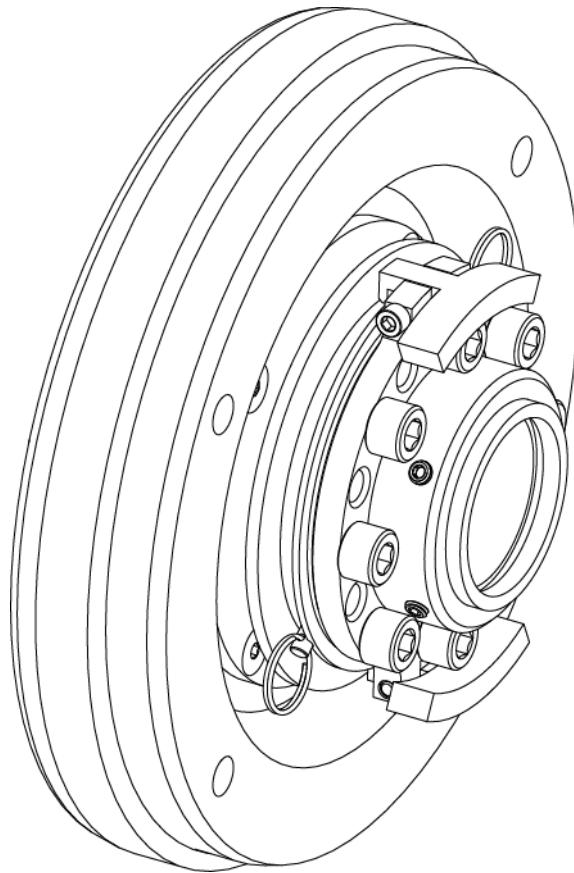


WILFLEY®

HEAVY DUTY CENTRIFUGAL PUMPS

Supplemental Assembly Manual



SolidLock® Static Seal Cartridge

Foreword

This manual contains instructions and guidelines for the assembly of the Wilfley SolidLock® static seal cartridge. There are many factors affecting the successful assembly of a seal cartridge, which makes it impossible to create a manual that covers all situations. Therefore, the information contained herein is meant to serve only as a general guideline. If detailed questions or problems arise, contact Wilfley or your authorized Wilfley representative.

Supplemental manuals may be required depending on the configuration of the pump.

It is extremely important that this entire manual be read prior to installation or start-up of the pump.

Use of the equipment on a service other than what was outlined at the time of purchase could void the warranty, unless Wilfley has been consulted and provided written approval in advance.

To assure proper installation, supervision from an authorized Wilfley representative is recommended.

A.R. Wilfley and Sons, Inc. shall not be liable for damage or delays caused by a failure to observe the instructions that are contained in this manual.

Warranty is only valid when genuine Wilfley parts are used. Contact your authorized Wilfley representative for basic warranty information and before making any changes.

