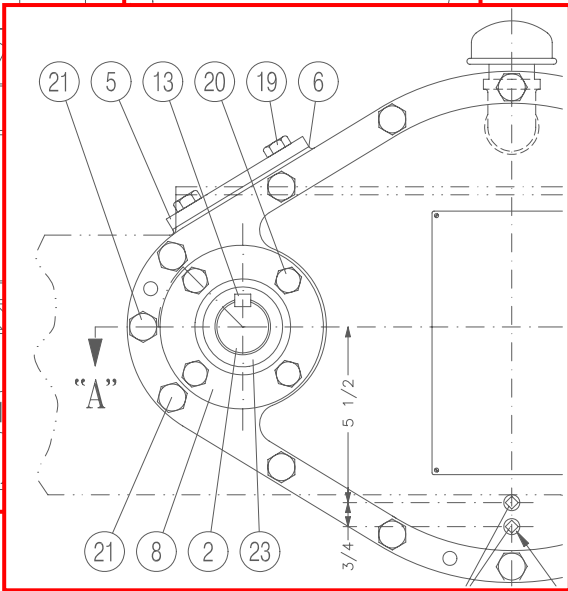
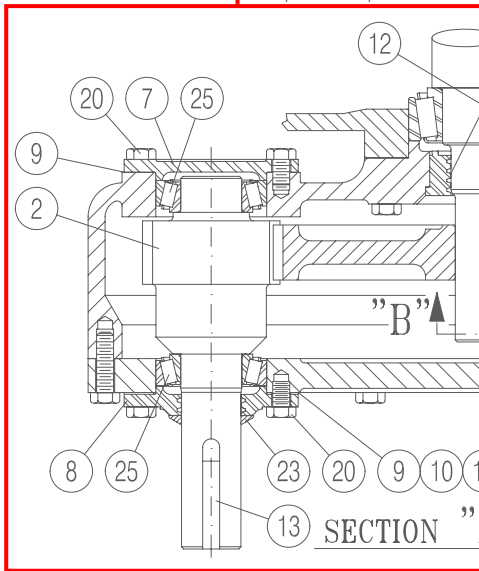
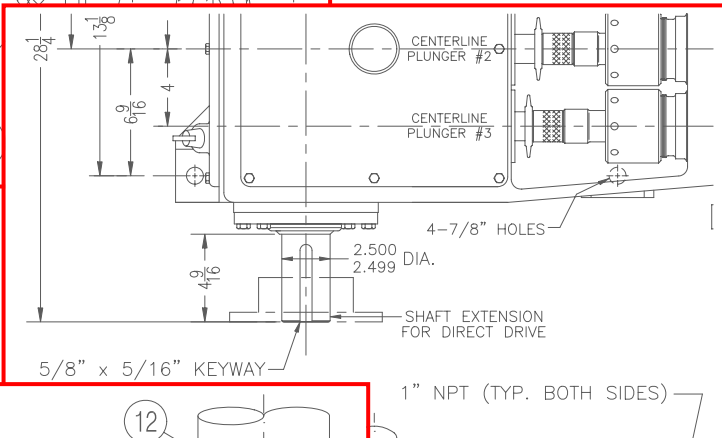
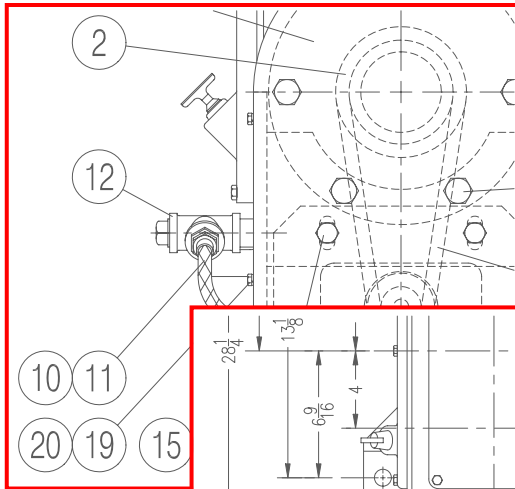
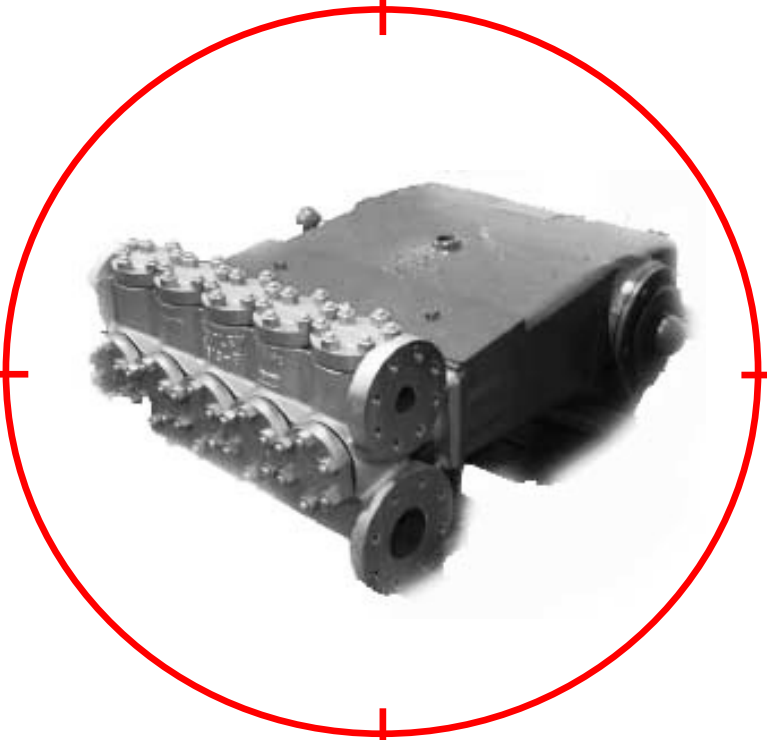
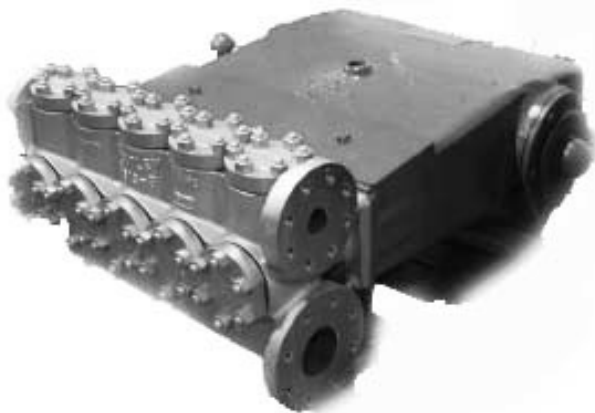


# 163Q-4 Multiplex Plunger Pumps Parts List

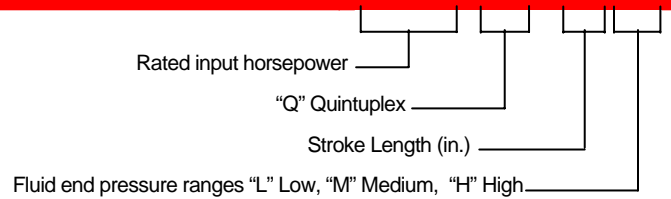


**Types:**  
**163Q-4L**  
**163Q-4M**  
**163Q-4H**

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



163Q-4



**Index and Check List:**

PAGE	DWG. NUMBER	DESCRIPTION	SERIES OF ISSUE	DATE OF ISSUE
1	118408	ASSEMBLY, CAST FLUID END, BRONZE (L)	FIRST	11-10-06
2	118407	ASSEMBLY, CAST FLUID END, STAINLESS STEEL (L)	FIRST	11-10-06
3	118409	ASSEMBLY, CAST FLUID END, DUCTILE IRON (L)	FIRST	11-10-06
4	118410	ASSEMBLY, STEEL BILLET FLUID END (L)	FIRST	11-10-06
5	118412	ASSEMBLY, CAST FLUID END, BRONZE (M) FLANGED CONNECTION	FIRST	11-10-06
6	118411	ASSEMBLY, CAST FLUID END, STAINLESS STEEL (M) FLANGED CONNECTION	FIRST	11-10-06
7	118413	ASSEMBLY, CAST FLUID END, DUCTILE IRON (M) THREADED CONNECTION	FIRST	11-10-06
8	118414	ASSEMBLY, BLOCK FLUID END, STEEL (M) FLANGED CONNECTION	FIRST	11-10-06
9	118415	ASSEMBLY, BLOCK FLUID END, CLAMPED STUFFING BOX, STAINLESS STEEL (H) FLANGED	FIRST	11-10-06
10	118416	ASSEMBLY, BLOCK FLUID END, CLAMPED STUFFING BOX, STEEL (H) FLANGED	FIRST	11-10-06
11	118405	ASSEMBLY, POWER END, 163Q-4	FIRST	11-10-06
12	118406	ASSEMBLY, CRANKSHAFT POWER END, 163Q-4	FIRST	11-10-06
13	118417	ASSEMBLY, GEAR REDUCER UNIT, 163Q-4	FIRST	11-10-06
15	118420	ASSEMBLY, SPHERICAL VALVE, (L)	FIRST	11-10-06
16	118421	ASSEMBLY, SPHERICAL VALVE, SEVERE DUTY (L)	FIRST	11-10-06
17	118422	ASSEMBLY, DISC VALVE (L)	FIRST	11-10-06
18	118423	ASSEMBLY, SEVERE DUTY VALVE (L)	FIRST	11-10-06
19	118425	ASSEMBLY, SPHERICAL VALVE (M)	FIRST	11-10-06
20	118426	ASSEMBLY, SPHERICAL VALVE, SEVERE DUTY (M)	FIRST	11-10-06
21	118427	ASSEMBLY, DISC VALVE (M)	FIRST	11-10-06
22	118428	ASSEMBLY, SEVERE DUTY VALVE (M)	FIRST	11-10-06

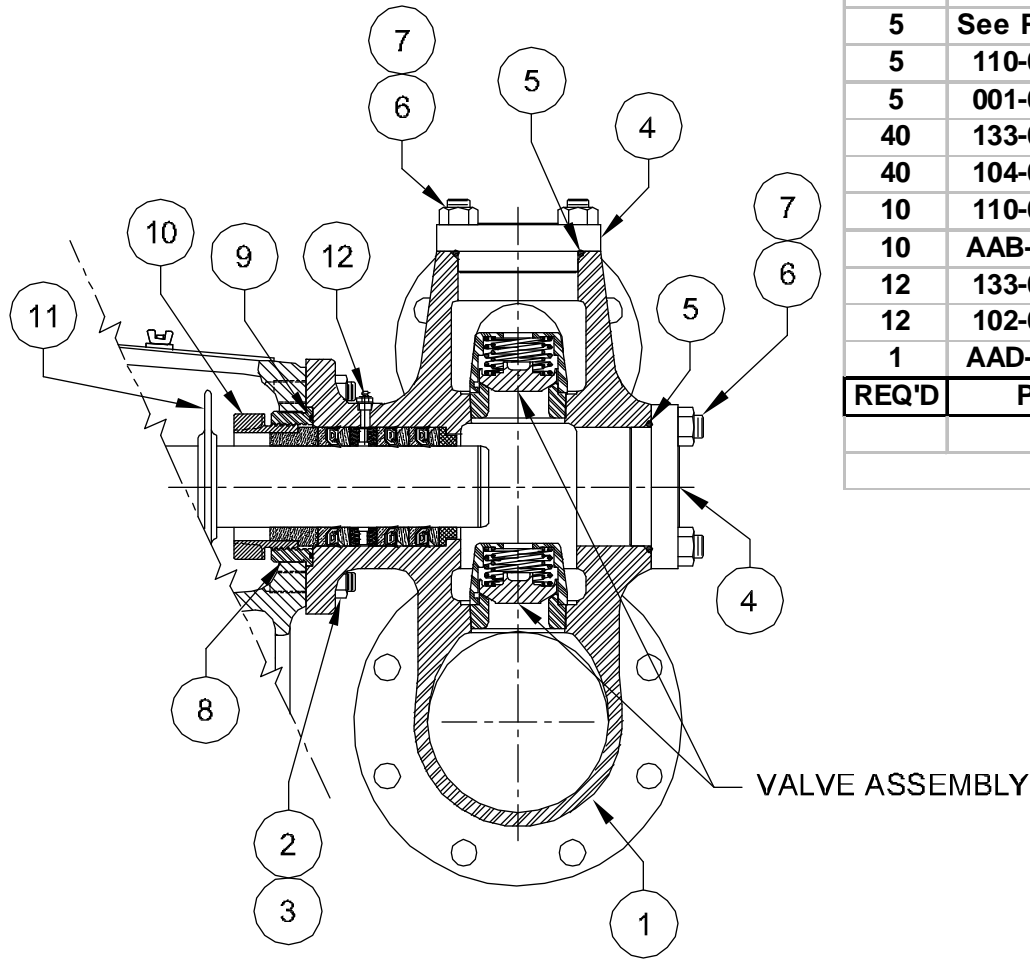
## Index and Check List Multiplex Plunger Pump (Continued)



PAGE	DWG. NUMBER	DESCRIPTION	SERIES OF ISSUE	DATE OF ISSUE
23	118424	ASSEMBLY, SPHERICAL VALVE (H)	FIRST	11-10-06
24	118548	ASSEMBLY, SPHERICAL VALVE, SEVERE DUTY (H)	FIRST	11-10-06
25	118549	ASSEMBLY, DISC VALVE (H)	FIRST	11-10-06
26	118429	ASSEMBLY, SEVERE DUTY VALVE (H)	FIRST	11-10-06
27	118430	TOOL KIT, (L) CLASS FLUID END	FIRST	11-10-06
28	118431	TOOL KIT, (M) CLASS FLUID END	FIRST	11-10-06
29	118432	TOOL KIT, (H) CLASS FLUID END	FIRST	11-10-06
30	118433	ASSEMBLY, PLUNGER KIT 2-3/4" – 3-3/8" J-STYLE PACKING (L) FLUID END	FIRST	11-10-06
35	118434	ASSEMBLY, PLUNGER KIT 2-3/4" – 3-3/8" BRAID STYLE PACKING (L) FLUID END	FIRST	11-10-06
40	118435	ASSEMBLY, PLUNGER KIT 2-3/4" – 3-3/8" SSF-4 STYLE PACKING (L) FLUID END	FIRST	11-10-06
45	118436	ASSEMBLY, PLUNGER KIT 1-5/8" - 2-1/2" J-STYLE PACKING (M) FLUID END	FIRST	11-10-06
53	118437	ASSEMBLY, PLUNGER KIT 1-5/8" – 2-1/2" BRAID STYLE PACKING (M) FLUID END	FIRST	11-10-06
61	118438	ASSEMBLY, PLUNGER KIT 1-5/8" – 2-1/2" SSF-4 STYLE PACKING (M) FLUID END	FIRST	11-10-06
69	118439	ASSEMBLY, PLUNGER KIT 1-1/4" – 1-3/4" J-STYLE PACKING, (H) FLUID END	FIRST	11-10-06
74	118440	ASSEMBLY, PLUNGER KIT 1-1/4" – 1-3/4" BRAID STYLE PACKING, (H) FLUID END	FIRST	11-10-06
79	118441	ASSEMBLY, PLUNGER KIT 1-1/4" – 1-3/4" SSF-4 STYLE PACKING, (H) FLUID END	FIRST	11-10-06
84	118442	PLUNGERS, 2-3/4" THRU 3-3/8", HARD SURFACE (L)	FIRST	11-10-06
85	118443	PLUNGERS, 2-3/4" THRU 3-3/8", CERAMIC (L)	FIRST	11-10-06
86	118444	PLUNGERS, 1-5/8" THRU 2-1/2", HARD SURFACE (M)	FIRST	11-10-06
87	118445	PLUNGERS, 1-5/8" THRU 2-1/2", CERAMIC (M)	FIRST	11-10-06
88	118446	PLUNGERS, 1-1/4" THRU 1-3/4", HARD SURFACE (H)	FIRST	11-10-06
89	118418	ASSEMBLY, PACKING LUBRICATOR, 163Q-4	FIRST	11-10-06
90	118419	ASSEMBLY, PACKING LUBRICATOR, D.O. H. 163Q-4	FIRST	11-10-06
91	118447	GENERAL DIMENSION, RHD, 163Q-4L	FIRST	11-10-06
92	118448	GENERAL DIMENSION, RHD, 163Q-4M	FIRST	11-10-06
93	118449	GENERAL DIMENSION, RHD, 163Q-4H	FIRST	11-10-06
94	118453	GENERAL DIMENSION, LHD, WITH GEAR REDUCER, 163Q-4	FIRST	11-10-06
95	118452	GENERAL DIMENSION, LHD, WITH GEAR REDUCER AND LUBRICATOR, 163Q-4H	FIRST	11-10-06

10	118423	SEVERE DUTY - (AR)	
10	118421	SPHERICAL VALVE - SEVERE DUTY	
10	118420	SPHERICAL VALVE	
10	118422	DISC VALVE	
	<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
<b>REQ'D</b>	<b>Part No.</b>		<b>ITEM</b>

**BILL OF MATERIAL**

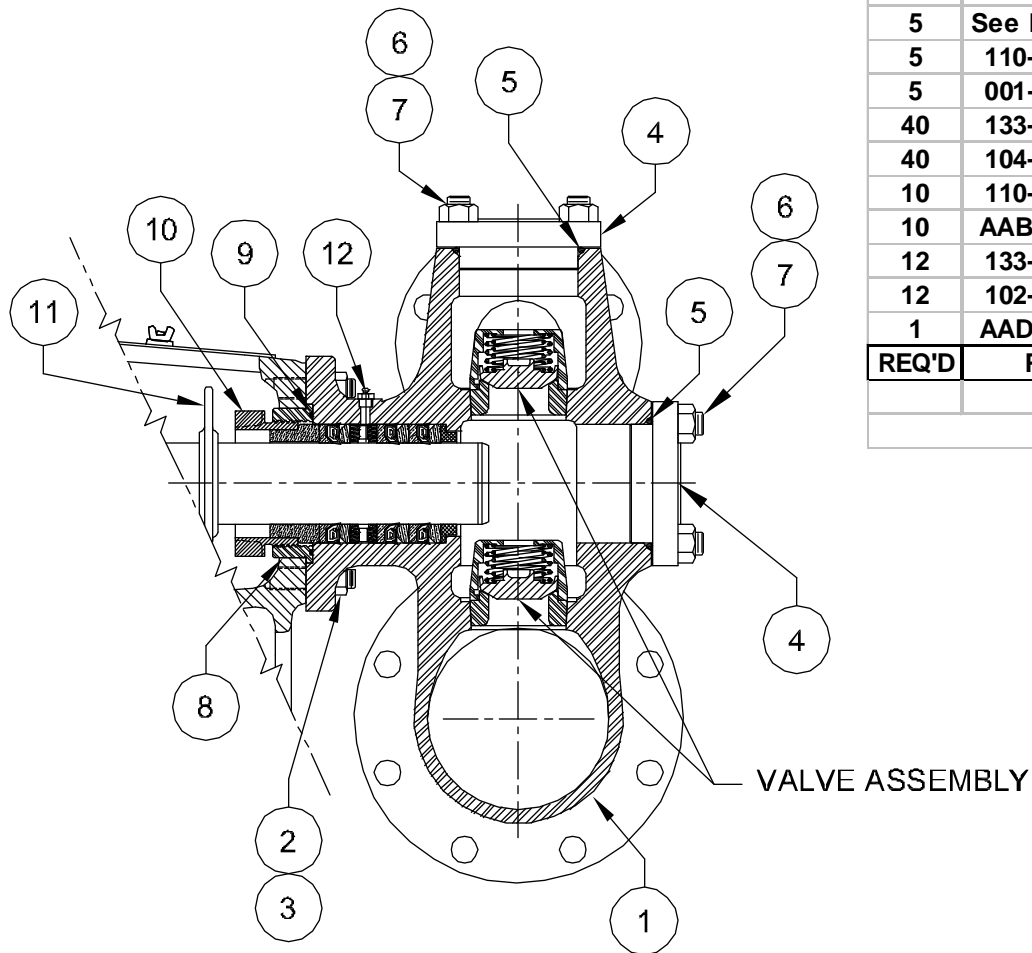


HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

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

D/WG No.: 118408	SCALE: NONE	REV A	SHT.: 1 OF 1
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1



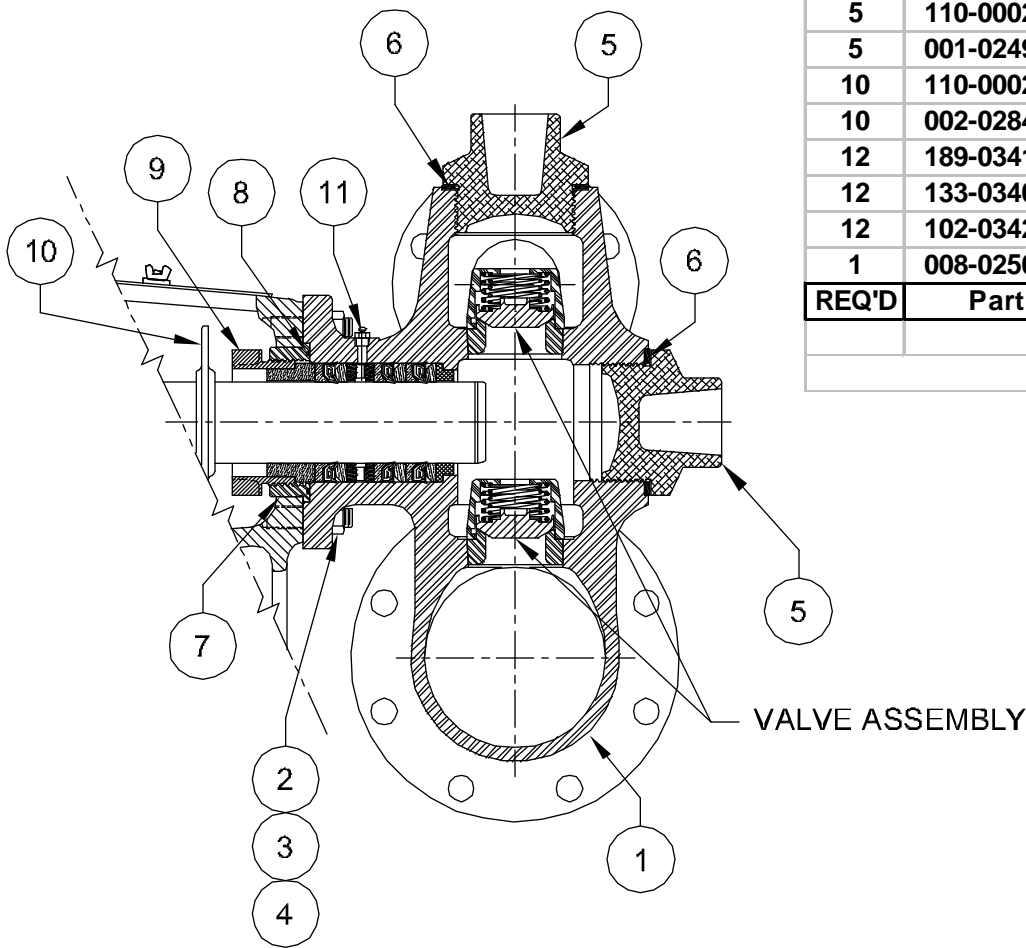
10	118423	SEVERE DUTY - (AR)	
10	118421	SPHERICAL VALVE - SEVERE DUTY	
10	118420	SPHERICAL VALVE	
10	118422	DISC VALVE	
	<b>DRAWING No:</b>	<b>VALVE ASSEMBLY:</b>	
5	180-165000-220	LUBE FITTING	12
5	001-007986-201	BAFFLE DISC	11
5	See Plunger Kits	GLAND NUT	10
5	110-000246-200	O-RING ( ADAPTER )	9
5	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

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

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

DWG No.: 118407 SCALE: NONE REV A SHT.: 1 OF 1



10	118423	SEVERE DUTY - (AR)	
10	118421	SPHERICAL VALVE - SEVERE DUTY	
10	118420	SPHERICAL VALVE	
10	118422	DISC VALVE	
	<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
REQ'D	Part No.		ITEM
<b>BILL OF MATERIAL</b>			

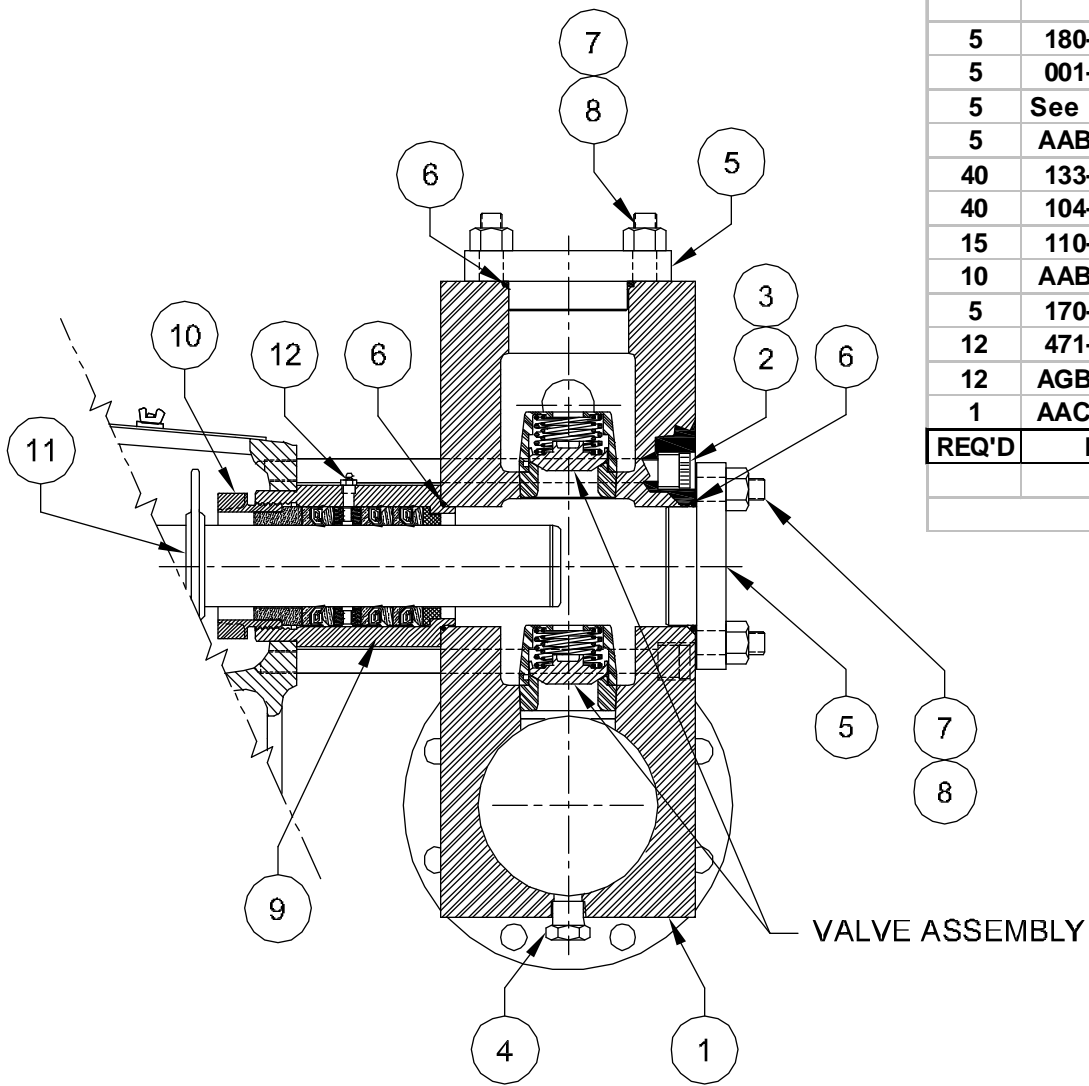
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**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

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

DWG No.: 118409    SCALE: NONE    REV: A    SHT.: 1 OF 1

10	118423	SEVERE DUTY - (AR)	
10	118421	SPHERICAL VALVE - SEVERE DUTY	
10	118420	SPHERICAL VALVE	
10	118422	DISC VALVE	
	<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	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
<b>REQ'D</b>	<b>Part No.</b>		<b>ITEM</b>
<b>BILL OF MATERIAL</b>			



4

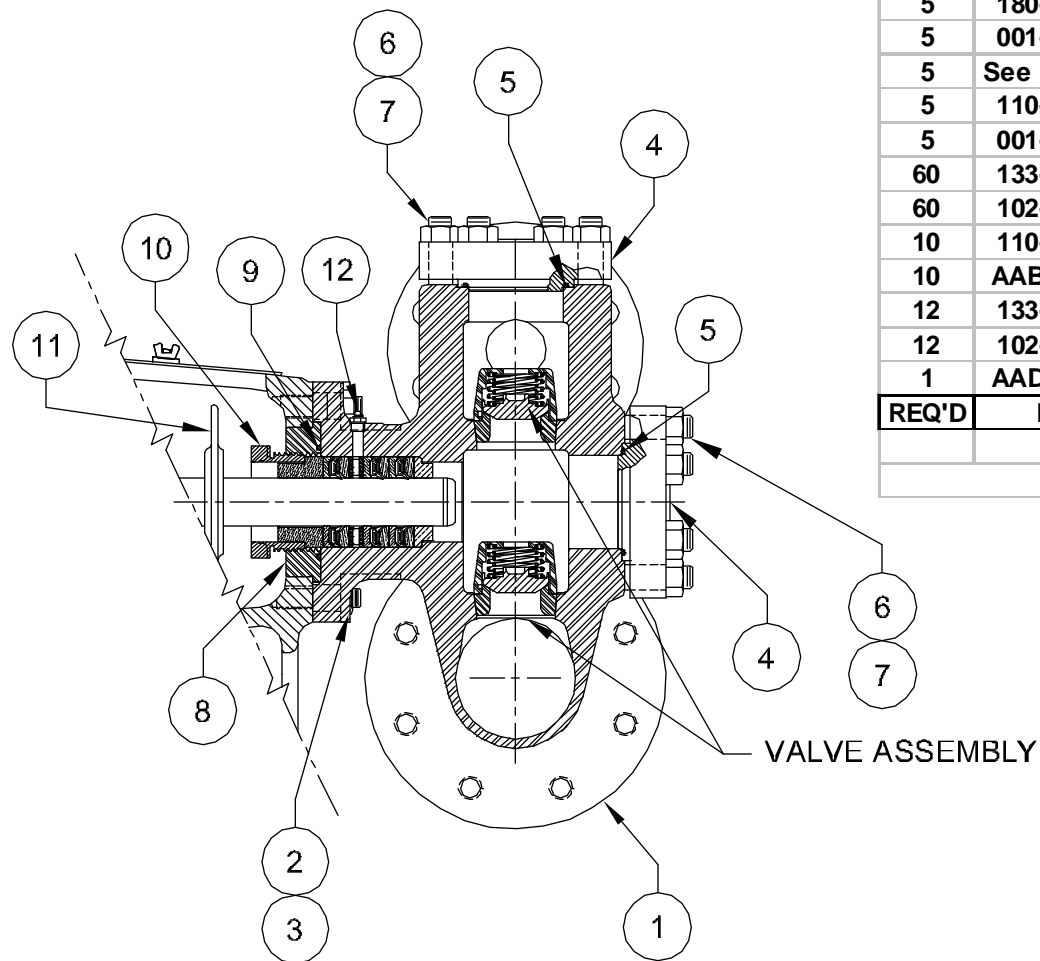
**NOV NATIONAL OILWELL VARCO**

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

TITLE:

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

DWG No.:	SCALE:	REV	SHT.:
118410	NONE	A	1 OF 1



10	118428	SEVERE DUTY - (AR)	
10	118426	SPHERICAL VALVE - SEVERE DUTY	
10	118425	SPHERICAL VALVE	
10	118427	DISC VALVE	
	<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**

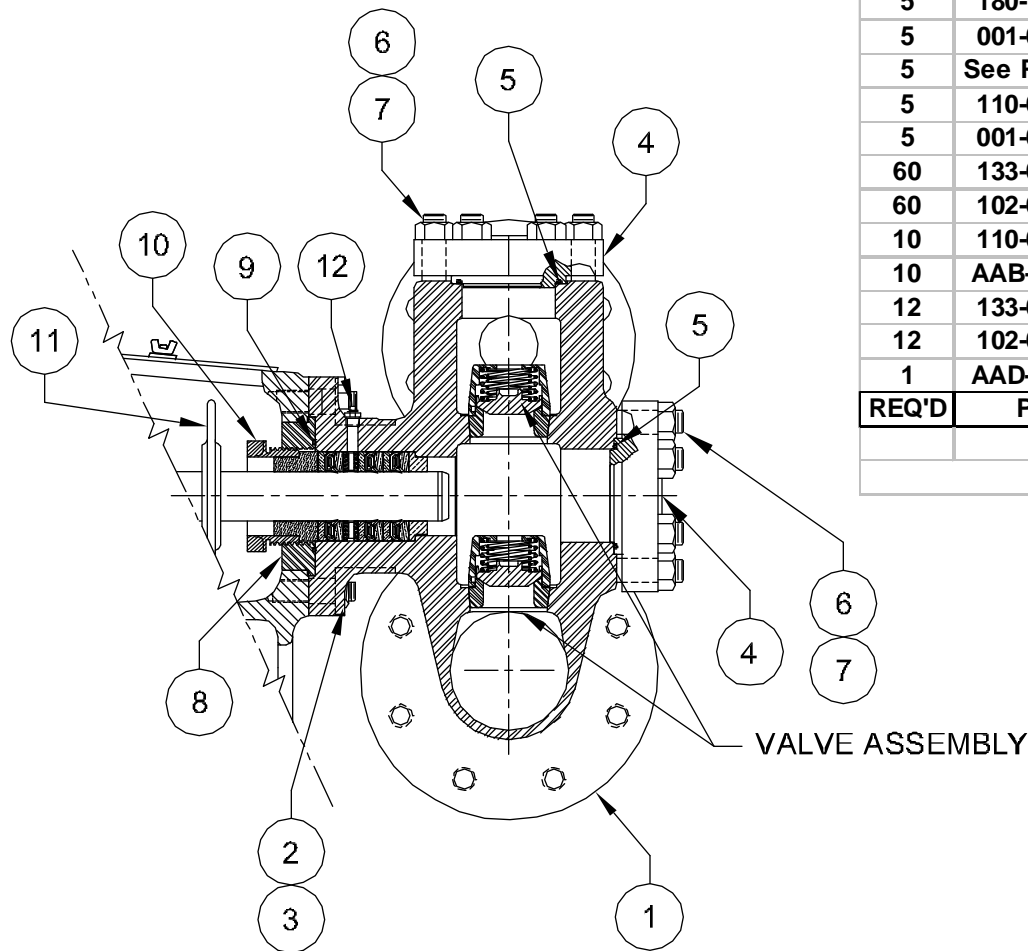
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:

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

DWG No:	SCALE:	REV	SHT.:
118412	NONE	A	1 OF 1





10	118428	SEVERE DUTY - (AR)	
10	118426	SPHERICAL VALVE - SEVERE DUTY	
10	118425	SPHERICAL VALVE	
10	118427	DISC VALVE	
	<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	001-023574-278	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
<b>REQ'D</b>	<b>Part No.</b>		<b>ITEM</b>
<b>BILL OF MATERIAL</b>			

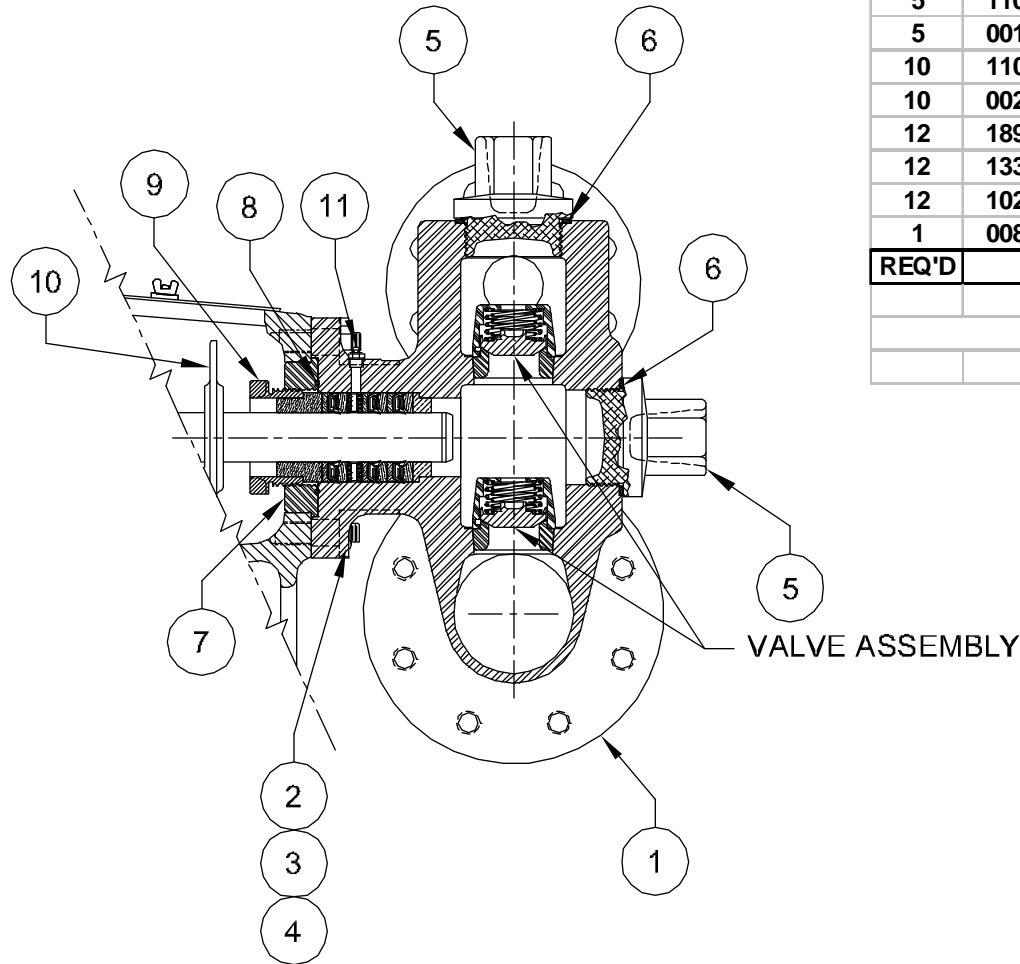
6

**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**  
**163Q-4M, 217Q-4M (HP 165AM, HP200AM)**

DWG No.: 118411      SCALE: NONE      REV: A      SHT.: 1 OF 1



10	118428	SEVERE DUTY - (AR)	
10	118426	SPHERICAL VALVE - SEVERE DUTY	
10	118425	SPHERICAL VALVE	
10	118427	DISC VALVE	
	<b>DRAWING No:</b>	<b>VALVE ASSEMBLY:</b>	
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			

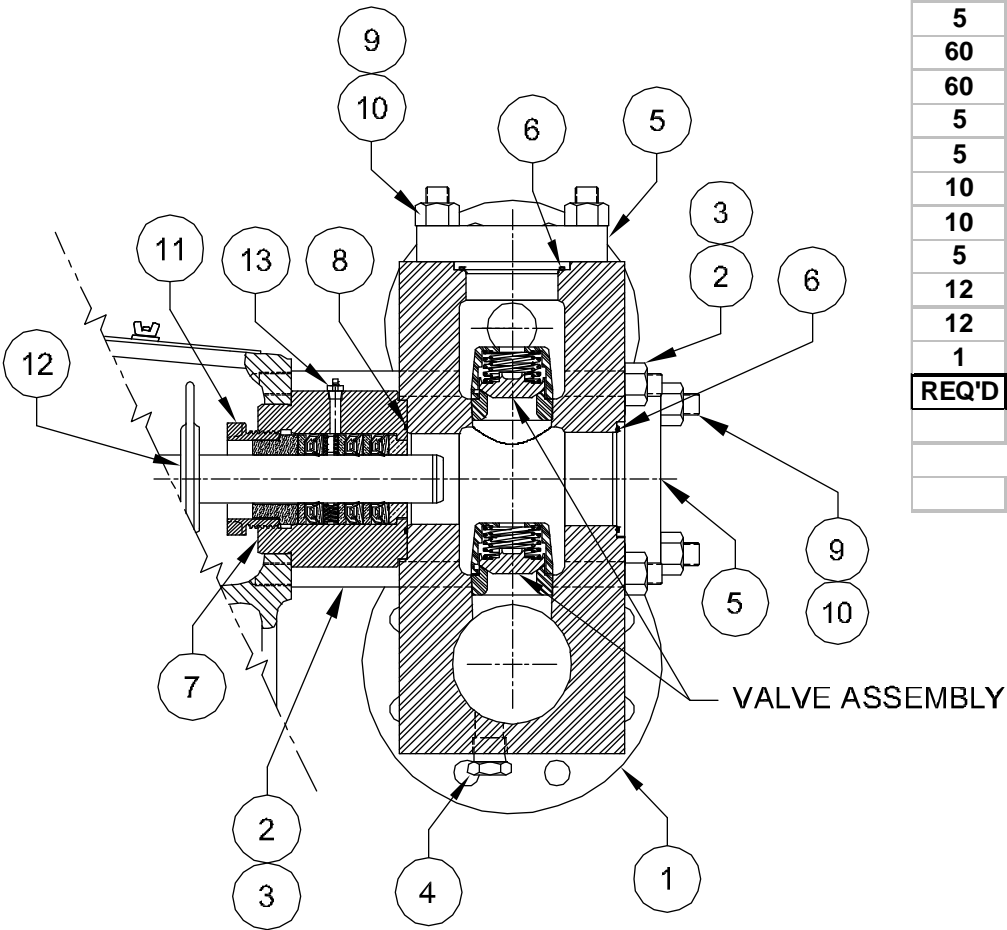
7



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

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

DWG No.: 118413	SCALE: NONE	REV A	SHT.: 1 OF 1
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10	118428	SEVERE DUTY - (AR)	
10	118426	SPHERICAL VALVE - SEVERE DUTY	
10	118425	SPHERICAL VALVE	
10	118427	DISC VALVE	
	<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>
BILL OF MATERIAL			

