89

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: PLUNGERS 1-5/8" THRU 2-1/2" CERAMIC 217Q-4M ( HP200-4M )			
DWG No.:	SCALE:	REV	SHT.:
118602	NONE	A	1 OF 1



5	001-028470-402	ADAPTER ROD	2
5	002-029035-E24	1-3/4" DIA. PLUNGER, CHROME OXIDE	
5	002-029035-E23	1-3/4" DIA. PLUNGER, COBALT	
5	002-029035-999	1-3/4" DIA. PLUNGER, TUNGSTEN	
5	002-029035-000	1-3/4" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-3/4" DIA. PLUNGER</b>			
5	002-029034-E24	1-5/8" DIA. PLUNGER, CHROME OXIDE	
5	002-029034-E23	1-5/8" DIA. PLUNGER, COBALT	
5	002-029034-999	1-5/8" DIA. PLUNGER, TUNGSTEN	
5	002-029034-000	1-5/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-5/8" DIA. PLUNGER</b>			
5	002-029033-E24	1-1/2" DIA. PLUNGER, CHROME OXIDE	
5	002-029033-E23	1-1/2" DIA. PLUNGER, COBALT	
5	002-029033-999	1-1/2" DIA. PLUNGER, TUNGSTEN	
5	002-029033-E26	1-1/2" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-1/2" DIA. PLUNGER</b>			
5	002-029032-E24	1-3/8" DIA. PLUNGER, CHROME OXIDE	
5	002-029032-E23	1-3/8" DIA. PLUNGER, COBALT	
5	002-029032-999	1-3/8" DIA. PLUNGER, TUNGSTEN	
5	002-029032-E26	1-3/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-3/8" DIA. PLUNGER</b>			
5	002-029031-E24	1-1/4" DIA. PLUNGER, CHROME OXIDE	
5	002-029031-E23	1-1/4" DIA. PLUNGER, COBALT	
5	002-029031-999	1-1/4" DIA. PLUNGER, TUNGSTEN	
5	002-029031-E26	1-1/4" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-1/4" DIA. PLUNGER</b>			
<b>REQ'D</b>	<b>Part No.</b>	<b>DESCRIPTION</b>	<b>ITEM</b>
<b>BILL OF MATERIAL</b>			

90

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

PLUNGERS 1-1/4" THRU 1-3/4"  
HARD SURFACE  
217Q-4H ( HP200-4H )

DWG No.:

118603

SCALE:

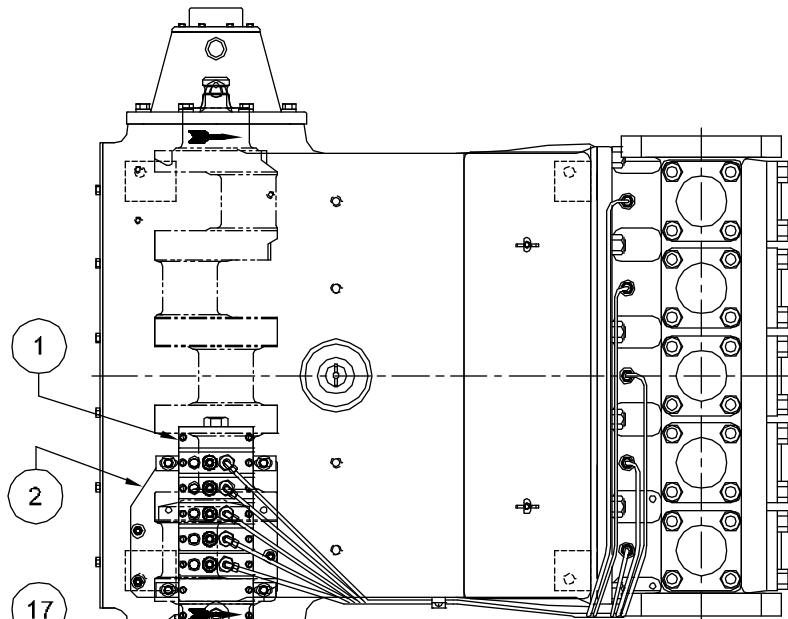
NONE

REV

A

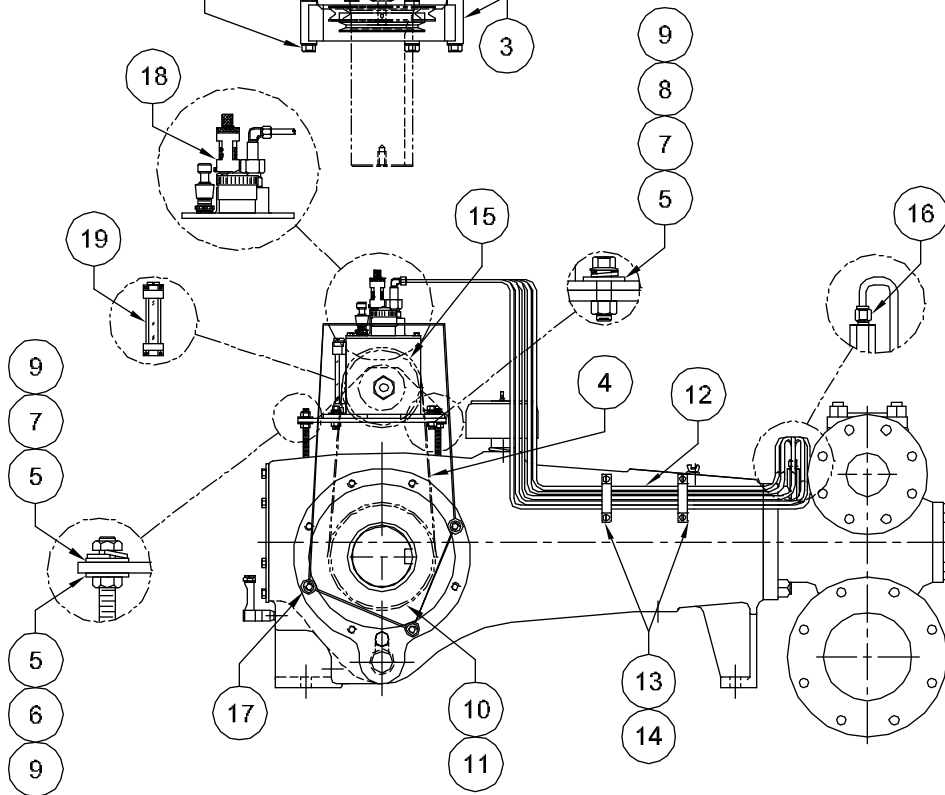
SHT.:

1 OF 1



1	GAS-105265-000	SIGHT GLASS	19
1	GAS-105264-000	PUMP ASSEMBLY w/ GASKET	18
<b>REPLACEMENT PARTS</b>			
3	100-012434-290	CAP SCREW 1/2" x 4-3/4"	17
5	GAS-105240-000	CHECK VALVE, 1/8" NPT	16
1	001-011597-999	SHEAVE, DRIVEN	15
4	126-006516-405	DRIVE SCREW	14
2	001-025128-405	LINE CLAMP	13
300"	330-002003-365	TUBING, 1/4"	12
2	119-014012-220	SET SCREW	11
1	001-028429-231	SHEAVE, DRIVER	10
10	155-038100-286	WASHER, 3/8"	9
4	100-038114-405	CAP SCREW 3/8" X 1-1/4" LG.	8
7	154-038068-286	LOCK WASHER 3/8"	7
3	104-038400-286	STUD, 3/8" X 4" LG	6
10	133-038016-286	NUT, ZINC PLATED 3/8"	5
1	421-100420-001	V-BELT	4
1	AAB-118614-C02	BELT GUARD	3
1	001-001718-231	LUBRICATOR BRACKET LH/RH	2
1	001-011154-999	LUBRICATOR, LHD, (5) FEED	
1	GAS-105239-000	LUBRICATOR, RHD, (5) FEED	1
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			

NOTE:  
RIGHT HAND DRIVE POWER PUMP (SHOWN) REQUIRES  
RIGHT HAND DRIVE LUBRICATOR.



SAME PLUMBING FOR CASTINGS AND BILLETS (CASTING SHOWN).

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PACKING LUBRICATOR  
(RHD OR LHD) RHD SHOWN  
217Q-4 (HP200)

DWG No.:

118573

SCALE:

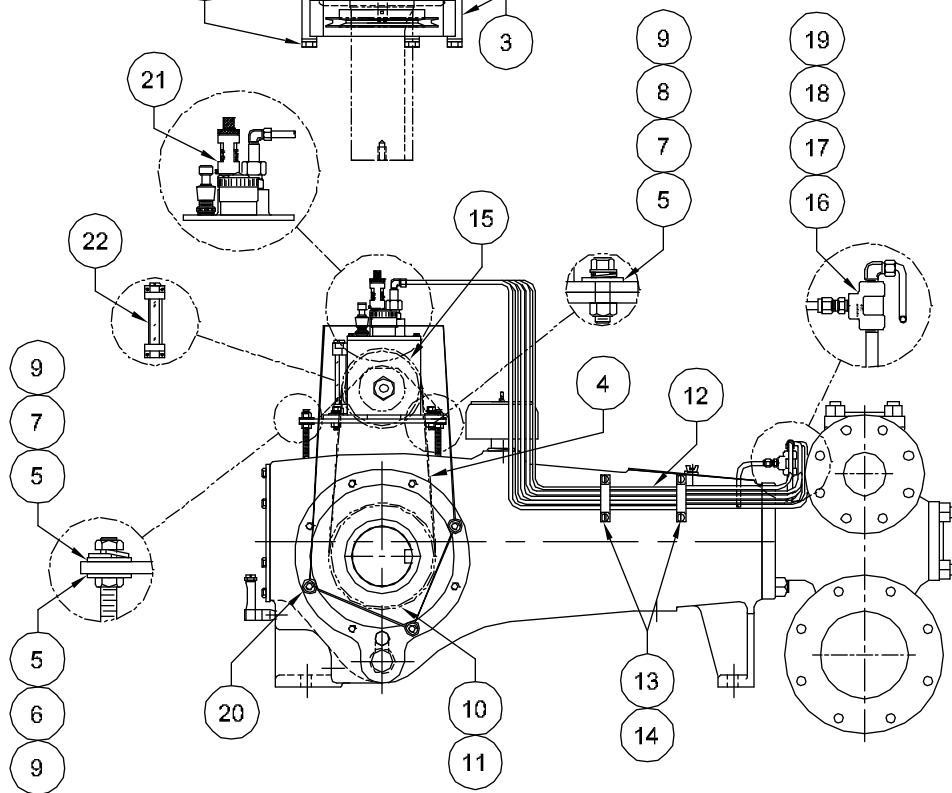
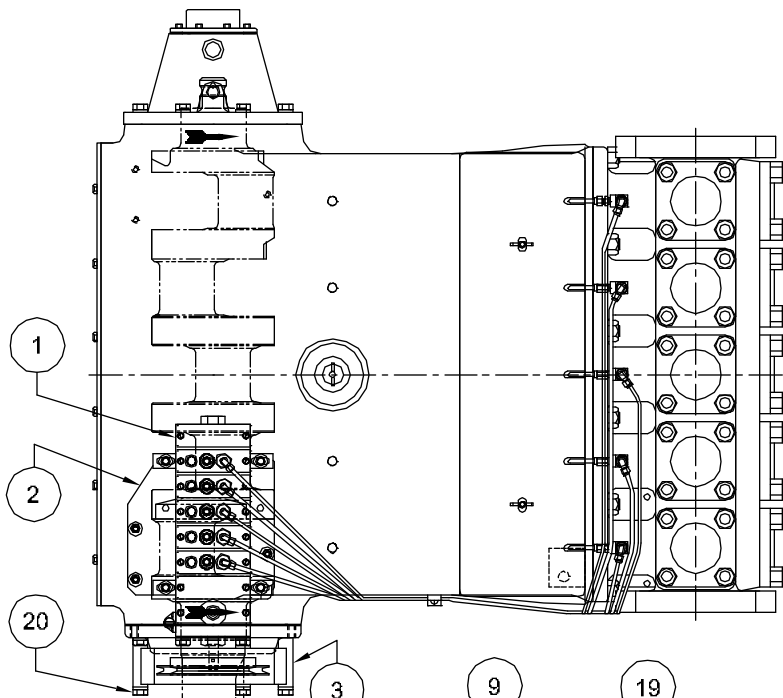
NONE

REV

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SHT.:

1 OF 1



SAME PLUMBING FOR CASTINGS AND BILLETS (CASTING SHOWN).