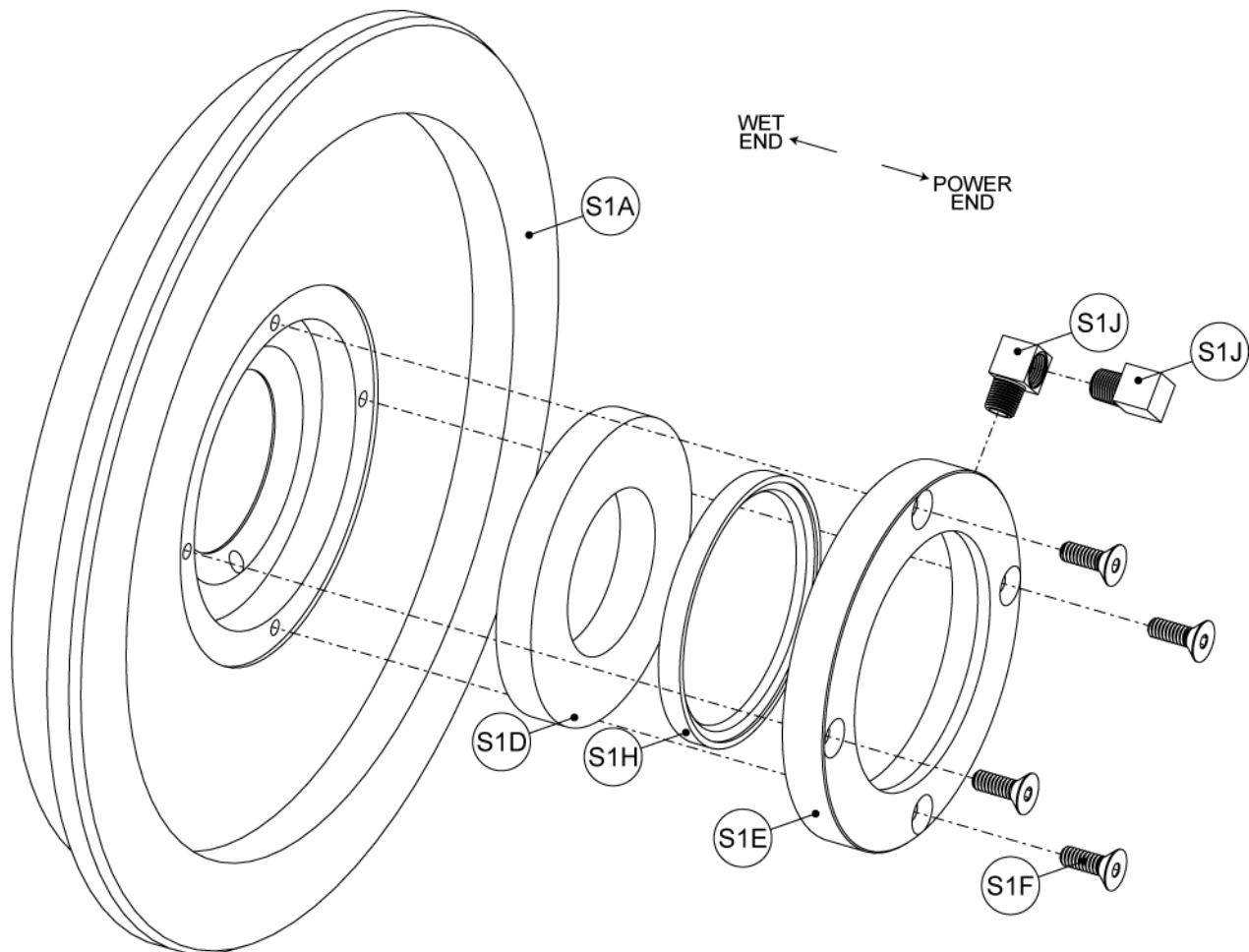
Table of Contents

1.0 Stationary Seal Subassembly.....	7
1.1 A7/A9 Chemical Pump (Purge Port Configuration).....	7
1.2 AF Chemical Pump (Purge Port Configuration)	8
1.3 EMW® Slurry Pump (Standard Configuration)	9
1.4 EMW® Slurry Pump (Purge Port Configuration)	10
1.5 HD Slurry Pump – 8x4 & 8x6 (Standard Configuration)	11
1.6 Kpro® Slurry Pump (Standard Configuration)	12
1.7 Kpro® Slurry Pump (Purge Port Configuration)	13
1.8 S3 Chemical Slurry Pump (Purge Port Configuration)	14
2.0 Rotary Seal Subassembly	15
2.1 Step 1	15
2.2 Step 2	16
3.0 Pump Assembly	17
4.0 SolidLock® Seal Adjustment	18
5.0 Quantity of Springs Based on Operating Speed	19
6.0 Cross Section	20
6.1 Standard Configuration	20
6.2 Purge Port Configuration.....	21
7.0 Revision History	22

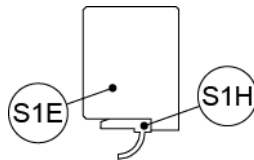
1.0 Stationary Seal Subassembly

1.1 A7/A9 Chemical Pump (Purge Port Configuration)

ITEM NO.	QTY.	DESCRIPTION
S1A	1	Stationary Seal Housing
S1D	1	Stationary Seal
S1E	1	Seal Lock
S1F	4	Stationary Seal Bolt
S1H	1	Lip Seal
S1J	2	Elbow



Ensure lip seal (S1H) is installed in the correct direction:

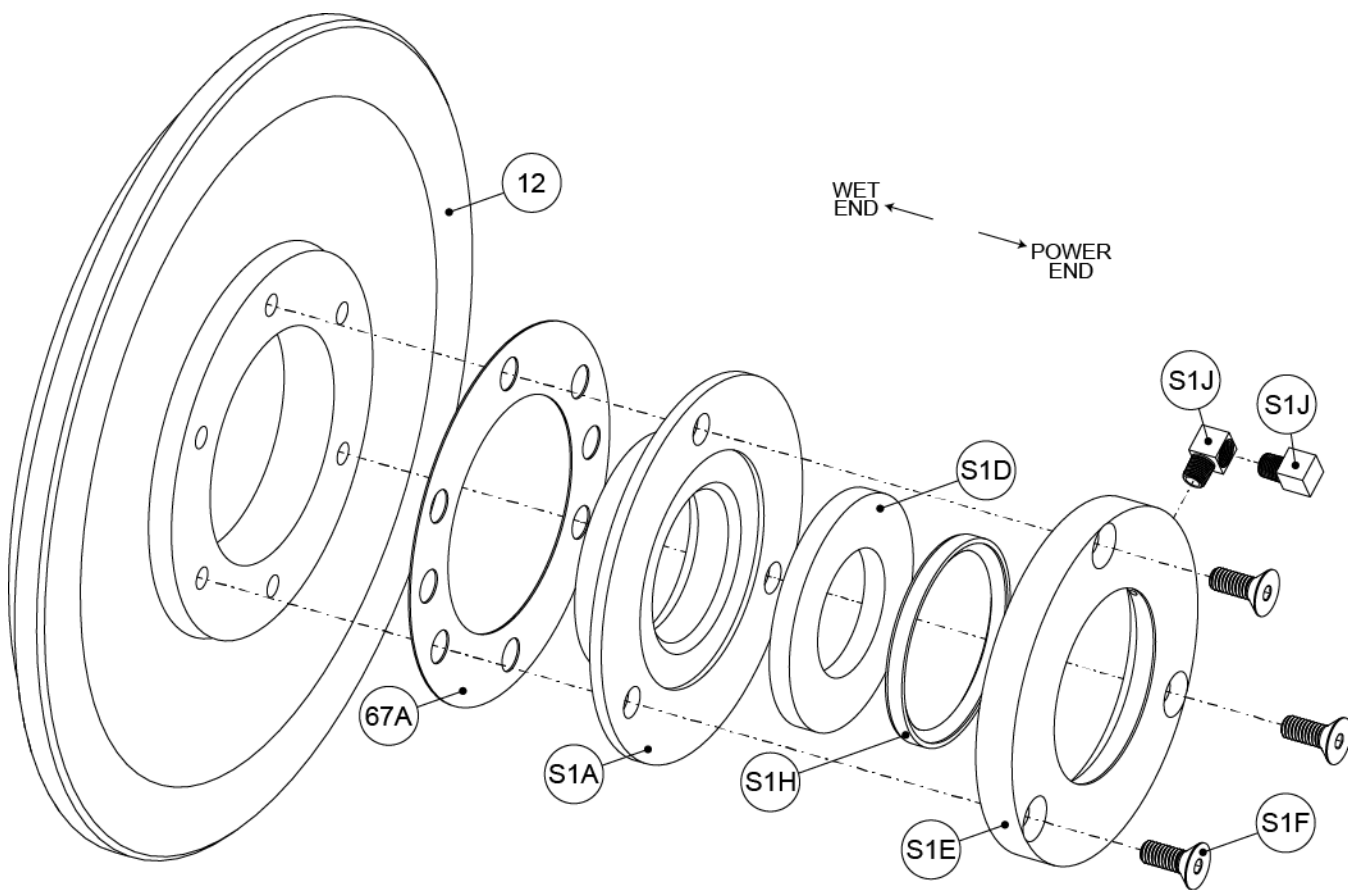


1. Press lip seal (S1H) into the seal lock (S1E).
2. Insert elbows (S1J) into the seal lock (S1E).
3. Insert stationary seal (S1D) and seal lock (S1E) into the stationary seal housing (S1A). Secure in place with the stationary seal bolts (S1F). Tighten in a crisscross fashion.