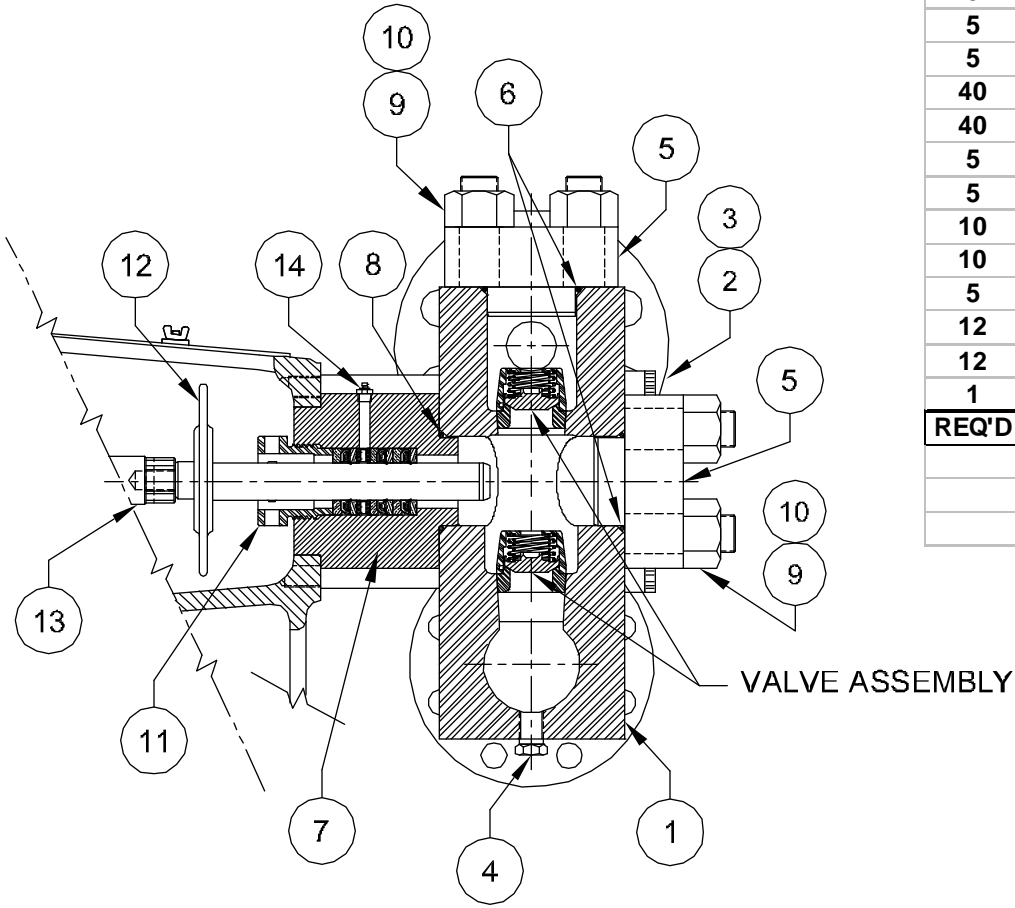
8

**NOV 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  
 163Q-4M, 217Q-4M (HP165AM, HP200AM)

DWG No.:	118414	SCALE:	NONE	REV	A	SH1.:	1 OF 1
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10	118429	SEVERE DUTY - (AR)	
10	118548	SPHERICAL VALVE - SEVERE DUTY	
10	118424	SPHERICAL VALVE	
10	118549	DISC VALVE	
	<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			



9

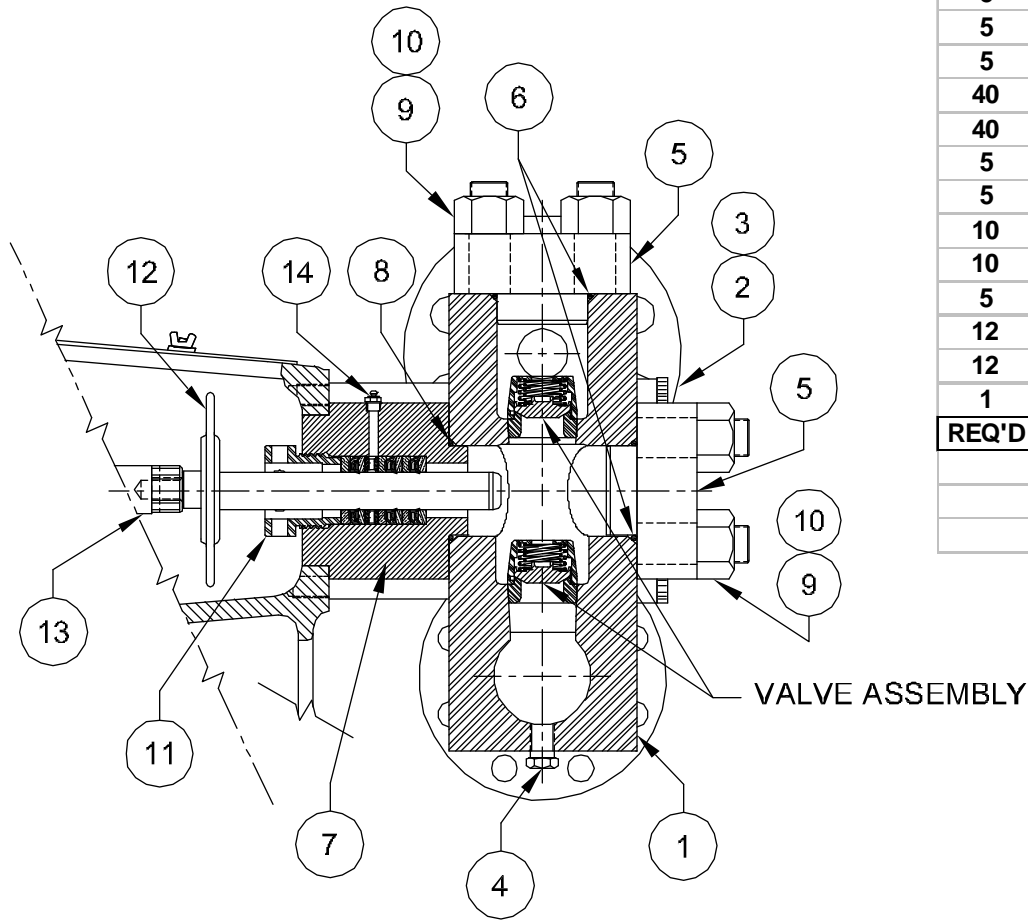
**NOV NATIONAL OILWELL VARCO**

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

TITLE:

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

DWG No.:	SCALE:	REV:	SHT.:
118415	NONE	A	1 OF 1



10	118429	SEVERE DUTY - (AR)	
10	118548	SPHERICAL VALVE - SEVERE DUTY	
10	118424	SPHERICAL VALVE	
10	118549	DISC VALVE	
	<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			

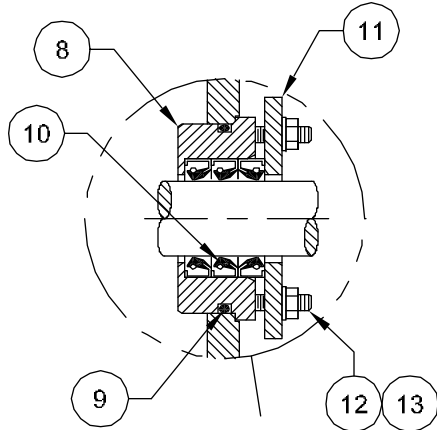
10

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

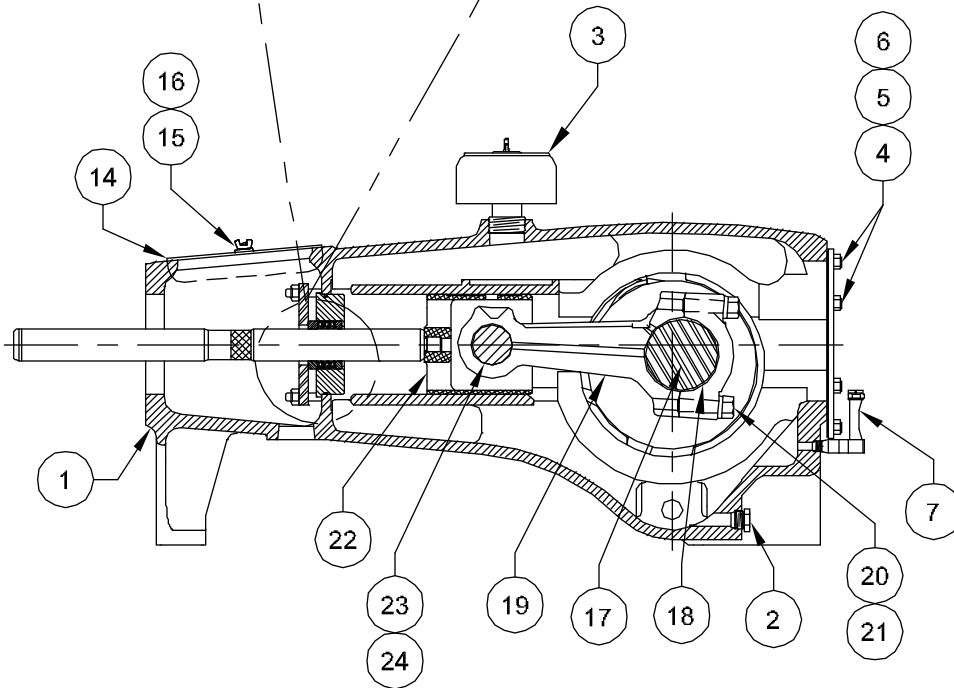
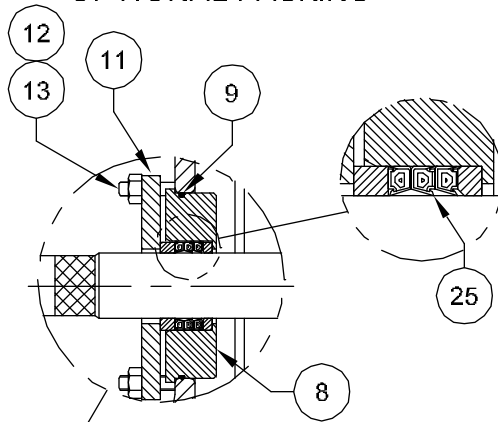
TITLE:  
**ASSEMBLY, BLOCK FLUID END  
 FORGED STEEL, 1-1/4" THRU 1-3/4"  
 PLUNGER, 163Q-4H & 217Q-4H**

DWG No.:	SCALE:	REV:	SHT.:
118416	NONE	A	1 OF 1

STANDARD LIP SEALS



OPTIONAL PACKING



5	001-028755-370	PACKING	25
5	001-023129-302	BUSHING (CONNECTING ROD)	24
5	001-023128-236	WRIST PIN	23
5	004-023127-359	CROSSHEAD	22
10	154-058108-286	WASHER (CONNECTING ROD)	21
10	100-058314-290	CAP SCREW (CONNECTING ROD)	20
5	998-810000-002	CONNECTING ROD (COMPLETE) - SEE NOTE	19
5	002-028392-999	SHELL BEARING (CONNECTING ROD)	18
1	008-024182-351	CRANKSHAFT	17
2	187-038016-286	WING NUT (CRADLE COVER)	16
2	104-038100-286	STUD (CRADLE COVER)	15
1	AAA-029923-231	CRADLE COVER	14
10	150-038016-306	LOCK NUT (GLAND)	13
10	102-038134-286	STUD (GLAND)	12
5	002-025365-231	GLAND	11
15	001-028755-370	OIL SEAL	10
5	110-000248-201	O-RING (WIPER BOX)	9
5	002-025366-237	WIPER BOX	8
1	001-010803-999	OIL LEVEL GAUGE	7
16	100-038034-290	CAP SCREW (CRANKCASE COVER)	6
1	001-024271-204	GASKET (CRANKCASE COVER)	5
1	001-024270-231	CRANK CASE COVER	4
1	AAB-113766-000	AIR BREATHER	3
1	170-012005-353	DRAIN PLUG	2
1	008-024179-350	POWER FRAME	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

NOTE: INCLUDES ITEMS 20, 21, & 24

11

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, POWER END  
163Q-4 (HP165)

DWG No.:

118405

SCALE:

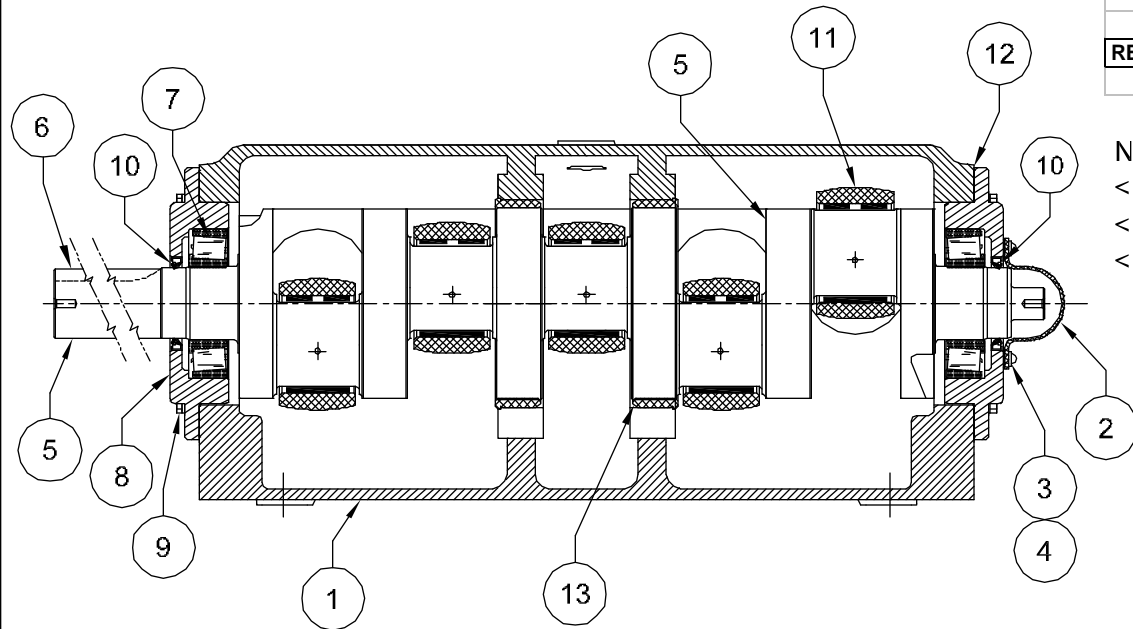
NONE

REV

A

SHI.:

1 OF 1



5	998-810000-007	CONNECTING ROD w/ NDL BEARING < * >	CC
5	998-T14000-030	WIPER BOX KIT < * >	BB
1	998-816500-038	POWER END GASKET KIT < * >	AA
REQ'D	Part No.	DESCRIPTION	OPTION
<b>OPTIONAL PARTS AND KITS</b>			
2	002-024251-999	MAIN BEARING	13
1	998-810000-037	SHIM / GASKET KIT ( BEARING HOUSING )	12
5	998-810000-002	CONNECTING ROD ( COMPLETE )	11
2	145-318418-999	OIL SEAL ( CRANKSHAFT )	10
12	100-058112-290	CAP SCREW ( BEARING HOUSING )	9
2	002-023230-359	BEARING HOUSING	8
2	120-325066-999	END BEARING < *** >	7
1	146-034500-236	KEY ( CRANKSHAFT )	6
1	008-024182-351	CRANKSHAFT	5
2	154-014049-220	LOCK WASHER ( GUARD )	4
2	113-014038-220	MACHINE SCREW ( GUARD ) < ** >	3
1	001-023575-282	EXTENSION GUARD < ** >	2
1	008-024179-350	POWER FRAME	1
REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

**NOTE:**

< \* > NOT SHOWN ON PARTS DRAWING

< \*\* > OMIT WHEN LUBRICATOR IS USED

< \*\*\* > SEE DWG. 118417 WHEN USING A GEAR REDUCER

12

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, CRANKSHAFT  
POWER END  
163Q-4 ( HP165 )

DWG No.:

118406

SCALE:

NONE

REV

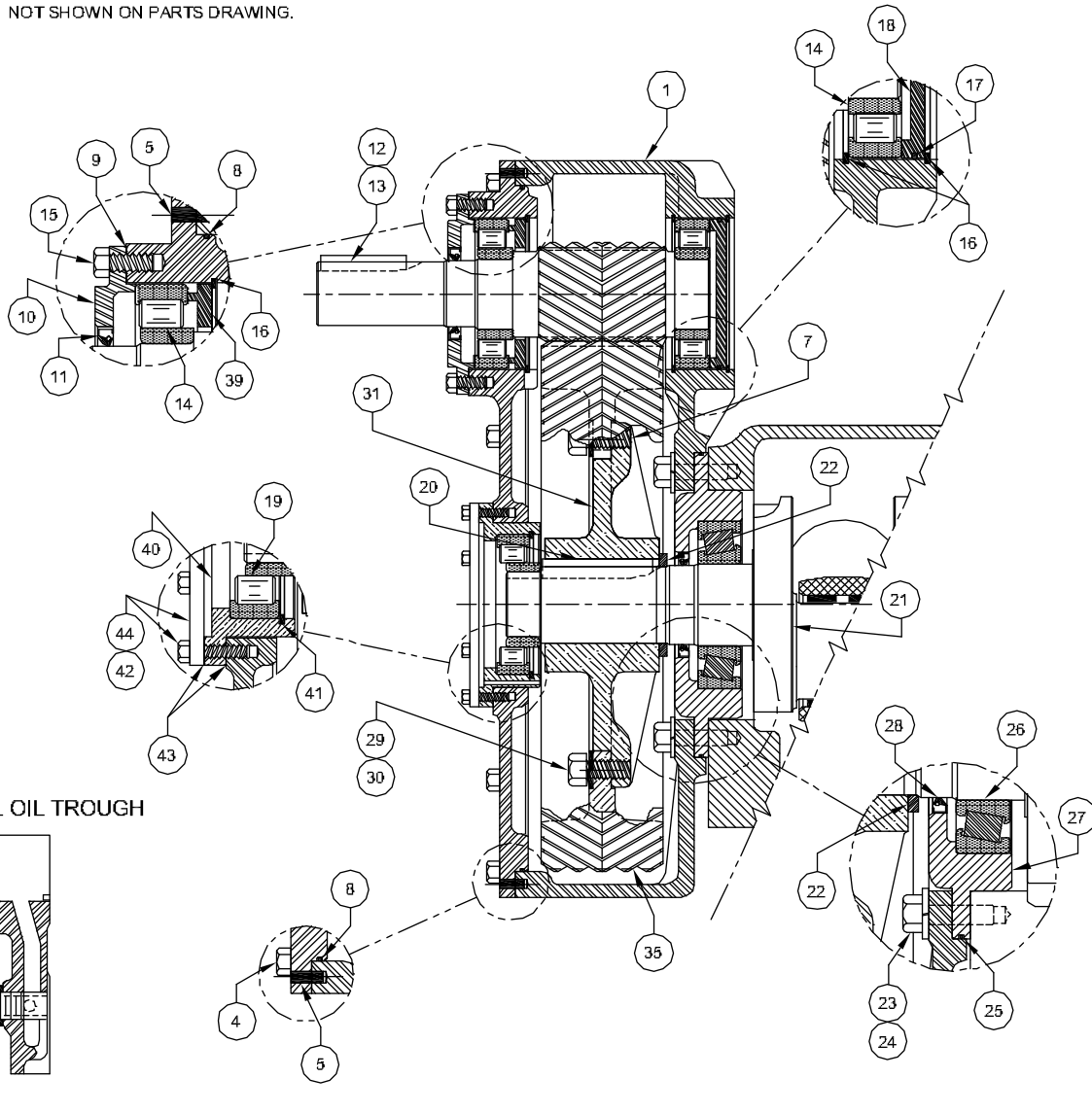
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SHT.:

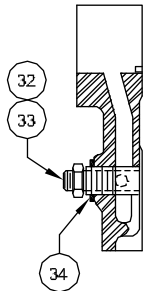
1 OF 1

**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 < SEENOTE 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	002-025626-351	HUB ( BULL GEAR )	31
8	100-034134-290	CAP SCREW ( BULL GEAR )	30
8	154-034127-220	LOCK WASHER ( BULL GEAR )	29
2	145-318418-999	OIL SEAL ( CRANKSHAFT )	28
1	002-025579-359	BEARING HOUSING, MAIN ( CRANKSHAFT )	27
2	120-325066-999	END BEARING ( CRANKSHAFT )	26
1	110-000277-201	O-RING ( BEARING HOUSING, MAIN )	25
6	GAS-103962-000	NUT ( CASING, GEAR REDUCER )	24
6	102-058314-286	STUD ( CASING, GEAR REDUCER )	23
1	001-025625-220	SPACER	22
1	008-025613-351	CRANKSHAFT	21
1	146-034312-236	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	008-025627-350	GEAR CASE ASSEMBLY	1
REQ'D	Part No.		ITEM
BILL OF MATERIAL			

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

III -

**GEAR REDUCER UNIT  
 POWER END, LEFT HAND DRIVE  
 163Q-4 ( HP165 )**

ENVC No.:	118417	SCA. B.:	NONE	REV:	A	SHEET:	1 OF 2
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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>				

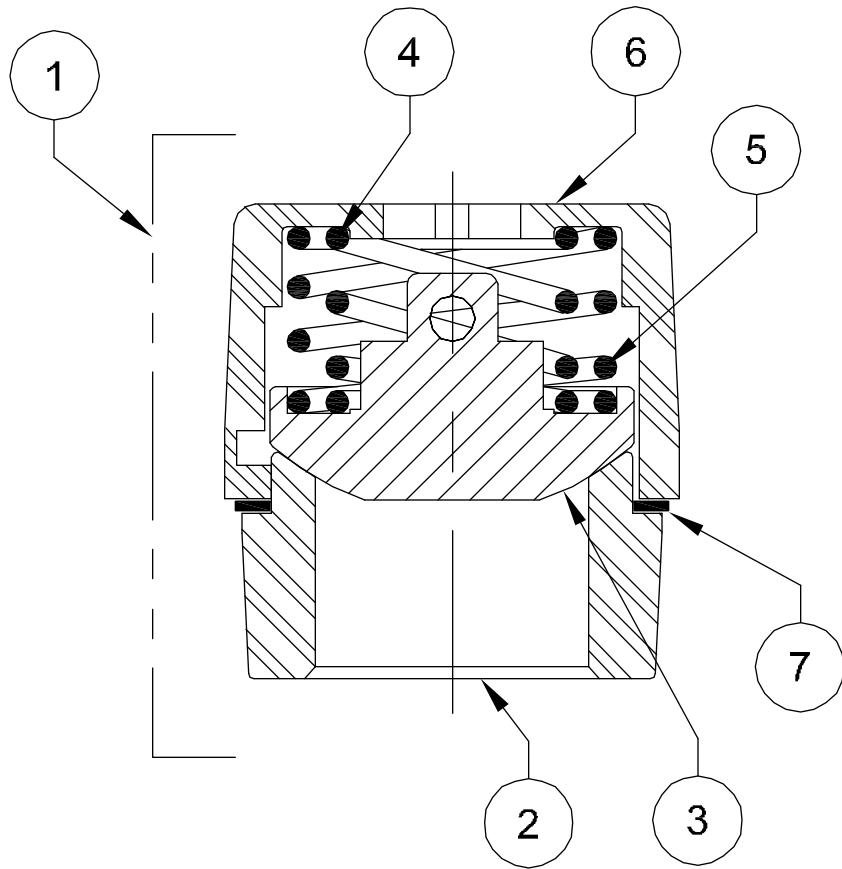
**LUBRICATION:**

- 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.: 008-025613-351 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 163Q-4 ( HP165 )			
DWG No.:	118417	SCALE:	NONE
REV	A	SHT.:	2 OF 2

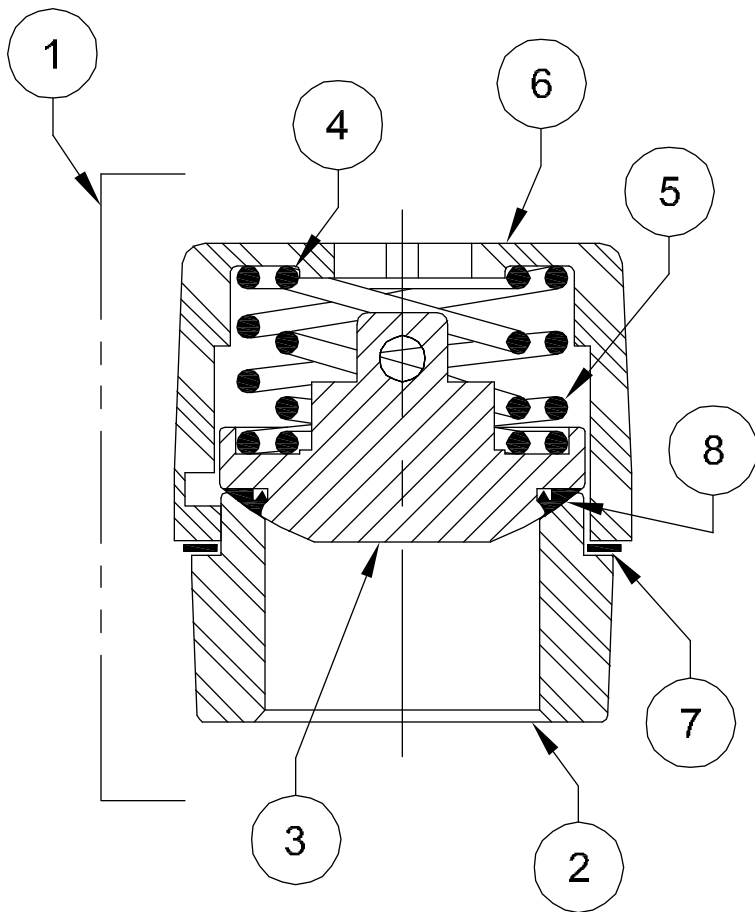


1	9707082	WAVE RING	7
1	17930246WX	RETAINER	6
1	1793025	SPRING, OUTER	5
1	1793026	SPRING, INNER	4
1	179302725	BODY ( VALVE) < * >	3
1	179303725	SEAT < * >	2
1	179303625W	ASSEMBLY, SPHERICAL VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

< \* > NOT SOLD SEPERATELY

15

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, SPHERICAL VALVE 163Q-4L, 217Q-4L (HP165AL, HP200AL)			
DWG No.:	SCALE:	REV	SH1.:
118420	NONE	A	1 OF 1



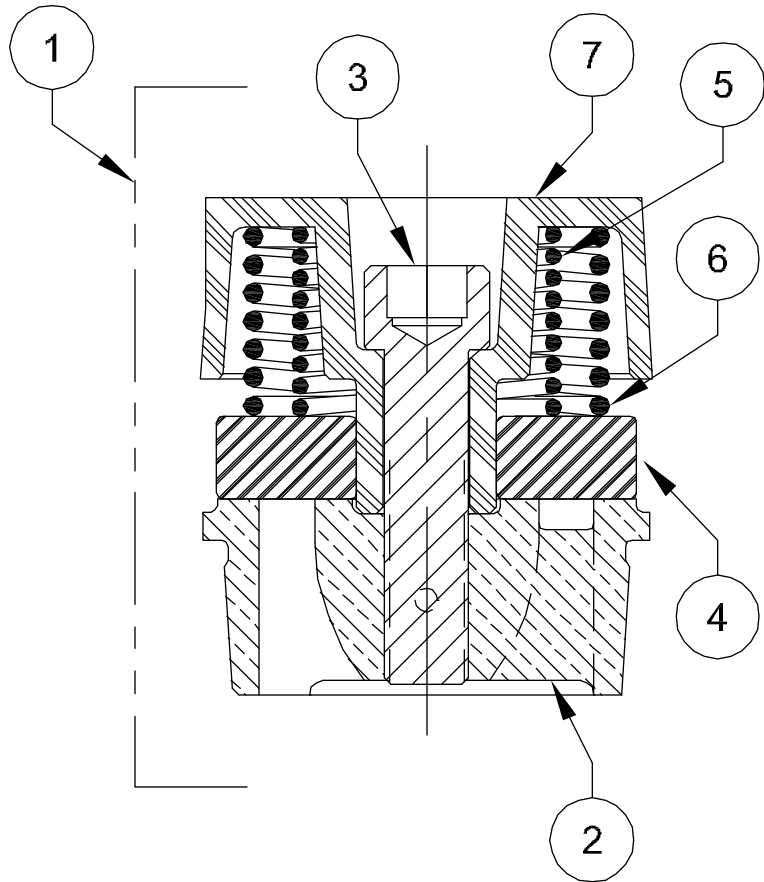
1	9707086	VAVLE INSERT	8
1	9707082	WAVE RING	7
1	17930246WX	RETAINER	6
1	1793025	SPRING, OUTER	5
1	1793026	SPRING, INNER	4
1	179302725SD	BODY ( VALVE)	3
1	179303725	SEAT	2
1	179303625SD	ASSEMBLY, SPHERICAL, SEVERE DUTY	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

16

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

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

DWG No.: 118421	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	TP08	DISC - TITANIUM	4
1	38178M	FASTENER	3
1	0010809	SEAT	2
		( TITANIUM )	
1	00ITP0809	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**

17

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

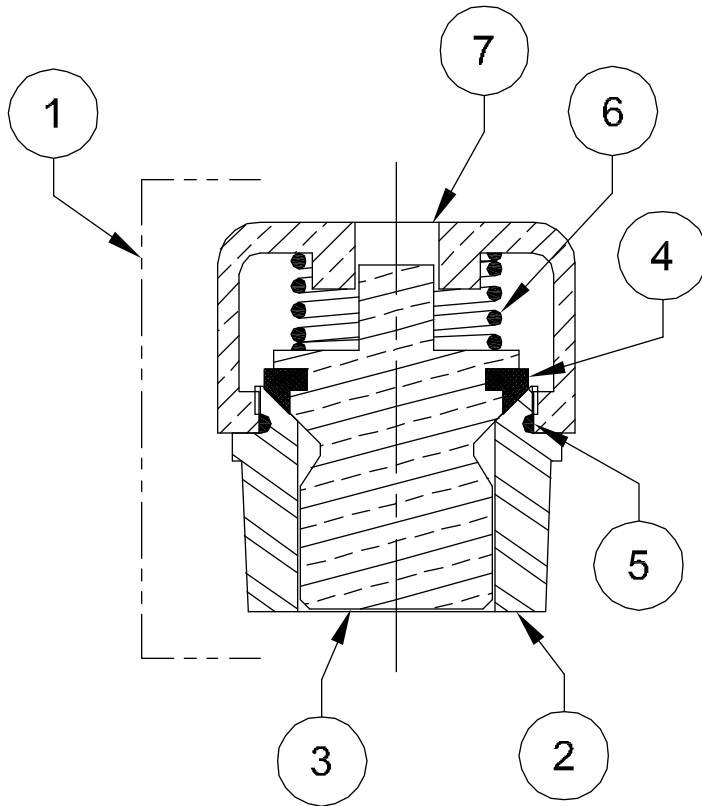
TITLE:  
 ASSEMBLY, DISC VALVE  
 163Q-4L, 217Q-4L (HP165AL, HP200AL)

DWG No.: 118422 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
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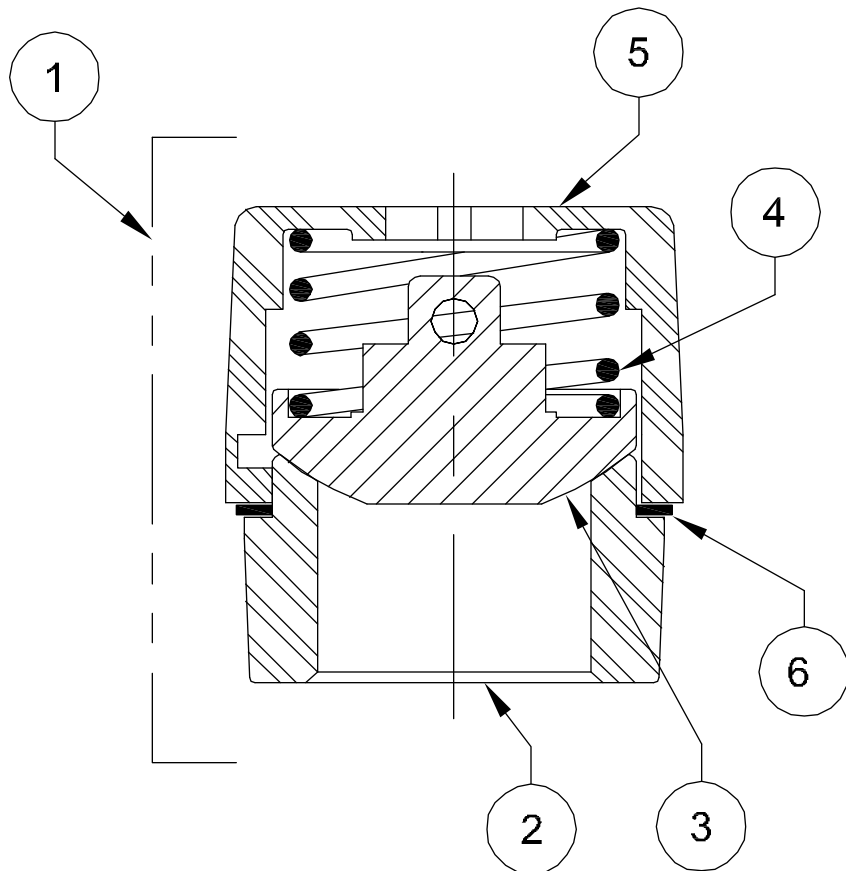
**BILL OF MATERIAL**



18

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, SEVERE DUTY 163Q-4L, 217Q-4L (HP165AL, HP200AL)			
DWG No.:	SCALE:	REV:	SHT.:
118423	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			

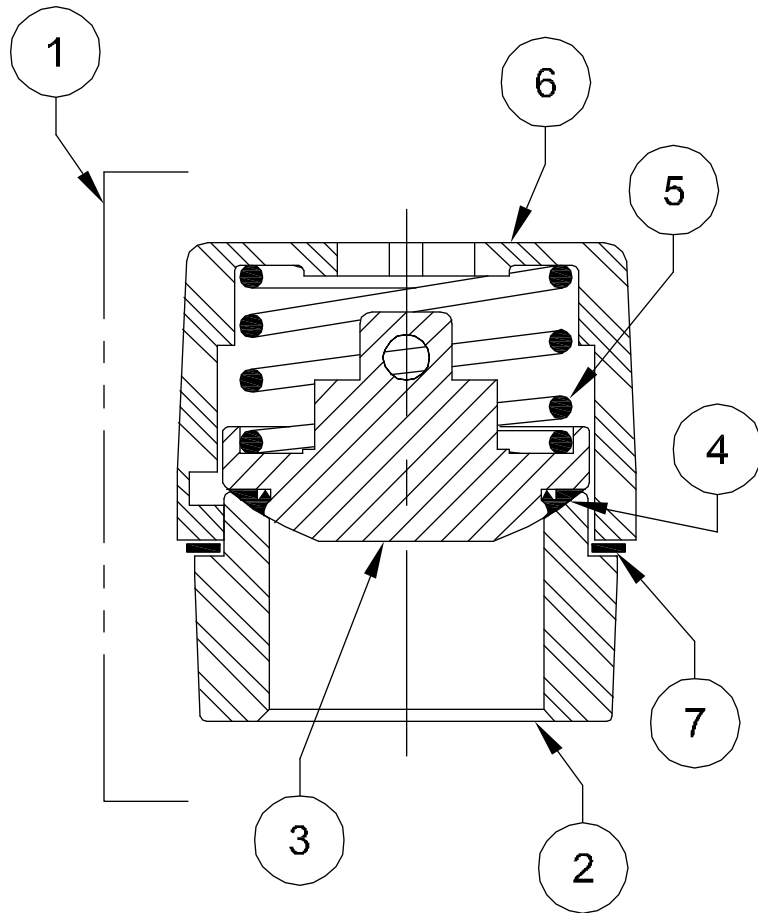


< \* > NOT SOLD SEPERATELY

19

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, SPHERICAL VALVE 163Q-4M, 217Q-4M (HP165AM. HP200AM)			
DWG No.:	118425	SCALE:	NONE
REV	A	SHT.:	1 OF 1

1	9707083	WAVE RING	7
1	17925246W	RETAINER	6
1	1792525	SPRING	5
1	9707087	VAVLE INSERT	4
1	179252725SD	BODY ( VALVE )	3
1	179253525SD	SEAT	2
1	179253425SD	ASSEMBLY, SPHERICAL, SEVERE DUTY	1
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			

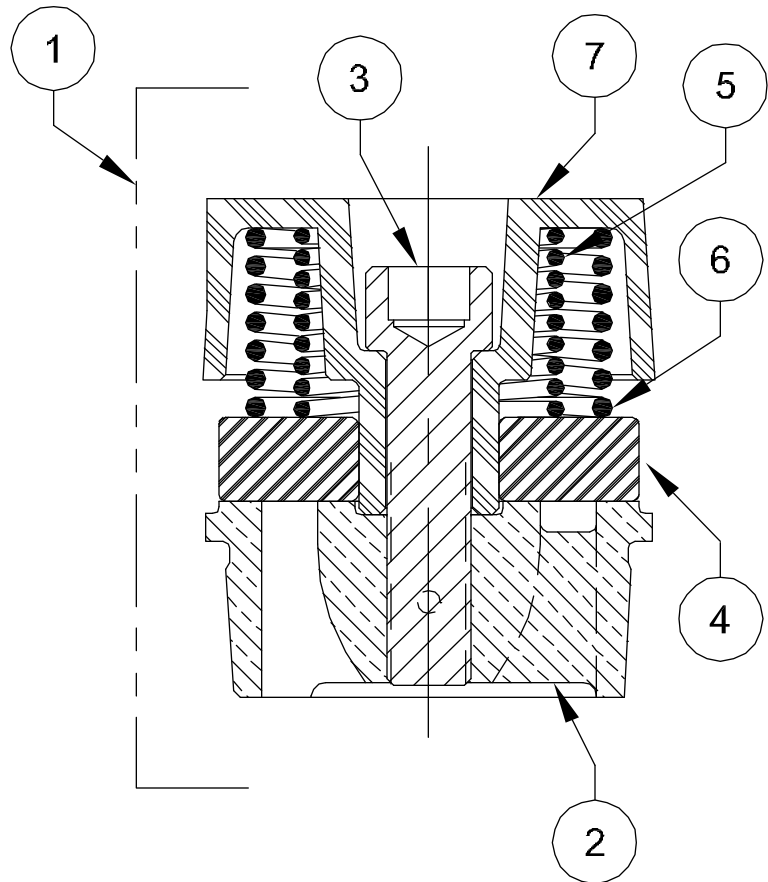


20

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

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

DWG No.: 118426	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	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

**BILL OF MATERIAL**

21

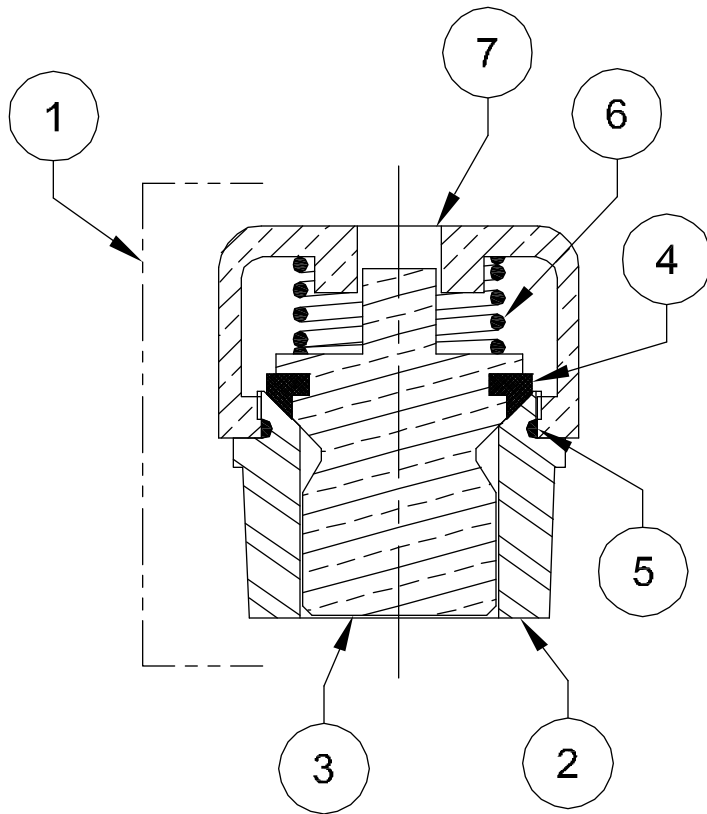
**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

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

DWG No.:	SCALE:	REV	SHT.:
118427	NONE	A	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
BILL OF MATERIAL			



22

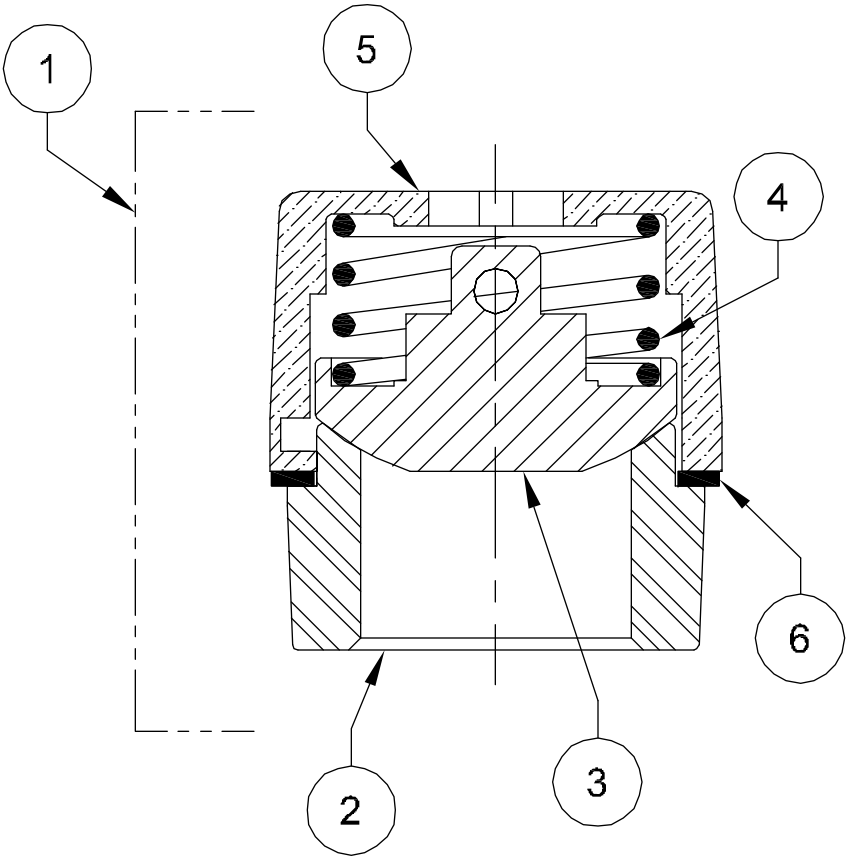
**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