1	GAS-105265-000	SIGHT GLASS	22
1	GAS-105264-000	PUMP ASSEMBLY w/ GASKET	21
<b>REPLACEMENT PARTS</b>			
3	100-012434-290	CAP SCREW 1/2" x 4-3/4"	20
5	462-040012-278	MALE CONN., STR., 1/4" TUBE x 1/8 NPT	19
5	462-040022-278	MALE CONN., 90 DEG 1/4" TUBE x 1/8 NPT	18
5	157-018112-278	PIPE NIPPLE, 1/8" NPT	17
5	469-020002-278	PIPE TEE, 1/8" NPT	16
1	001-011597-999	SHEAVE, DRIVEN	15
4	126-006516-405	DRIVE SCREW,	14
2	001-025128-405	LINE CLAMP	13
300"	330-002003-365	TUBING, 1/4"	12
2	119-014012-290	SET SCREW	11
1	001-028429-231	SHEAVE, DRIVER	10
10	155-038100-286	WASHER, 3/8"	9
4	100-038114-405	CAP SCREW 3/8" X 1-1/4" LG.	8
7	154-038068-220	LOCK WASHER 3/8"	7
3	104-038400-286	STUD, 3/8" X 4" LG	6
10	133-038016-286	NUT, ZINC PLATED 3/8"	5
1	421-100420-001	V-BELT	4
1	AAB-118614-C02	BELT GUARD	3
1	001-001718-231	LUBRICATOR BRACKET LH/RH	2
1	001-011154-999	LUBRICATOR, LHD, (5) FEED	
1	GAS-105239-000	LUBRICATOR, RHD, (5) FEED	1
<b>REQ'D</b>	<b>Part No.</b>	<b>DESCRIPTION</b>	<b>ITEM</b>
<b>BILL OF MATERIAL</b>			

NOTE:  
RIGHT HAND DRIVE POWER PUMP (SHOWN) REQUIRES  
RIGHT HAND DRIVE LUBRICATOR.

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, D.O.H. LUBRICATOR  
(DRIP ON THE HEEL) - (RHD OR LHD)  
217Q-4 (HP200)

DWG No.:

118574

SCALE:

NONE

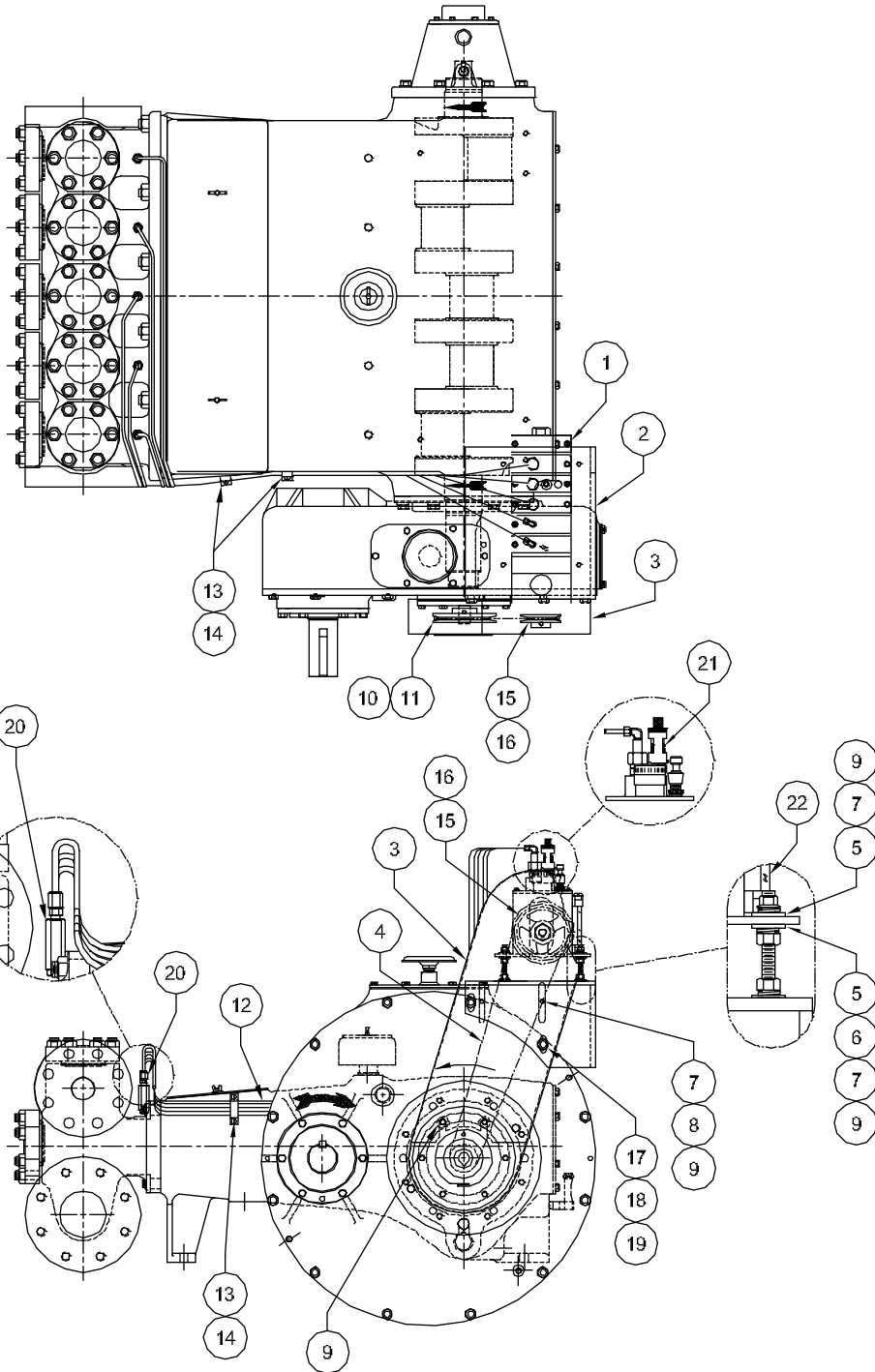
REV

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SHT.:

1

OF 1



SAME PLUMBING FOR CASTINGS AND BILLETS (CASTING SHOWN).

1	GAS-105265-000	SIGHT GLASS	22
1	GAS-105264-000	PUMP ASSEMBLY w/ GASKET	21
<b>REPLACEMENT PARTS</b>			
5	GAS-105240-000	CHECK VALVE, 1/8" NPT	20
2	154-012087-286	LOCK WASHER 1/2"	19
2	155-012138-286	WASHER 1/2"	18
2	100-012134-290	CAP SCREW 1/2" x 1-3/4"	17
1	420-020509-019	HUB, DRIVEN, 5/8" BORE	16
1	419-101050-999	SHEAVE, DRIVEN, 5" DD	15
6	126-006516-405	DRIVE SCREW	14
3	001-025128-405	LINE CLAMP	13
300"	330-002003-365	TUBING, 1/4"	12
1	420-011000-000	HUB, PUMP DRIVER, 1" BORE	11
1	419-101032-999	SHEAVE, DRIVER, 3.2" DD	10
16	155-038100-286	WASHER, 3/8"	9
2	100-038058-290	CAP SCREW 3/8" X 5/8" LG.	8
14	154-038068-286	LOCK WASHER 3/8"	7
4	104-038400-286	STUD, 3/8" X 4" LG	6
12	133-038016-286	NUT, ZINC PLATED 3/8"	5
1	421-100420-008	V-BELT	4
1	AAB-116599-C02	BELT GUARD	3
1	AAB-116600-231	LUBRICATOR BRACKET	2
1	001-011154-999	LUBRICATOR, LHD, (5) FEED	1
<b>REQ'D</b>	<b>Part No.</b>	<b>DESCRIPTION</b>	<b>ITEM</b>
<b>BILL OF MATERIAL</b>			

NOTE:  
LEFT HAND DRIVE POWER PUMP (SHOWN) REQUIRES  
RIGHT HAND DRIVE LUBRICATOR.