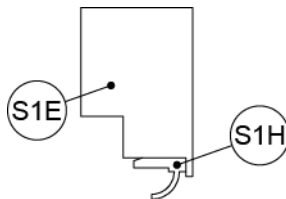
1.2 AF Chemical Pump (Purge Port Configuration)

ITEM NO.	QTY.	DESCRIPTION
12*	1	Stationary Seal Ring Housing
67A	1	Stationary Seal Ring Housing Gasket
S1A	1	Lab Ring
S1D	1	Stationary Seal
S1E	1	Seal Lock
S1F	3	Stationary Seal Bolt
S1H	1	Lip Seal
S1J	2	Elbow

* Not included in retrofit kits



Ensure lip seal (S1H) is installed in the correct direction:

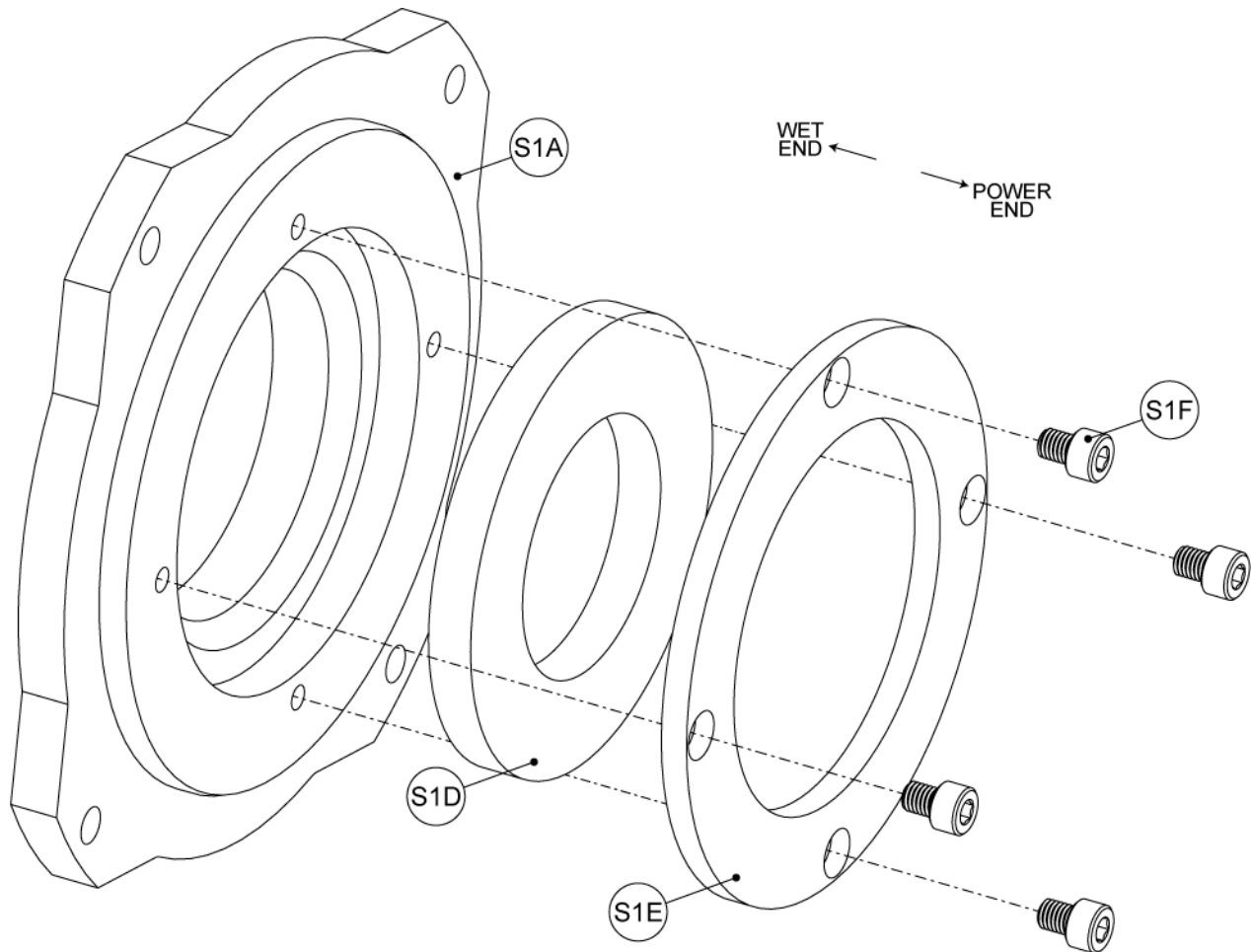


1. Press lip seal (S1H) into the seal lock (S1E).
2. Insert elbows (S1J) into the seal lock (S1E).
3. Insert gasket (67A), lab ring (S1A), and stationary seal (S1D) into the stationary seal ring housing (12).
4. Secure in place with the seal lock (S1E) and bolts (S1F). Tighten in a crisscross fashion.

1.3 EMW® Slurry Pump (Standard Configuration)

ITEM NO.	QTY.	DESCRIPTION
S1A	1	Stationary Seal Housing
S1D	1	Stationary Seal
S1E	1	Seal Lock
S1F	4-6*	Stationary Seal Bolt