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

DWG No.: 118428	SCALE: NONE	REV A	SHT: 1 OF 1
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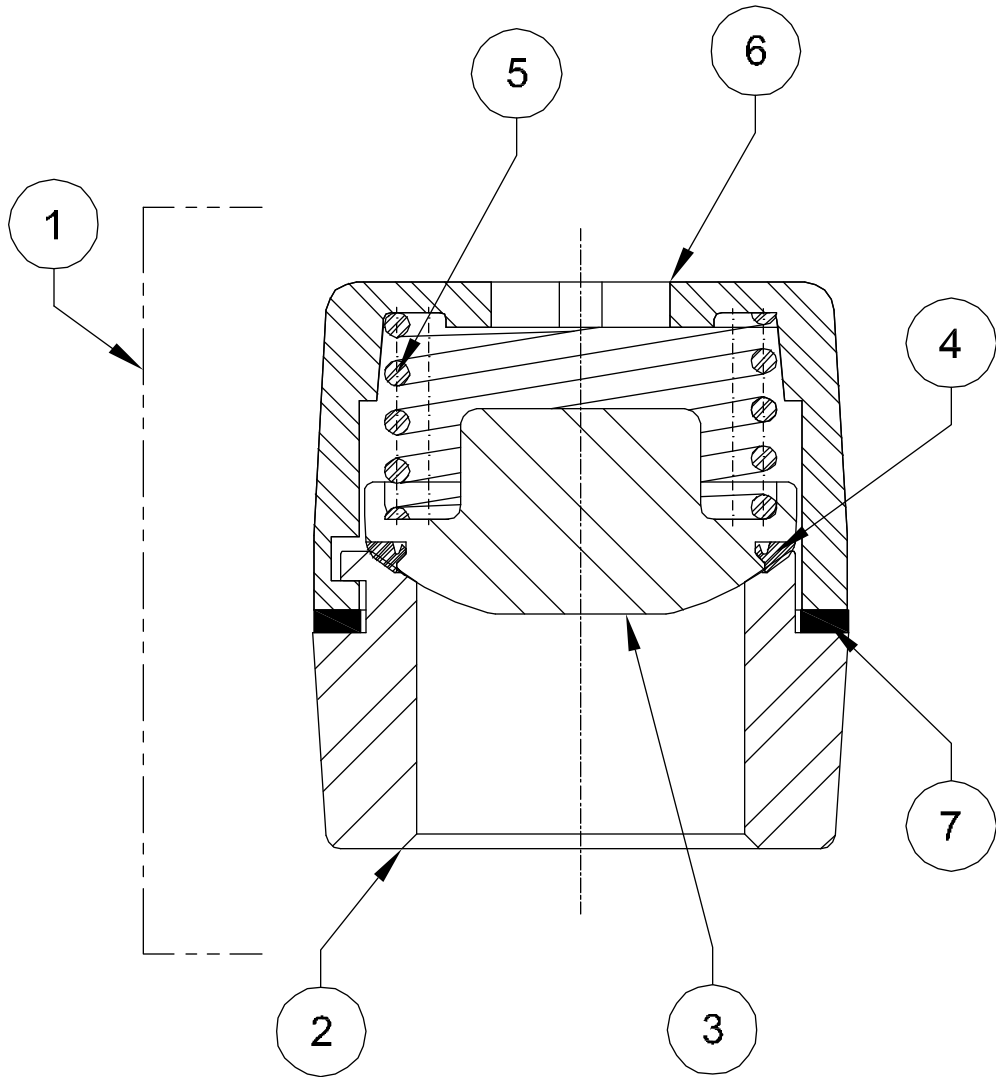
1	9707072	WAVE RING	6
1	17910036W	RETAINER	5
1	1792525	SPRING	4
1	179100225	BODY ( VALVE ) <*>	3
1	179100125M	SEAT <*>	2
1	179100025M	ASSEMBLY, SPHERICAL VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

<\*> NOT SOLD SEPERATELY



<b>NOV NATIONAL OILWELL VARCO</b>	
HOUSTON, TEXAS, U.S.A.	ENGINEERING, TULSA, OKLAHOMA
TITLE: ASSEMBLY, SPHERICAL VALVE 163Q-4H, 217Q-4H	
DWG No.: 118424	SCALE: NONE REV A SHT.: 1 of 1

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			



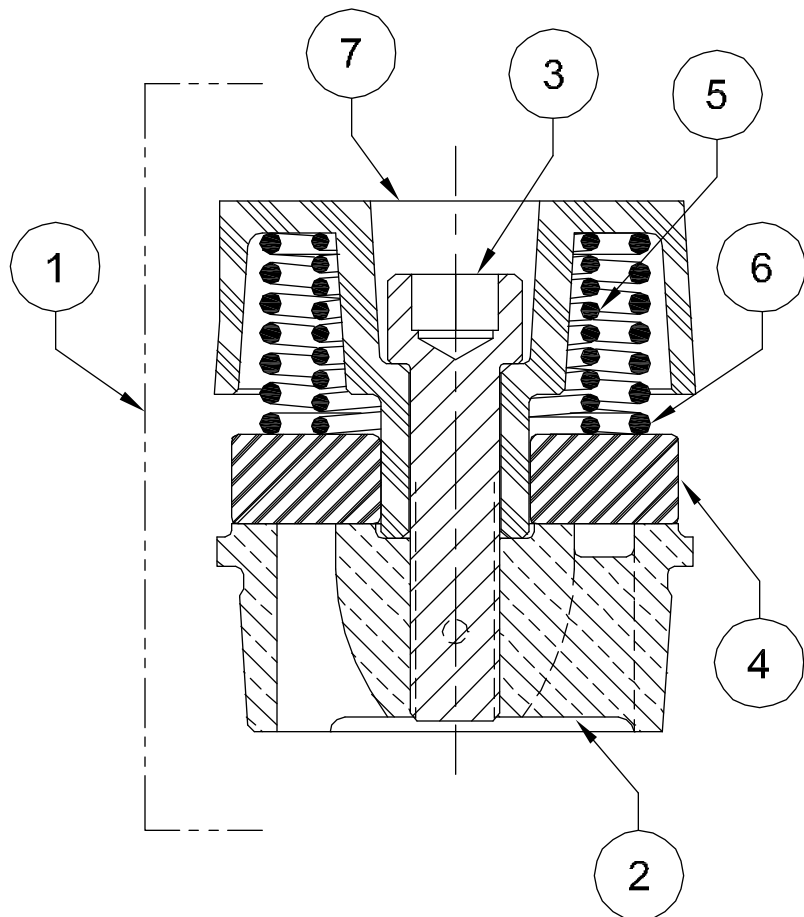
24

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

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

DWG No.: 118548	SCALE: NONE	REV A	SHT.: 1 OF 1
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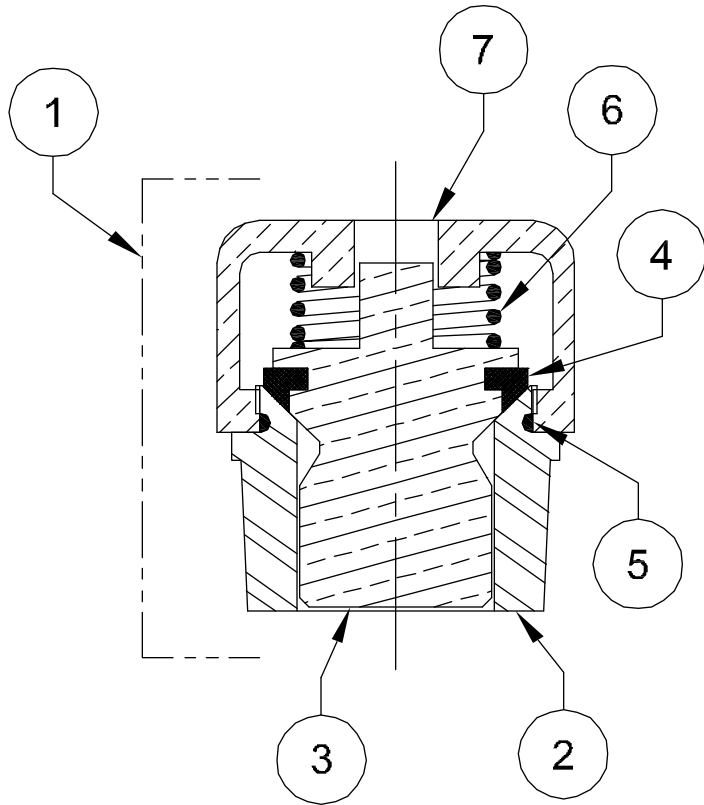
1	CAA-RT36S0-000	RETAINER	7
1	IS011	SPRING, OUTER	6
1	IS022	SPRING, INNER	5
1	TP05	DISC ( TITANIUM )	4
1	38178M	FASTENER	3
1	CAA-X5S130-000	SEAT	2
		(TITANIUM)	
1	CAA-X5ST2S-130	ASSEMBLY, TI/CF8M DISC VALVE	1
REQ'D	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			



25

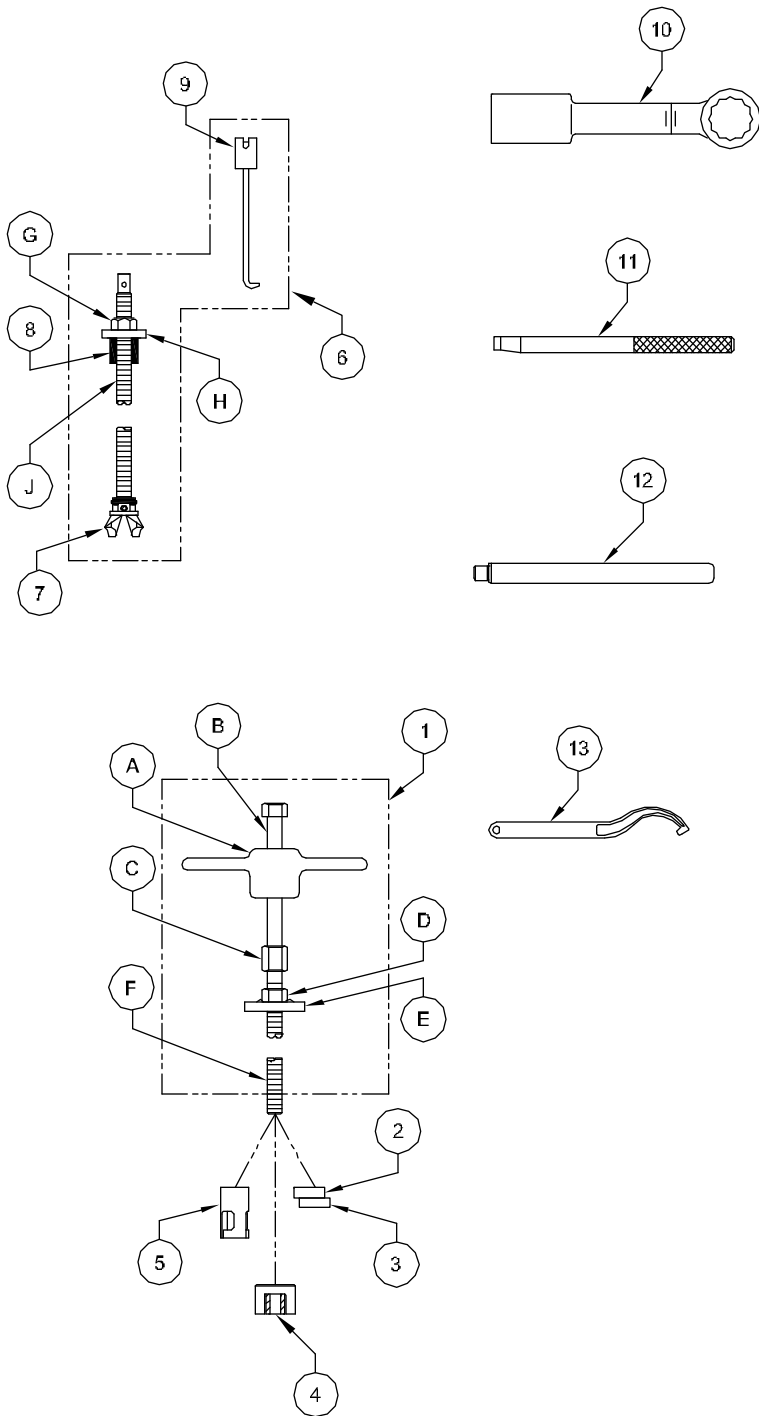
<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, DISC VALVE 163Q-4H, 217Q-4H			
DWG No.:	SCALE:	REV	SHT.:
118549	NONE	A	1 OF 1

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
<b>BILL OF MATERIAL</b>			



26

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, SEVERE DUTY 163Q-4H, 217Q-4H			
DWG No.:	118429	SCALE:	NONE
REV	A	SHT.:	1 OF 1



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**



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

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

DWG No.:

118430

SCALE:

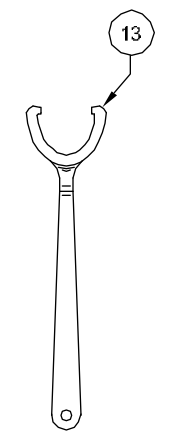
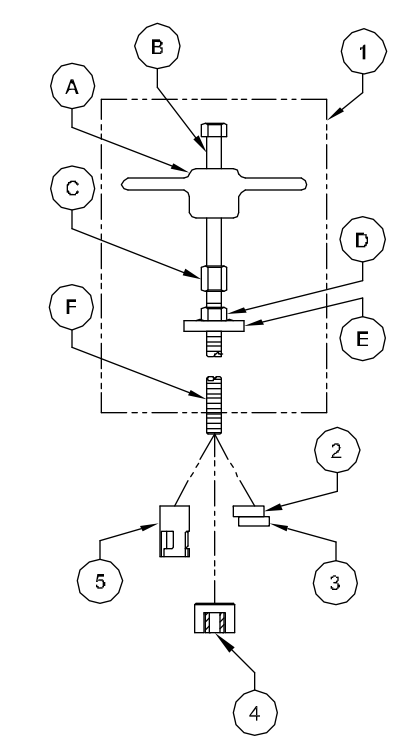
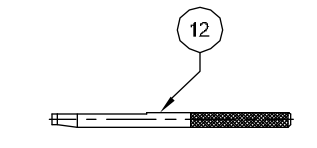
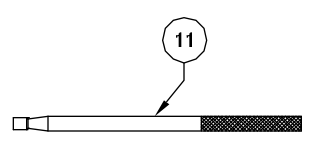
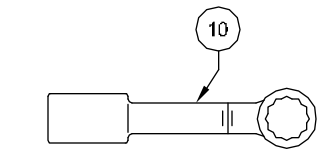
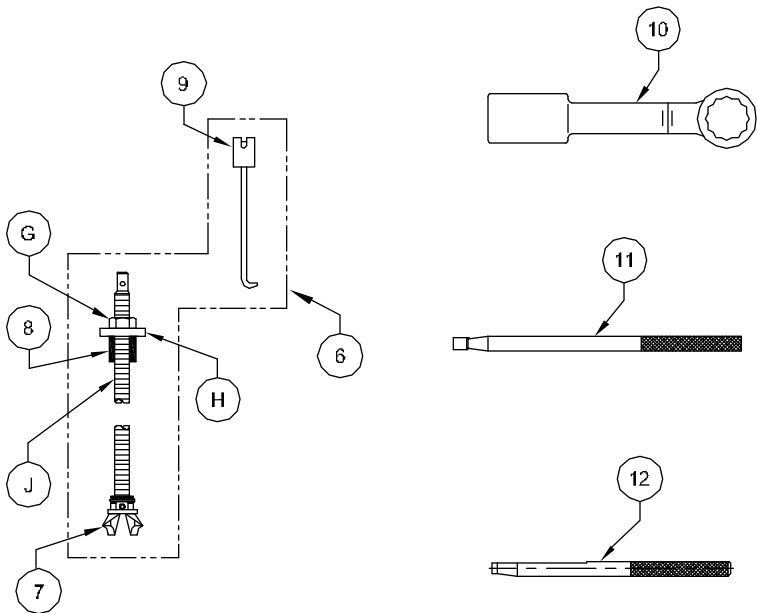
NONE

REV

A

SHT.:

1 OF 1

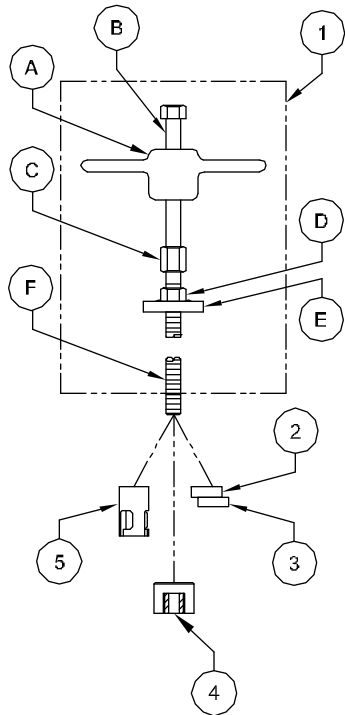
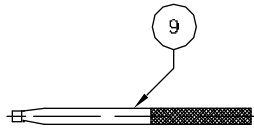
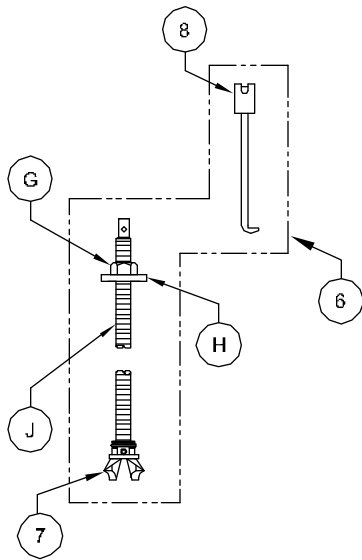


1	002-027780-351	WRENCH, GLAND NUT (DUCTILE IRON)	13
1	AAB-030945-274	WRENCH, GLAND NUT (PINTYPE - 0.531 HOLE)	12
1	002-051293-274	WRENCH, GLAND NUT (PINTYPE - 0.545 HOLE)	11
1	001-027584-999	WRENCH, VALVE COVER (HAMMER WRENCH)	10
1	1790034	RETRIEVER	9
1	181205709	SPACER	8
1	181259250	PULLER HEAD	7
1	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
<b>BILL OF MATERIAL</b>			

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

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

DWG No.: 118431 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

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

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

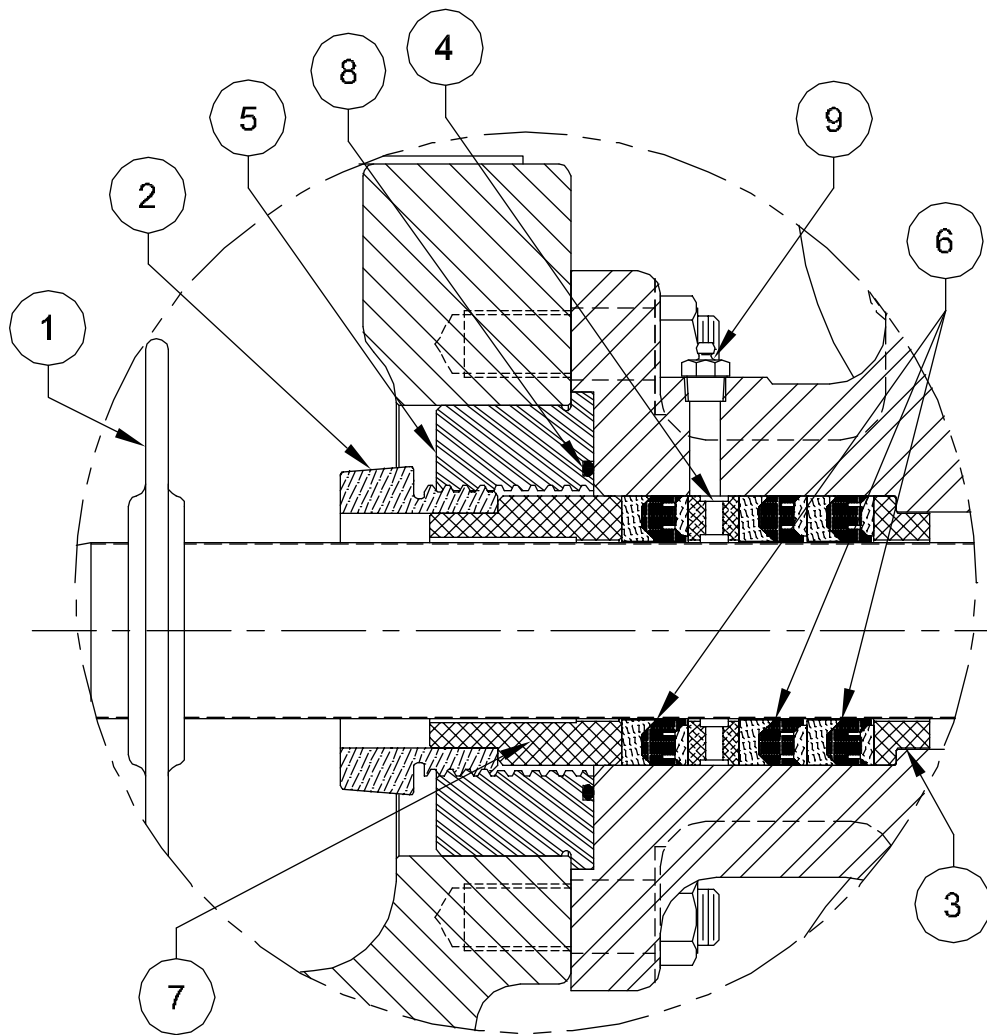
DWG No.: 118432

SCALE: NONE

REV A

SHT.: 1 OF 1





**NOTE**

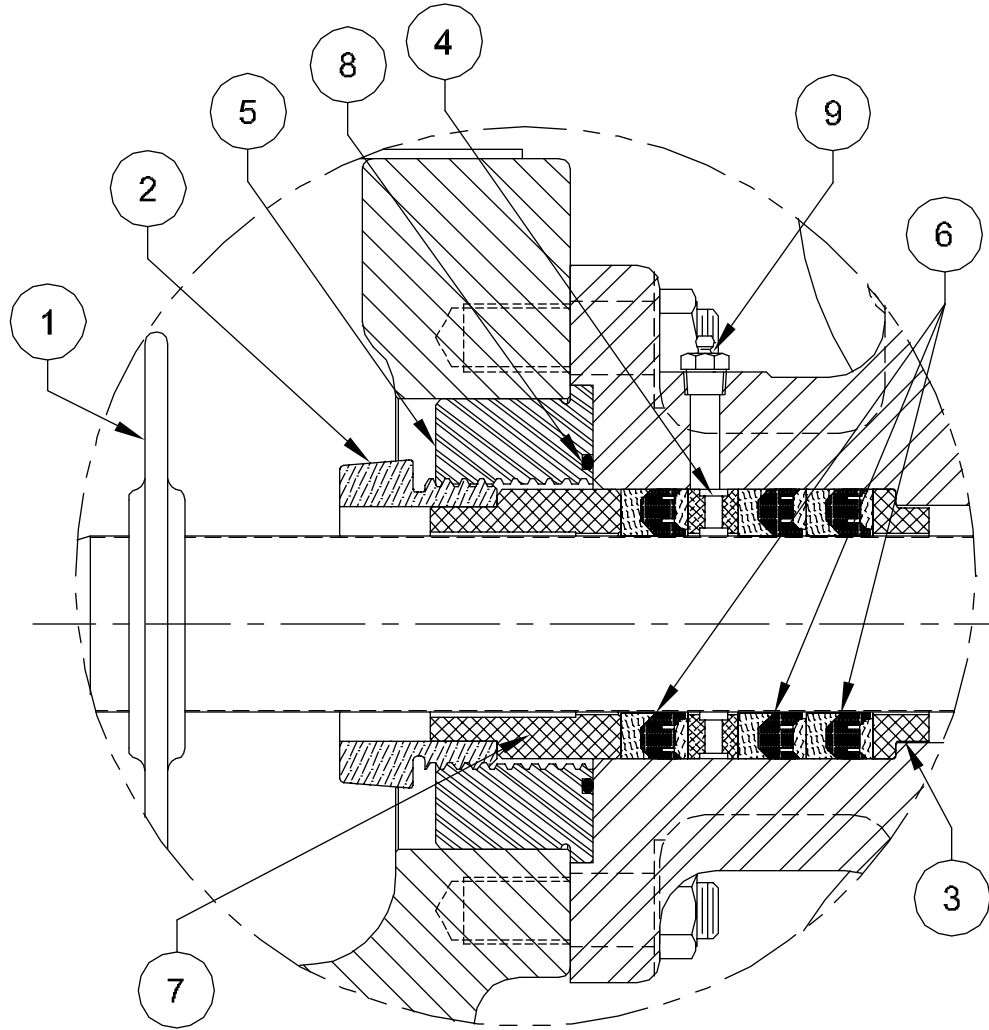
1) FOR ALL " J " STYLE PACKING SEE DRAWING 118433, SHEETS 1 THRU 5.

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
BILL OF MATERIAL				

<\*> COATED STAINLESS STEEL

30

<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 163Q-4L, 217Q-4L (HP165AL, HP200AL)			
DWG No.:	SCALE:	REV	SH1.:
118433	NONE	A	1 OF 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
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**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

**NOTE**

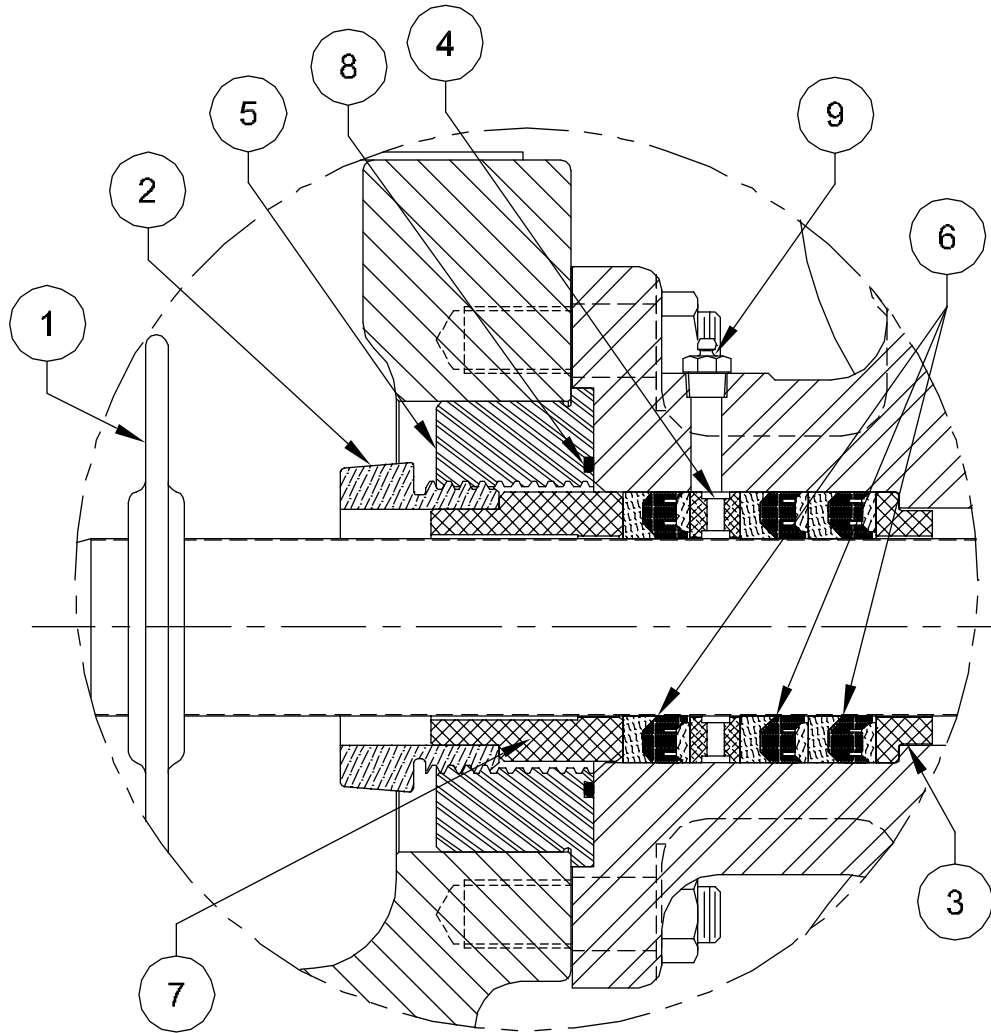
1) FOR ALL " J " STYLE PACKING SEE DRAWING 118433, SHEETS 1 THRU 5.



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

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

DWG No.:	SCALE:	REV	SHT.:
118433	NONE	A	2 OF 5



NOTE  
 1) FOR ALL " J " STYLE PACKING SEE DRAWING 118433,  
 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

( 3" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

BILL OF MATERIAL

<\*> COATED STAINLESS STEEL

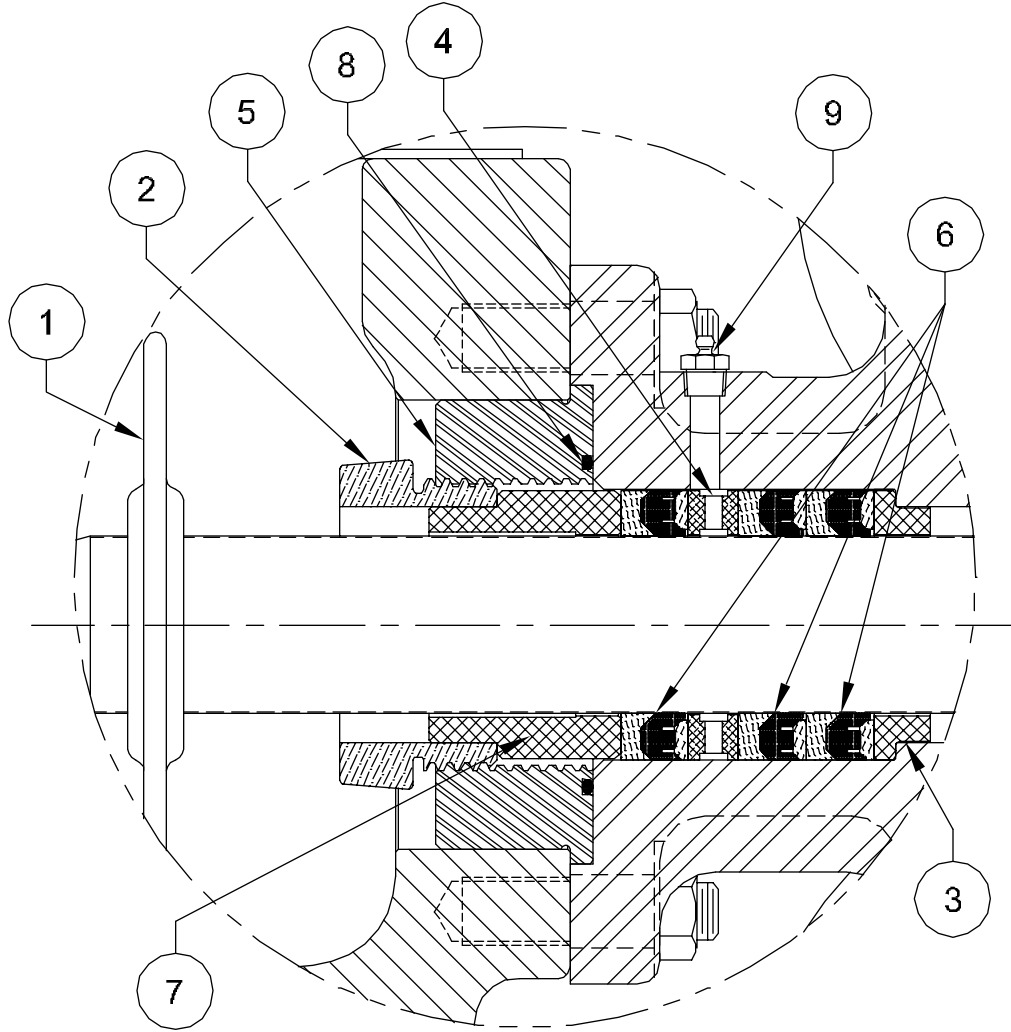
32

**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  
 163Q-4L, 217Q-4L (HP165AL, HP200AL)

DWG No.: 118433	SCALE: NONE	REV A	SHT.: 3 OF 5
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**NOTE**

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118433, 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

( 3-1/4" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**

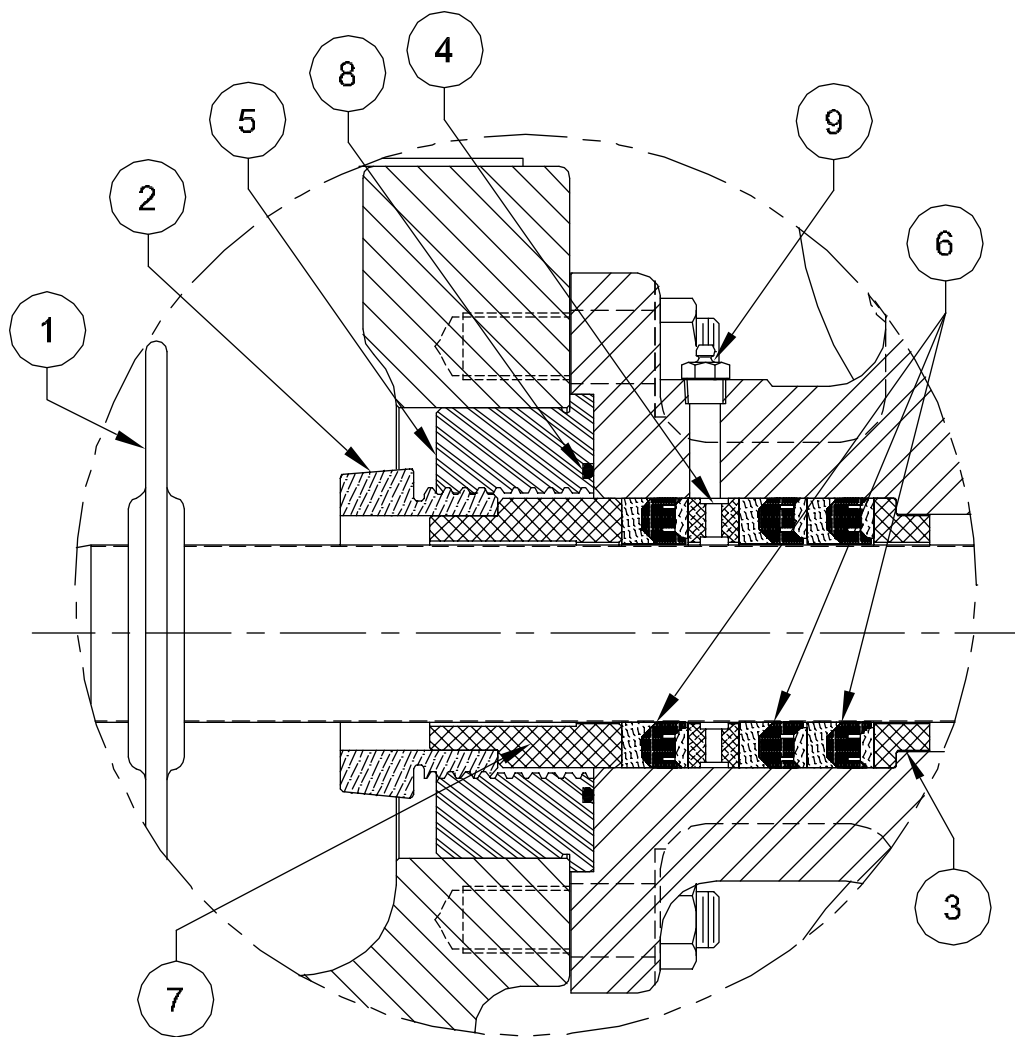
<\*> COATED STAINLESS STEEL



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

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

DWG No.: 118433	SCALE: NONE	REV A	SHT.: 4 OF 5
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**NOTE**

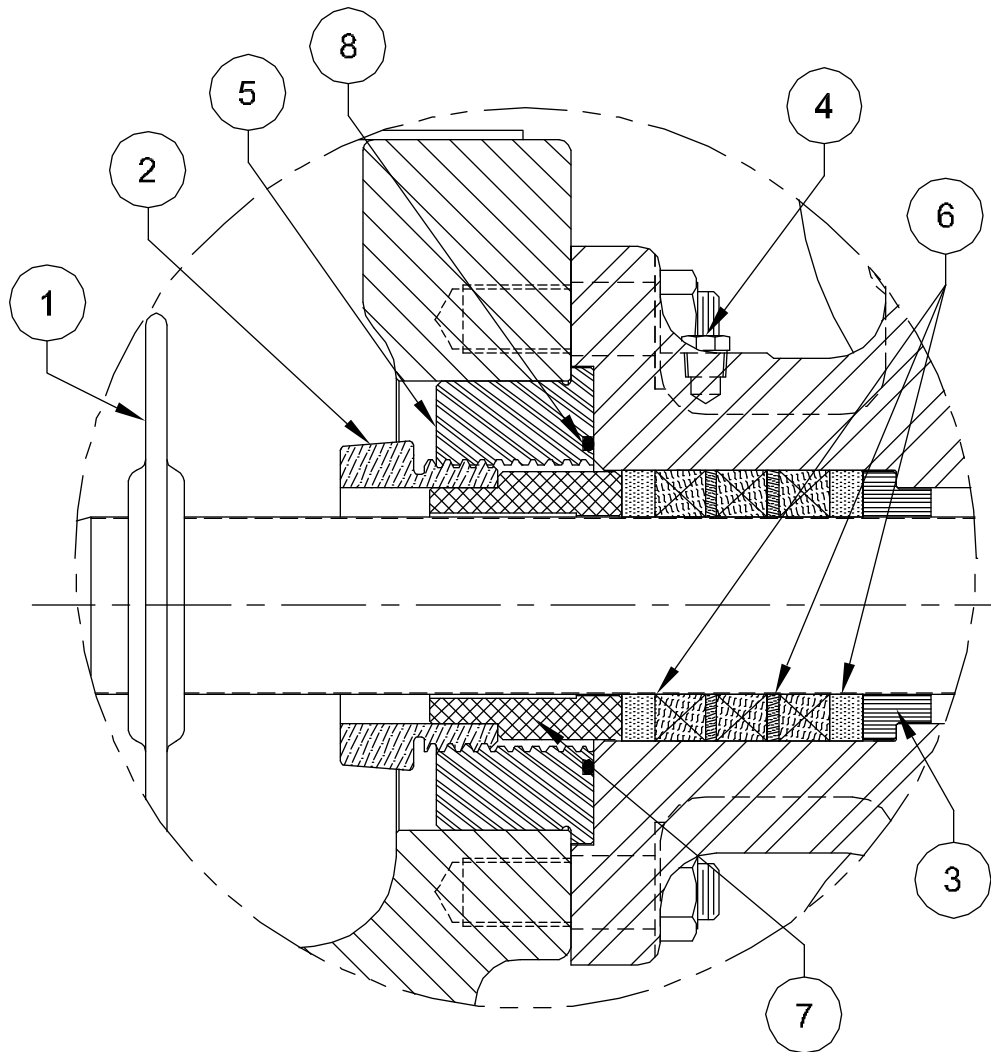
1) FOR ALL " J " STYLE PACKING SEE DRAWING 118433, SHEETS 1 THRU 5.