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PACKING LUBRICATOR  
W/ GEAR REDUCER (LHD)  
MODEL: 217Q-4 (HP200)

DWG No.:

118625

SCALE:

NONE

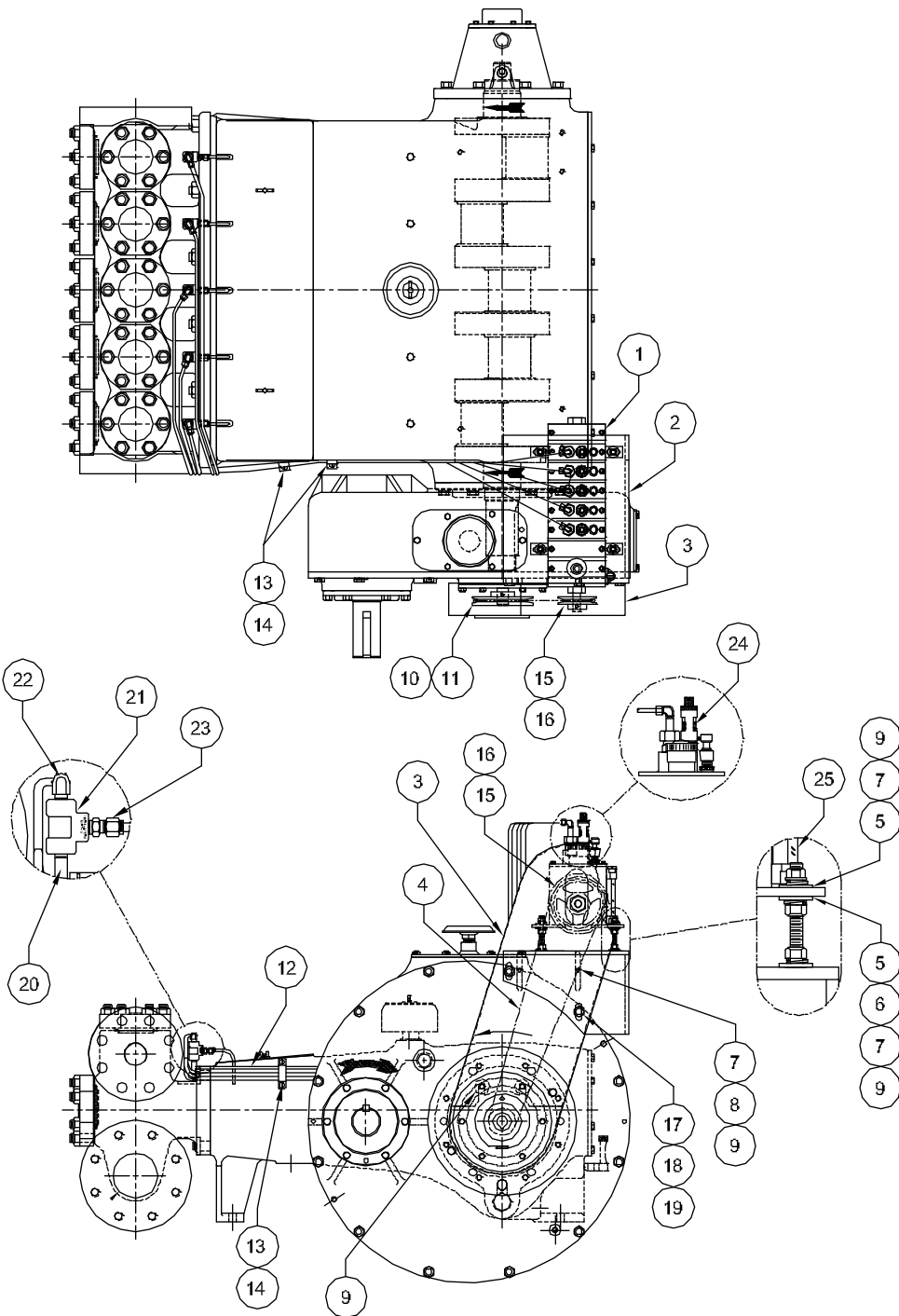
REV

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SHT.:

1 OF 1





SAME PLUMBING FOR CASTINGS AND BILLETS (CASTING SHOWN).

1	GAS-105265-000	SIGHT GLASS	25
1	GAS-105264-000	PUMP ASSEMBLY w/ GASKET	24
<b>REPLACEMENT PARTS</b>			
5	462-040012-278	MALE CONN., STR., 1/4" TUBE x 1/8" NPT	23
5	462-040022-278	MALE CONN., 90 DEG 1/4" TUBE x 1/8" NPT	22
5	469-020002-278	PIPE TEE, 1/8" NPT	21
5	157-018112-278	PIPE NIPPLE, 1/8" NPT	20
2	154-012087-286	LOCK WASHER 1/2"	19
2	155-012138-286	WASHER 1/2"	18
2	100-012134-290	CAP SCREW 1/2" x 1-3/4"	17
1	420-020509-019	HUB, DRIVEN, 5/8" BORE	16
1	419-101050-999	SHEAVE, DRIVEN, 5" DD	15
6	126-006516-405	DRIVE SCREW	14
3	001-025128-405	LINE CLAMP	13
300"	330-002003-365	TUBING, 1/4"	12
1	420-011000-000	HUB, PUMP DRIVER, 1" BORE	11
1	419-010032-999	SHEAVE, DRIVER, 3.2" DD	10
16	155-038100-286	WASHER, 3/8"	9
2	100-038058-290	CAP SCREW 3/8" X 5/8" LG.	8
14	154-038068-286	LOCK WASHER 3/8"	7
4	104-038400-286	STUD, 3/8" X 4" LG	6
12	133-038016-286	NUT, ZINC PLATED 3/8"	5
1	421-100420-008	V-BELT	4
1	AAB-116599-C02	BELT GUARD	3
1	AAB-116600-231	LUBRICATOR BRACKET	2
1	001-011154-999	LUBRICATOR, LHD, (5) FEED	1
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			

NOTE:  
LEFT HAND DRIVE POWER PUMP (SHOWN) REQUIRES  
RIGHT HAND DRIVE LUBRICATOR.