* Depends on pump size

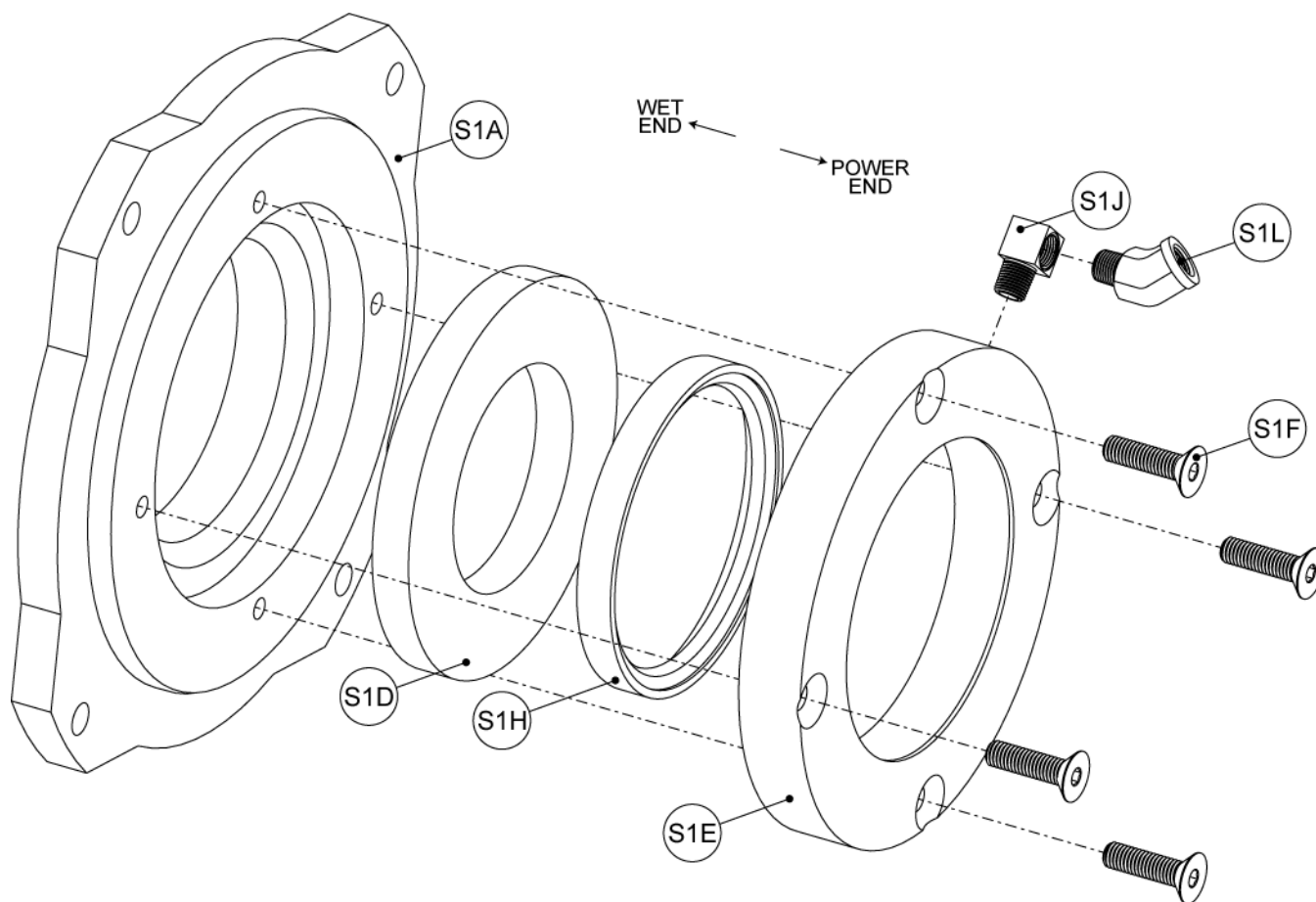


1. Insert stationary seal (S1D) into the stationary seal housing (S1A).
2. Secure in place with the seal lock (S1E) and bolts (S1F). Tighten in a crisscross fashion.

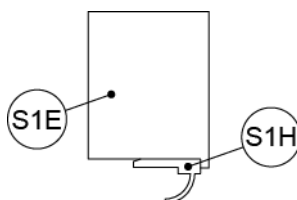
1.4 EMW® Slurry Pump (Purge Port Configuration)

ITEM NO.	QTY.	DESCRIPTION
S1A	1	Stationary Seal Housing
S1D	1	Stationary Seal
S1E	1	Seal Lock
S1F	4-6*	Stationary Seal Bolt
S1H	1	Lip Seal
S1J	1	Elbow
S1L	1	Elbow

* Depends on pump size



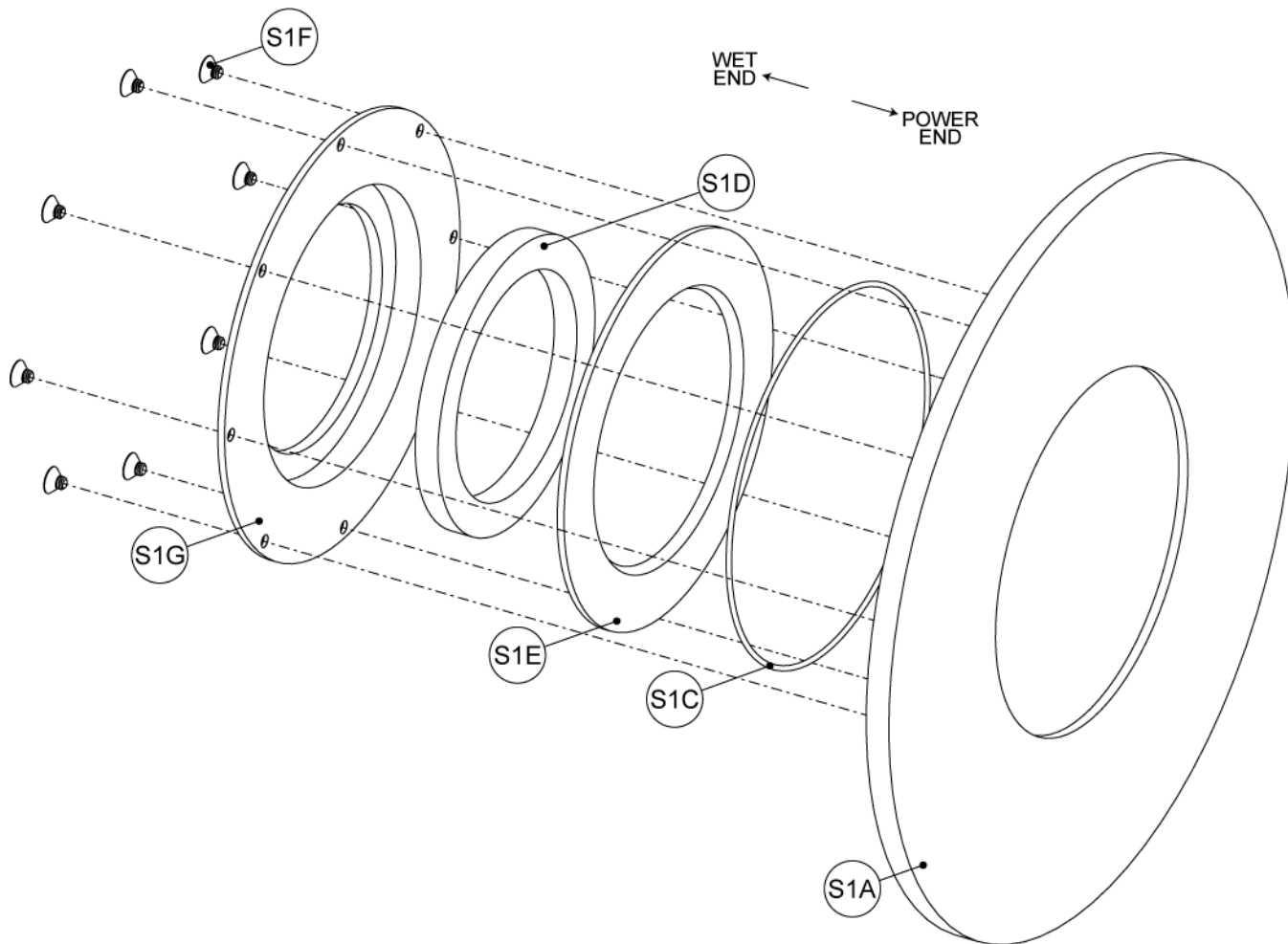
Ensure lip seal (S1H) is installed in the correct direction:



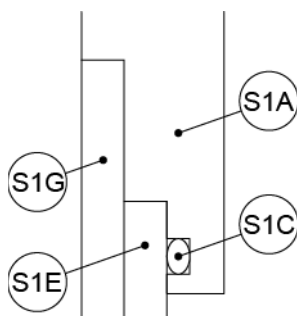
1. Press lip seal (S1H) into the seal lock (S1E).
2. Insert elbows (S1J & S1L) into the seal lock (S1E).
3. Insert stationary seal (S1D) into the stationary seal housing (S1A).
4. Secure in place with the seal lock (S1E) and bolts (S1F). Tighten in a crisscross fashion.

1.5 HD Slurry Pump – 8x4 & 8x6 (Standard Configuration)

ITEM NO.	QTY.	DESCRIPTION
S1A	1	Stationary Seal Housing
S1C	1	O-Ring, Stationary Seal Housing
S1D	1	Stationary Seal
S1E	1	Seal Lock
S1F	8	Stationary Seal Bolt
S1G	1	Stationary Seal Holder



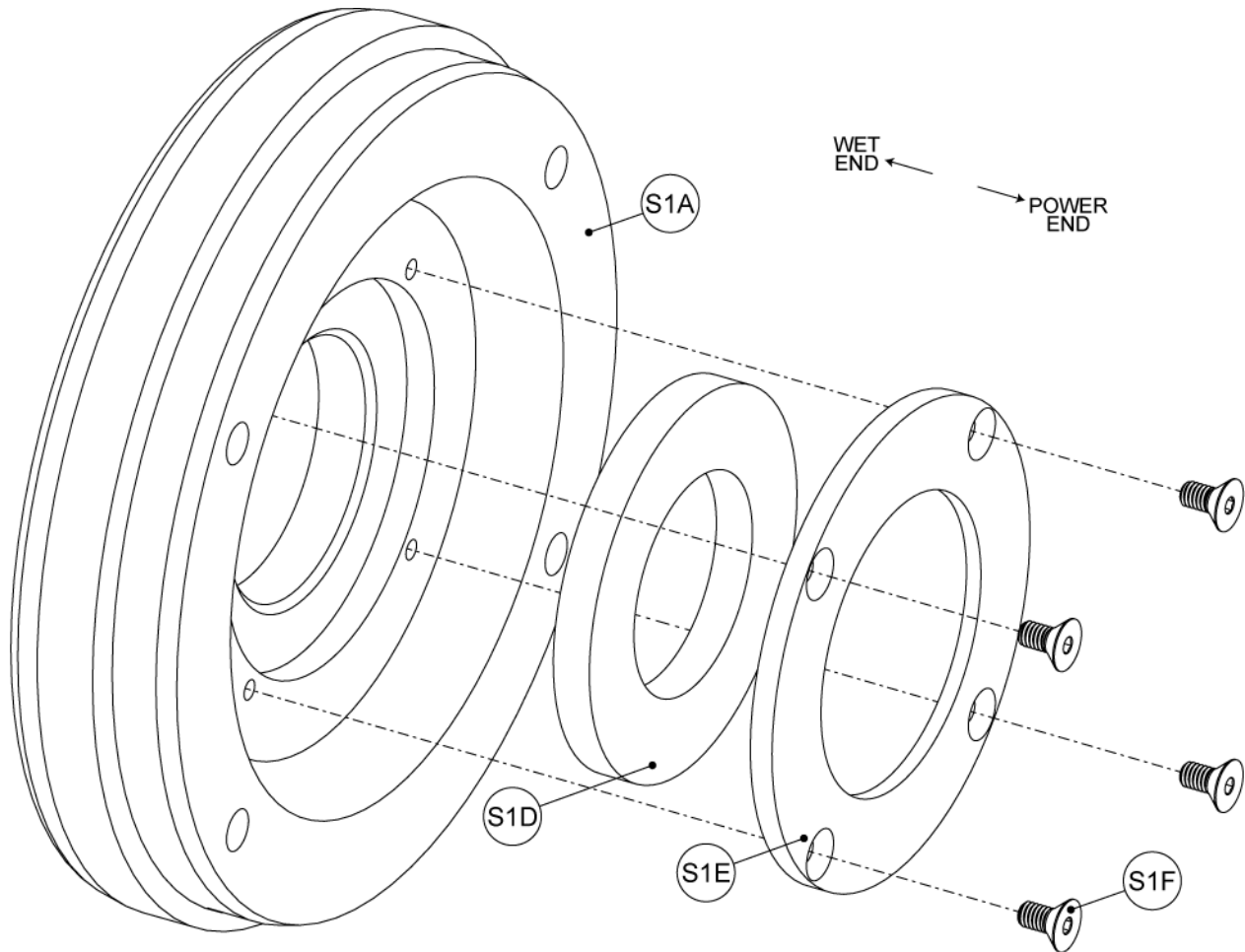
HD



1. Insert o-ring (S1C), seal lock (S1E), and stationary seal (S1D) into the stationary seal housing (S1A).
2. Secure in place with the stationary seal holder (S1G) and bolts (S1F). Tighten in a crisscross fashion.