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
<b>( 3-3/8" PLUNGER )</b>				
REQ'D	Part No.	DESCRIPTION		ITEM
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL

34

<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			
163Q-4L, 217Q-4L (HP165AL, HP200AL)			
DWG No.:	SCALE:	REV	SHT.:
118433	NONE	A	5 OF 5



NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118434,  
 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

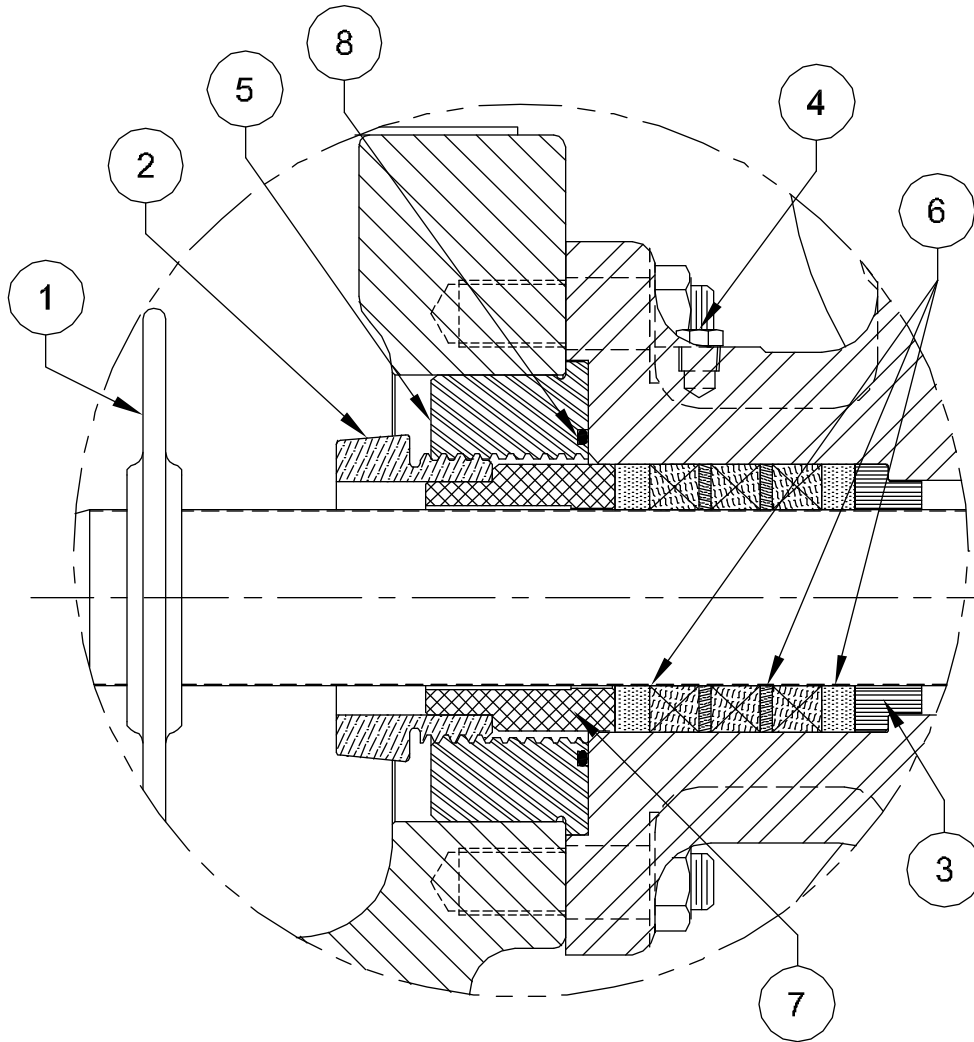
35

**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  
 163Q-4L, 217Q-4L (HP165AL, HP200AL)

DWG No.:	SCALE:	REV	SHT.:
118434	NONE	A	1 OF 5



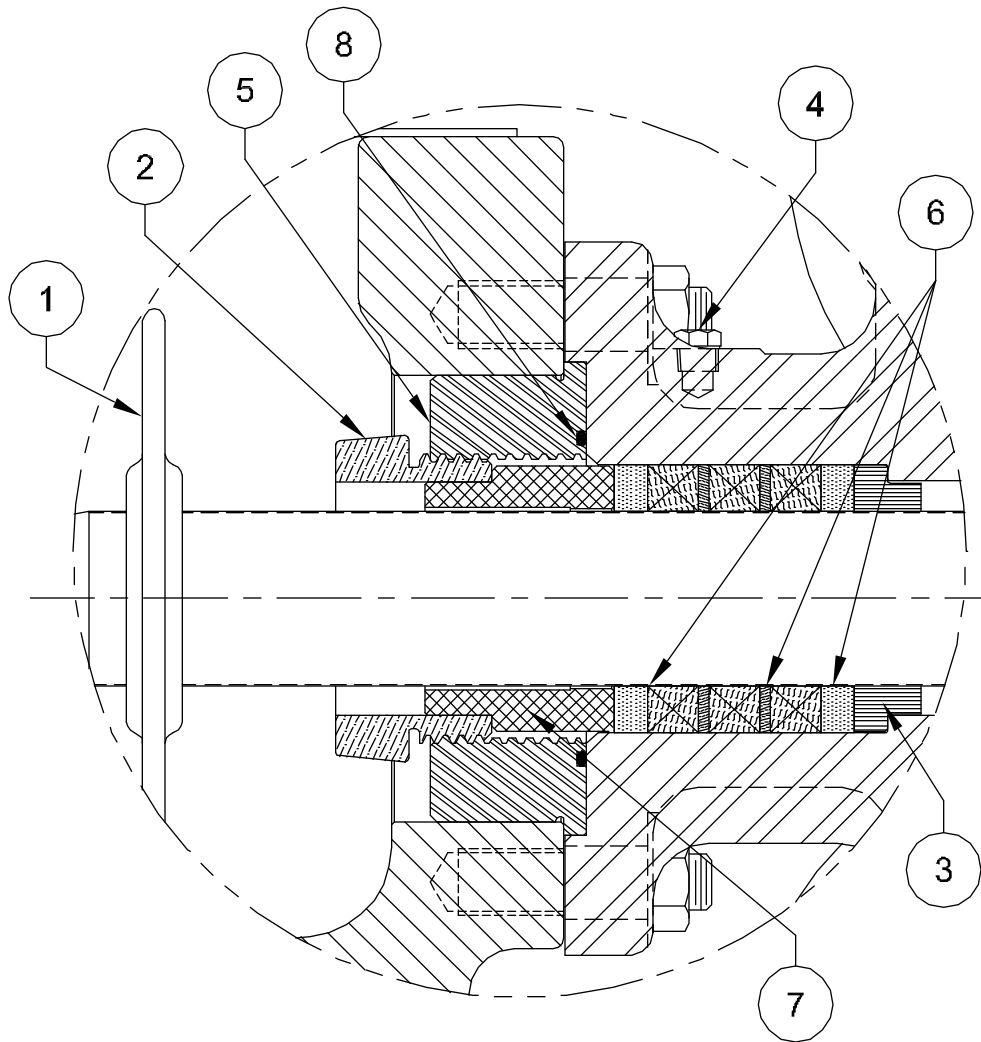
NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118434,  
 SHEETS 1 THRU 5.

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

36

<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 163Q-4L, 217Q-4L (HP165AL, HP200AL)			
DWG No.:	118434	SCALE:	NONE
REV	A	SHT.:	2 OF 5



NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118434,  
 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

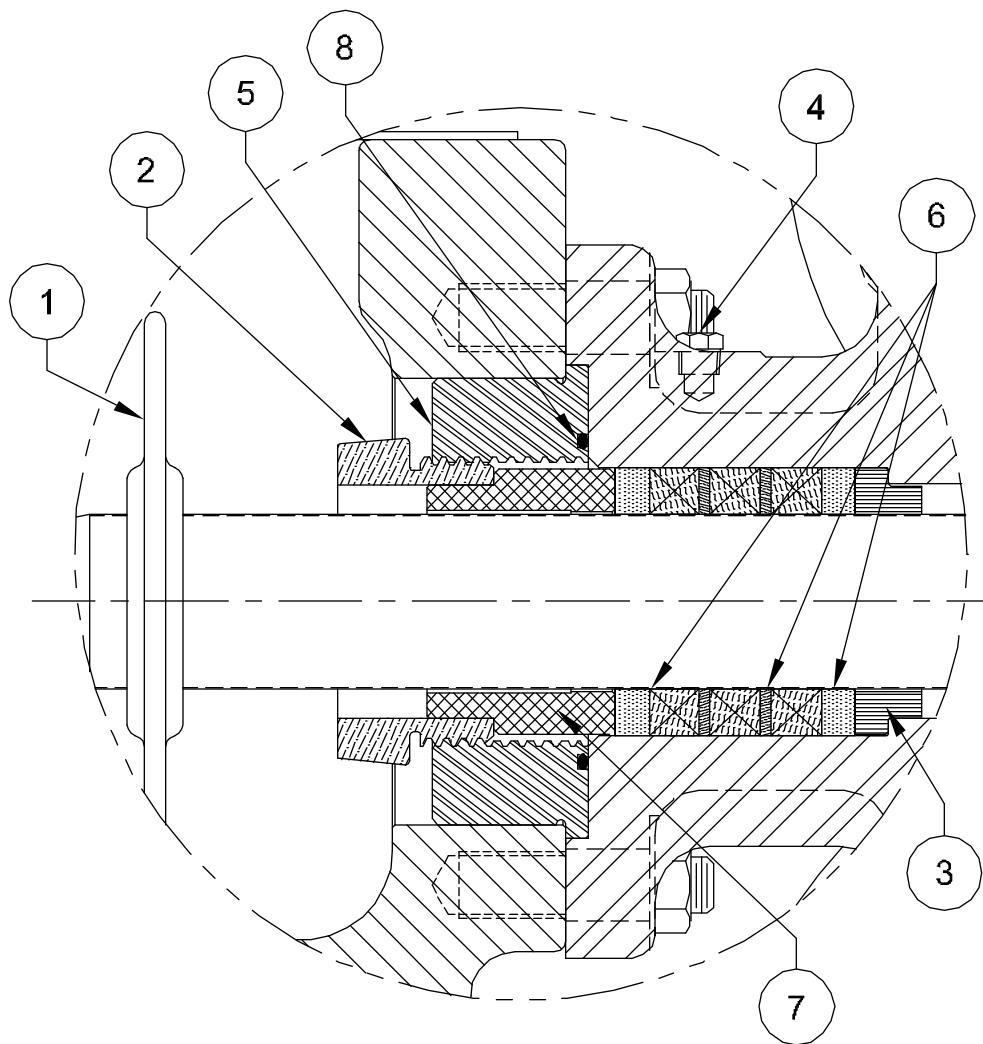
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

37

<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 163Q-4L, 217Q-4L (HP165AL, HP200AL)			
DWG No.:	118434	SCALE:	NONE
REV	A	SHT.:	3 OF 5





NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118434,  
 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**

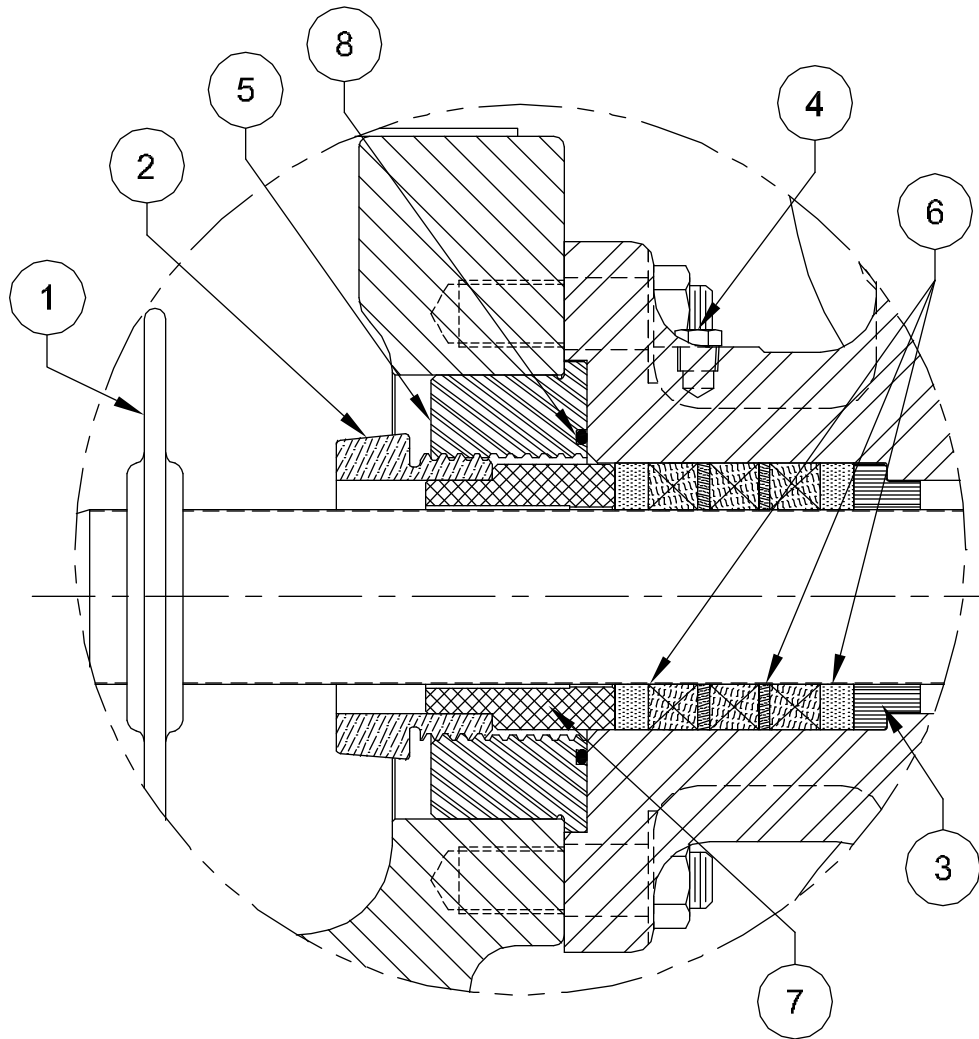
<\*> COATED STAINLESS STEEL



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

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

DWG No.:	118434	SCALE:	NONE	REV	A	SHT.:	4	OF	5
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NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118434,  
 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

( 3-3/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

BILL OF MATERIAL

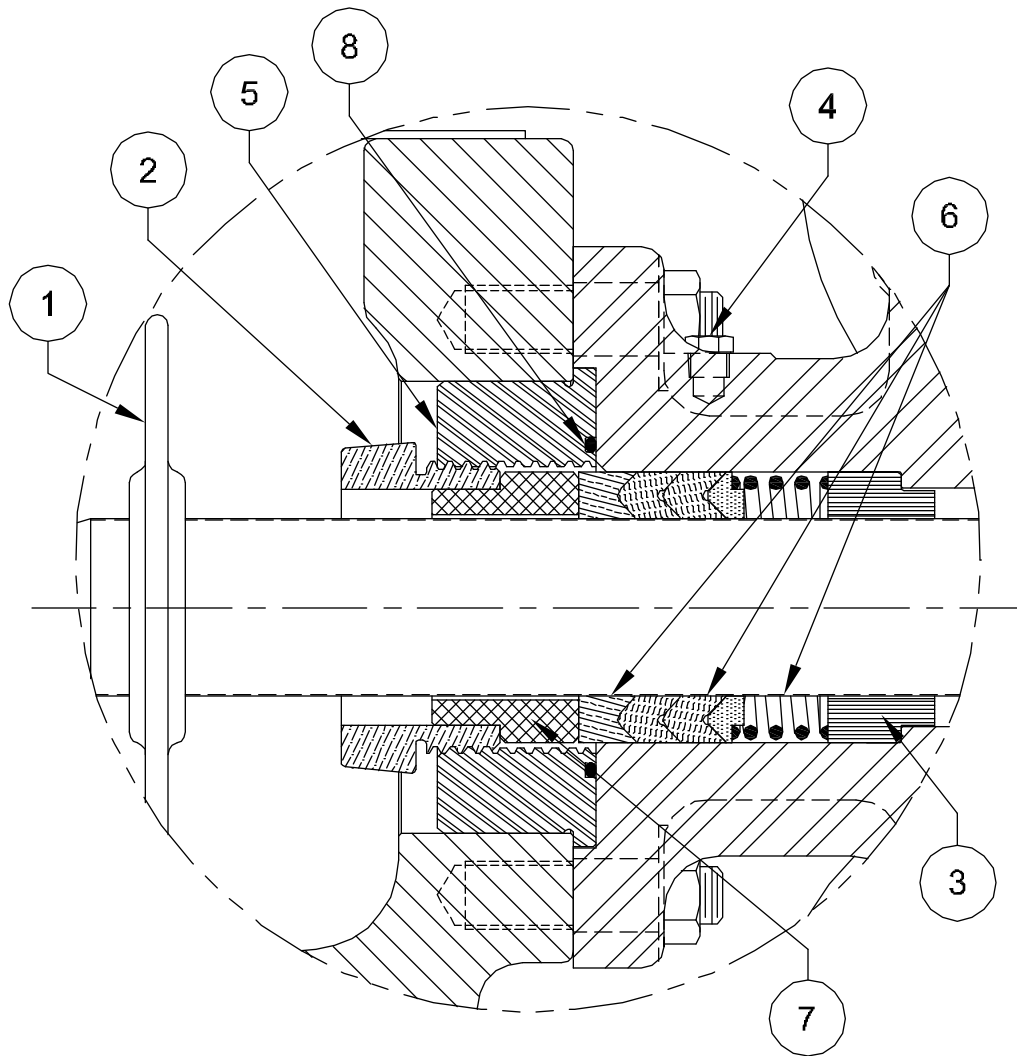
<\*> COATED STAINLESS STEEL

39

**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  
 163Q-4L, 217Q-4L (HP165AL, HP200AL)

DWG No.:	SCALE:	REV	SHT.:
118434	NONE	A	5 OF 5



**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118435, 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
<b>( 2-3/4" PLUNGER )</b>				
REQ'D	Part No.	DESCRIPTION		ITEM

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

40



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

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

DWG No.:

118435

SCALE:

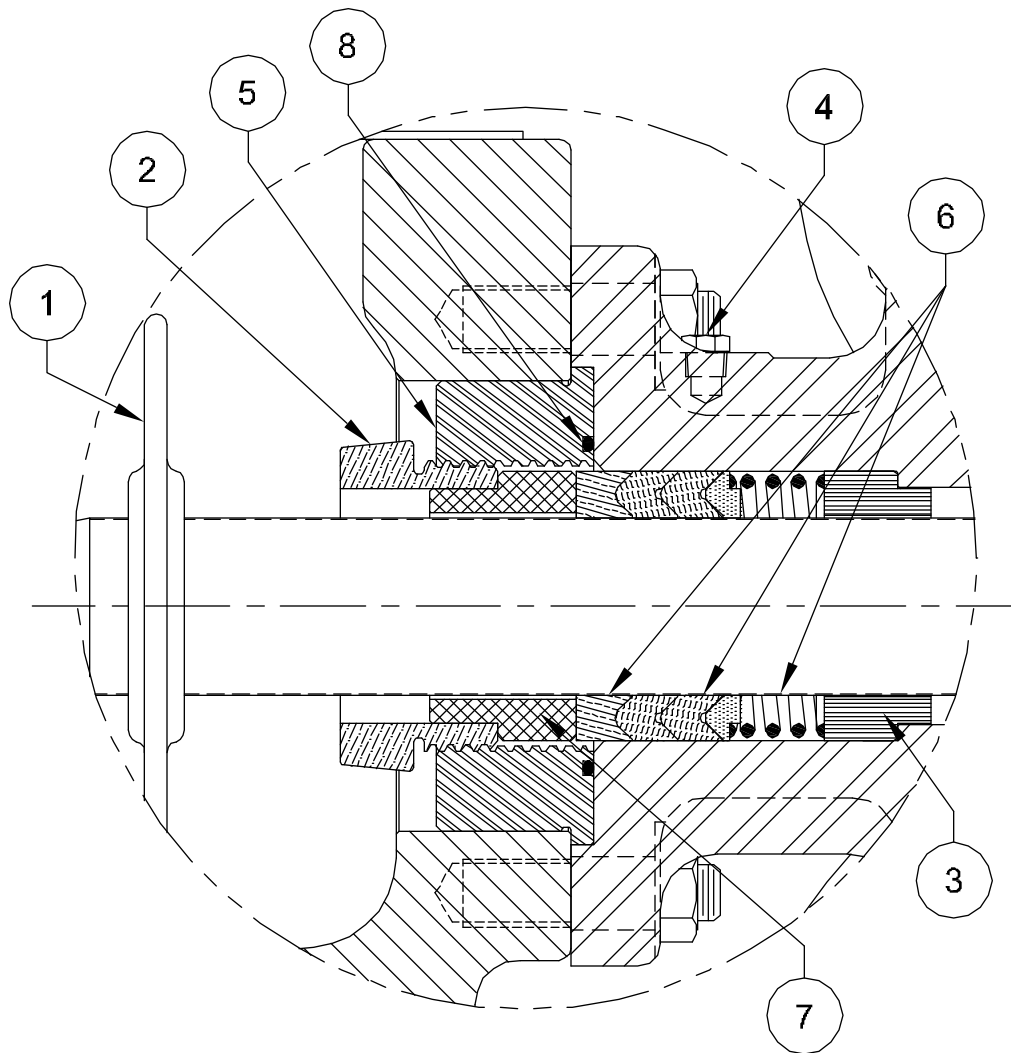
NONE

REV

A

SHT.:

1 OF 5



NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118435,  
 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
BILL OF MATERIAL			

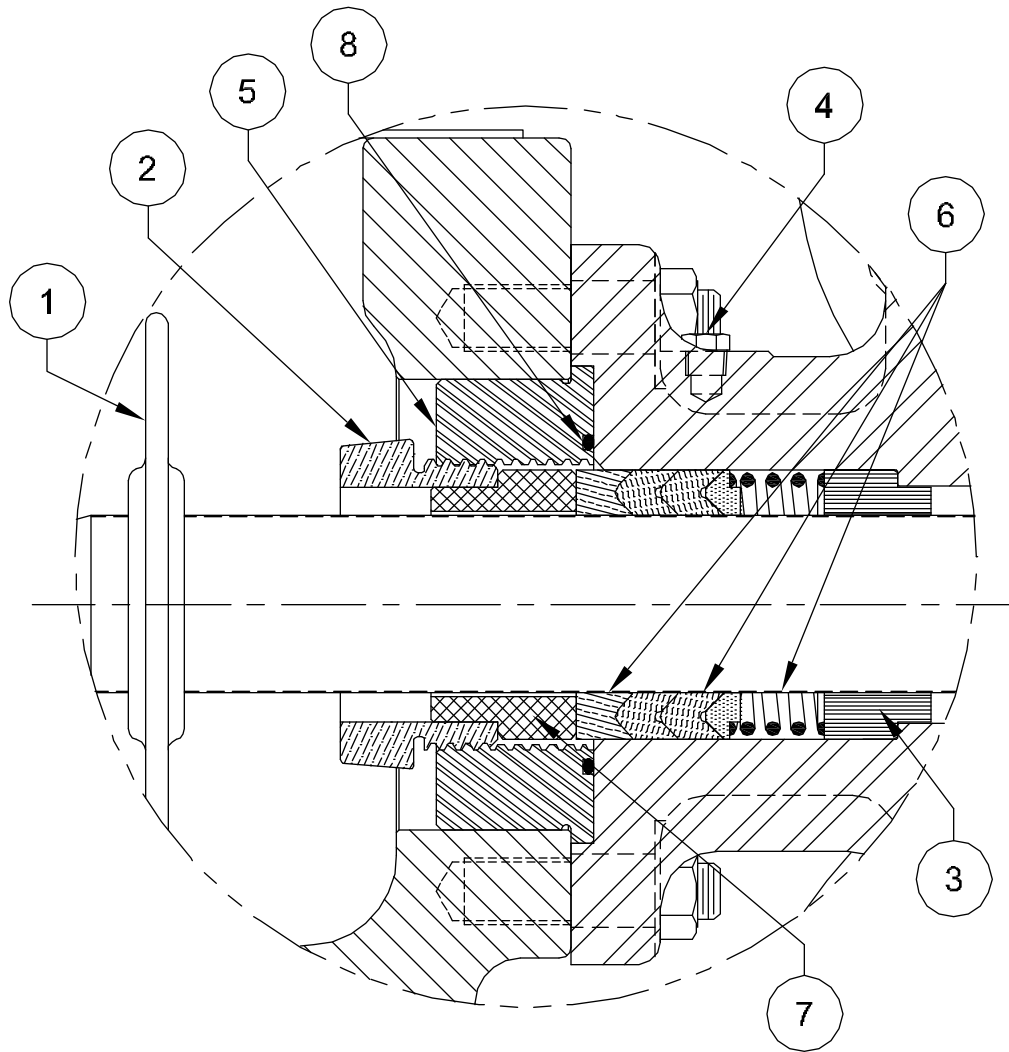
<\*> COATED STAINLESS STEEL

41

**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  
 163Q-4L, 217Q-4L (HP165AL, HP200AL)

DWG No.: 118435	SCALE: NONE	REV A	SHT.: 2 OF 5
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NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118435,  
 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**

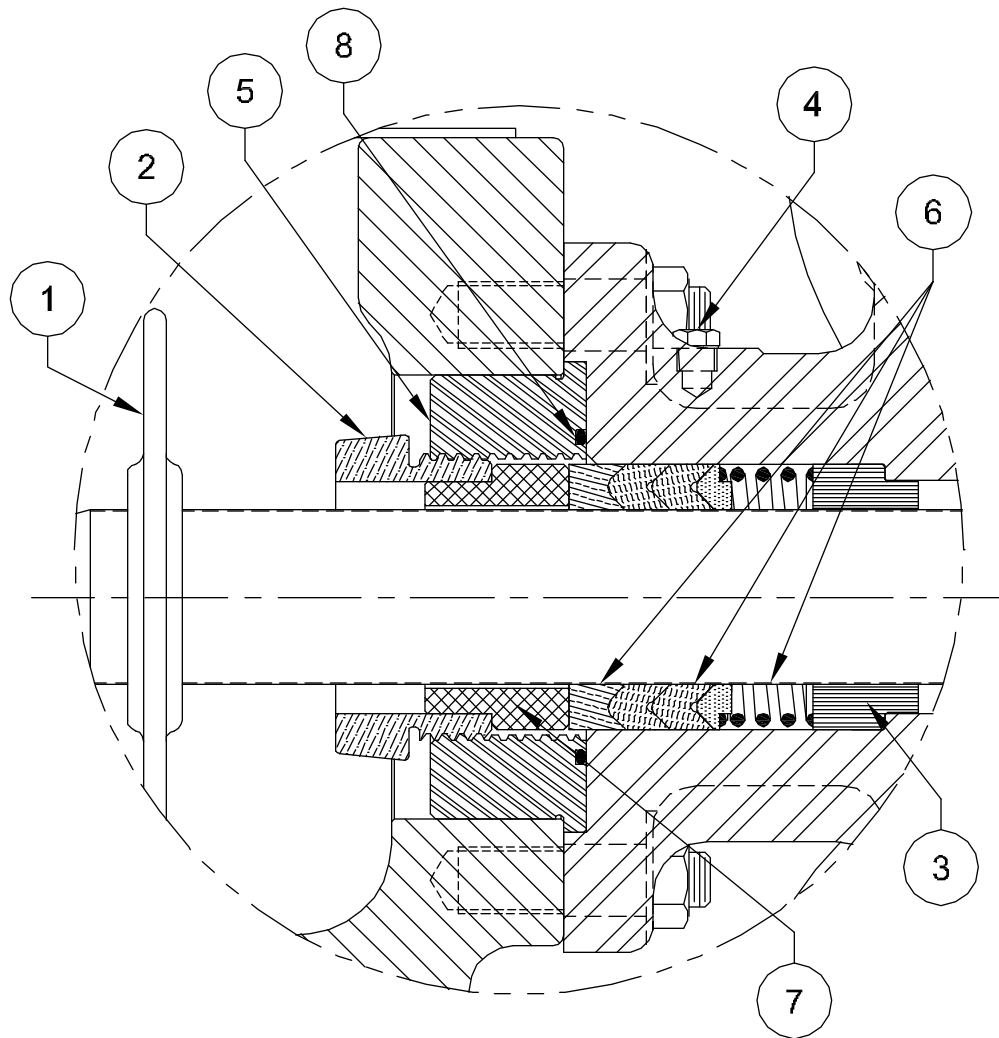
<\*> COATED STAINLESS STEEL



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

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

DWG No.: 118435	SCALE: NONE	REV A	SHT.: 3 OF 5
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**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118435, 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 )

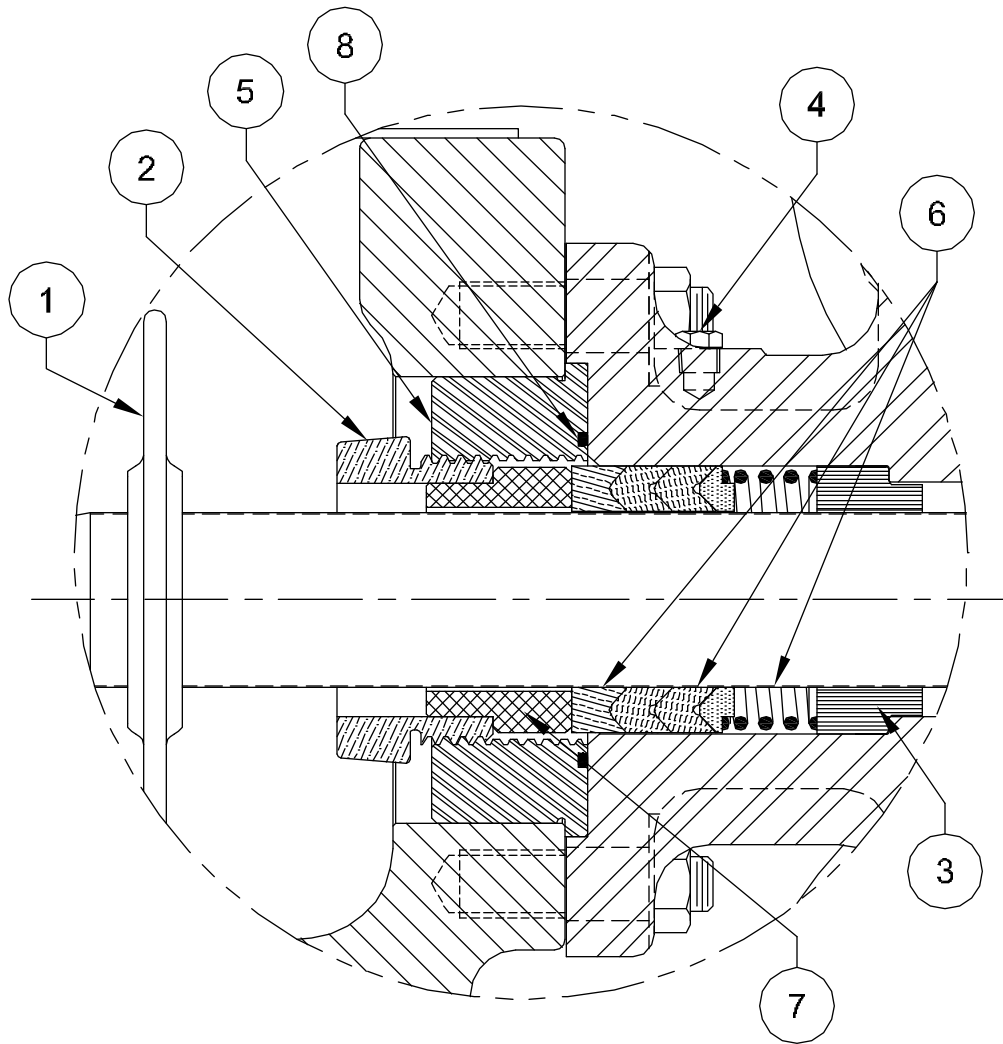
REQ'D	Part No.	DESCRIPTION	ITEM
<b>BILL OF MATERIAL</b>			

<\*> 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**  
**163Q-4L, 217Q-4L (HP165AL, HP200AL)**

DWG No.:	SCALE:	REV	SHT.:
118435	NONE	A	4 of 5



NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118435,  
 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  
 163Q-4L, 217Q-4L (HP165AL, HP200AL)

DWG No.:

118435

SCALE:

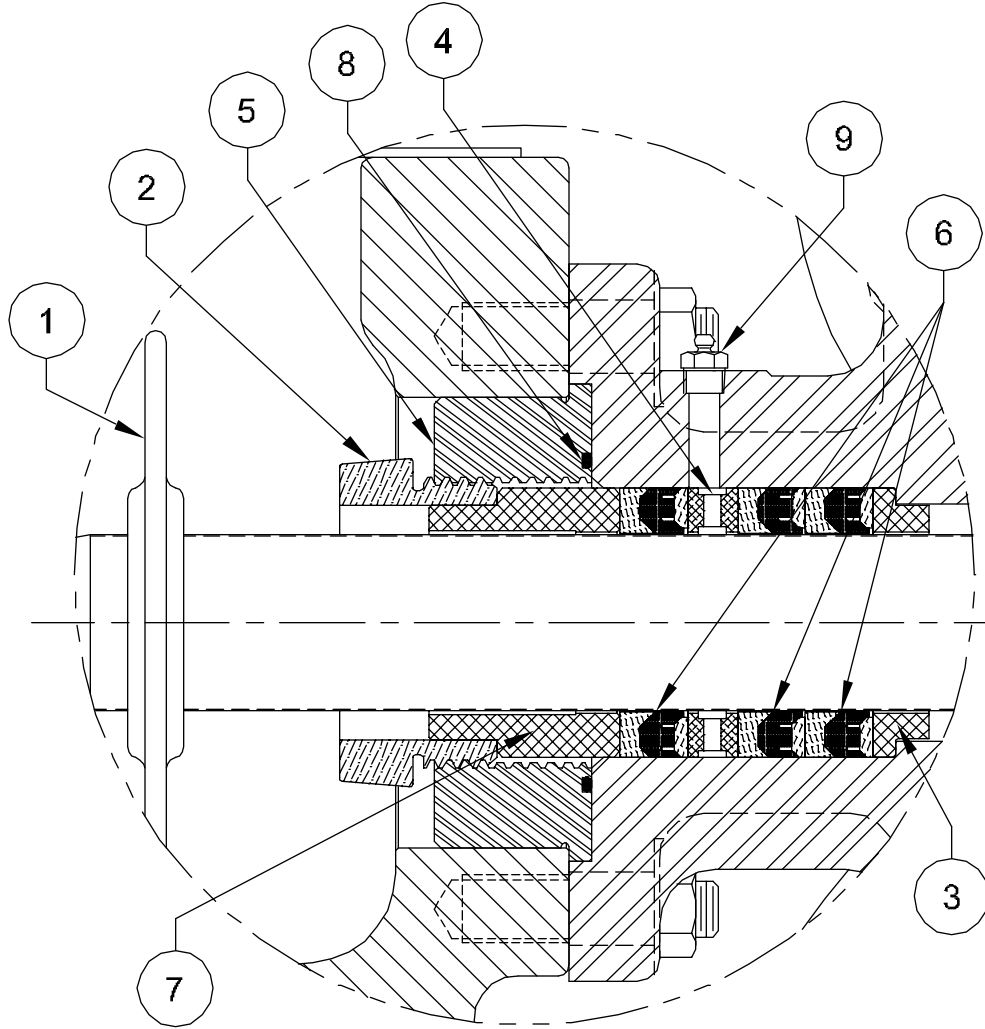
NONE

REV

A

SHT.:

5 OF 5



NOTE  
 1) FOR ALL " J " STYLE PACKING SEE DRAWING 118436,  
 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
<b>BILL OF MATERIAL</b>			

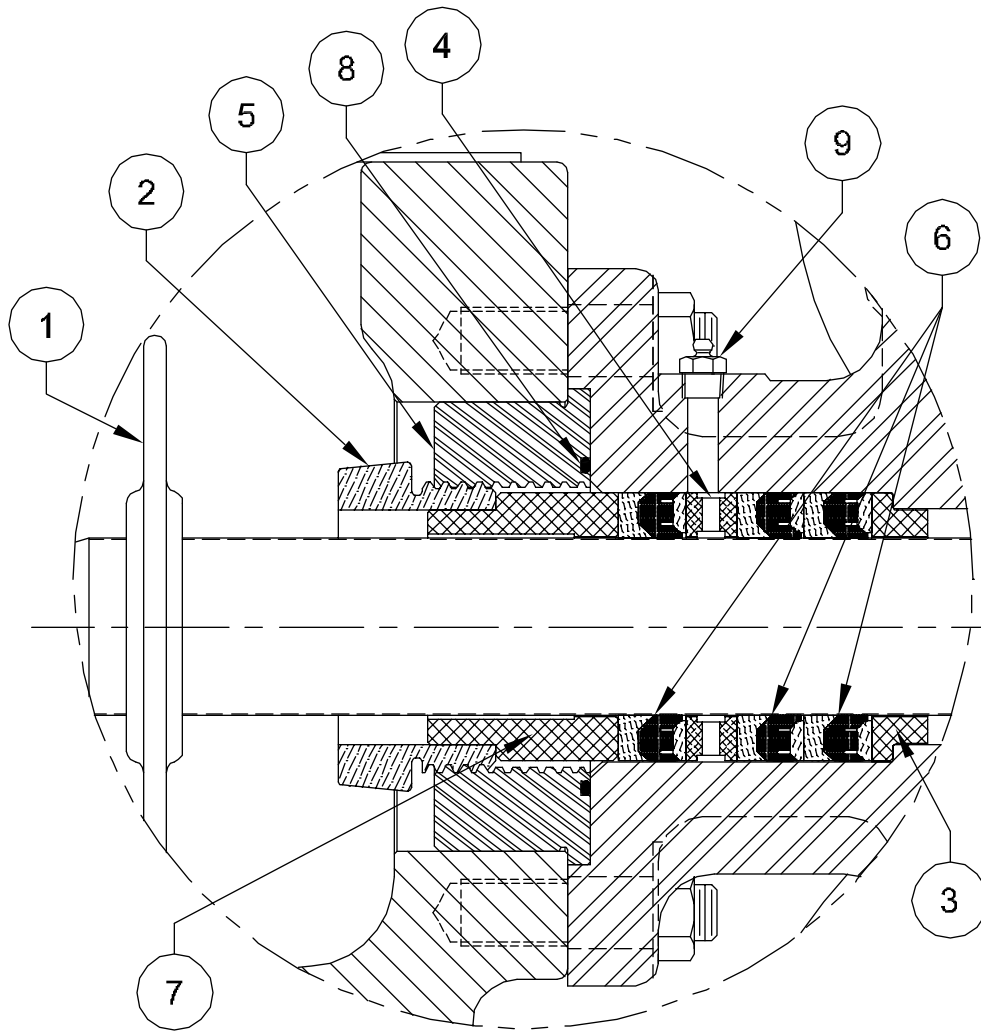
<\*> COATED STAINLESS STEEL

**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  
 163Q-4M, 217Q-4M (HP165AM, HP200AM)

DWG No.: 118436	SCALE: NONE	REV A	SHT.: 1 OF 8
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**NOTE**

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118436, 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
<b>BILL OF MATERIAL</b>			

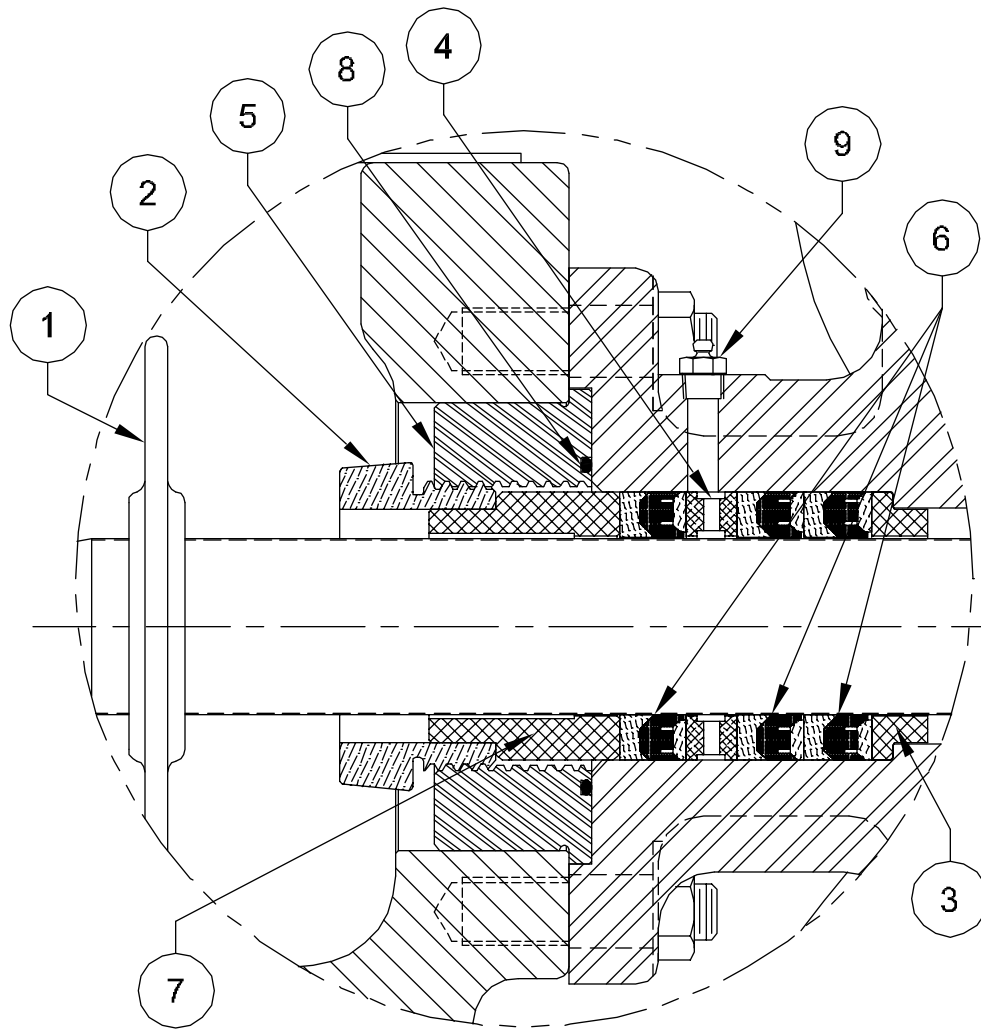
<\*> COATED STAINLESS STEEL



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

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

DWG No.:	SCALE:	REV:	SHT.:
118436	NONE	A	2 OF 8



NOTE  
 1) FOR ALL " J " STYLE PACKING SEE DRAWING 118436,  
 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	6
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

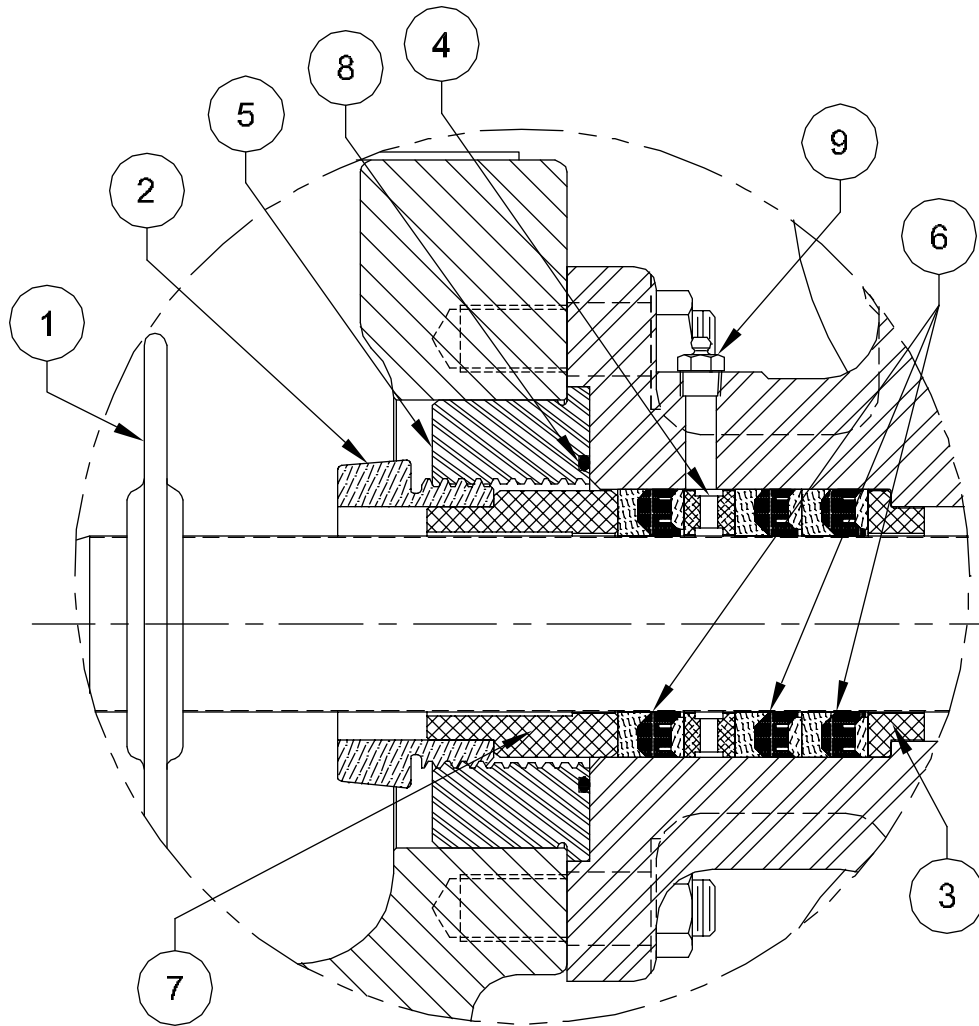
47



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

TITLE:  
 ASSEMBLY, PLUNGER KIT  
 "J"-STYLE PKG, 1-5/8" THRU 2-1/2" PLUNGER  
 163Q-4M, 317Q-4M (HP165AM, HP200AM)

DWG No.:	118436	SCALE:	NONE	REV	A	SHT.:	3	OF	8
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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
BILL OF MATERIAL				

<\*> COATED STAINLESS STEEL

NOTE

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118436, SHEETS 1 THRU 8.