**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**ASSEMBLY, PACKING LUBRICATOR  
W/ GEAR REDUCER, D.O. H. (LHD)  
MODEL: 217Q-4 (HP200 )**

DWG No.: 118626 SCALE: NONE REV A SHT.: 1 of 1

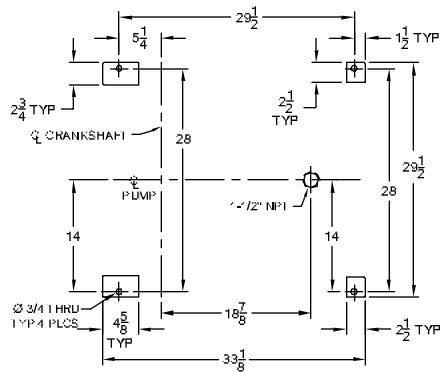
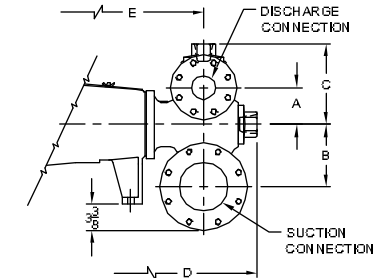
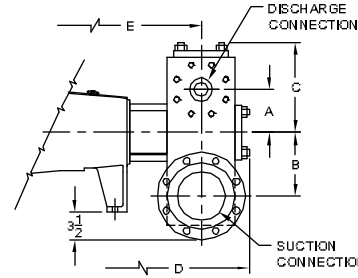
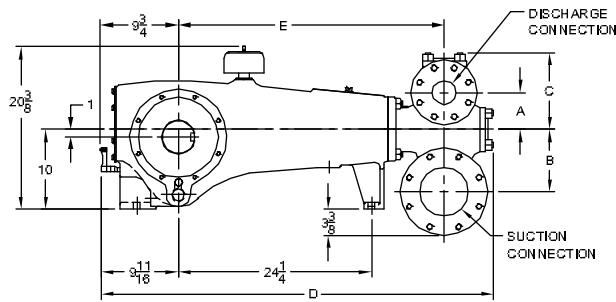
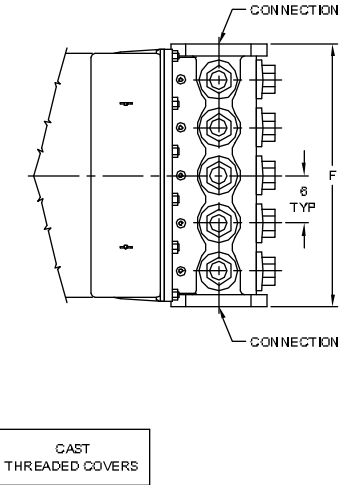
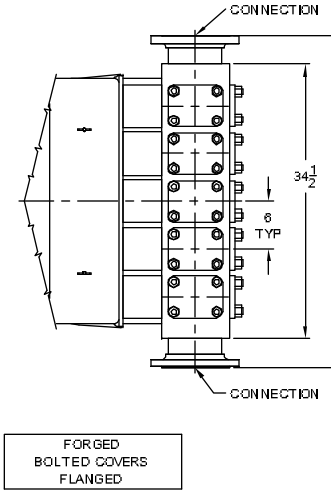
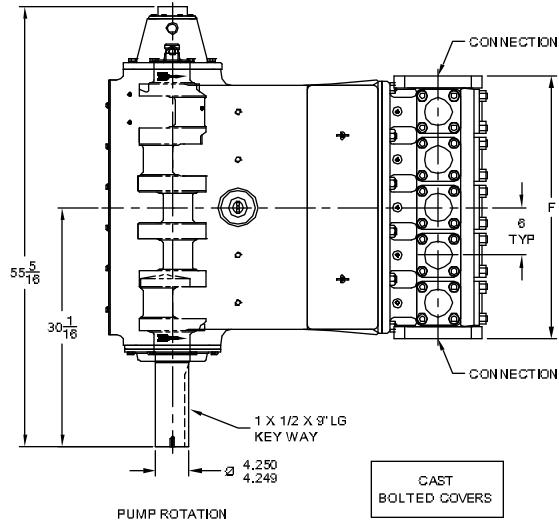
**NOTES:**

1. RIGHT HAND DRIVE SHOWN, FOR LEFT HAND DRIVE MOVE SHAFT AND DIMENSIONS TO THE OPPOSITE SIDE SHOWN.
2. DIMENSIONS SHOWN ARE FOR INSTALLATION PURPOSES.

**FIELD CONNECTIONS**

PUMP TYPE	DIMENSIONS IN INCHES	
	DISCHARGE CONNECTION SIZE	SUCTION CONNECTION SIZE
217Q-4L	3" - 600# ANSI	6" - 150# ANSI

PUMP TYPE	DIMENSIONS IN INCHES					
	A	B	C	D	E	F
CAST, BOLTED COVERS	4-5/8	7-7/8	9-5/8	49-3/8	33-3/8	33
FORGED BOLTED, COVERS	5-3/8	8	11-1/4	51-1/4	35-5/16	41-5/8
CAST, THREADED COVERS	4-5/8	7-7/8	10-1/8	49-5/8	33-3/8	33



**MOUNTING FEET DETAIL**



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

**GENERAL DIMENSION, RHD  
"L" CLASS FLUID END  
217Q-4L (HP200AL)**

DWG No.:

118604

SCALE:

NONE

REV

A

SHT.:

1 OF 1

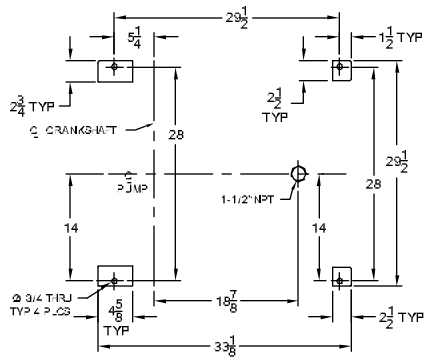
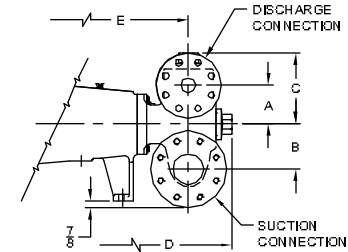
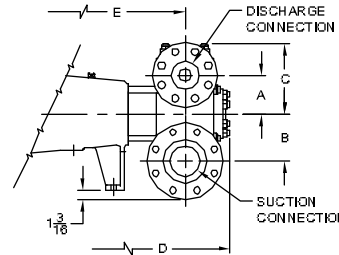
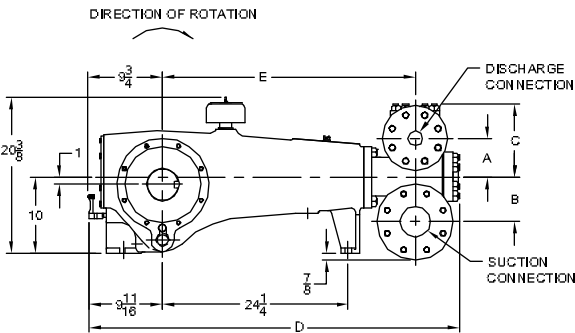
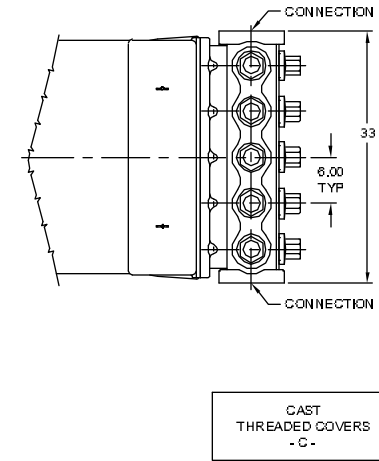
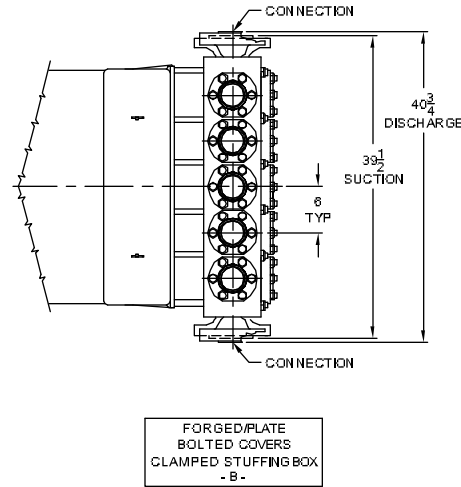
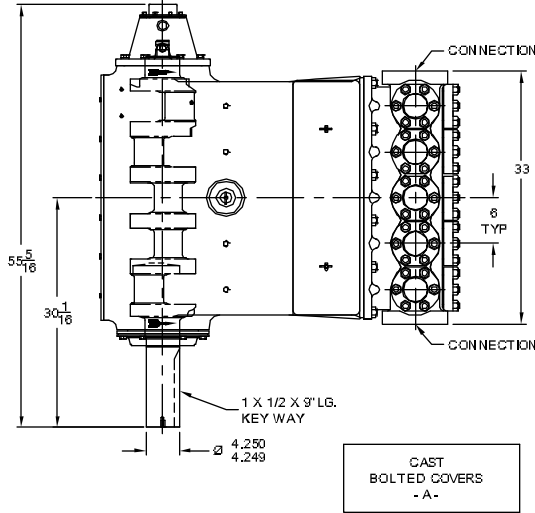
**NOTES:**

1. RIGHT HAND DRIVE SHOWN, FOR LEFT HAND DRIVE MOVE SHAFT AND DIMENSIONS TO THE OPPOSITE SIDE SHOWN.
2. DIMENSIONS SHOWN ARE FOR INSTALLATION PURPOSES.

**FIELD CONNECTIONS**

PUMP TYPE	DIMENSIONS IN INCHES		
	DISCHARGE CONNECTION SIZE	SUCTION CONNECTION SIZE	
217Q-4M	- A -	2" - 1500# ANSI	4" - 300# ANSI
	- B -	2" - 1500# ANSI	4" - 300# ANSI
	- C -	2" - 1500# ANSI	4" - 300# ANSI

PUMP TYPE	DIMENSIONS IN INCHES				
	A	B	C	D	E
CAST, BOLTED COVERS (-A-)	5-1/16	5-7/8	9-1/2	48-11/16	33
FORGED/PLATE, CLAMPED BOX (-B-)	5-1/16	6-3/16	9-1/4	49-3/8	33-5/8
CAST, THREADED COVERS (-C-)	5-1/16	5-7/8	9-5/16	47-7/8	33



**MOUNTING FEET DETAIL**

**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE: **GENERAL DIMENSION, RHD  
 "M" CLASS FLUID END  
 217Q-4M ( HP200AM )**

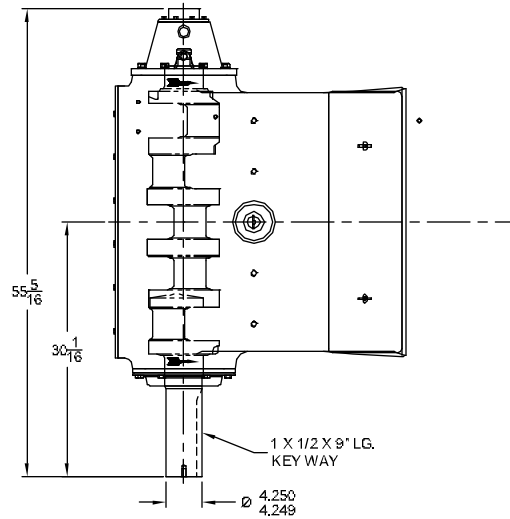
DWG No.: <b>118605</b>	SCALE: <b>NONE</b>	REV <b>A</b>	SHT.: <b>1</b> OF <b>1</b>
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**NOTES:**

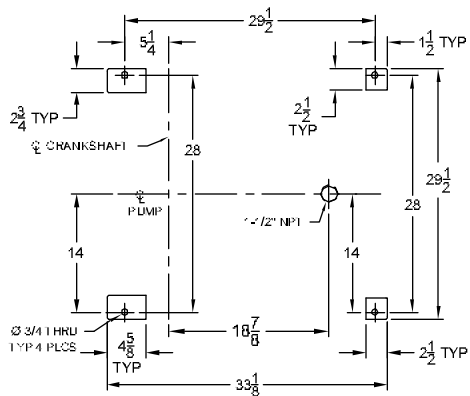
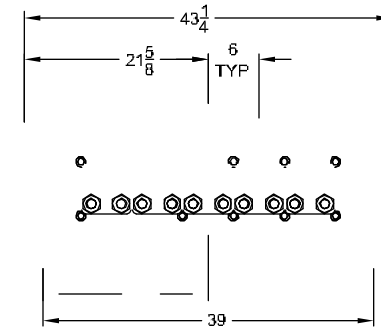
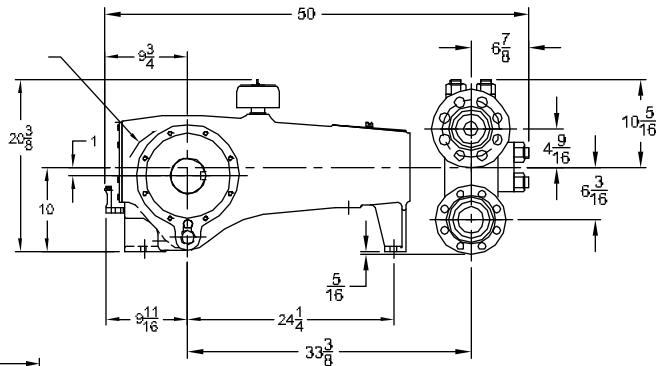
1. RIGHT HAND DRIVE SHOWN, FOR LEFT HAND DRIVE  
MOVE SHAFT AND DIMENSIONS TO THE OPPOSITE SIDE SHOWN.
2. DIMENSIONS SHOWN ARE FOR INSTALLATION PURPOSES.