1.6 Kpro® Slurry Pump (Standard Configuration)

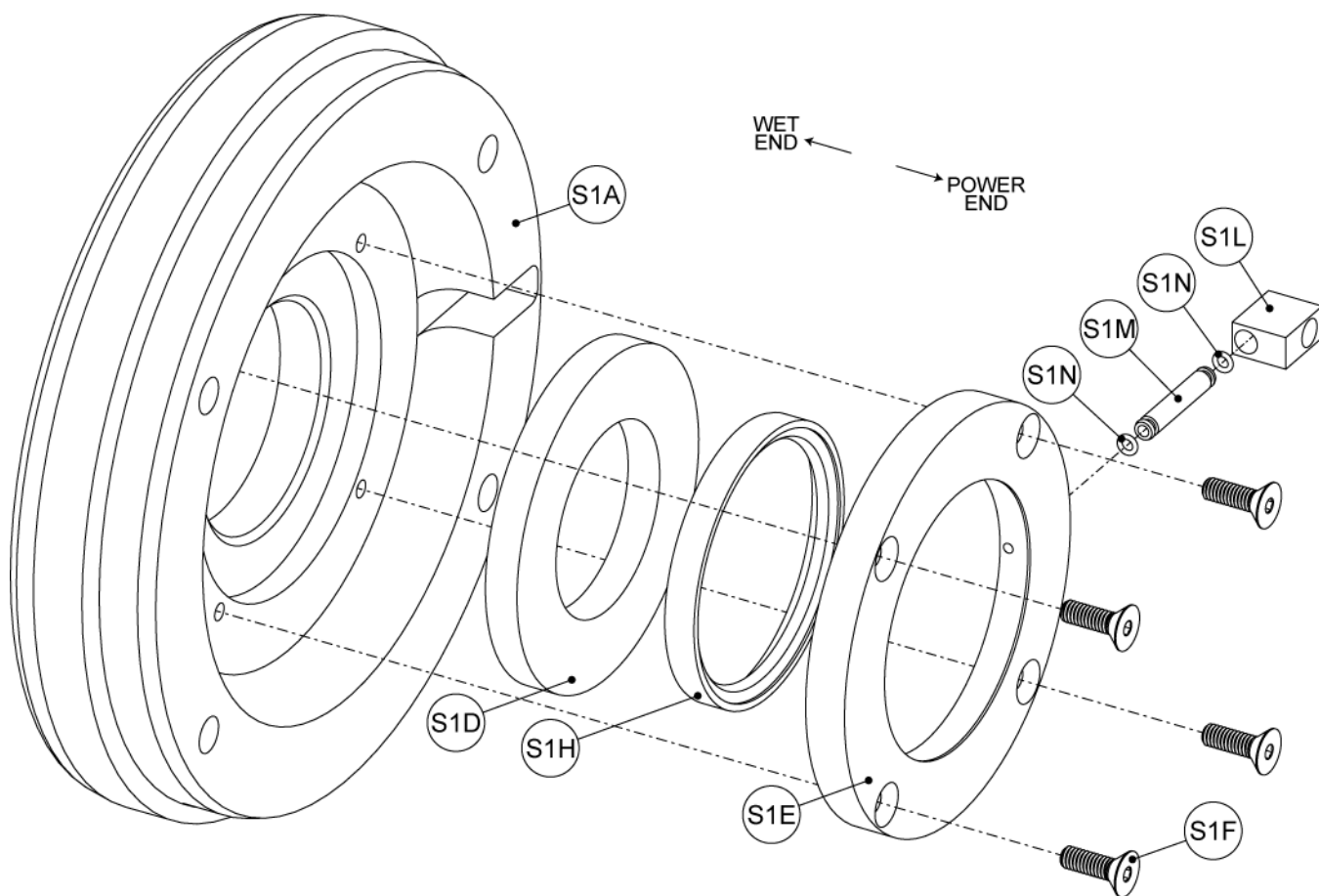
ITEM NO.	QTY.	DESCRIPTION
S1A	1	Stationary Seal Housing
S1D	1	Stationary Seal
S1E	1	Seal Lock
S1F	4	Stationary Seal Bolt



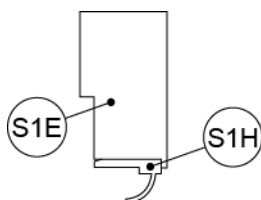
1. Insert stationary seal (S1D) into the stationary seal housing (S1A).
2. Secure in place with the seal lock (S1E) and bolts (S1F). Tighten in a crisscross fashion.

1.7 Kpro® Slurry Pump (Purge Port Configuration)

ITEM NO.	QTY.	DESCRIPTION
S1A	1	Stationary Seal Housing
S1D	1	Stationary Seal
S1E	1	Seal Lock
S1F	4	Stationary Seal Bolt
S1H	1	Lip Seal
S1L	1	Flush Block
S1M	1	Transfer Tube
S1N	2	O-Ring, Transfer Tube