**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  
 163Q-4M, 217Q-4M (HP165AM, HP200AM)

DWG No.:

118436

SCALE:

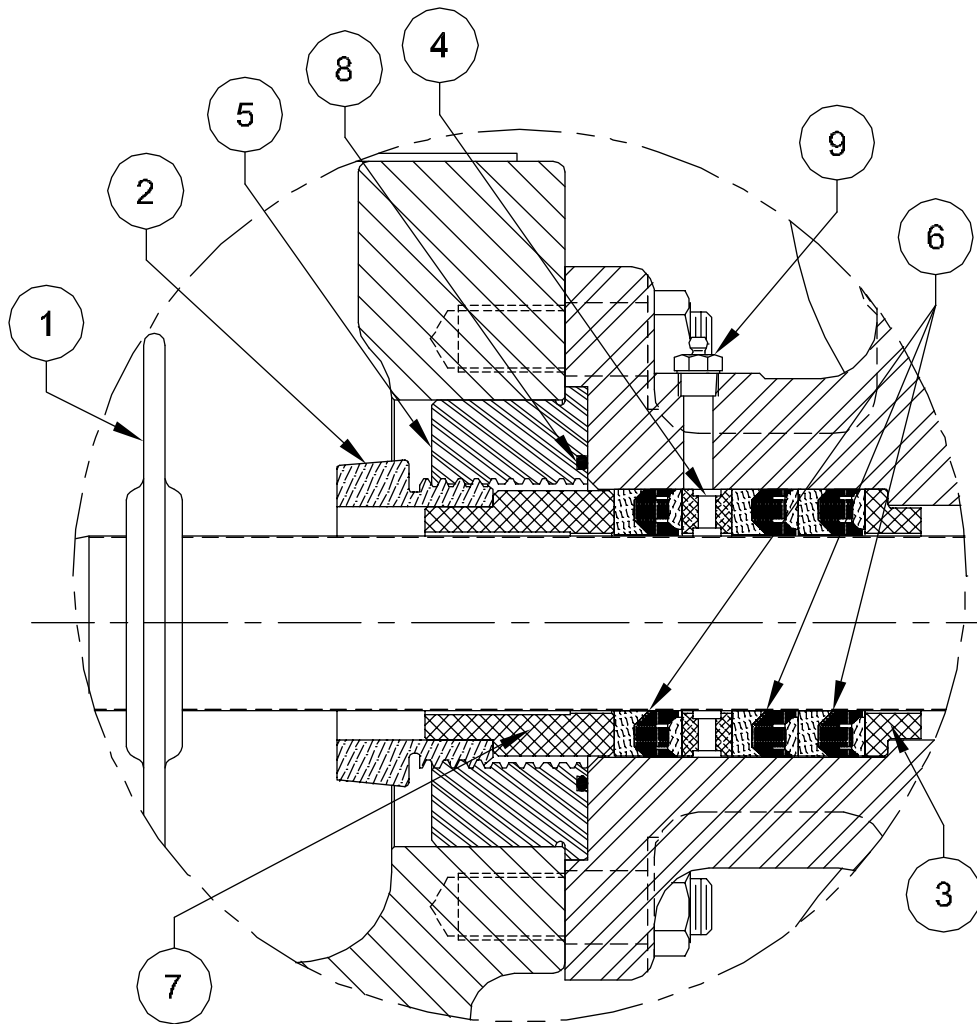
NONE

REV

A

SHT.:

4 OF 8



**NOTE**

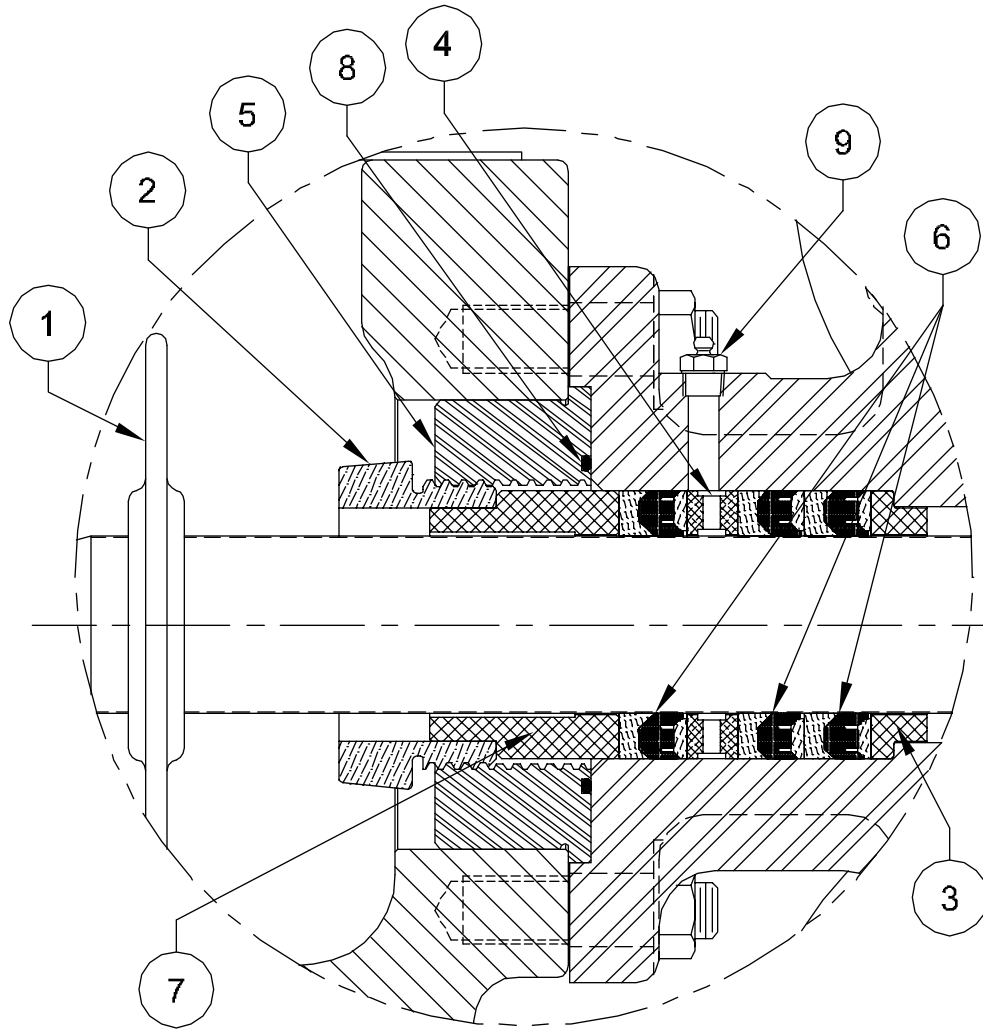
1) FOR ALL " J " STYLE PACKING SEE DRAWING 118436, SHEETS 1 THRU 8.

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		(D)	
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
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL

49

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE:			
ASSEMBLY, PLUNGER KIT			
"J"-STYLE PKG, 1-5/8" THRU 2-1/2" PLUNGER			
163Q-4M, 217Q-4M (HP165AM, HP200AM)			
DWG No.:	SCALE:	REV	SHT.:
118436	NONE	A	5 OF 8



NOTE  
 1) FOR ALL " J " STYLE PACKING SEE DRAWING 118436,  
 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

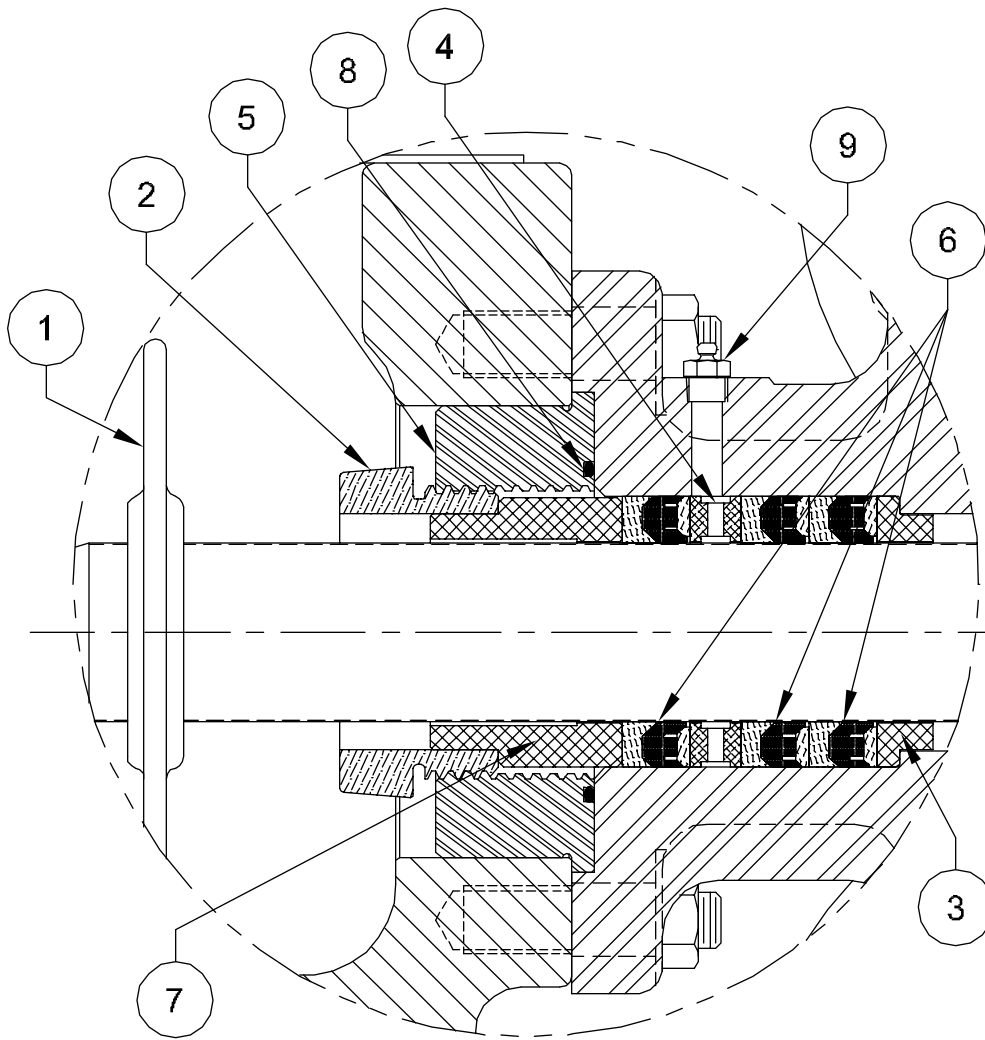
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

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

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

D/WG No.:	SCALE:	REV	SHT.:
118436	NONE	A	6 OF 8



**NOTE**

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118436, 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
<b>BILL OF MATERIAL</b>			

<\*> COATED STAINLESS STEEL

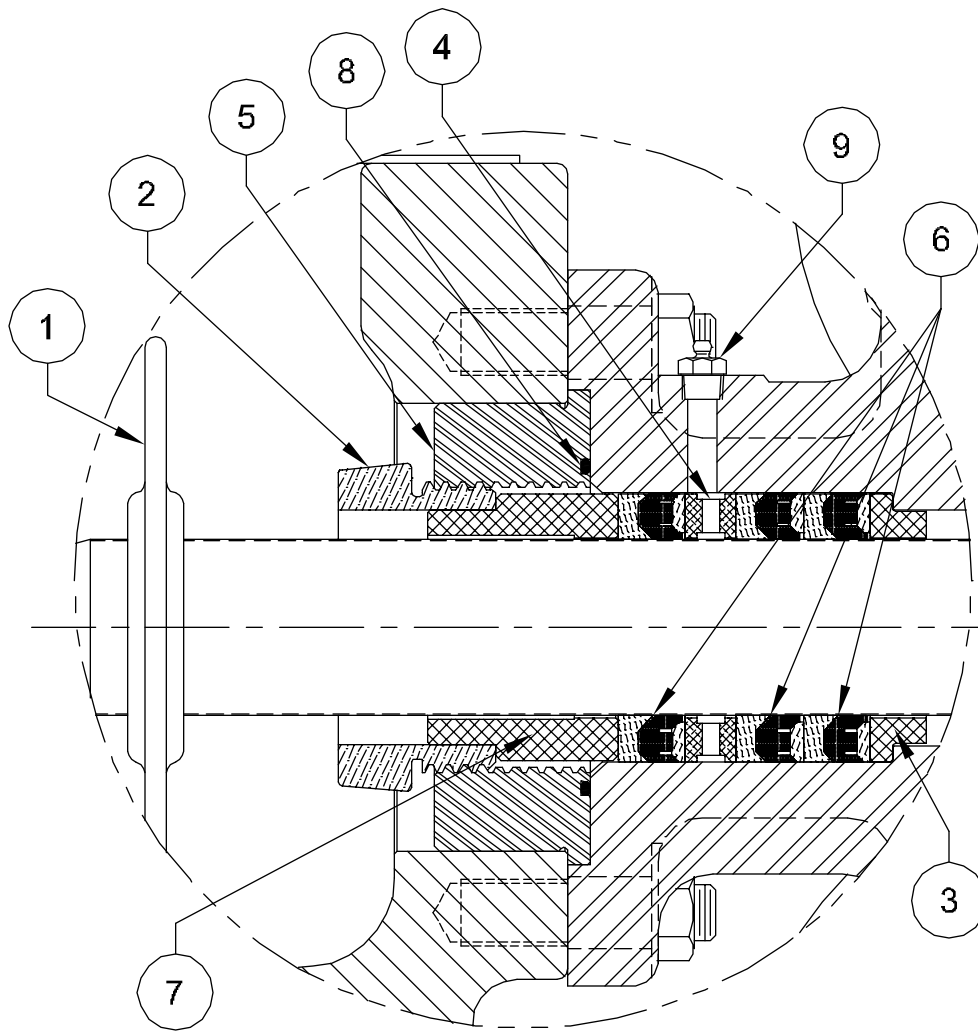
51



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

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

DWG No.: 118436	SCALE: NONE	REV A	SHT.: 7 OF 8
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**NOTE**

1) FOR ALL " J " STYLE PACKING SEE DRAWING 118436, 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

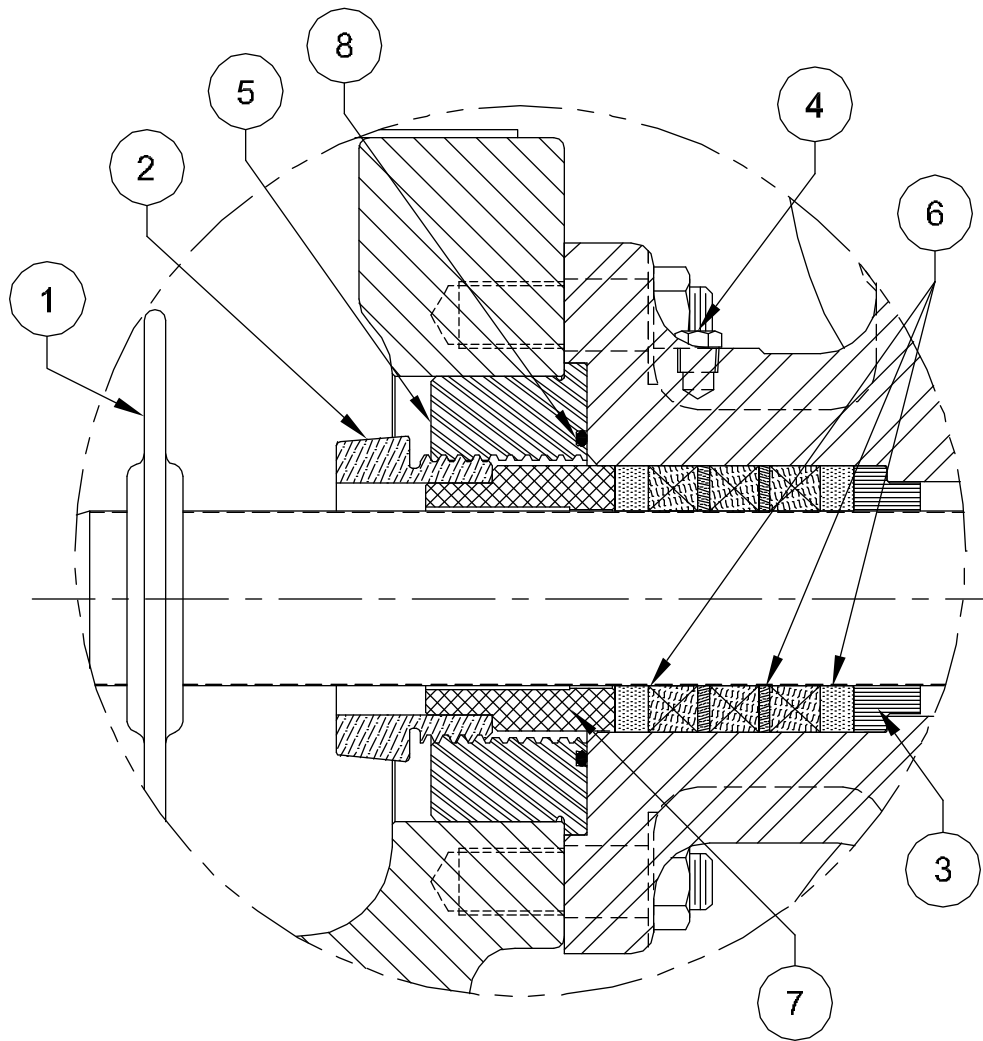
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

**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  
 163Q-4M, 217Q-4M (HP165AM, HP200AM)

DWG No.: 118436 SCALE: NONE REV: A SHT.: 8 OF 8



**NOTE**

1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118437, 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	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	001-023662-575		(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**

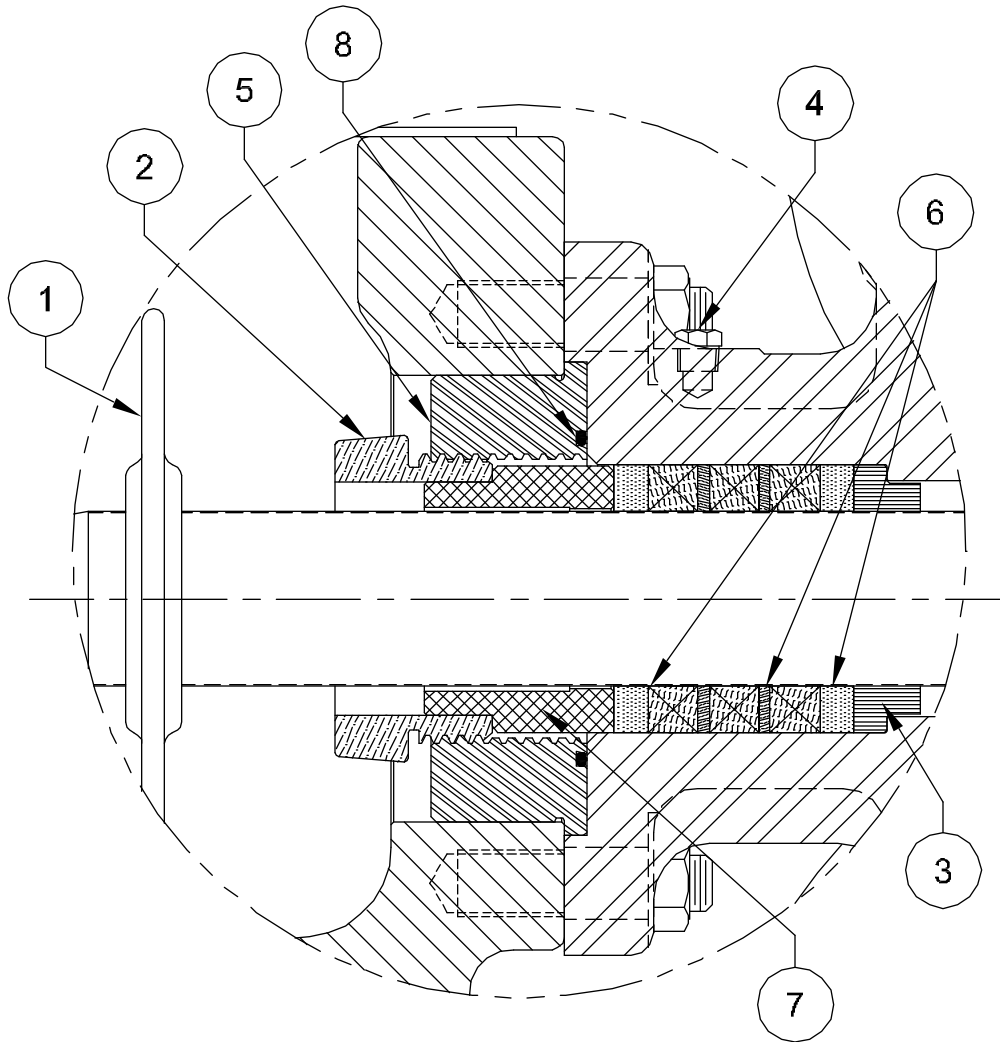
<\*> COATED STAINLESS STEEL

**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**  
**163Q-4M, 217Q-4M (HP165AM, HP200AM)**

DWG No.: 118437 SCALE: NONE REV A SHT.: 1 OF 8





NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118437,  
 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

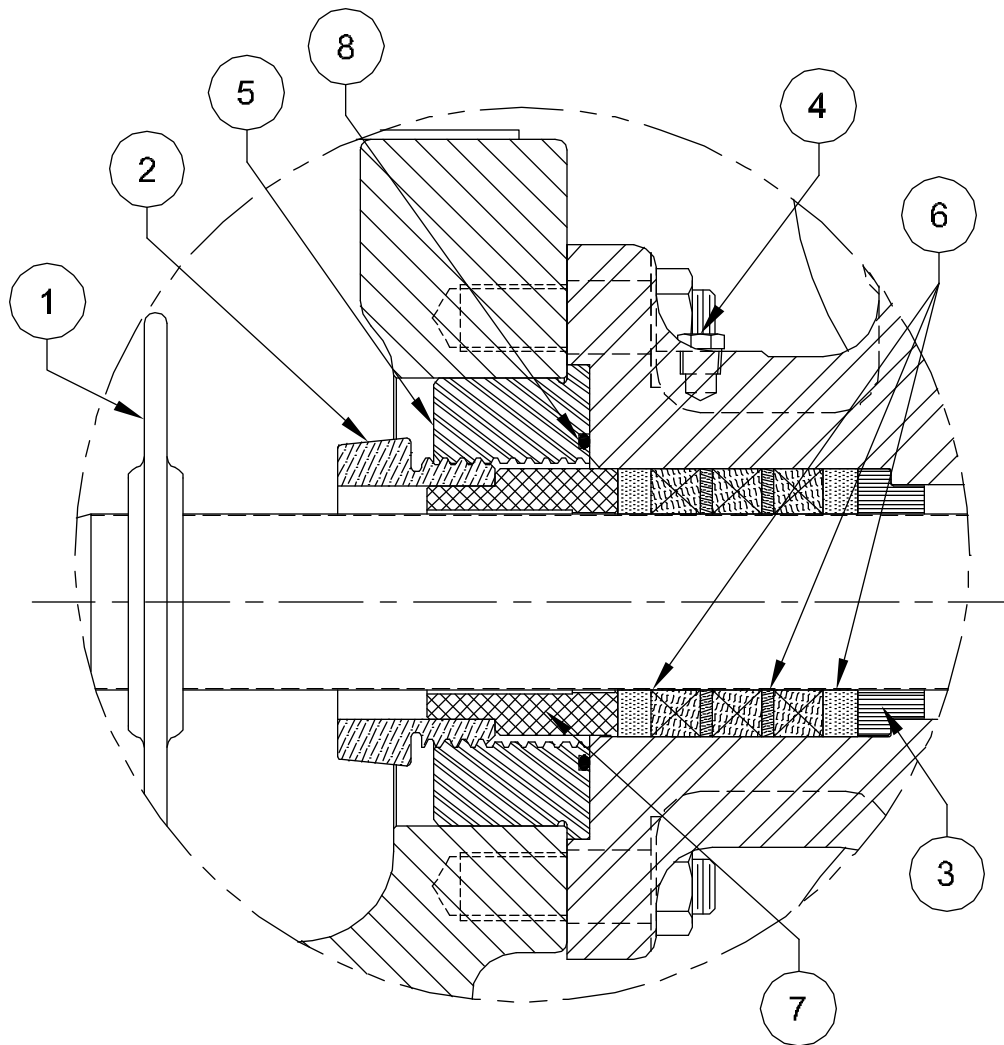
BILL OF MATERIAL

<\*> COATED STAINLESS STEEL

**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  
 163Q-4M, 217Q-4M (HP165AM, HP200AM)

DWG No:	118437	SCALE:	NONE	REV	A	SHT.:	2 OF 8
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**NOTE**

1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118437, 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

( 1-7/8" PLUNGER )

REQ'D	Part No.	DESCRIPTION	ITEM

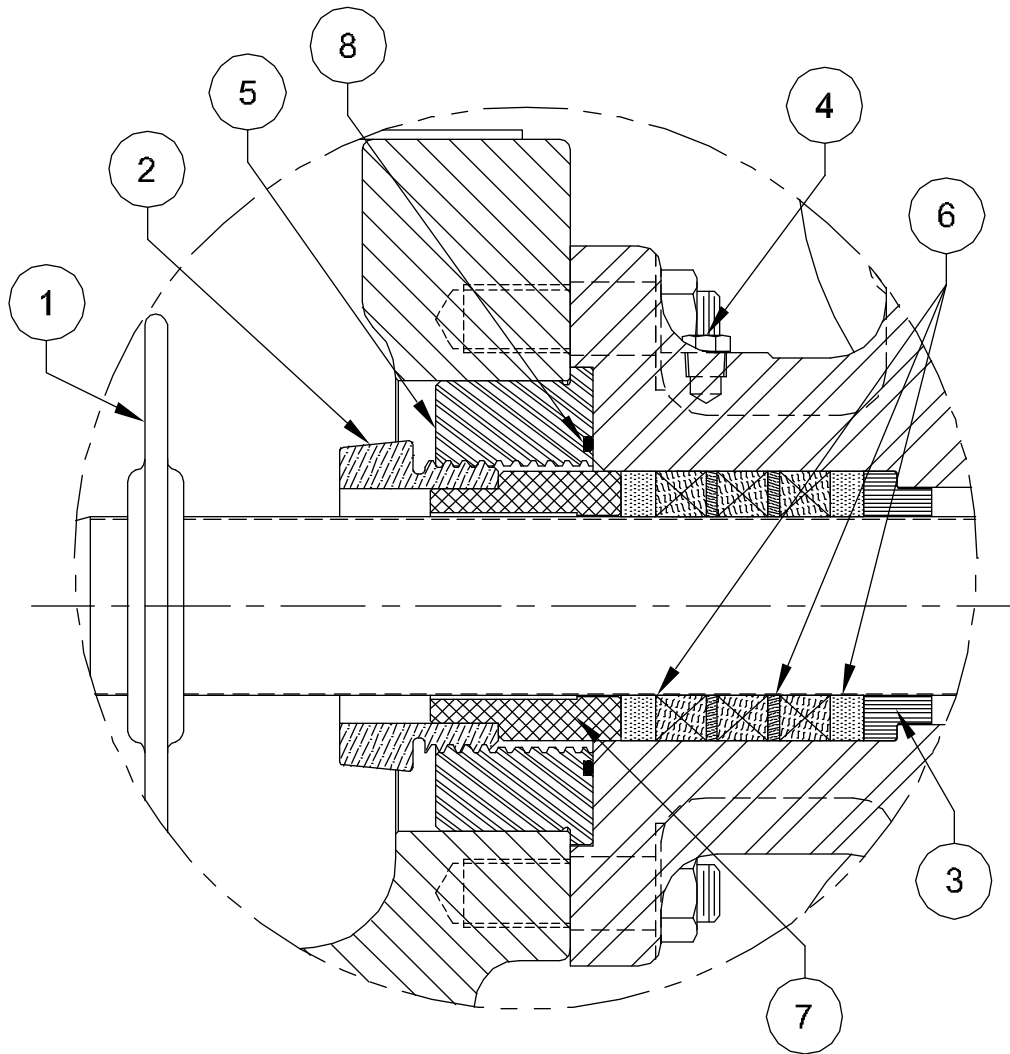
**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

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

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

DWG No.: 118437 SCALE: NONE REV A SHT.: 3 OF 8



**NOTE**

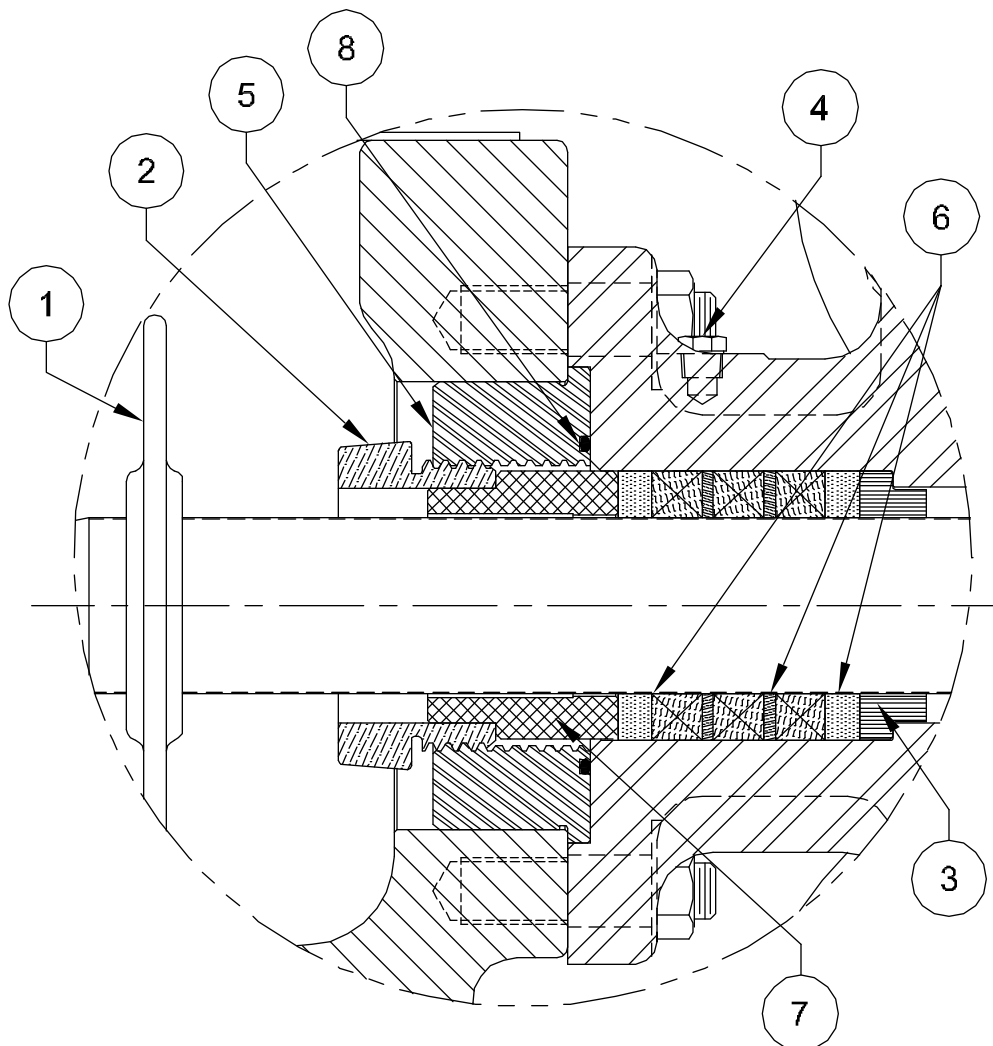
1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118437, SHEETS 1 THRU 8.

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>

**BILL OF MATERIAL**

<\*> COATED STAINLESS STEEL

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: <b>ASSEMBLY, PLUNGER KIT</b> BRAID STYLE PKG, 1-5/8" THRU 2-1/2" PLGR 163Q-4M, 217Q-4M (HP165AM, HP200AM)			
DWG No:	118437	SCALE:	NONE
REV	A	SHT.:	4 OF 8



**NOTE**

1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118437, 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 )

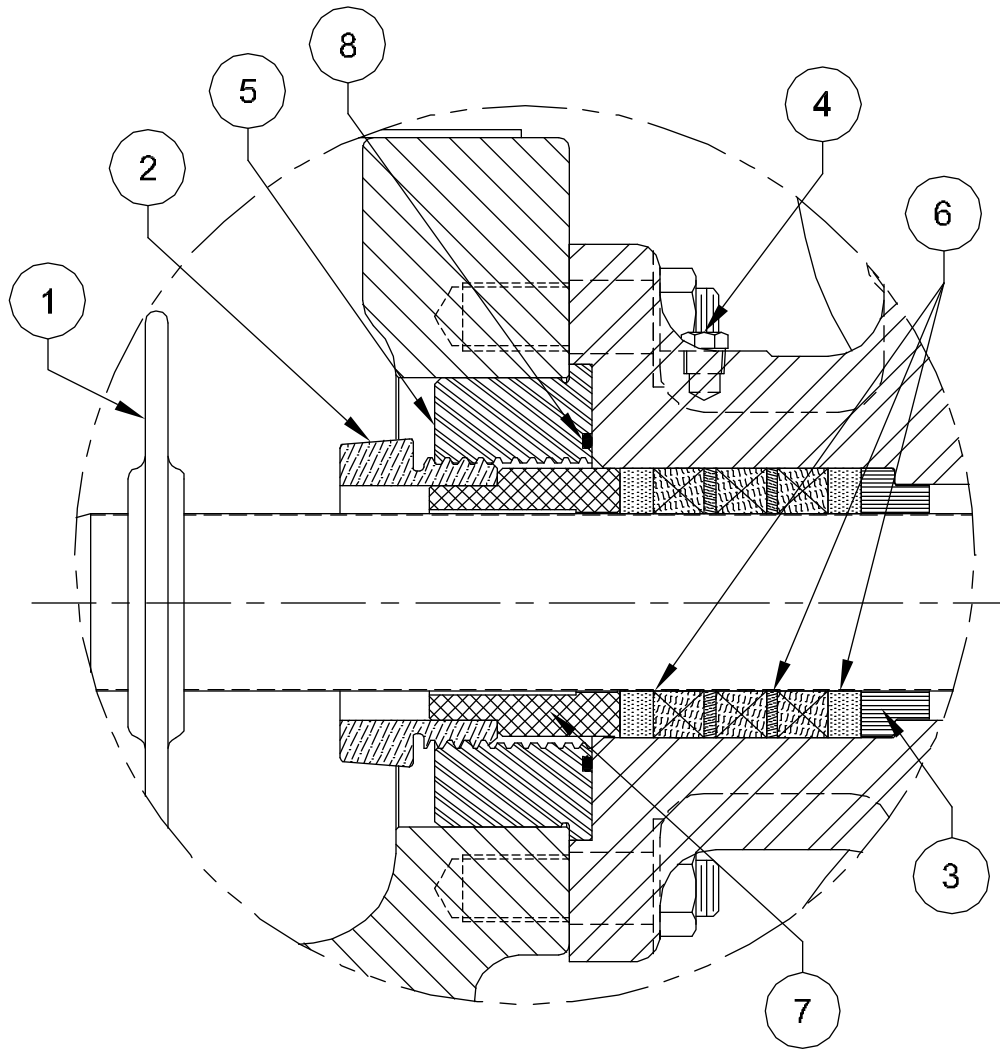
DDA	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

<\*> COATED STAINLESS STEEL

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

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

DWG No.: 118437      SCALE: NONE      REV A      SHT.: 5 OF 8



NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118437,  
 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

(2-1/4" PLUNGER )

DDA	Part No.	DESCRIPTION	ITEM

BILL OF MATERIAL

<\*> COATED STAINLESS STEEL

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

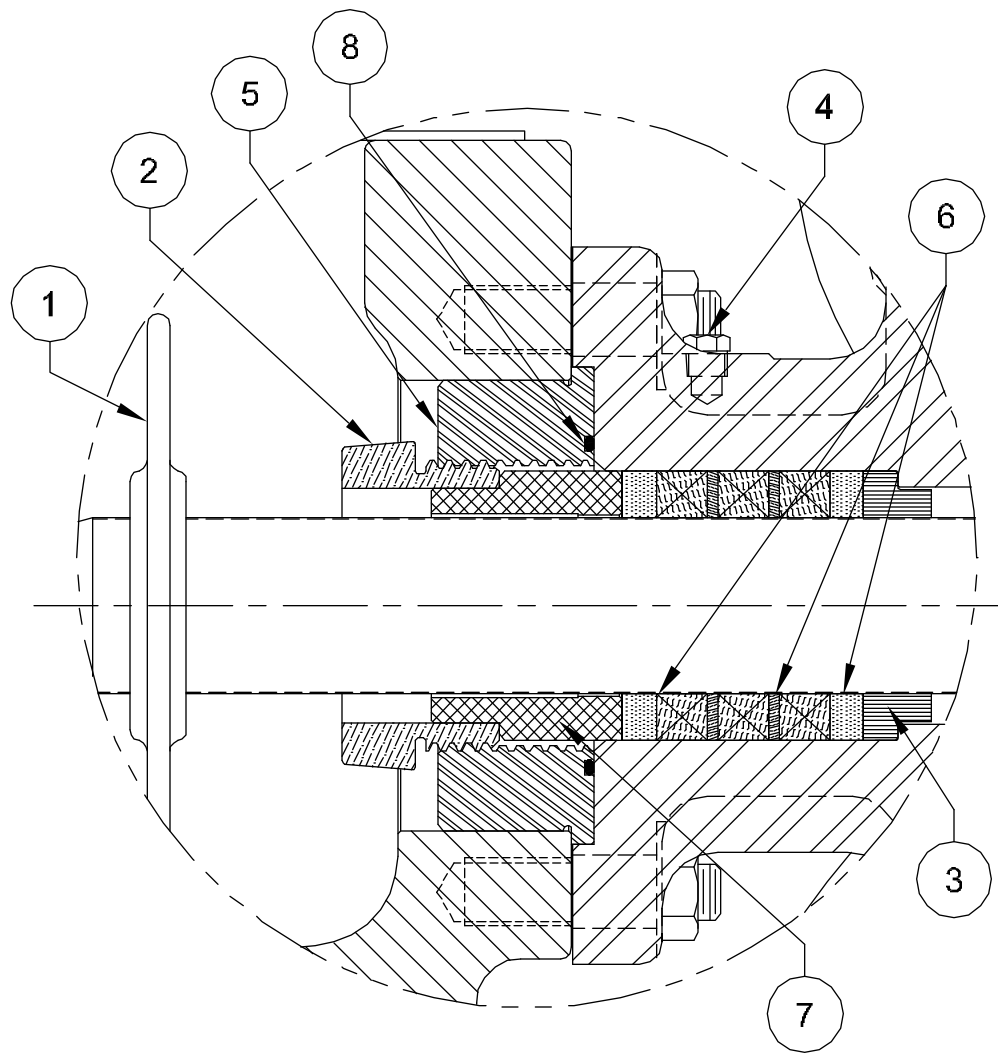
ASSEMBLY, PLUNGER KIT  
 BRAID STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
 163Q-4M, 217Q-4M (HP165AM, HP200AM)

DWG No.: 118437

SCALE: NONE

REV: A

SHT.: 6 OF 8



NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118437,  
 SHEETS 1 THRU 8.