**FIELD CONNECTIONS**

PUMP TYPE	DIMENSIONS IN INCHES	
	DISCHARGE CONNECTION SIZE	SUCTION CONNECTION SIZE
217Q-4H	2" - 2500# ANSI	3" - 300# ANSI

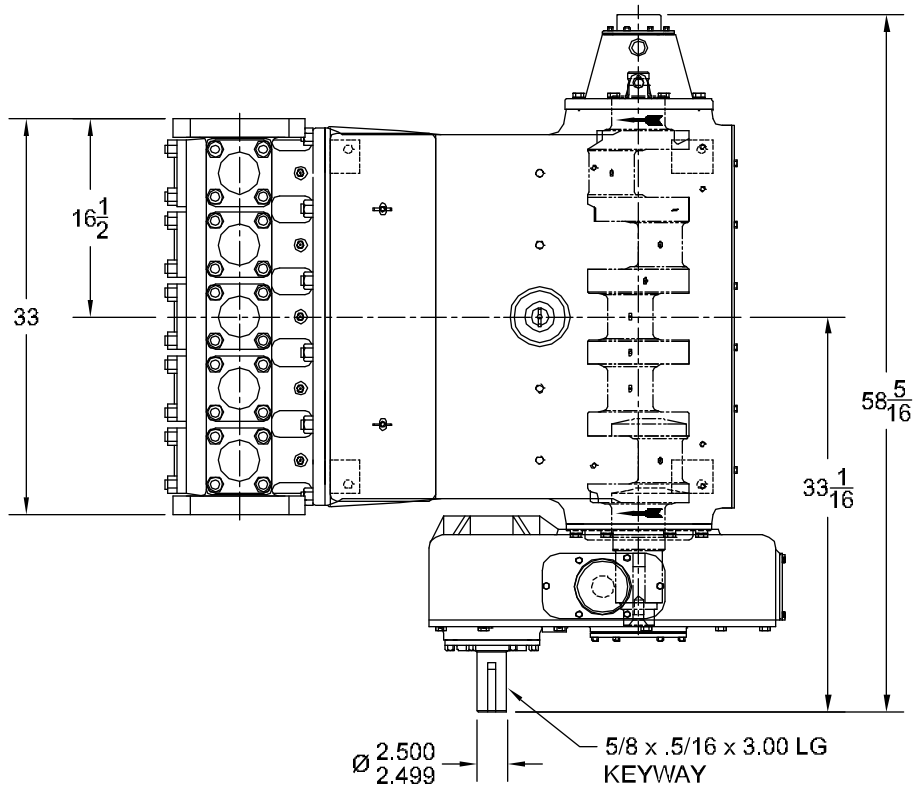


FORGED  
BOLTED COVERS  
FLANGED

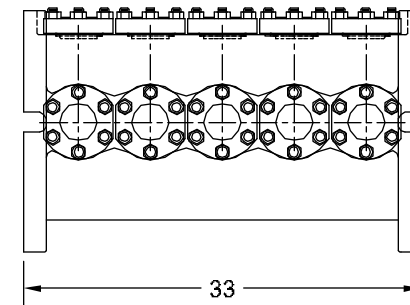
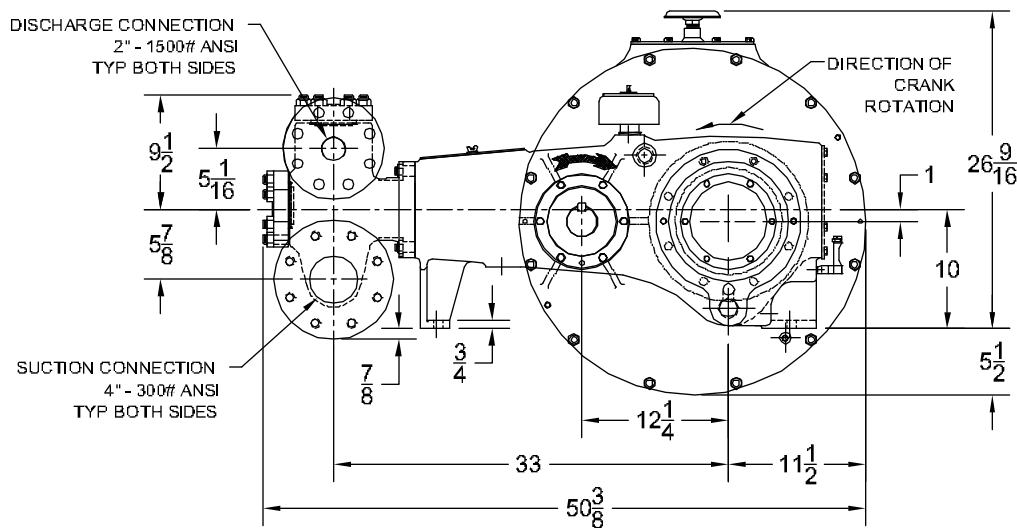


**MOUNTING FEET DETAIL**

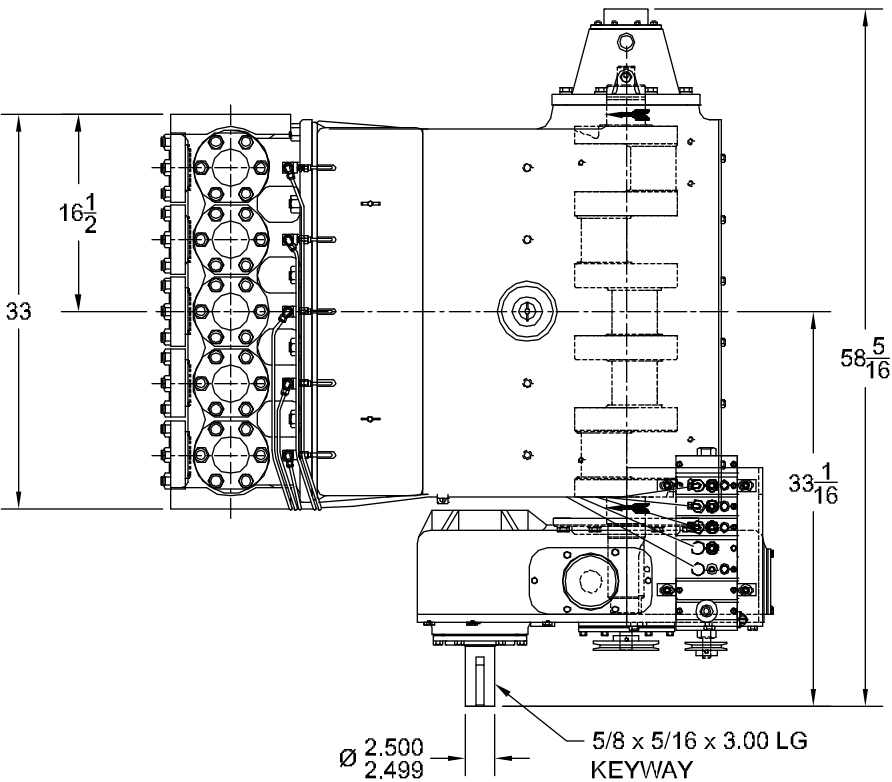
<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: <b>GENERAL DIMENSION, RHD "H" CLASS FLUID END 217Q-4H</b>			
DWG No.:	SCALE:	REV:	SH1.:
118606	NONE	A	1 OF 1