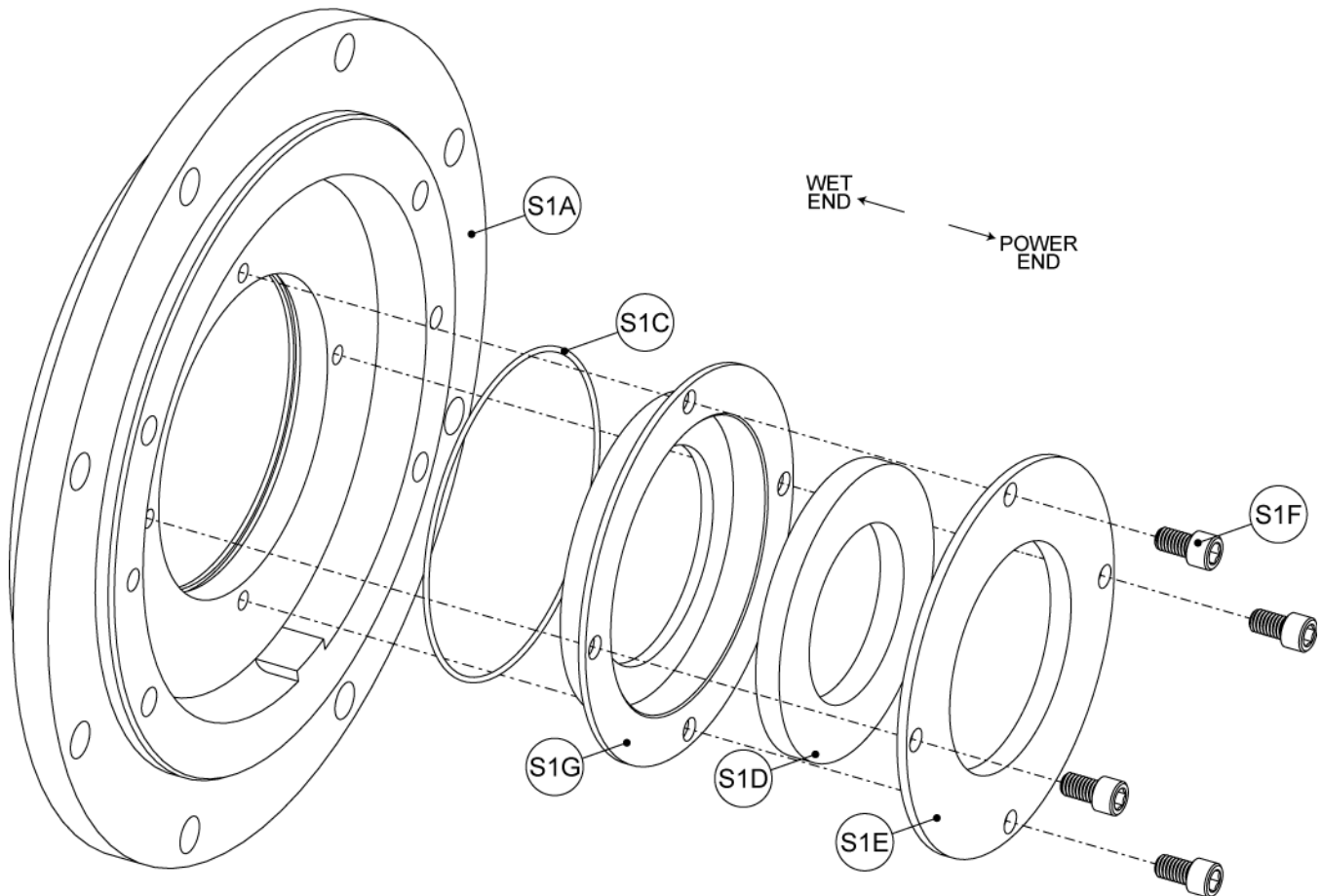
Ensure lip seal (S1H) is installed in the correct direction:



1. Press lip seal (S1H) into the seal lock (S1E).
2. Insert o-rings (S1N), transfer tube (S1M), and flush block (S1L) into the seal lock (S1E).
3. Insert stationary seal (S1D) into the stationary seal housing (S1A).
4. Secure in place with the seal lock (S1E) and bolts (S1F). Tighten in a crisscross fashion.

1.8 S3 Chemical Slurry Pump (Purge Port Configuration)

ITEM NO.	QTY.	DESCRIPTION
S1A	1	Stationary Seal Housing
S1C	1	O-Ring, Stationary Seal Housing
S1D	1	Stationary Seal
S1E	1	Seal Lock
S1F	4	Stationary Seal Bolt
S1G	1	Stationary Seal Holder