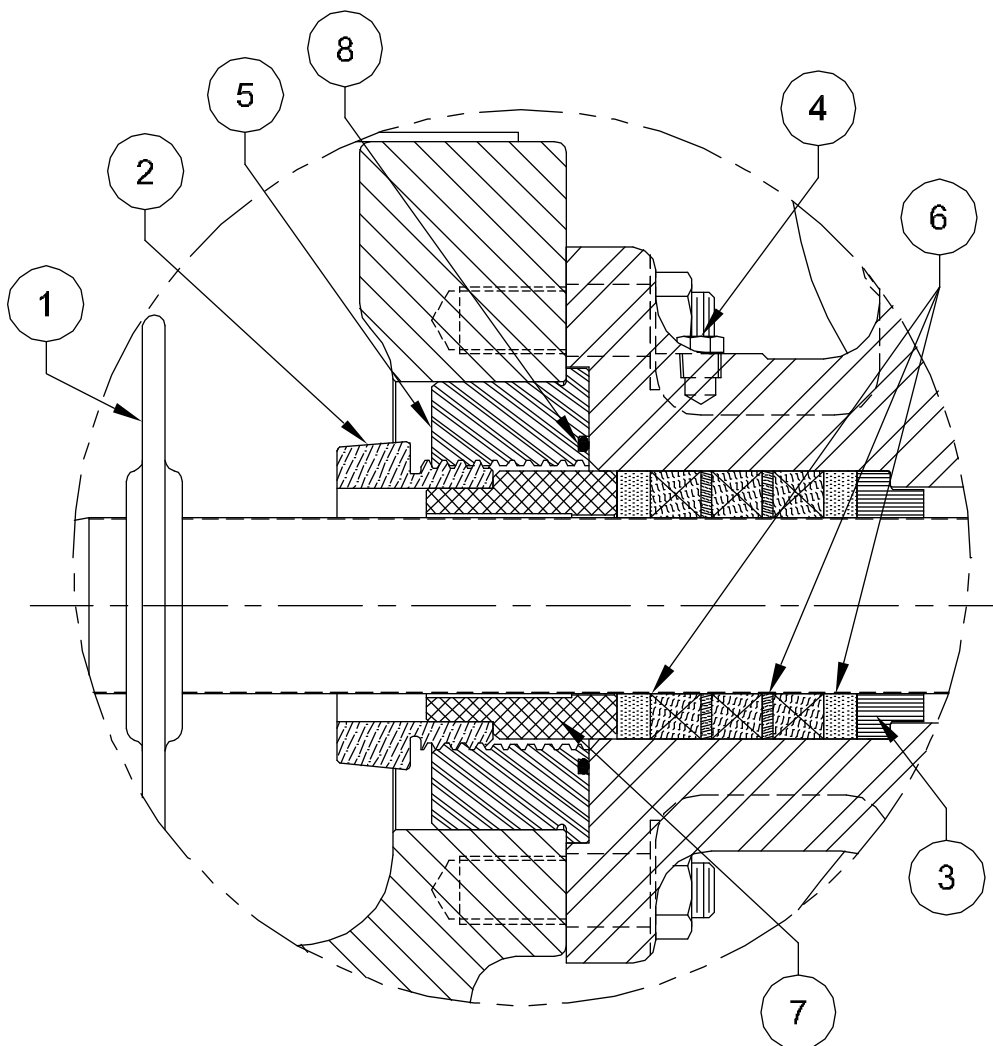
5	110-000238-201	O-RING		8
5	001-024393-575		(SS)	
5	001-024393-235		(STL)	
5	001-024393-302	FOLLOWER	(BRZ)	7
5	288-238234-458		8921-K	
5	288-238234-339		249	
5	288-238234-337		241	
5	288-238234-395	PACKING	238	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	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
<b>( 2-3/8" PLUNGER )</b>				
DDA	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" - 2-1/2" PLGR**  
**163Q-4M, 217Q-4M (HP165AM, HP200AM)**

DWG No.:	118437	SCALE:	NONE	REV	A	SHT.:	7 OF 8
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NOTE  
 1) FOR ALL " BRAID " STYLE PACKING SEE DRAWING 118437,  
 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

( 2-1/2" PLUNGER )

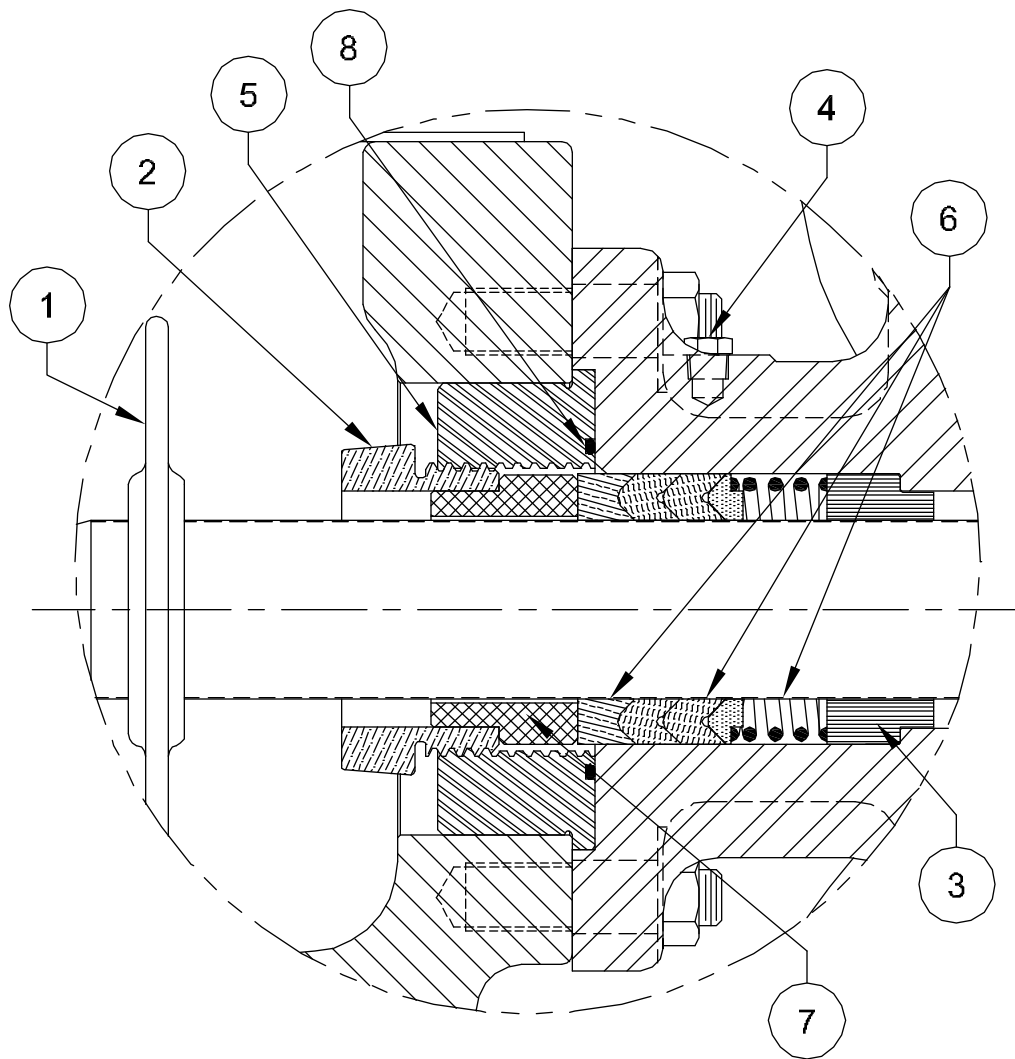
DDA	Part No.	DESCRIPTION	ITEM
BILL OF MATERIAL			

<\*> COATED STAINLESS STEEL

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

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

DWG No.: 118437 SCALE: NONE REV A SHT.: 8 OF 8



NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118438,  
 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
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BILL OF MATERIAL

<\*> COATED STAINLESS STEEL

61

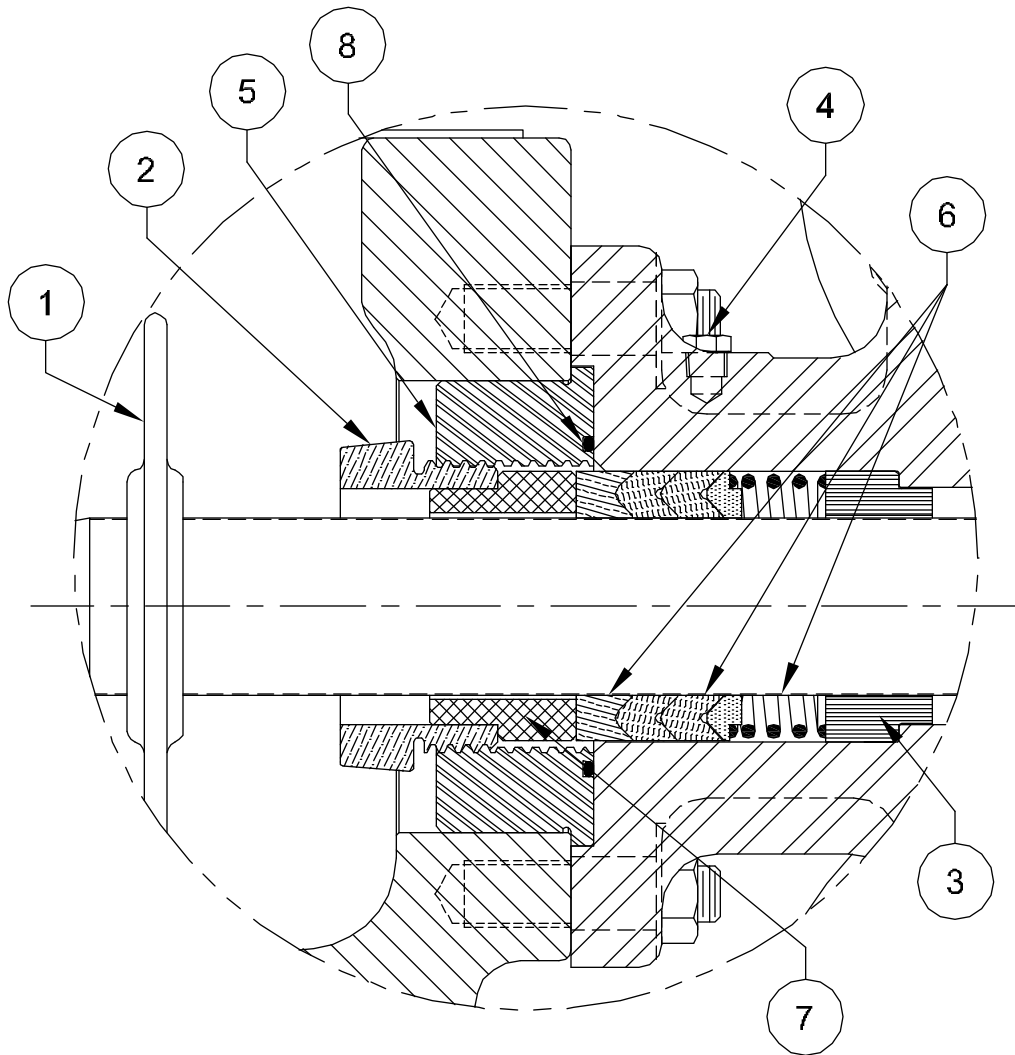


HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

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

DWG No.:	SCALE:	REV	SHT.:
118438	NONE	A	1 OF 8





**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118438, 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
( 1-3/4" PLUNGER )				
REQ'D	Part No.	DESCRIPTION		ITEM
BILL OF MATERIAL				

<\*> COATES 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  
 163Q-4M, 217Q-4M (HP165AM, HP200AM)

DWG No.:

118438

SCALE:

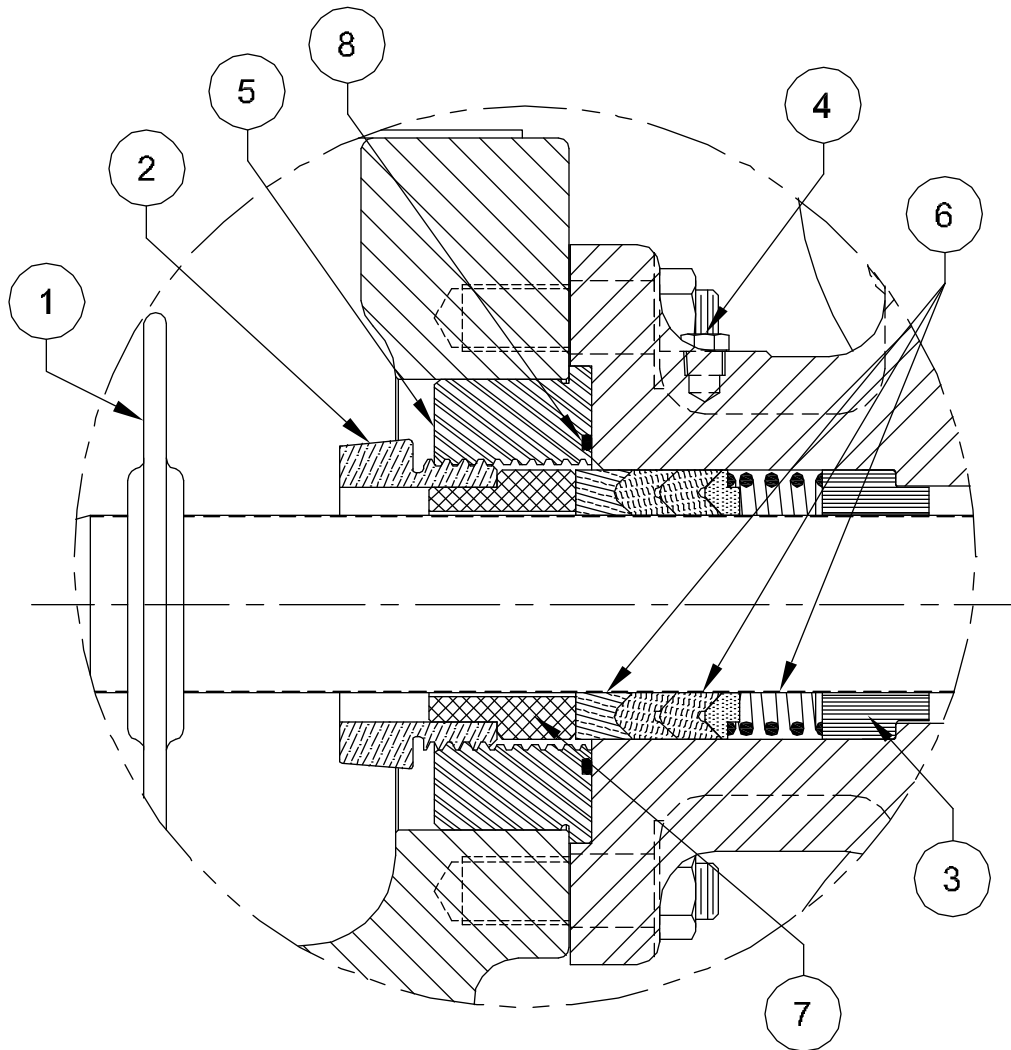
NONE

REV

A

SHT.:

2 OF 8



NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118438,  
 SHEETS 1 THRU 8.

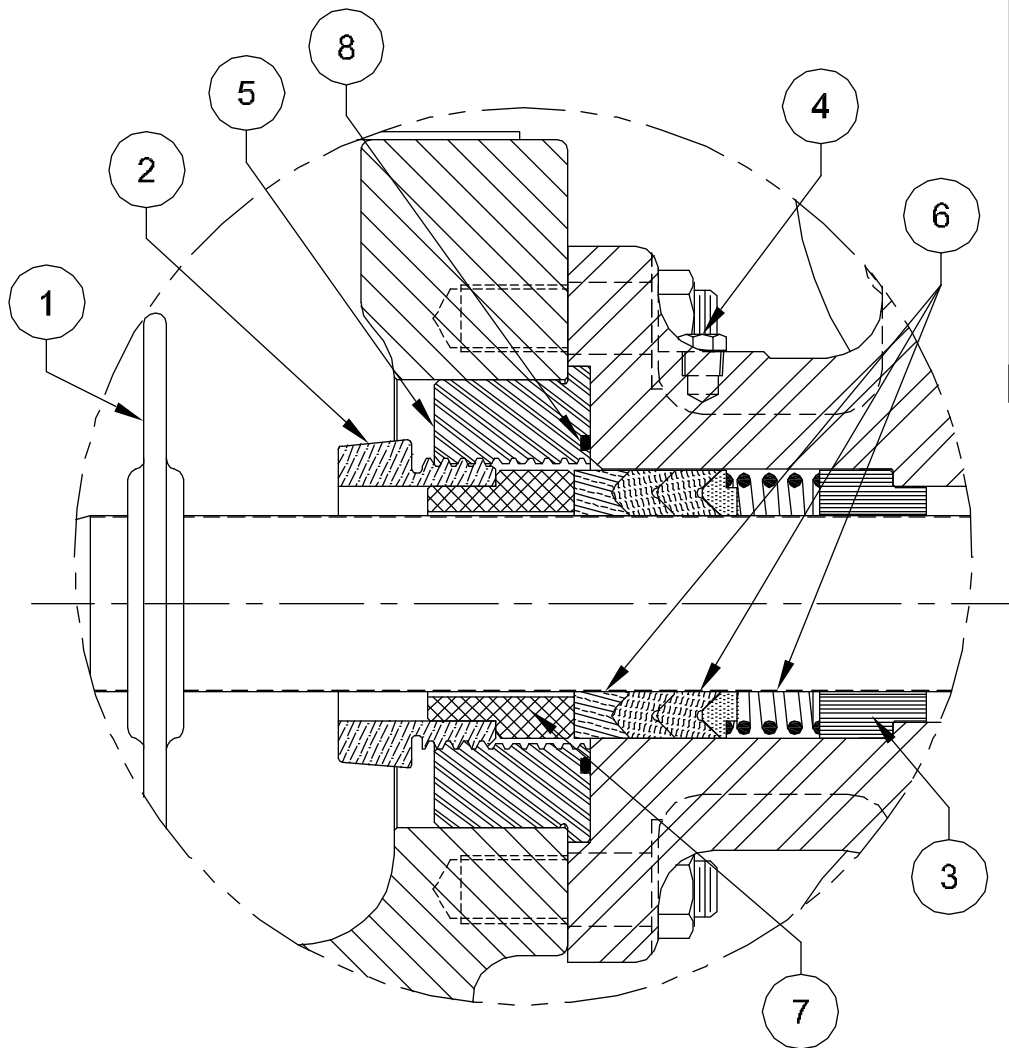
5	110-000238-201	O-RING		8
5	001-014459-575		(SS)	
5	001-014459-235		(STL)	
5	001-014459-302	FOLLOWER	(BRZ)	7
5	428-178212-473		1043-4	
5	428-178212-340	PACKING	1068-4	6
5	001-023574-278		(SS)	
5	001-023574-236		(STL)	
5	001-023574-316	ADAPTER	(BRZ)	5
5	170-018002-278	PIPE PLUG	(SS)	4
5	001-010899-575		(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
<b>( 1-7/8" PLUNGER )</b>				
REQ'D	Part No.	DESCRIPTION		ITEM
<b>BILL OF MATERIAL</b>				

<\*> 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 163Q-4M, 217Q-4M (HP165AM, HP200AM)			
DWG No.:	118438	SCALE:	NONE
REV	A	SHT.:	3 OF 8





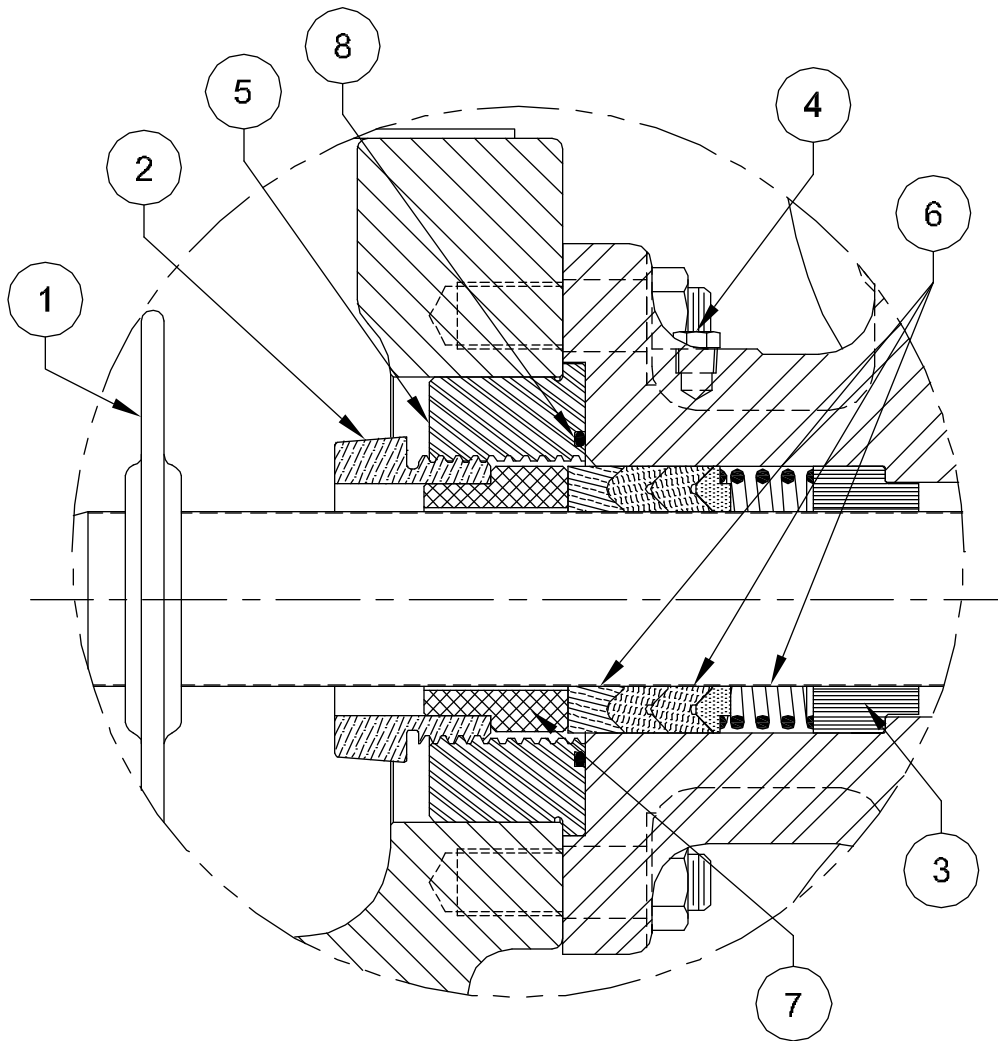
NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118438  
 SHEETS 1 THRU 8.

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
BILL OF MATERIAL				

<\*> COATED STAINLESS STEEL

65

<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 163Q-4M, 217Q-4M (HP165AM, HP200AM)			
DWG No.:	SCALE:	REV:	SHT.:
118438	NONE	A	5 OF 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
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL

**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118438, SHEETS 1 THRU 8.

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

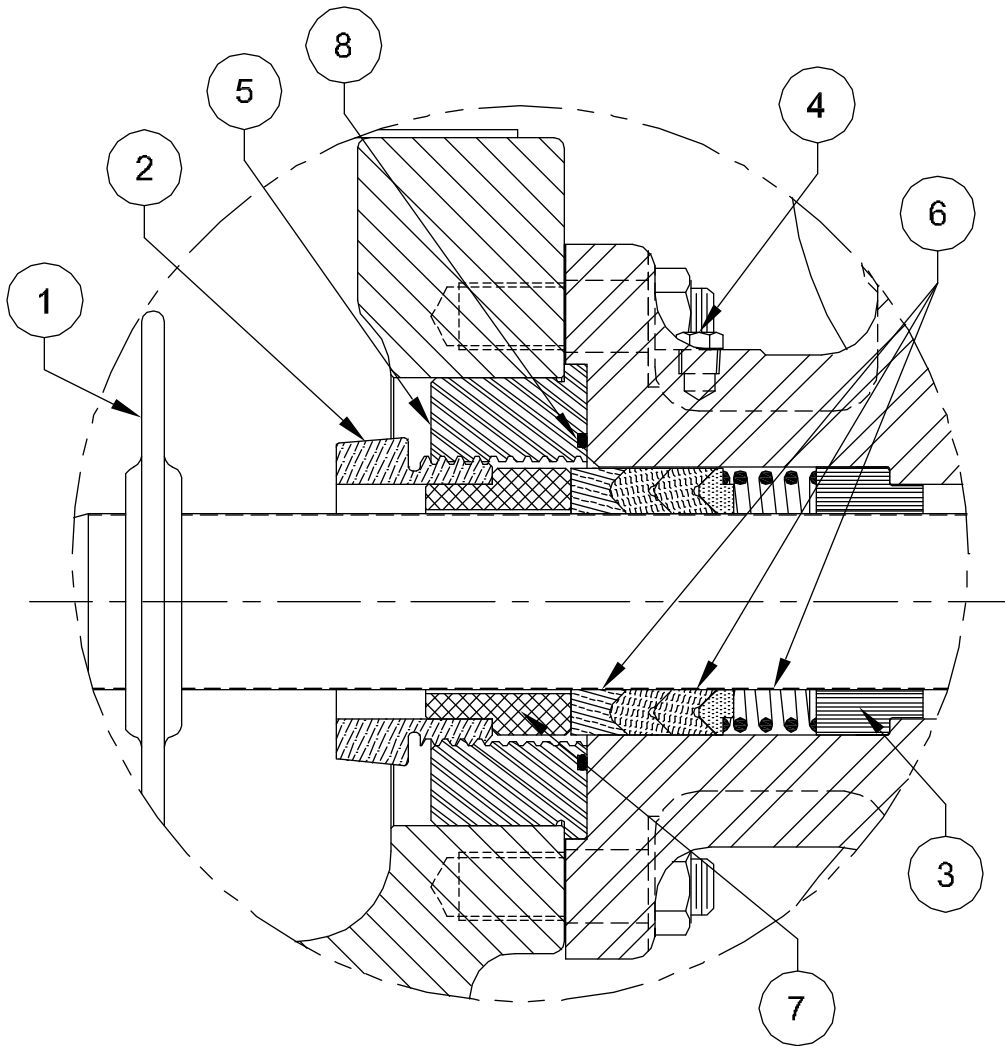
ASSEMBLY, PLUNGER KIT  
 "SSF-4" STYLE PKG, 1-5/8" THRU 2-1/2" PLGR  
 163Q-4M, 217Q-4M (HP165AM, HP200AM)

DWG No.: 118438

SCALE: NONE

REV A

SHT.: 6 OF 8



NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118438,  
 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

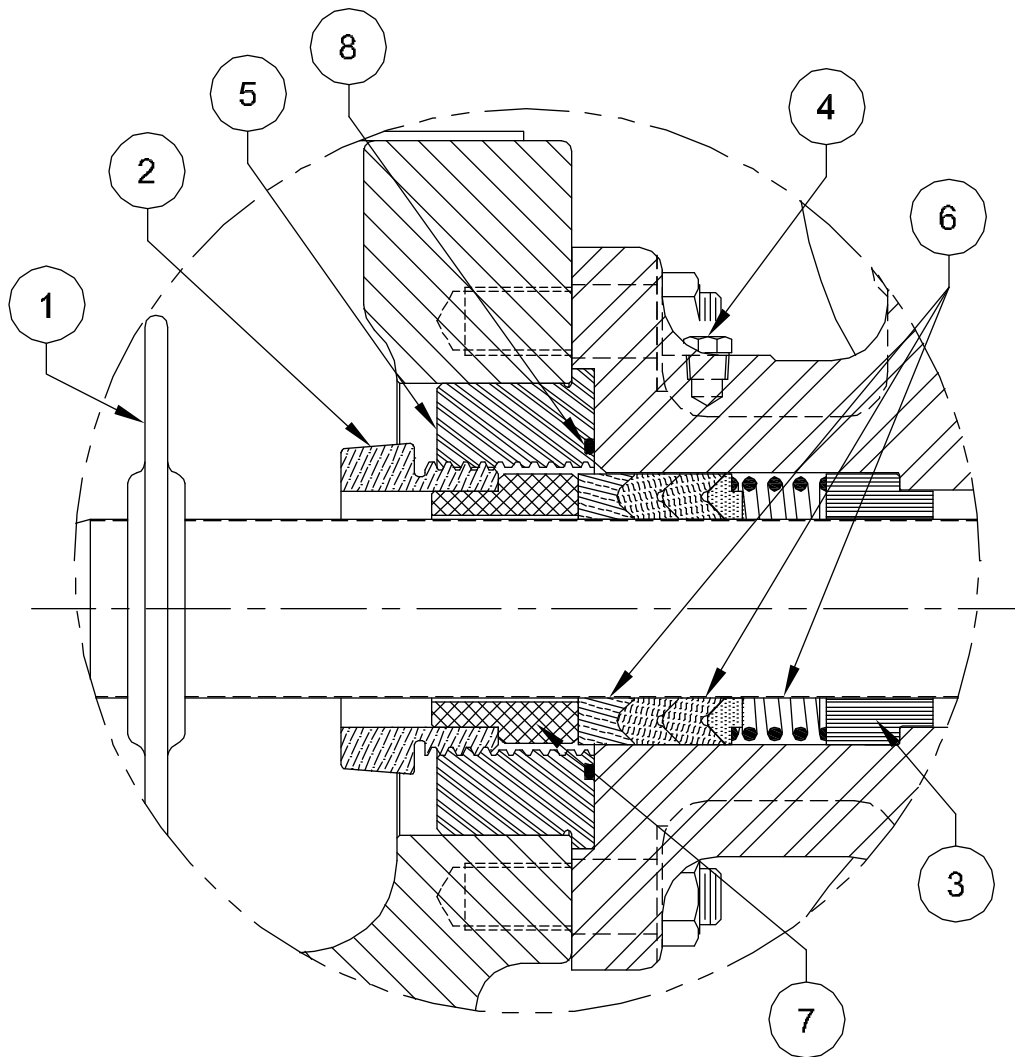
BILL OF MATERIAL

<\*> COATED STAINLESS STEEL

**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  
 163Q-4M, 217Q-4M (HP165AM, HP200AM)

DWG No.: 118438	SCALE: NONE	REV A	SHT.: 7 OF 8
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NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118438,  
 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>
<b>BILL OF MATERIAL</b>				

<\*> COATED STAINLESS STEEL

68

**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  
 163Q-4M, 217Q-4M (HP165AM, HP200AM)

DWVG No.:

118438

SCALE:

NONE

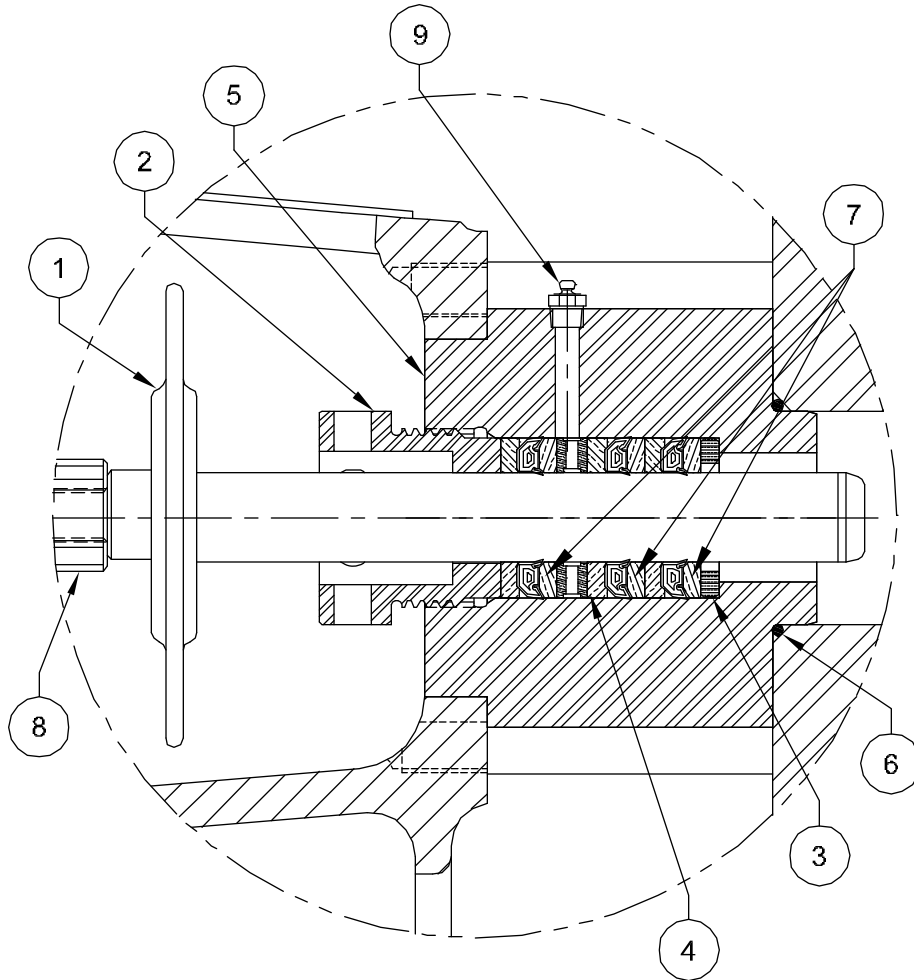
REV

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SHT.:

8

OF 8



**NOTE**

1) FOR ALL "J" STYLE PACKING SEE DRAWING 118439, 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
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**BILL OF MATERIAL**

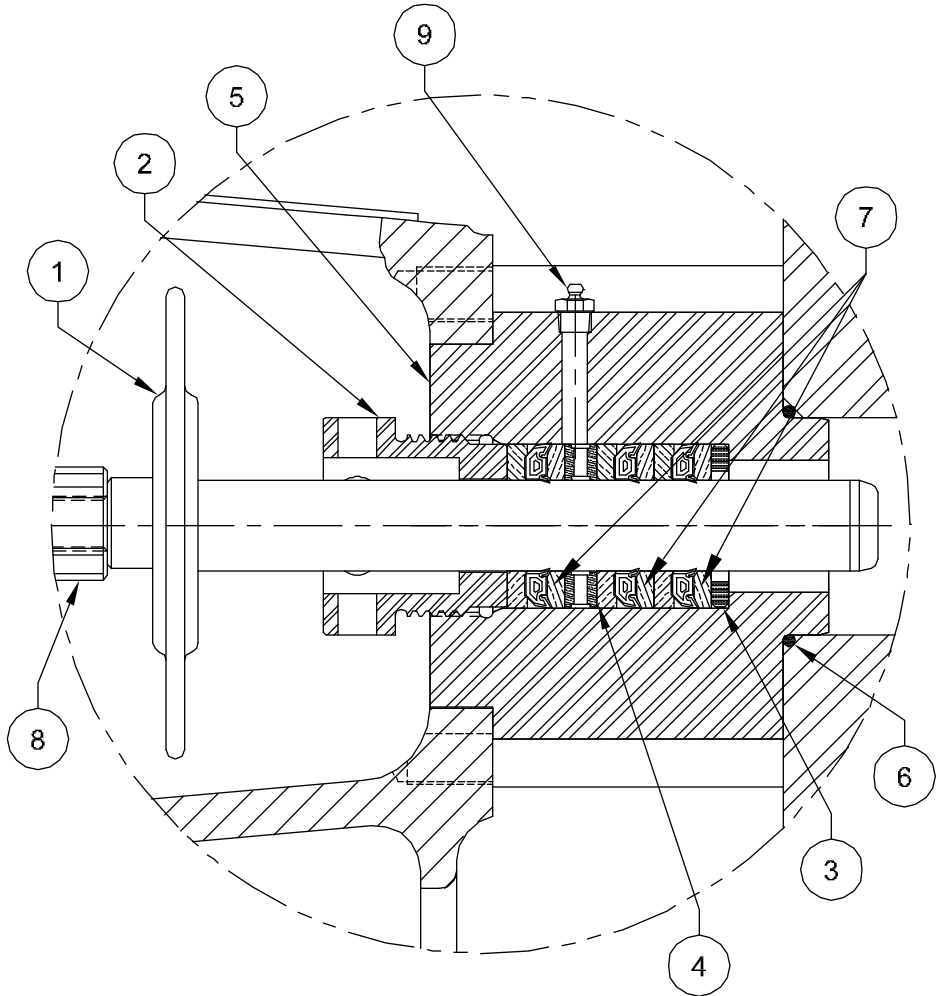


HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

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

DWG No.:	118439	SCALE:	NONE	REV:	A	SHT.:	1 OF 5
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NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118439,  
 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

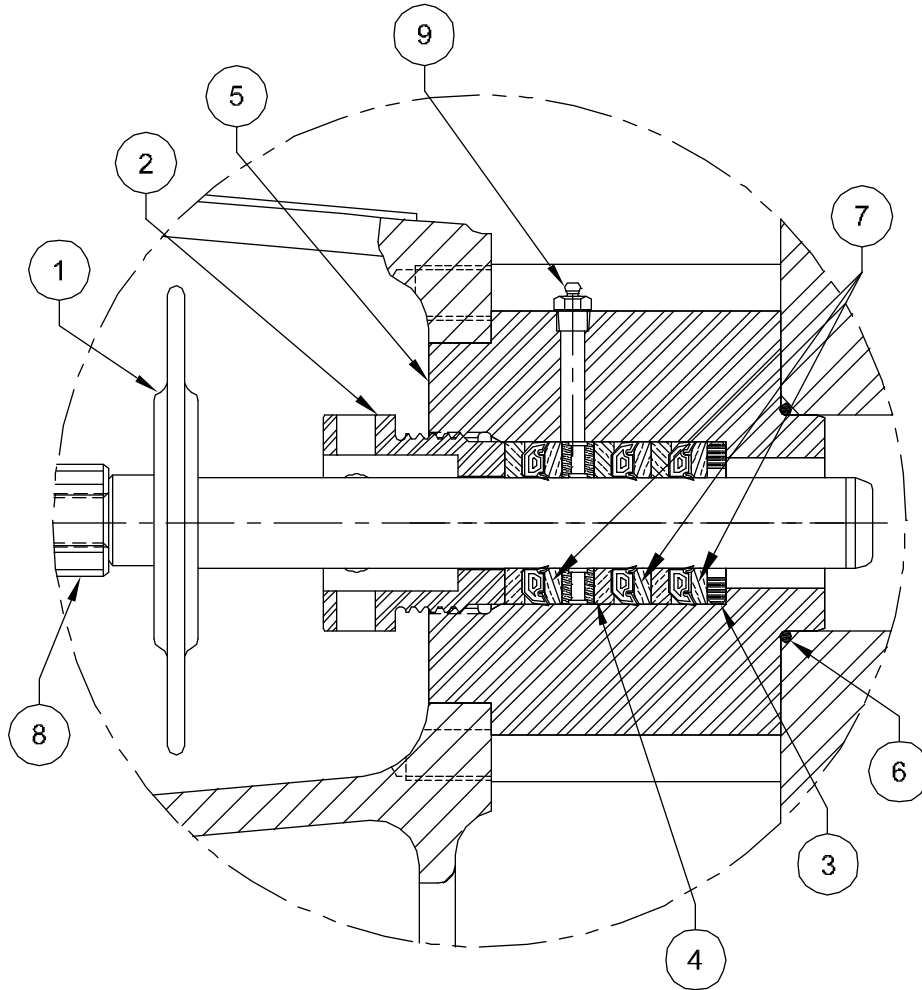
70

**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"  
 163Q-4H & 217Q-4H

DWG No.: 118439	SCALE: NONE	REV A	SHT.: 2 OF 5
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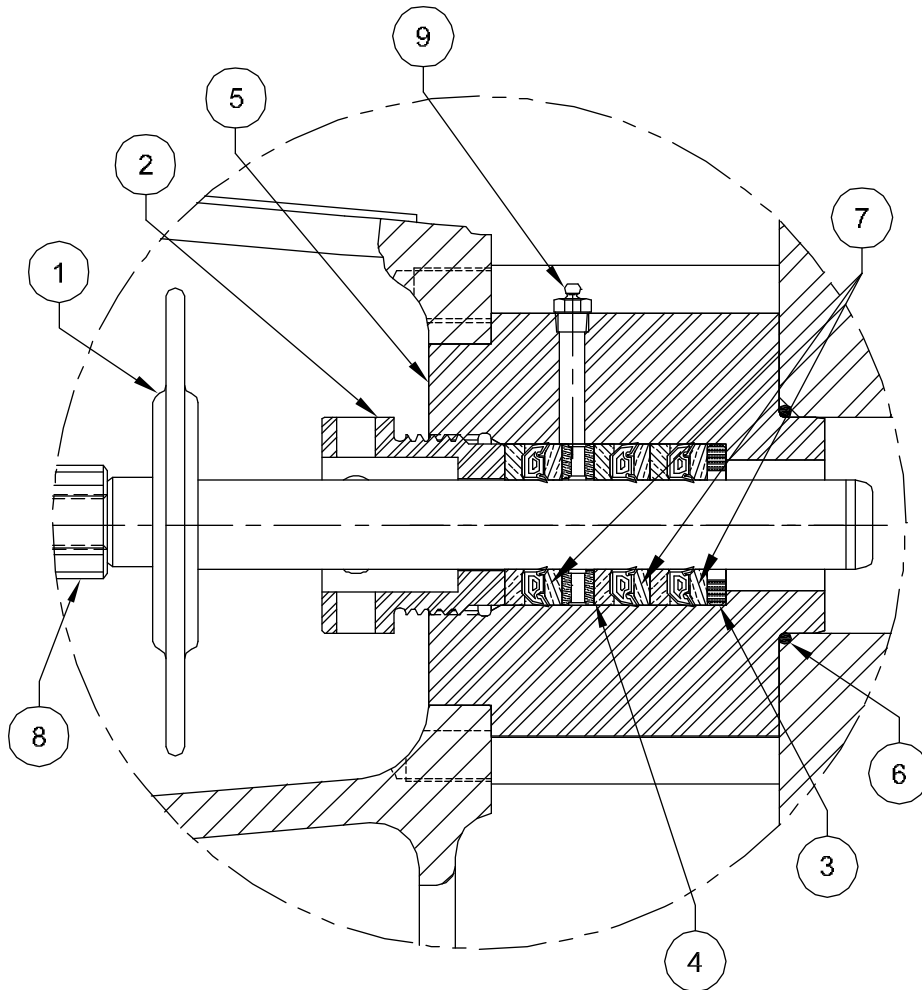
NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118439,  
 SHEETS 1 THRU 5.