1. ALL GEAR REDUCER DRIVEN PUMPS ARE LEFT HAND DRIVE ONLY.
2. "M" CLASS CAST FLUID END SHOWN. FOR OTHER CLASS FLUID ENDS AND OTHER DIMENSIONS SEE DRAWINGS 118604, 118605, AND 118606.

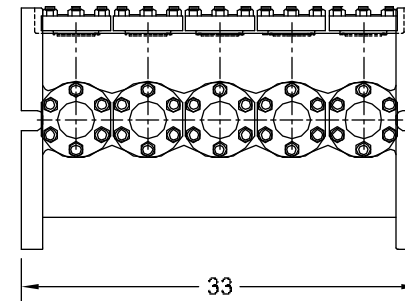
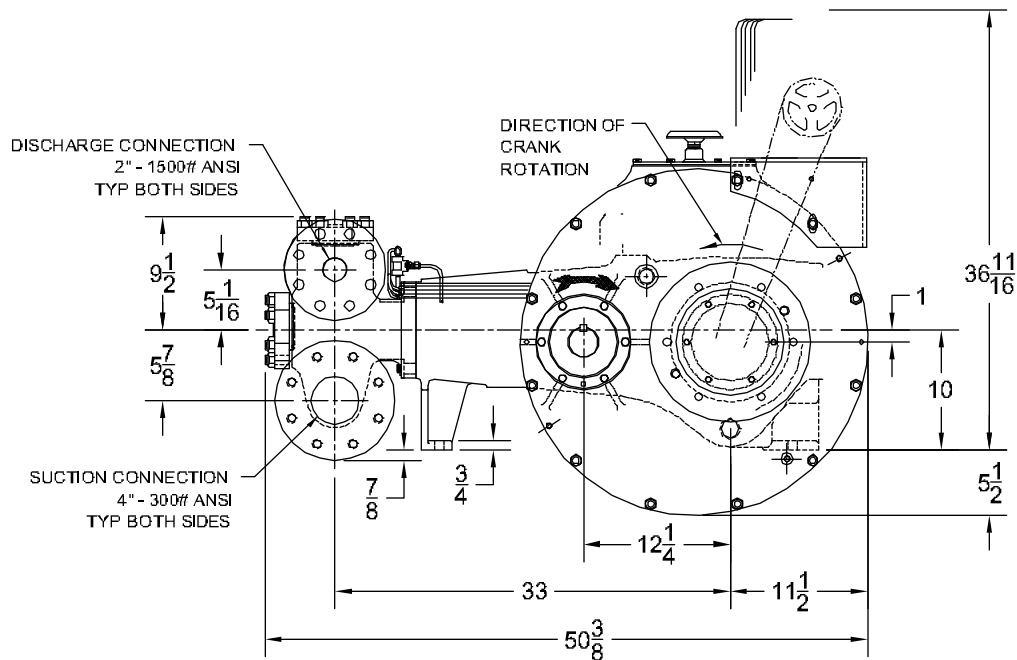


<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: <b>GENERAL DIMENSION, HELICAL GEAR REDUCER MODEL: 217Q-4 (HP200)</b>			
DWG No.:	118610	SCALE:	NONE
REV	A	SHT.:	1 of 1



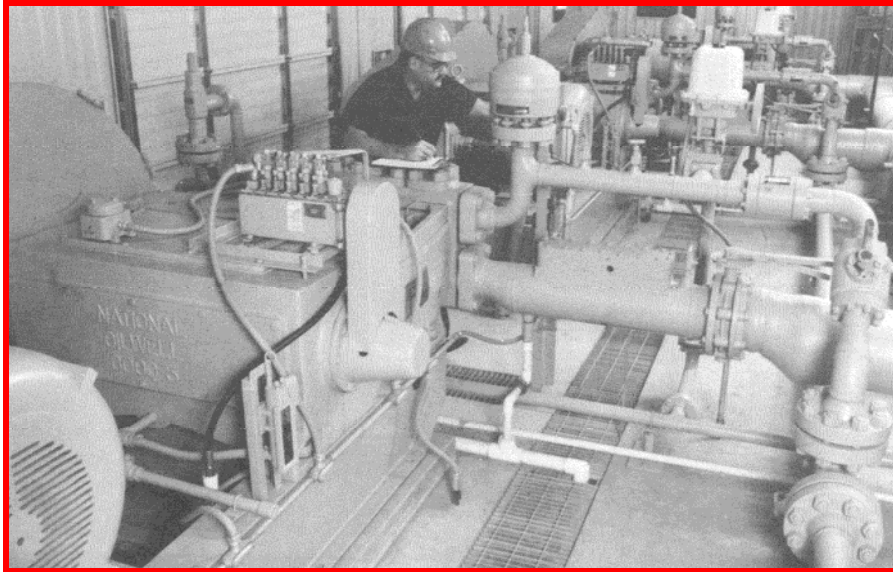
NOTE:

1. LEFT HAND DRIVE POWER PUMP (SHOWN) REQUIRES LEFT HAND DRIVE LUBRICATOR.
2. ALL GEAR REDUCER DRIVEN PUMPS ARE LEFT HAND DRIVE ONLY.
3. "M" CLASS CAST FLUID END SHOWN. FOR OTHER CLASS FLUID ENDS AND OTHER DIMENSIONS SEE DRAWINGS 118604, 118605, AND 118606.



<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: <b>GENERAL DIMENSION, HELICAL GEAR REDUCER, w/ LUBRICATOR (LHD) MODEL: 217Q-4 (HP200 )</b>			
DWG No.:	SCALE:	REV	SHT.:
118609	NONE	A	1 OF 1

# **NATIONAL OILWELL VARCO**



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