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
<b>( 1-1/2" PLUNGER )</b>				
REQ'D	Part No.	DESCRIPTION		ITEM
<b>BILL OF MATERIAL</b>				

**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"  
 163Q-4H & 217Q-4H

DWVG No.:	118439	SCALE:	NONE	REV	A	SHT.:	3 OF 5
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NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118439,  
 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

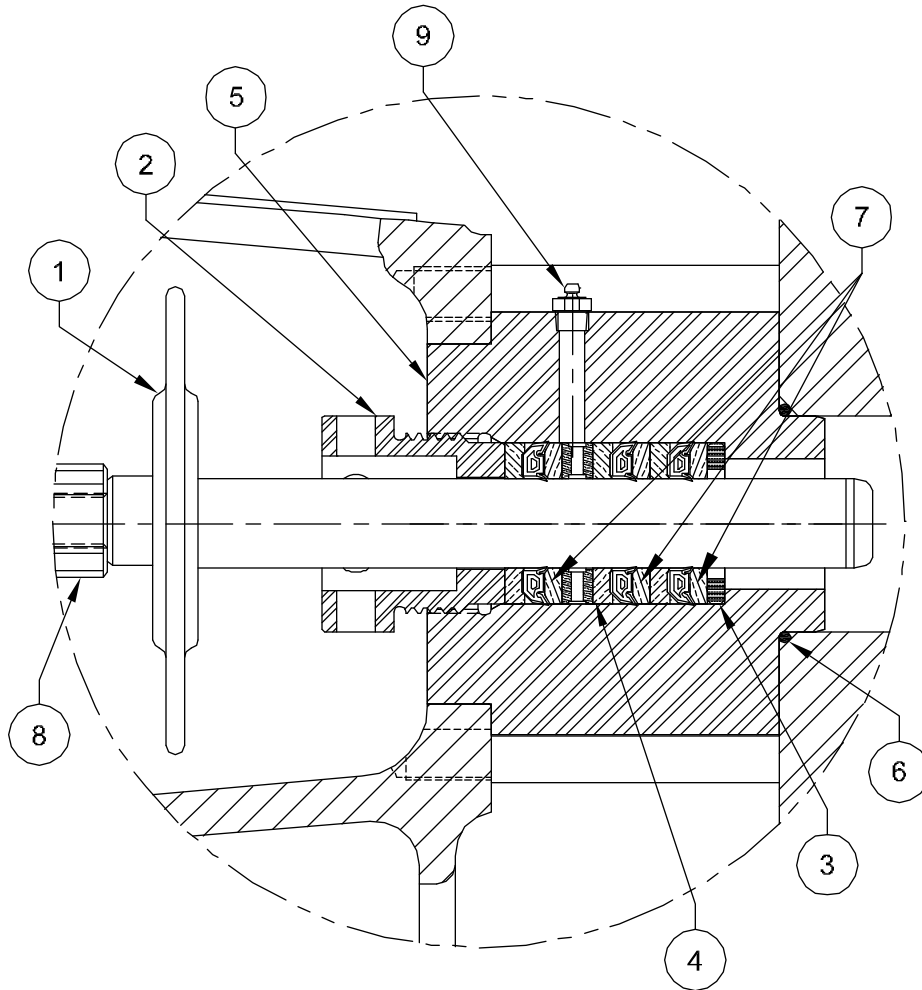
BILL OF MATERIAL

72

**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"**  
**163Q-4H & 217Q-4H**

DWG No.: 118439	SCALE: NONE	REV A	SHT: 4 OF 5
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**NOTE**

1) FOR ALL "J" STYLE PACKING SEE DRAWING 118439, 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>				
<b>REQ'D</b>	<b>Part No.</b>	<b>DESCRIPTION</b>		<b>ITEM</b>
<b>BILL OF MATERIAL</b>				

73



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

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

DWG No.:

118439

SCALE:

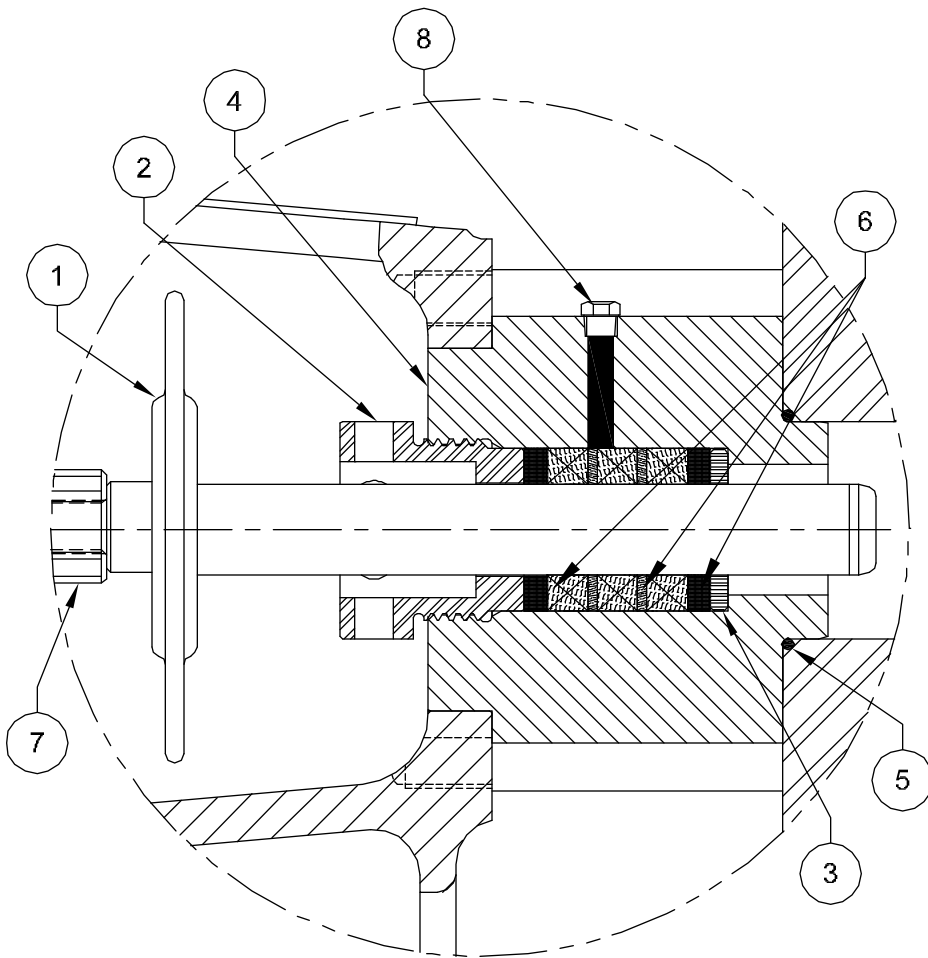
NONE

REV

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SHT.:

5 OF 5



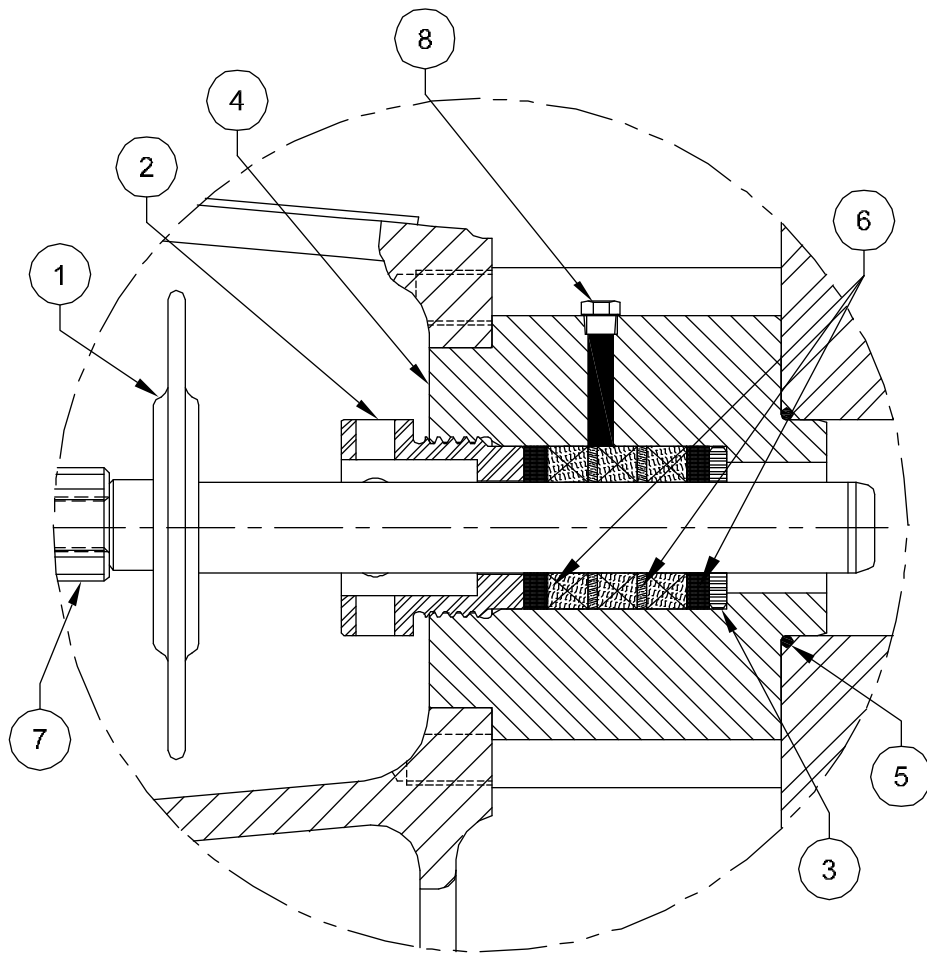
NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118440,  
 SHEETS 1 THRU 5.

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"  
 163Q-4H & 217Q-4H

DWG No.: 118440	SCALE: NONE	REV A	SHT.: 1 OF 5
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NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118440,  
 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

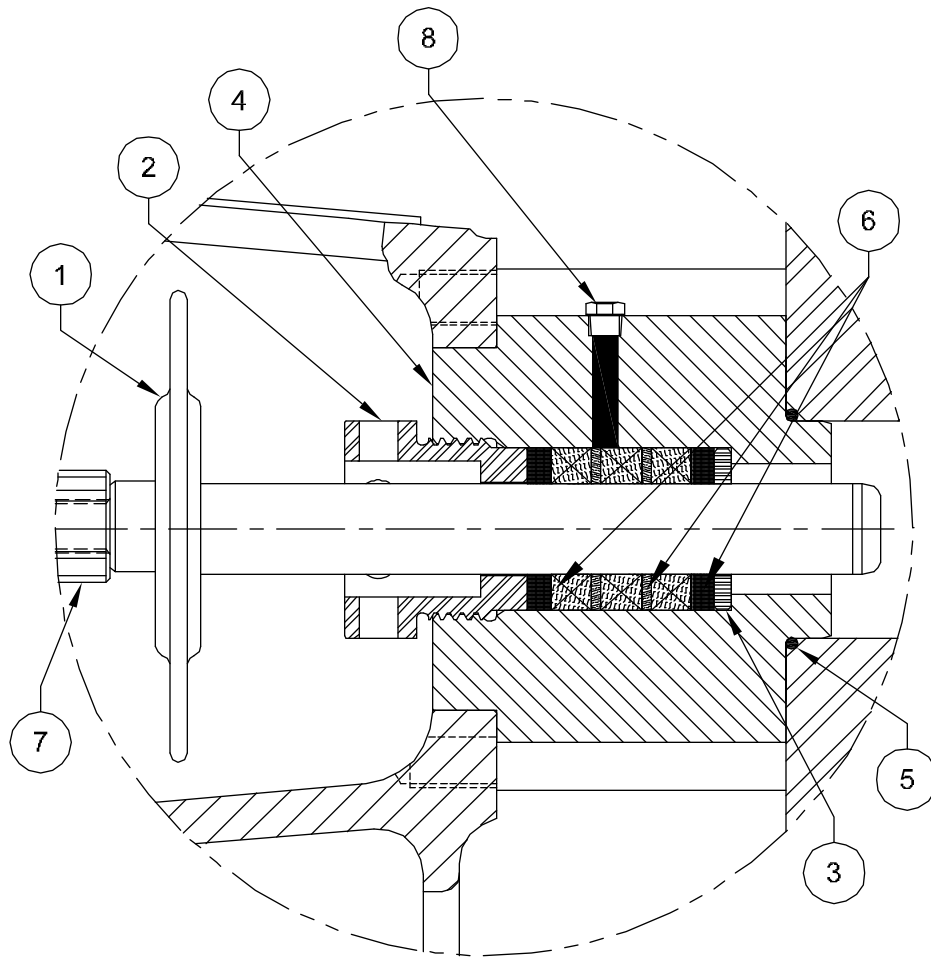
75



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

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

DWG No.:	118440	SCALE:	NONE	REV	A	SHT.:	2	OF	5
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NOTE  
 1) FOR ALL "J" STYLE PACKING SEE DRAWING 118440,  
 SHEETS 1 THRU 5.

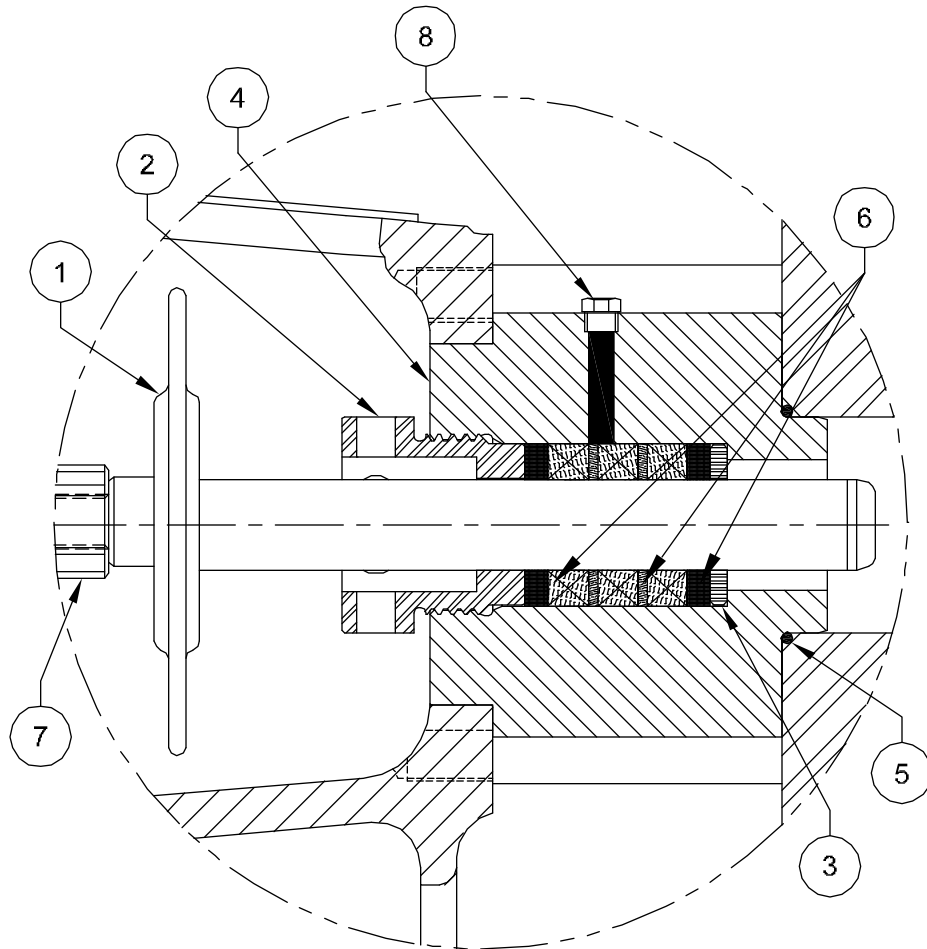
5	170-018002-278	PIPE PLUG		8
5	001-028470-402	ADAPTER ROD	(SS)	7
5	287-112234-458		8921-K	
5	287-112234-339		249	
5	287-112234-337		241	
5	287-112234-395	PACKING	238	6
5	110-000337-200	SEAL		5
5	AAC-118464-402		(SS)	
5	AAC-118464-270	STUFFING BOX	(STL)	4
5	001-010949-575		(SS)	
5	001-010949-235		(STL)	
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  
 BRAID STYLE PACKING, 1-1/4" THRU 1-3/4"  
 163Q-4H & 217Q-4H

DWG No.: 118440	SCALE: NONE	REV A	SHT.: 3 OF 5
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**NOTE**

1) FOR ALL "J" STYLE PACKING SEE DRAWING 118440, 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
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**BILL OF MATERIAL**

77



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

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

DWG No.:

118440

SCALE:

NONE

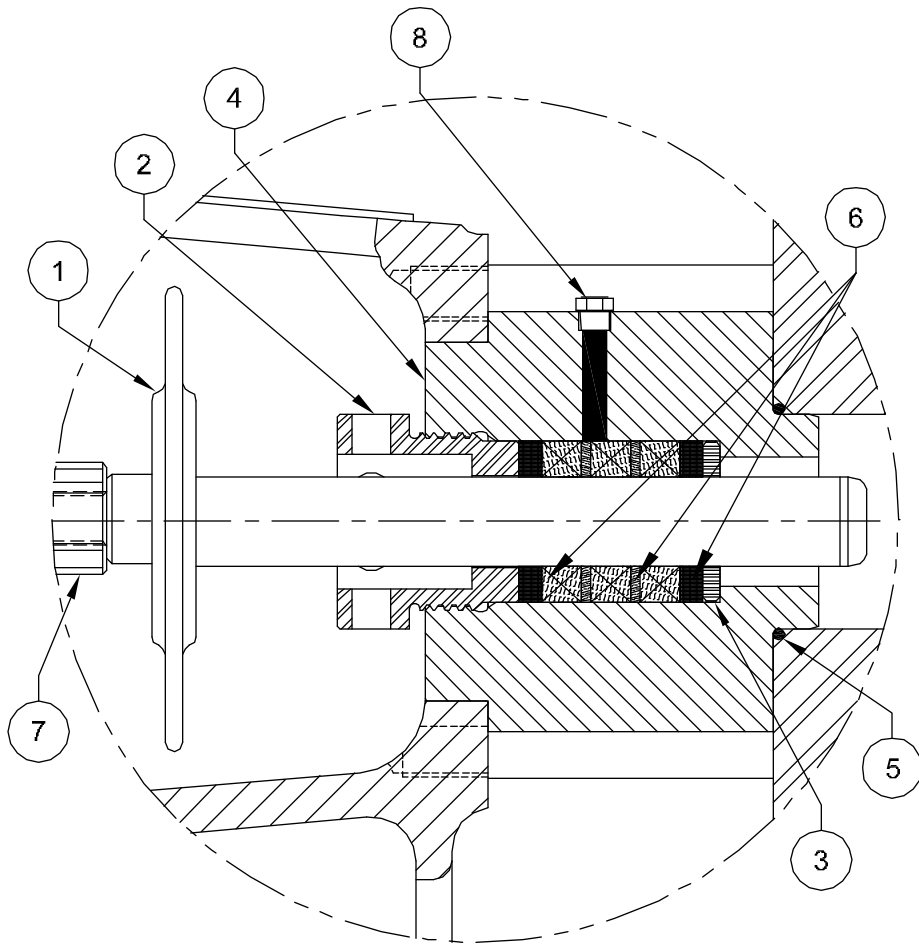
REV

A

SHT.:

4 OF 5





**NOTE**

1) FOR ALL "J" STYLE PACKING SEE DRAWING 118440, 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
<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>				

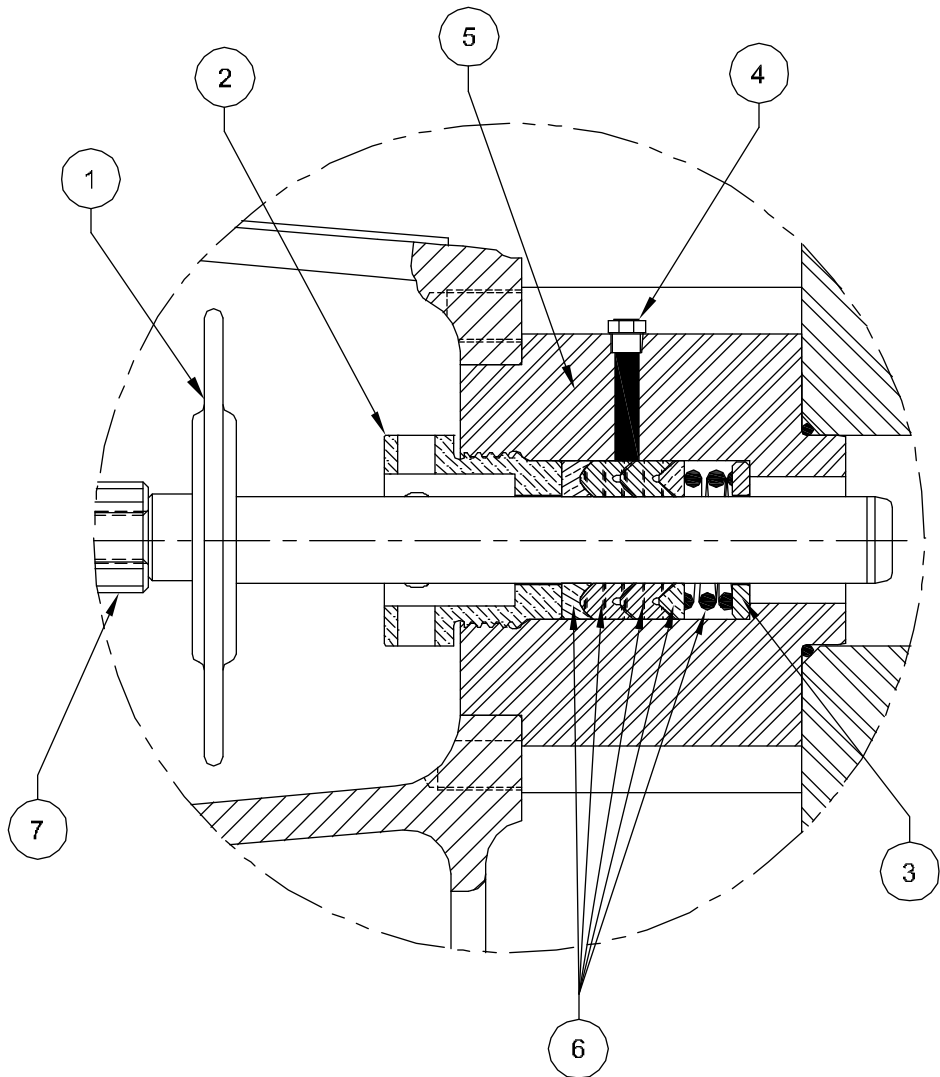
78



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

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

DWG No.: 118440	SCALE: NONE	REV A	SHT.: 5 OF 5
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**NOTE**

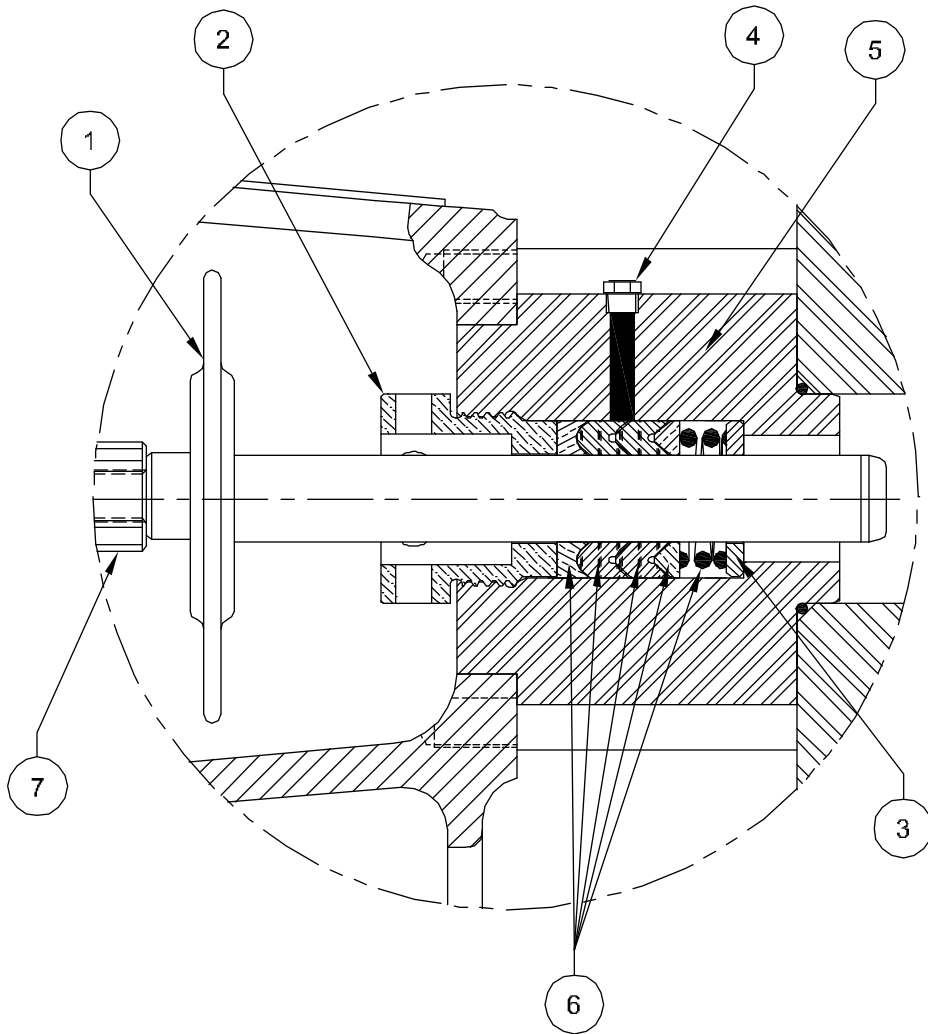
1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118441, SHEETS 1 THRU 5.

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
BILL OF MATERIAL				

**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  
 163Q-4H & 217Q-4H

DWC No: 118441 SCALE: NONE REV A SHT.: 1 OF 5

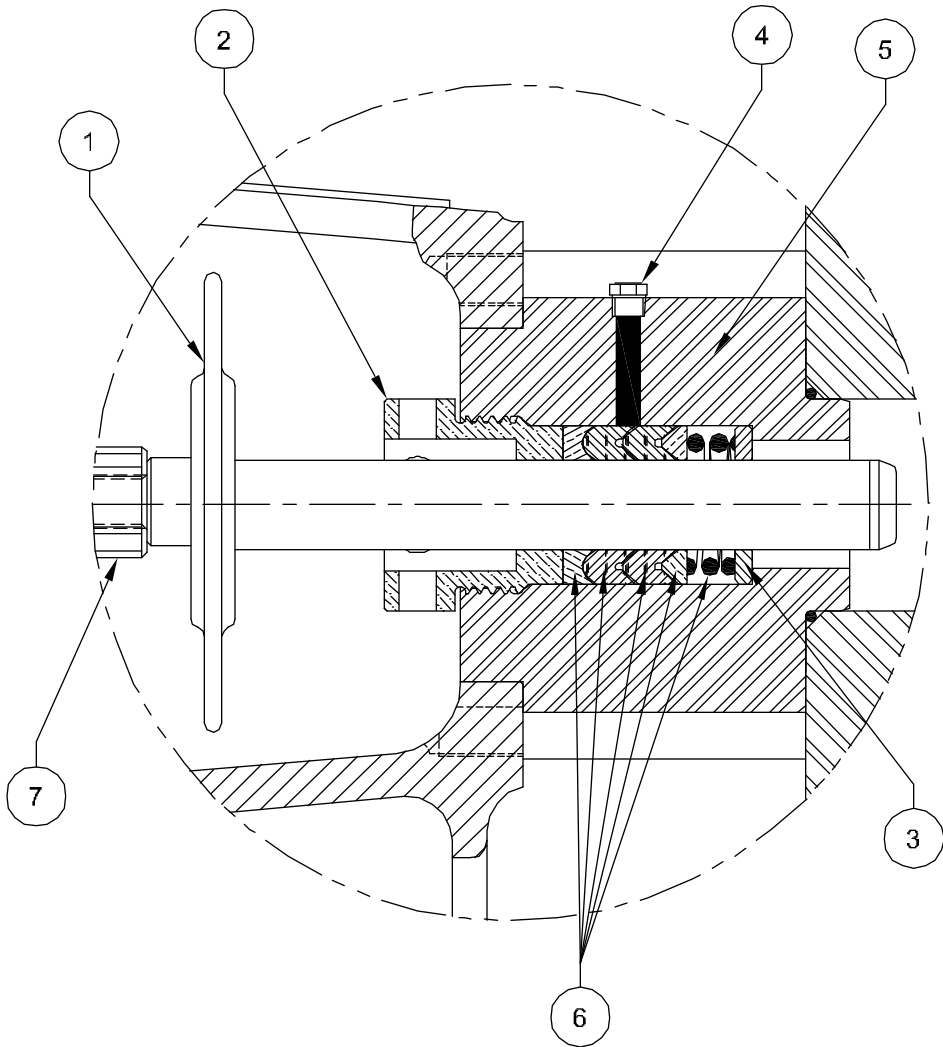


**NOTE**

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118441, SHEETS 1 THRU 5.

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
<b>( 1-3/8" PLUNGER )</b>				
REQ'D	Part No.	DESCRIPTION		ITEM
<b>BILL OF MATERIAL</b>				

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: ASSEMBLY, PLUNGER KIT "SSF-4" STYLE PKG, 1-1/4" THRU 1-3/4" PLGR 163Q-4H & 217Q-4H			
DWG No.:	118441	SCALE:	NONE
REV	A	SHT.:	2 of 5



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
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BILL OF MATERIAL

NOTE

1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118441, SHEETS 1 THRU 5.



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

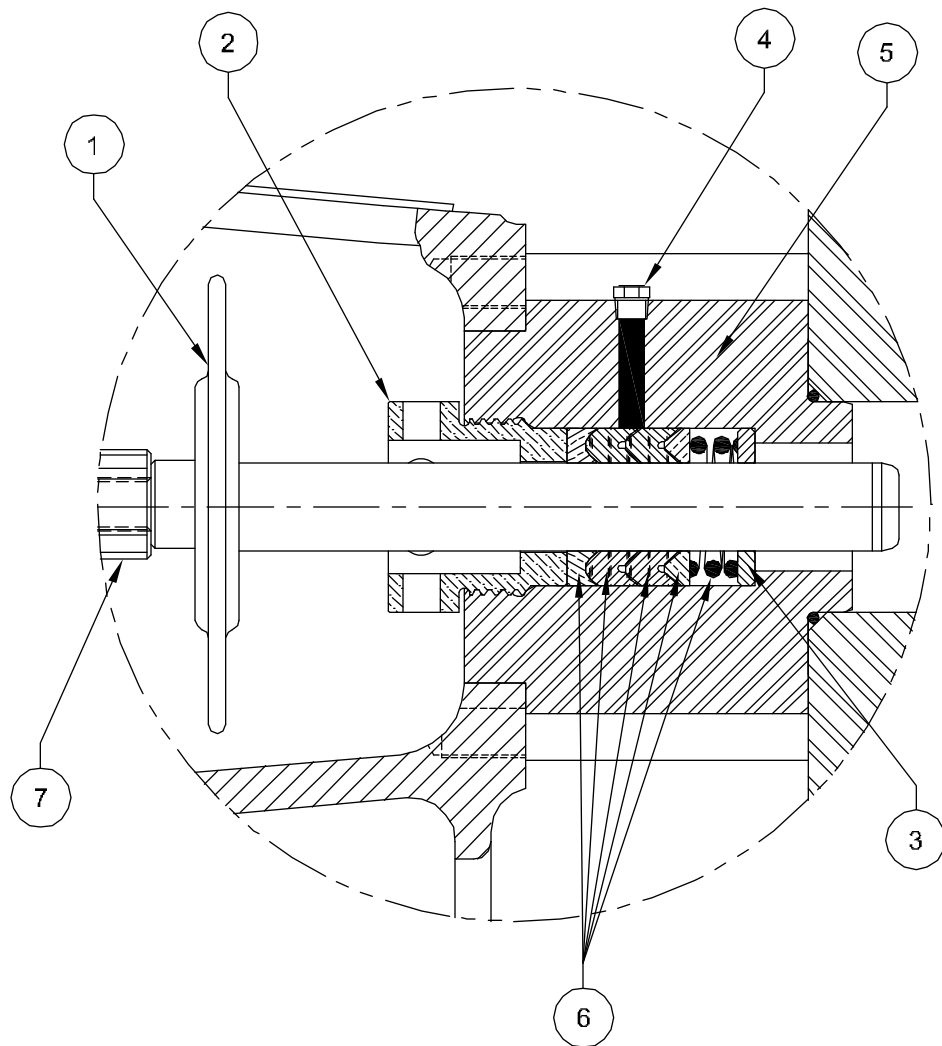
ASSEMBLY, PLUNGER KIT  
 "SSF-4" STYLE PKG, 1-1/4" THRU 1-3/4" PLGR  
 163Q-4H & 217Q-4H

DWG No.: 118441

SCALE: NONE

REV A

SHEET: 3 OF 5



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

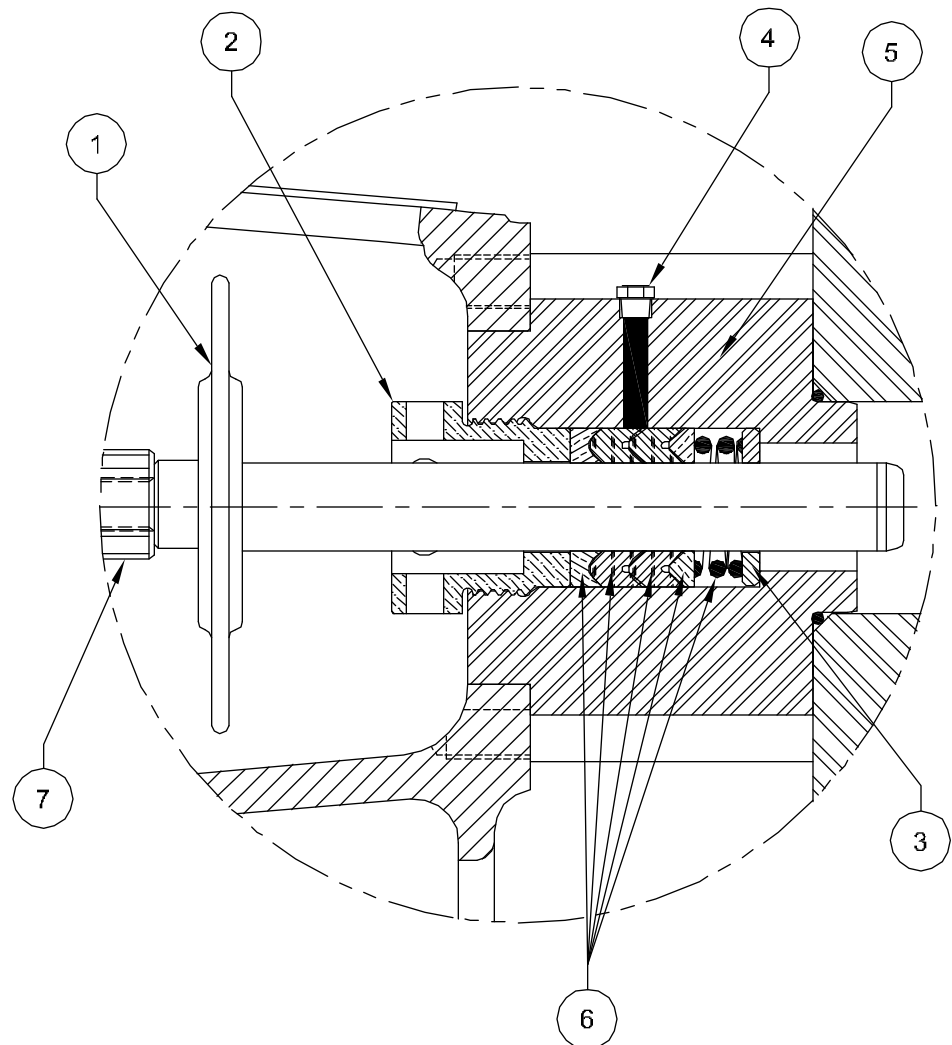
BILL OF MATERIAL

NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118441,  
 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  
 163Q-4H & 217Q-4H

DWG No.: 118441	SCALE: NONE	REV A	SHT.: 4 OF 5
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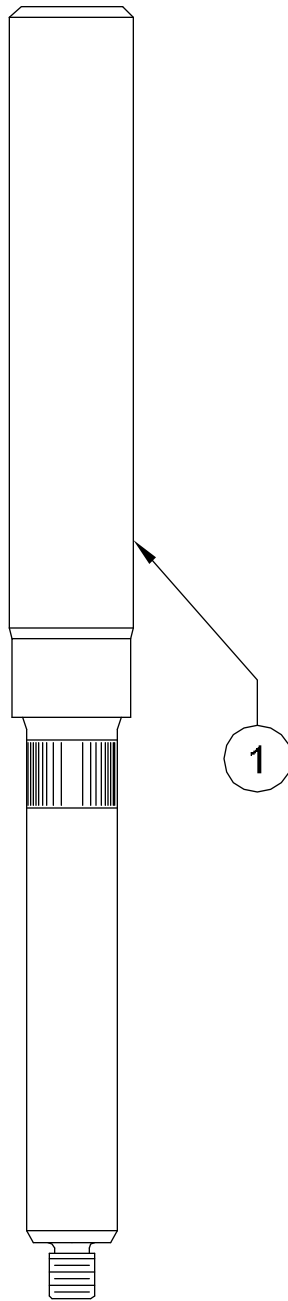
NOTE  
 1) FOR ALL " SSF-4 " STYLE PACKING SEE DRAWING 118441,  
 SHEETS 1 THRU 5.

5	001-028470-402	ADAPTER ROD	(SS)	7
5	432-134238-473		1043-4	
5	432-134238-340	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	001-024096-575		(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  
 "SSF-4" STYLE PKG, 1-1/4" THRU 1-3/4" PLGR  
 163Q-4H & 217Q-4H

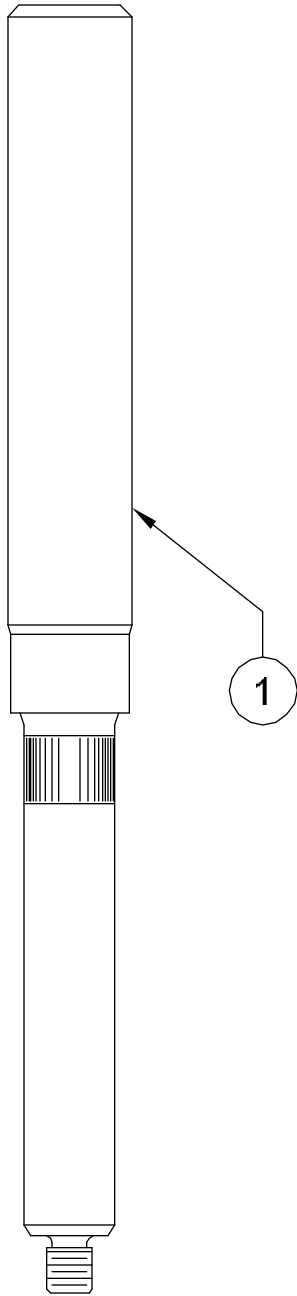
DWG No.:	118441	SCALE:	NONE	REV	A	SHT.:	5	OF	5
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5	002-025999-999	3-3/8" DIA. PLUNGER, CHROME OXIDE	
5	002-024964-E23	3-3/8" DIA. PLUNGER, COBALT	
5	002-024964-999	3-3/8" DIA. PLUNGER, TUNGSTEN	
5	002-024964-000	3-3/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>3-3/8" DIA. PLUNGERS</b>			
5	002-025998-999	3-1/4" DIA. PLUNGER, CHROME OXIDE	
5	002-024963-E23	3-1/4" DIA. PLUNGER, COBALT	
5	002-024963-999	3-1/4" DIA. PLUNGER, TUNGSTEN	
5	002-024963-E26	3-1/4" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>3-1/4" DIA. PLUNGERS</b>			
5	002-025997-999	3" DIA. PLUNGER, CHROME OXIDE	
5	002-024962-E23	3" DIA. PLUNGER, COBALT	
5	002-024962-999	3" DIA. PLUNGER, TUNGSTEN	
5	002-024962-E26	3" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>3" DIA. PLUNGERS</b>			
5	AAC-117539-E24	2-7/8" DIA. PLUNGER, CHROME OXIDE	
5	AAC-117539-E23	2-7/8" DIA. PLUNGER, COBALT	
5	AAC-117539-E22	2-7/8" DIA. PLUNGER, TUNGSTEN	
5	AAC-117539-E26	2-7/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-7/8" DIA. PLUNGERS</b>			
5	002-025996-999	2-3/4" DIA. PLUNGER, CHROME OXIDE	
5	002-024961-E23	2-3/4" DIA. PLUNGER, COBALT	
5	002-024961-999	2-3/4" DIA. PLUNGER, TUNGSTEN	
5	002-024961-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>			

84

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: <p style="text-align: center;">PLUNGERS 2-3/4" THRU 3-3/8"            HARD SURFACE            163Q-4L (HP165AL)</p>			
DWG No.:	118442	SCALE:	NONE
REV	A	SHT.:	1 OF 1

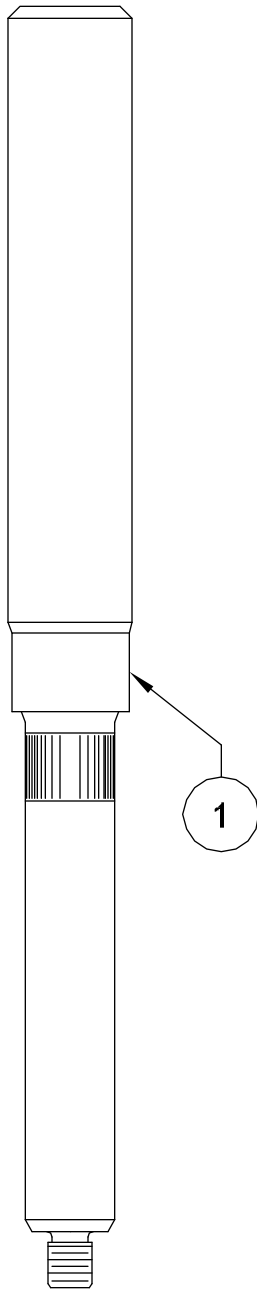


5	002-024968-999	3-3/8" DIA. PLUNGER, CERAMIC	1
<b>3-3/8" DIA. PLUNGERS</b>			
5	002-024967-999	3-1/4" DIA. PLUNGER, CERAMIC	1
<b>3-1/4" DIA. PLUNGERS</b>			
5	002-027966-999	3" DIA. PLUNGER, CERAMIC	1
<b>3" DIA. PLUNGERS</b>			
5	ABC-117501-E33	2-7/8" DIA. PLUNGER, CERAMIC	1
<b>2-7/8" DIA. PLUNGERS</b>			
5	002-024965-999	2-3/4" DIA. PLUNGER, CERAMIC	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>			

85

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: PLUNGERS 2-3/4" THRU 3-3/8" CERAMIC 163Q-4L (HP165AL)			
DWG No.:	118443	SCALE:	NONE
REV	A	SHT.:	1 OF 1





5	002-025995-999	2-1/2" DIA. PLUNGER, CHROME OXIDE	
5	002-024441-E23	2-1/2" DIA. PLUNGER, COBALT	
5	002-024441-999	2-1/2" DIA. PLUNGER, TUNGSTEN	
5	002-024441-000	2-1/2" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-1/2" DIA. PLUNGER</b>			
5	AAB-116125-E24	2-3/8" DIA. PLUNGER, CHROME OXIDE	
5	AAB-116125-E23	2-3/8" DIA. PLUNGER, COBALT	
5	002-024440-999	2-3/8" DIA. PLUNGER, TUNGSTEN	
5	AAB-116125-E26	2-3/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-3/8" DIA. PLUNGER</b>			
5	002-025994-999	2-1/4" DIA. PLUNGER, CHROME OXIDE	
5	002-024439-E23	2-1/4" DIA. PLUNGER, COBALT	
5	002-024439-999	2-1/4" DIA. PLUNGER, TUNGSTEN	
5	002-024439-000	2-1/4" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-1/4" DIA. PLUNGER</b>			
5	002-025993-999	2-1/8" DIA. PLUNGER, CHROME OXIDE	
5	002-024438-E23	2-1/8" DIA. PLUNGER, COBALT	
5	002-024438-999	2-1/8" DIA. PLUNGER, TUNGSTEN	
5	002-024438-000	2-1/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2-1/8" DIA. PLUNGER</b>			
5	002-025992-999	2" DIA. PLUNGER, CHROME OXIDE	
5	002-024437-E23	2" DIA. PLUNGER, COBALT	
5	002-024437-999	2" DIA. PLUNGER, TUNGSTEN	
5	002-024437-E26	2" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>2" DIA. PLUNGER</b>			
5	002-025991-999	1-7/8" DIA. PLUNGER, CHROME OXIDE	
5	002-024436-E23	1-7/8" DIA. PLUNGER, COBALT	
5	002-024436-999	1-7/8" DIA. PLUNGER, TUNGSTEN	
5	002-024436-E26	1-7/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-7/8" DIA. PLUNGER</b>			
5	002-025990-999	1-3/4" DIA. PLUNGER, CHROME OXIDE	
5	002-024435-E23	1-3/4" DIA. PLUNGER, COBALT	
5	002-024435-999	1-3/4" DIA. PLUNGER, TUNGSTEN	
5	002-024435-000	1-3/4" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-3/4" DIA. PLUNGER</b>			
5	002-024434-E24	1-5/8" DIA. PLUNGER, CHROME OXIDE	
5	002-024434-E23	1-5/8" DIA. PLUNGER, COBALT	
5	002-024434-999	1-5/8" DIA. PLUNGER, TUNGSTEN	
5	002-024434-E26	1-5/8" DIA. PLUNGER, PREMIUM TUNGSTEN	1
<b>1-5/8" DIA. PLUNGER</b>			
REQ'D	Part No.	DESCRIPTION	ITEM

**BILL OF MATERIAL**



HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

**PLUNGERS 1-5/8" THRU 2-1/2"  
HARD SURFACE  
163Q-4M (HP165AM)**

DWG No.:

118444

SCALE:

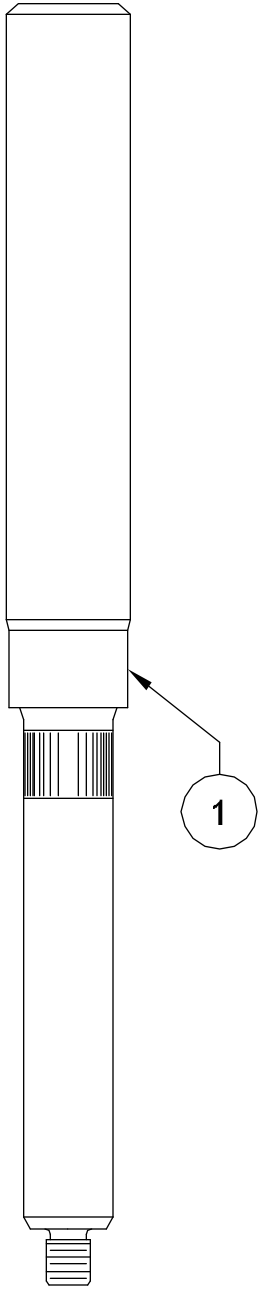
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REV

A

SHT.:

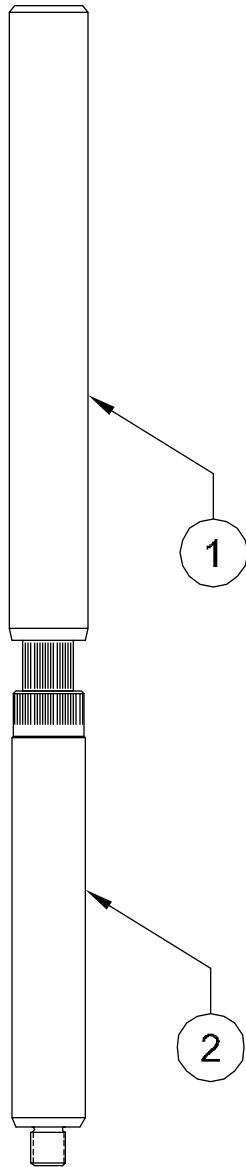
1 OF 1



5	002-024699-999	2-1/2" DIA. PLUNGER, CERAMIC	1
<b>2-1/2" DIA. PLUNGERS</b>			
5	AAB-030435-999	2-3/8" DIA. PLUNGER, CERAMIC	1
<b>2-3/8" DIA. PLUNGERS</b>			
5	002-024698-999	2-1/4" DIA. PLUNGER, CERAMIC	1
<b>2-1/4" DIA. PLUNGERS</b>			
5	002-024697-999	2-1/8" DIA. PLUNGER, CERAMIC	1
<b>2-1/8" DIA. PLUNGERS</b>			
5	002-024696-999	2" DIA. PLUNGER, CERAMIC	1
<b>2" DIA. PLUNGERS</b>			
5	002-024695-999	1-7/8" DIA. PLUNGER, CERAMIC	1
<b>1-7/8" DIA. PLUNGERS</b>			
5	002-024694-999	1-3/4" DIA. PLUNGER, CERAMIC	1
<b>1-3/4" DIA. PLUNGERS</b>			
5	002-024693-999	1-5/8" DIA. PLUNGER, CERAMIC	1
<b>1-5/8" DIA. PLUNGERS</b>			
<b>REQ'D</b>	<b>Part No.</b>	<b>DESCRIPTION</b>	<b>ITEM</b>
<b>BILL OF MATERIAL</b>			

87

<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: PLUNGERS 1-5/8" THRU 2-1/2" CERAMIC 163Q-4M (HP165AM)			
DWG No.:	118445	SCALE:	NONE
REV:	A	SHT.:	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>			

88

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

PLUNGERS 1-1/4" THRU 1-3/4"  
HARD SURFACE  
163Q-4H

DWG No.:

118446

SCALE:

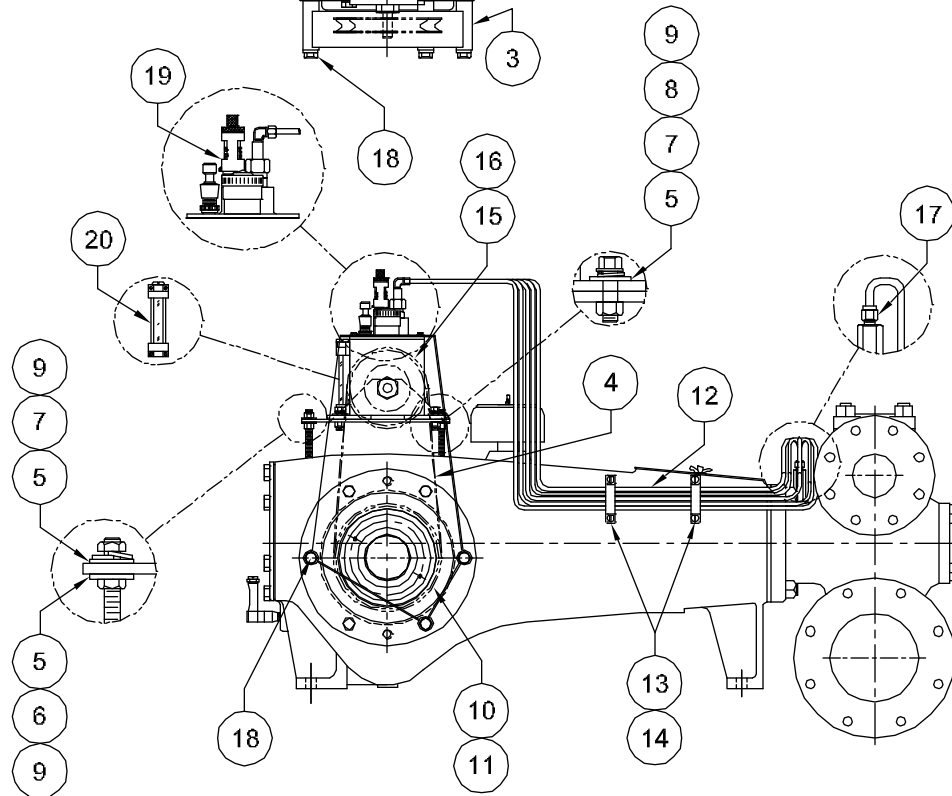
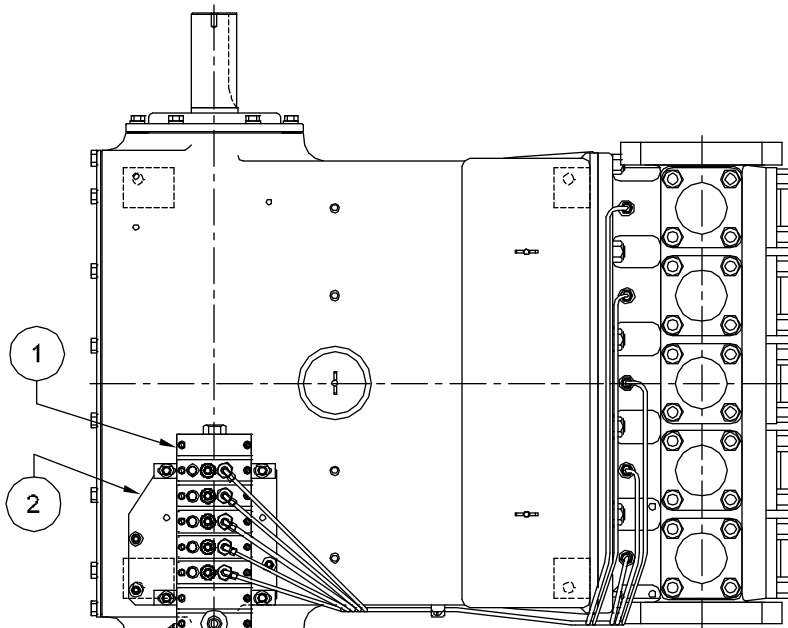
NONE

REV

A

SHT.:

1 OF 1



SAME PLUMBING FOR CASTINGS AND BILLETS (CASTING SHOWN).

1	GAS-105265-000	SIGHT GLASS	20
1	GAS-105264-000	PUMP ASSEMBLY w/ GASKET	19
<b>REPLACEMENT PARTS</b>			
3	100-058434-290	CAP SCREW 5/8" X 4-3/4"	18
5	GAS-105240-000	CHECK VALVE, 1/8" NPT	17
1	419-101050-999	DRIVEN SHEAVE 5" DD	16
1	420-020509-019	HUB, LUBRICATOR DRIVEN 5/8" BORE	15
4	126-006516-405	DRIVE SCREW, #6 X 5/16"	14
2	001-025128-405	LINE CLAMP	13
300"	330-002003-365	TUBING, 1/4"	12
1	419-101032-999	SHEAVE, LUBRICATOR DRIVER 3.2" DD	11
1	420-011900-000	HUB, PUMP DRIVER 1-7/16" BORE	10
10	155-038100-286	WASHER, 3/8"	9
4	100-038114-290	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	421-100350-001	V-BELT	4
1	004-023688-231	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:  
LEFT HAND DRIVE POWER PUMP (SHOWN) REQUIRES  
RIGHT HAND DRIVE LUBRICATOR.

89

**NOV NATIONAL OILWELL VARCO**

HOUSTON, TEXAS, U.S.A.

ENGINEERING, TULSA, OKLAHOMA

TITLE:

ASSEMBLY, PACKING LUBRICATOR  
(RHD OR LHD) LHD SHOWN  
163Q-4 (HP165)

DWG No.:

118418

SCALE:

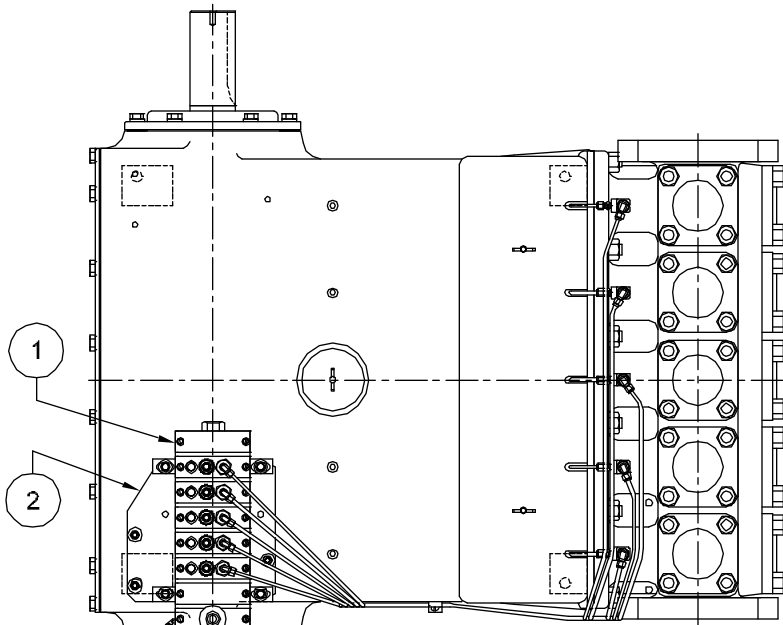
NONE

REV

A

SHT.:

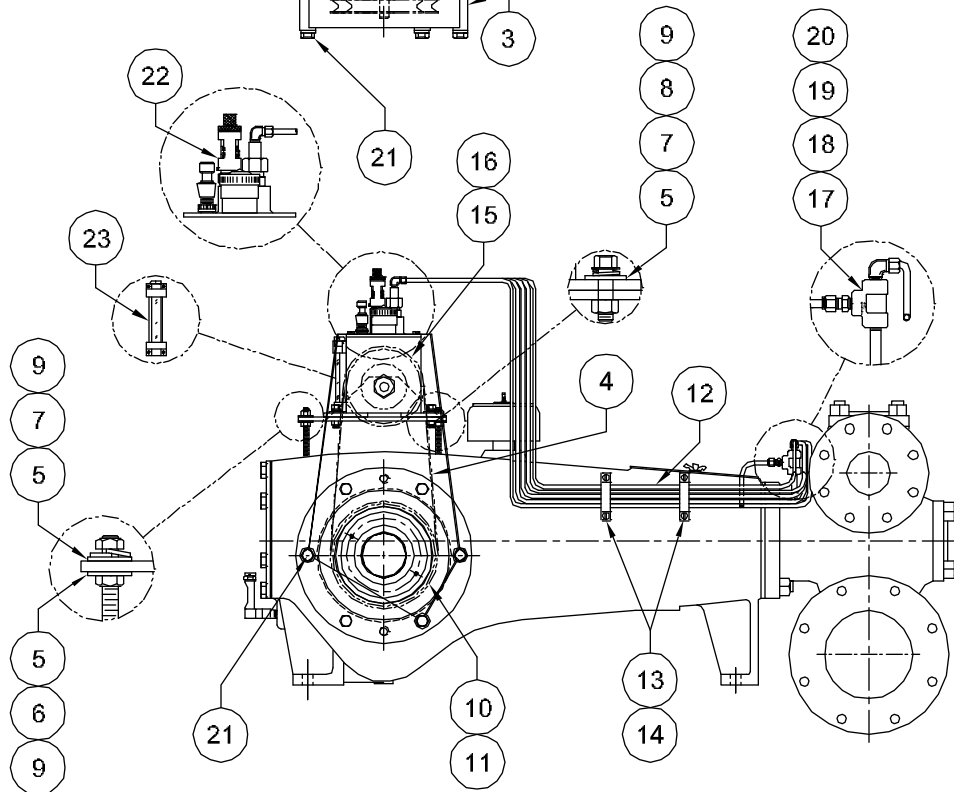
1 OF 1



1	GAS-105265-000	SIGHT GLASS	23
1	GAS-105264-000	PUMP ASSEMBLY w/ GASKET	22
<b>REPLACEMENT PARTS</b>			
3	100-058434-290	CAP SCREW 5/8" X 4-3/4"	21
5	462-040012-278	MALE CONN., STR., 1/4" TUBE x 1/8 NPT	20
5	462-040022-278	MALE CONN., 90 DEG 1/4" TUBE x 1/8 NPT	19
5	157-018112-278	PIPE NIPPLE, 1/8" NPT	18
5	469-020002-278	PIPE TEE, 1/8" NPT	17
1	419-101050-999	DRIVEN SHEAVE 5" DD	16
1	420-020509-019	HUB, LUBRICATOR DRIVEN 5/8" BORE	15
4	126-006516-405	DRIVE SCREW, #6 X 5/16"	14
2	001-025128-405	LINE CLAMP	13
300"	330-002003-365	TUBING, 1/4"	12
1	419-101032-999	SHEAVE, LUBRICATOR DRIVER 3.2" DD	11
1	420-011900-000	HUB, PUMP DRIVER 1-7/16" BORE	10
10	155-038100-286	WASHER, 3/8"	9
4	100-038114-290	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	421-100350-001	V-BELT	4
1	004-023688-231	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

**BILL OF MATERIAL**

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



SAME PLUMBING FOR CASTINGS AND BILLETS (CASTING SHOWN).

90

**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)  
163Q-4 ( HP165 )**

DWG No.:

118419

SCALE:

NONE

REV

A

SHT.:

1 OF 1

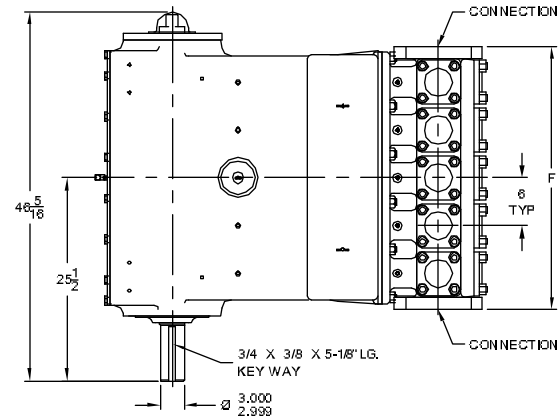
**NOTES:**

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.

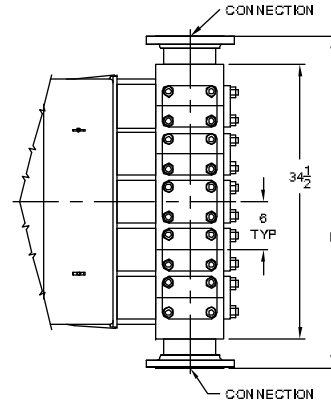
**FIELD CONNECTIONS**

PUMP TYPE	DIMENSIONS IN INCHES	
	DISCHARGE CONNECTION SIZE	SUCTION CONNECTION SIZE
163Q-4L	3" - 600# ANSI	6" - 150# ANSI

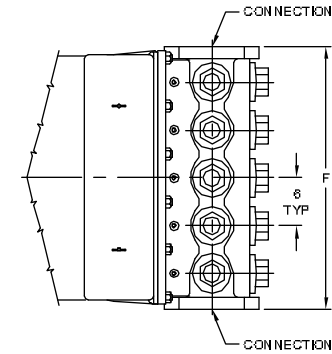
PUMP TYPE	DIMENSIONS IN INCHES					
	A	B	C	D	E	F
CAST, BOLTED COVERS	4-5/8	7-7/8	9-5/8	49-3/8	33-3/8	33
FORGED BOLTED, COVERS	5-3/8	8	11-1/4	51-1/4	35-5/16	41-5/8
CAST, THREADED COVERS	4-5/8	7-7/8	10-1/8	49-5/8	33-3/8	33



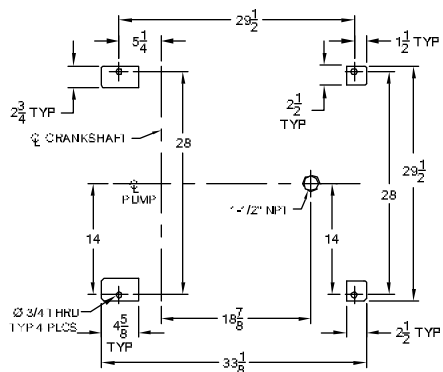
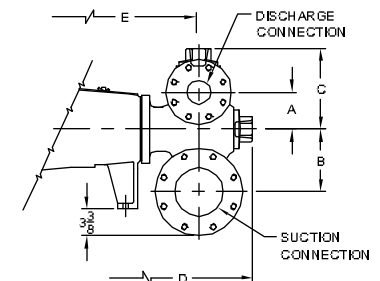
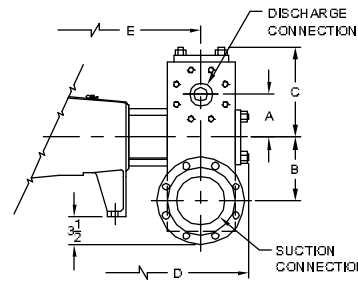
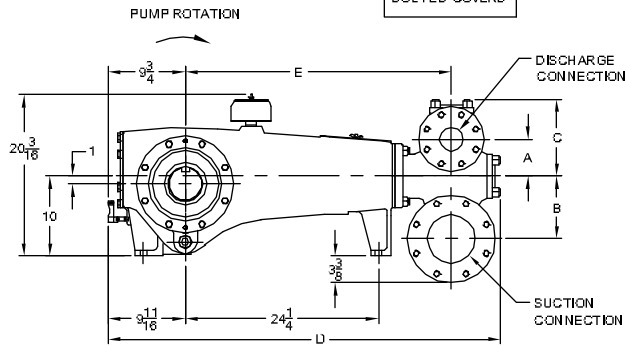
CAST BOLTED COVERS



FORGED BOLTED COVERS FLANGED



CAST THREADED COVERS



MOUNTING FEET DETAIL

**NOV NATIONAL OILWELL VARCO**

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

TITLE:  
**GENERAL DIMENSION, RHD**  
**"L" CLASS FLUID END**  
**163Q-4L (HP165AL)**

DWG No:	SCALE:	REV	SHT.:
118447	NONE	A	1 OF 1

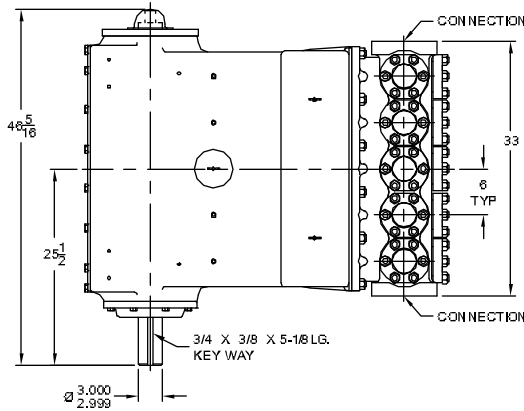
**NOTES:**

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.

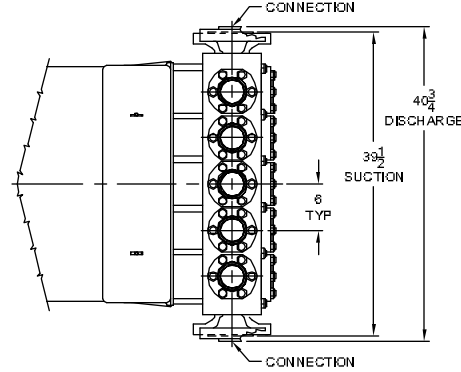
**FIELD CONNECTIONS**

PUMP TYPE		DIMENSIONS IN INCHES	
		DISCHARGE CONNECTION SIZE	SUCTION CONNECTION SIZE
163Q-4M	- A -	2" - 1500# ANSI	4" - 300# ANSI
163Q-4M	- B -	2" - 1500# ANSI	4" - 300# ANSI
163Q-4M	- C -	2" - 1500# ANSI	4" - 300# ANSI

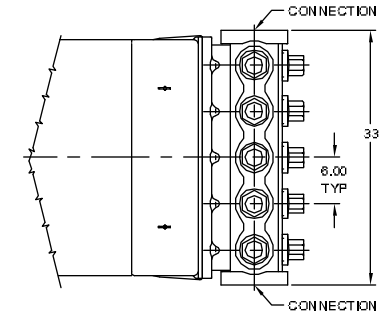
PUMP TYPE	DIMENSIONS IN INCHES				
	A	B	C	D	E
CAST, BOLTED COVERS (-A-)	5-1/16	5-7/8	9-1/2	48-11/16	33
FORGED/PLATE, CLAMPED BOX (-B-)	5-1/16	6-3/16	9-1/4	49-3/8	33-5/8
CAST, THREADED COVERS (-C-)	5-1/16	5-7/8	9-5/16	47-7/8	33



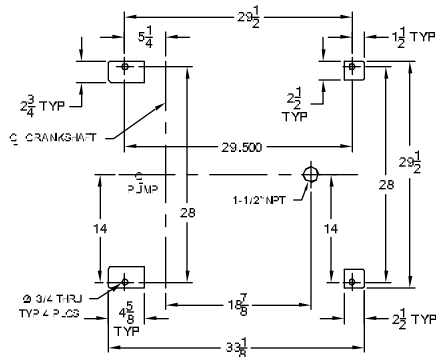
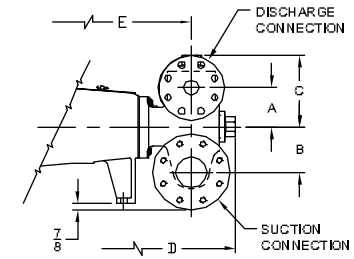
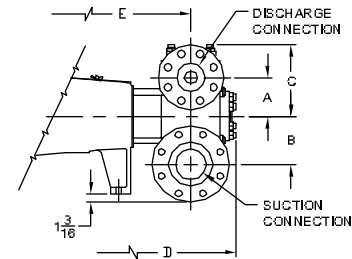
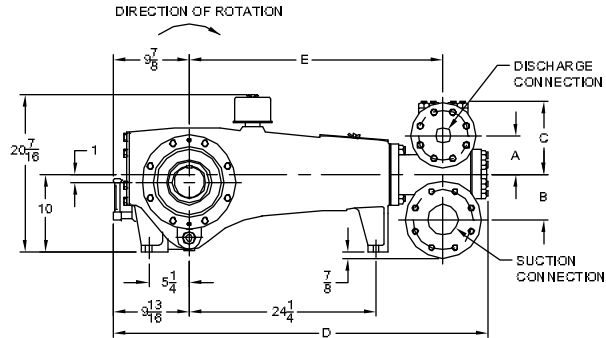
CAST  
BOLTED COVERS  
- A -



FORGED/PLATE  
BOLTED COVERS  
CLAMPED STUFFING BOX  
- B -



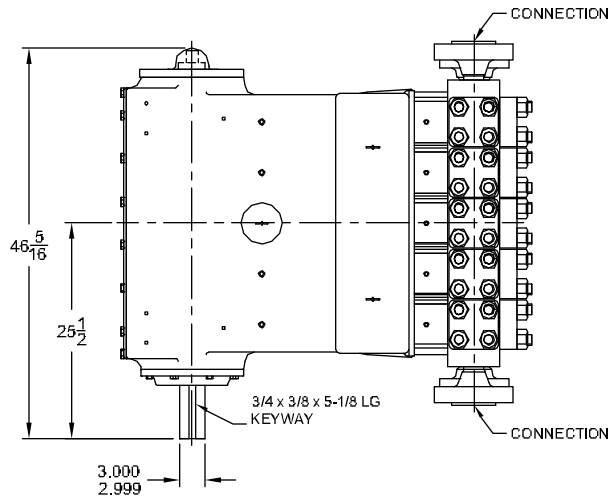
CAST  
THREADED COVERS  
- C -



**NOV NATIONAL OILWELL VARCO**  
 HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA  
 TITLE: GENERAL DIMENSION, RHD  
 "M" CLASS FLUID END  
 163Q-4M (HP165AM)  
 DWG No.: 118448 SCALE: NONE REV A SHT.: 1 OF 1

**NOTES:**

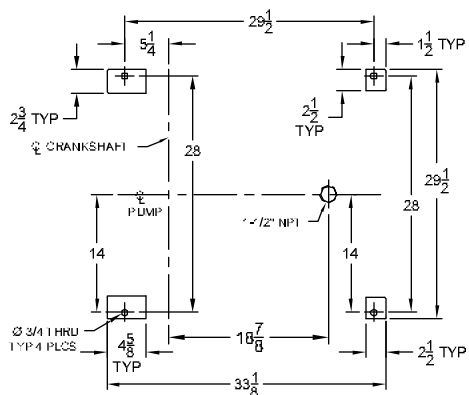
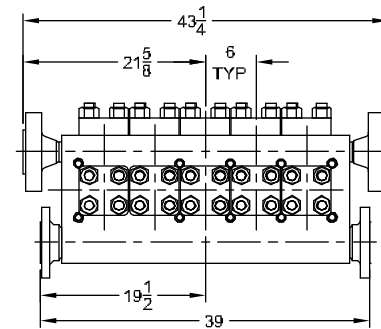
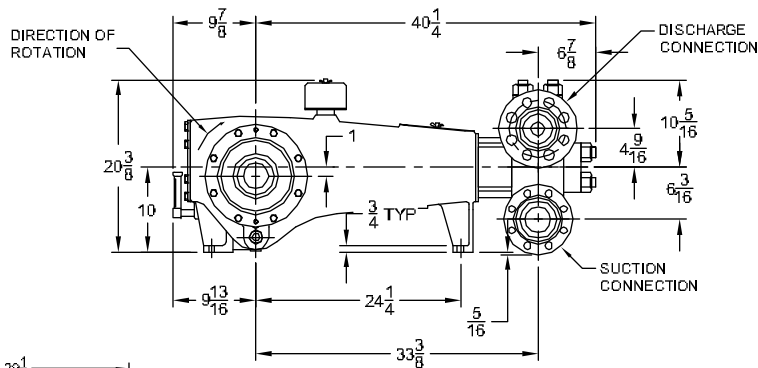
1. RIGHT HAND DRIVE SHOWN, FOR LEFT HAND DRIVE  
MOVE SHAFT AND DIMENSIONS TO THE OPPOSITE SIDE SHOWN.
2. DIMENSIONS SHOWN ARE FOR INSTALLATION PURPOSES.



FORGED  
BOLTED COVERS  
FLANGED

**FIELD CONNECTIONS**

PUMP TYPE	DIMENSIONS IN INCHES	
	DISCHARGE CONNECTION SIZE	SUCTION CONNECTION SIZE
163Q-4H	2" - 2500# ANSI	3" - 300# ANSI



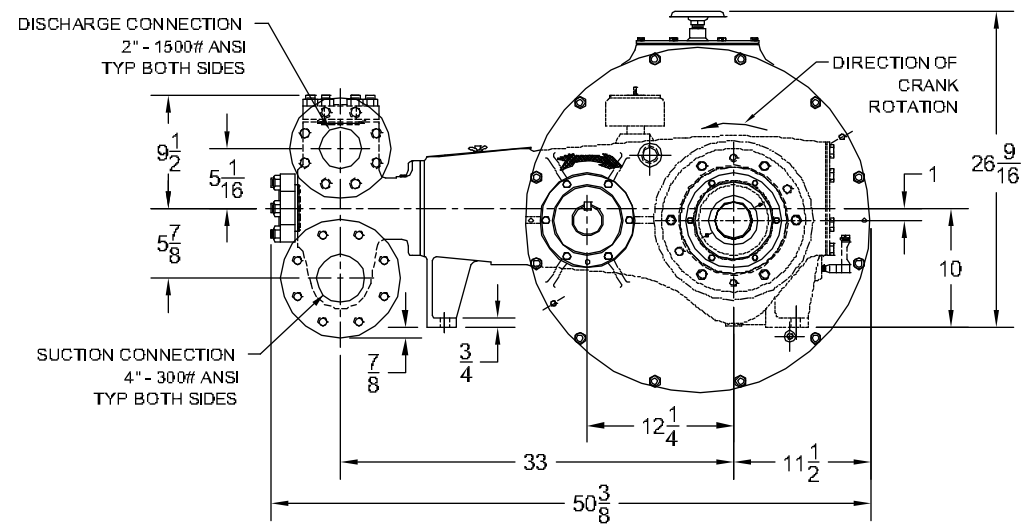
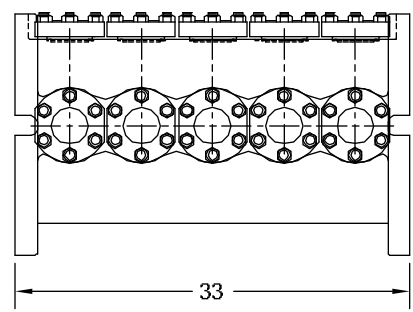
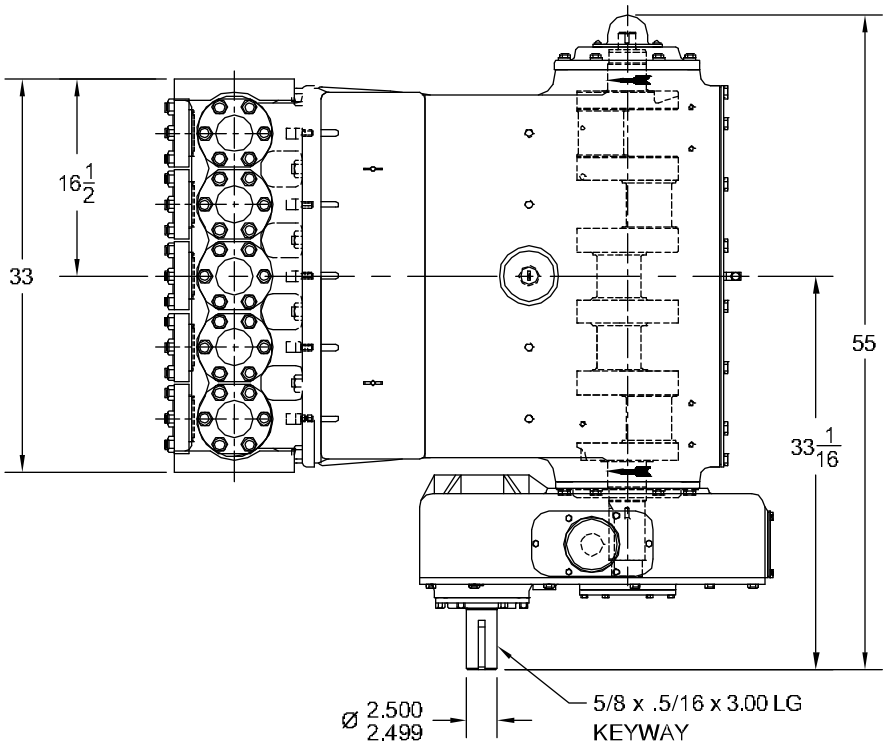
**NOV NATIONAL OILWELL VARCO**  
HOUSTON, TEXAS, U.S.A. ENGINEERING, TULSA, OKLAHOMA

TITLE:  
**GENERAL DIMENSION, RHD  
"H" CLASS FLUID END  
163Q-4H**

DWG No.: <b>118449</b>	SCALE: <b>NONE</b>	REV: <b>A</b>	SHT.: <b>1 OF 1</b>
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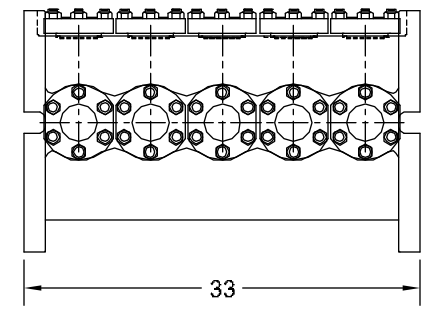
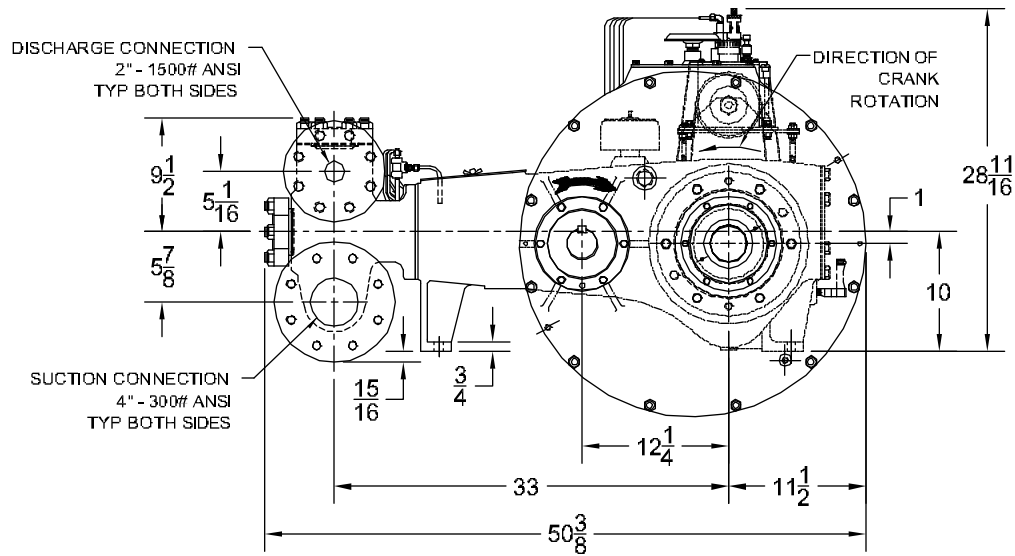
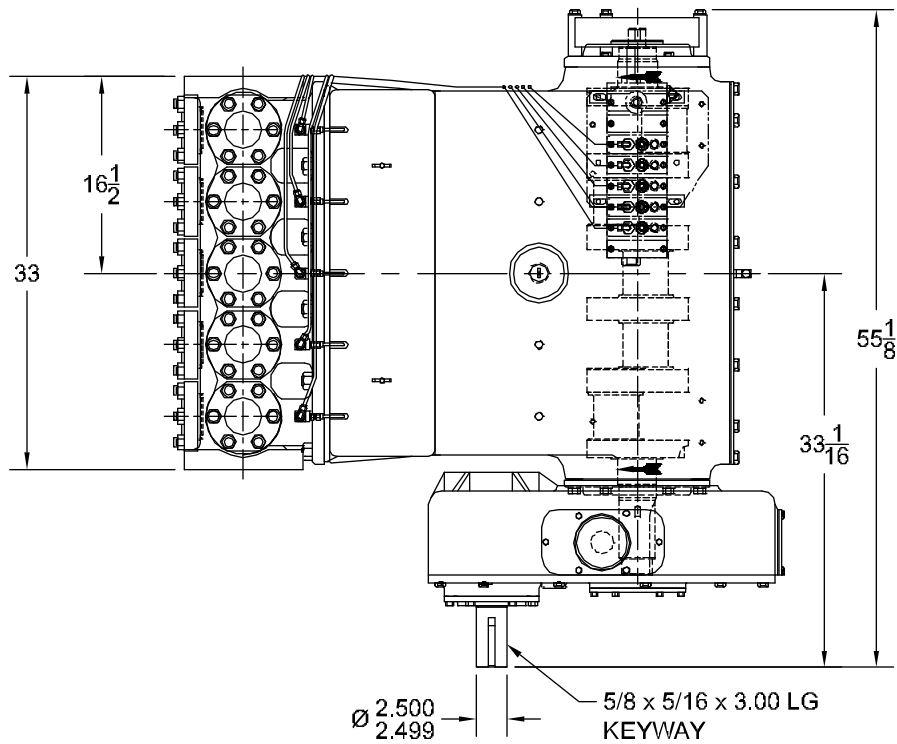
1. ALL GEAR REDUCER DRIVEN PUMPS ARE LEFT HAND DRIVE ONLY.
2. "M" CLASS CAST FLUID END SHOWN. FOR OTHER CLASS FLUID ENDS AND OTHER DIMENSIONS SEE DRAWINGS 118447, 118448, AND 118449.



<b>NOV NATIONAL OILWELL VARCO</b>			
HOUSTON, TEXAS, U.S.A.		ENGINEERING, TULSA, OKLAHOMA	
TITLE: <b>GENERAL DIMENSION, HELICAL GEAR REDUCER MODEL: 163Q-4 (HP165)</b>			
DWG No.:	SCALE:	REV:	SHT.:
118453	NONE	A	1 OF 1

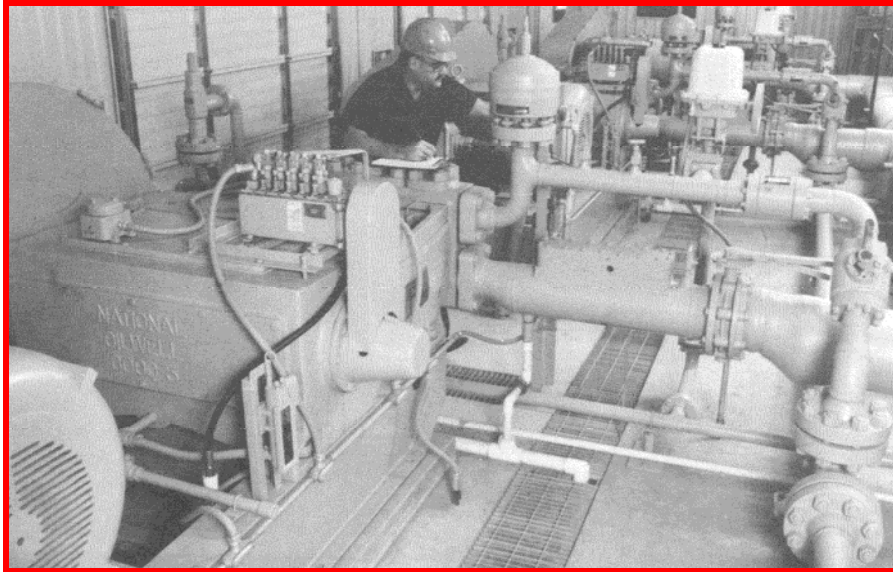
NOTE:

1. LEFT HAND DRIVE POWER PUMP (SHOWN) REQUIRES RIGHT 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 118447, 118448, AND 118449.



<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: 163Q-4 (HP165 )</b>			
DWG No.:	SCALE:	REV:	SHT.:
118452	NONE	A	1 OF 1

# **NATIONAL OILWELL VARCO**



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