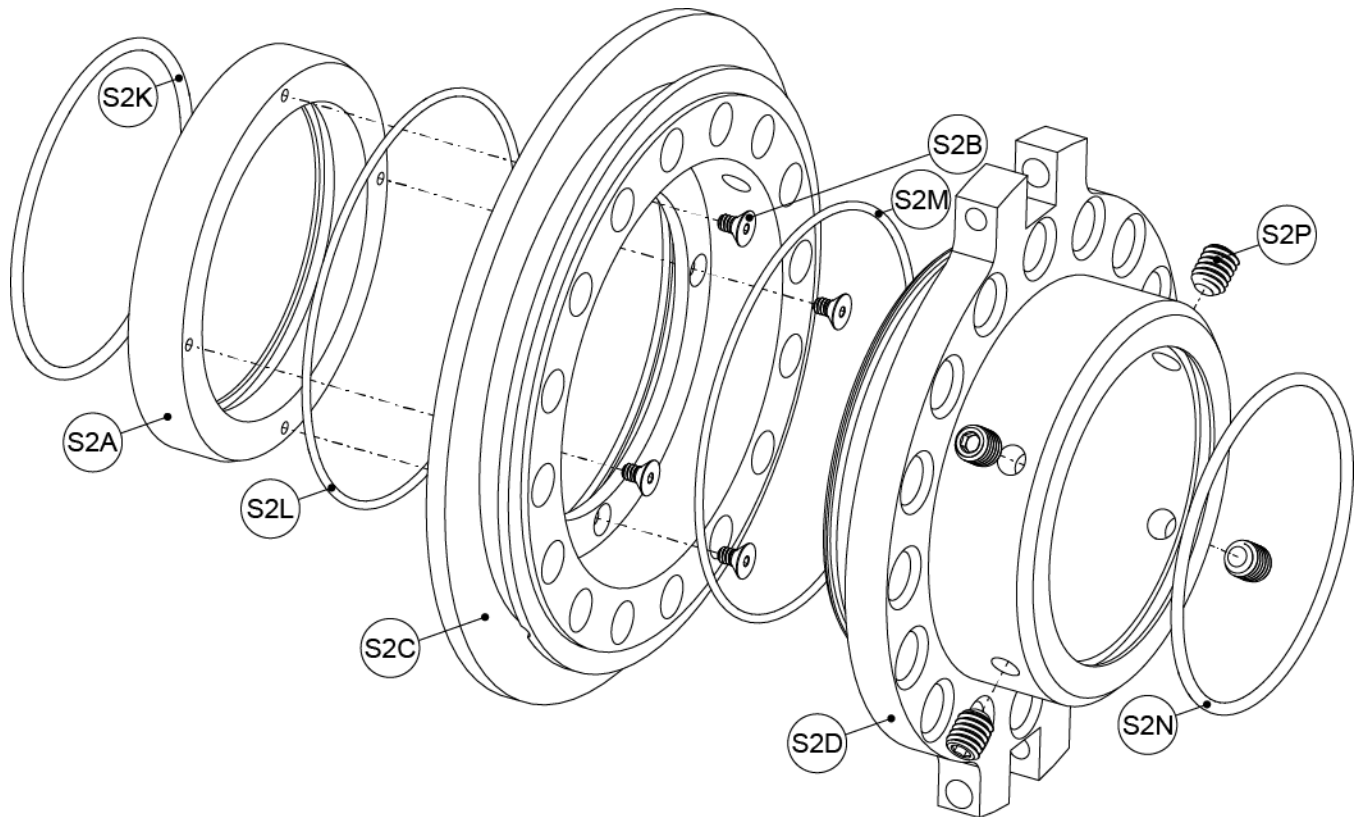


1. Insert o-ring (S1C), stationary seal holder (S1G), and stationary seal (S1D) into the stationary seal housing (S1A).
2. Secure in place with the seal lock (S1E) and bolts (S1F). Tighten in a crisscross fashion.

2.0 Rotary Seal Subassembly

2.1 Step 1

ITEM NO.	QTY.	DESCRIPTION
S2A	1	Rotary Seal
S2B	4	Rotary Seal Bolt
S2C	1	Rotary Seal Carrier
S2D	1	Weight Spider
S2K	1	O-ring, Rotary Seal
S2L	1	O-ring, Rotary Seal Carrier
S2M	1	O-ring, Weight Spider
S2N	1	O-ring, Weight Spider to Shaft Sleeve
S2P	4	Shaft Sleeve Set Screw

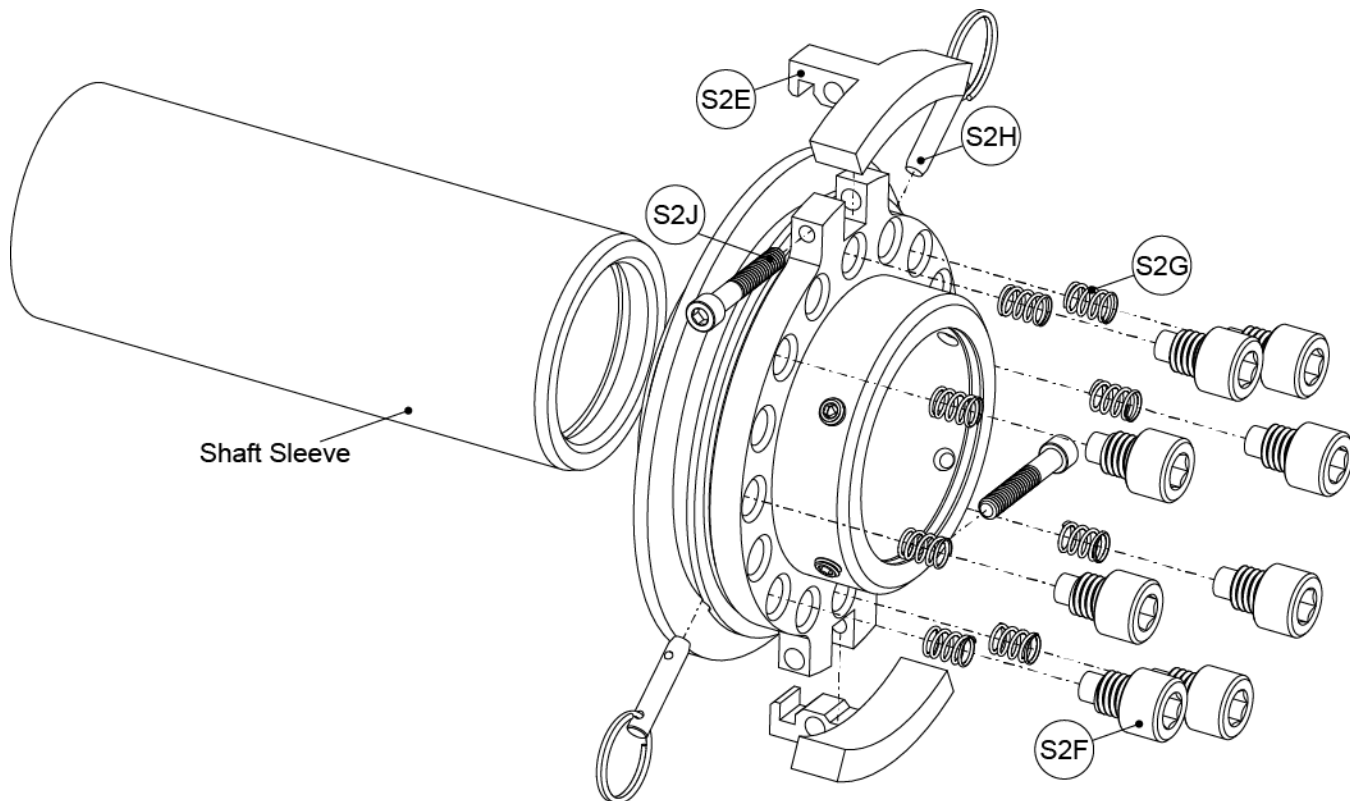


1. Install o-ring (S2K) into the rotary seal (S2A).
2. Install o-ring (S2L) into bore of the rotary seal carrier (S2C).
3. Insert rotary seal (S2A) into the rotary seal carrier (S2C) attaching them with bolts (S2B).
4. Insert o-ring (S2N) into the bore on the weight spider (S2D), and o-ring (S2M) onto the outer diameter groove of the weight spider (S2D).
5. Loosely install set screws (S2P) into the weight spider (S2D).
6. Insert weight spider (S2D) into the rotary seal carrier (S2C) in the orientation shown above, making sure the two sets of radial holes line up with each other.

2.2 Step 2

ITEM NO.	QTY.	DESCRIPTION
S2E	2	Weight
S2F	TBD*	Spring Bolt
S2G	TBD*	Spring
S2H	2	Pull Pin
S2J	2	Weight Bolt

* Refer to section 5.0 for quantities

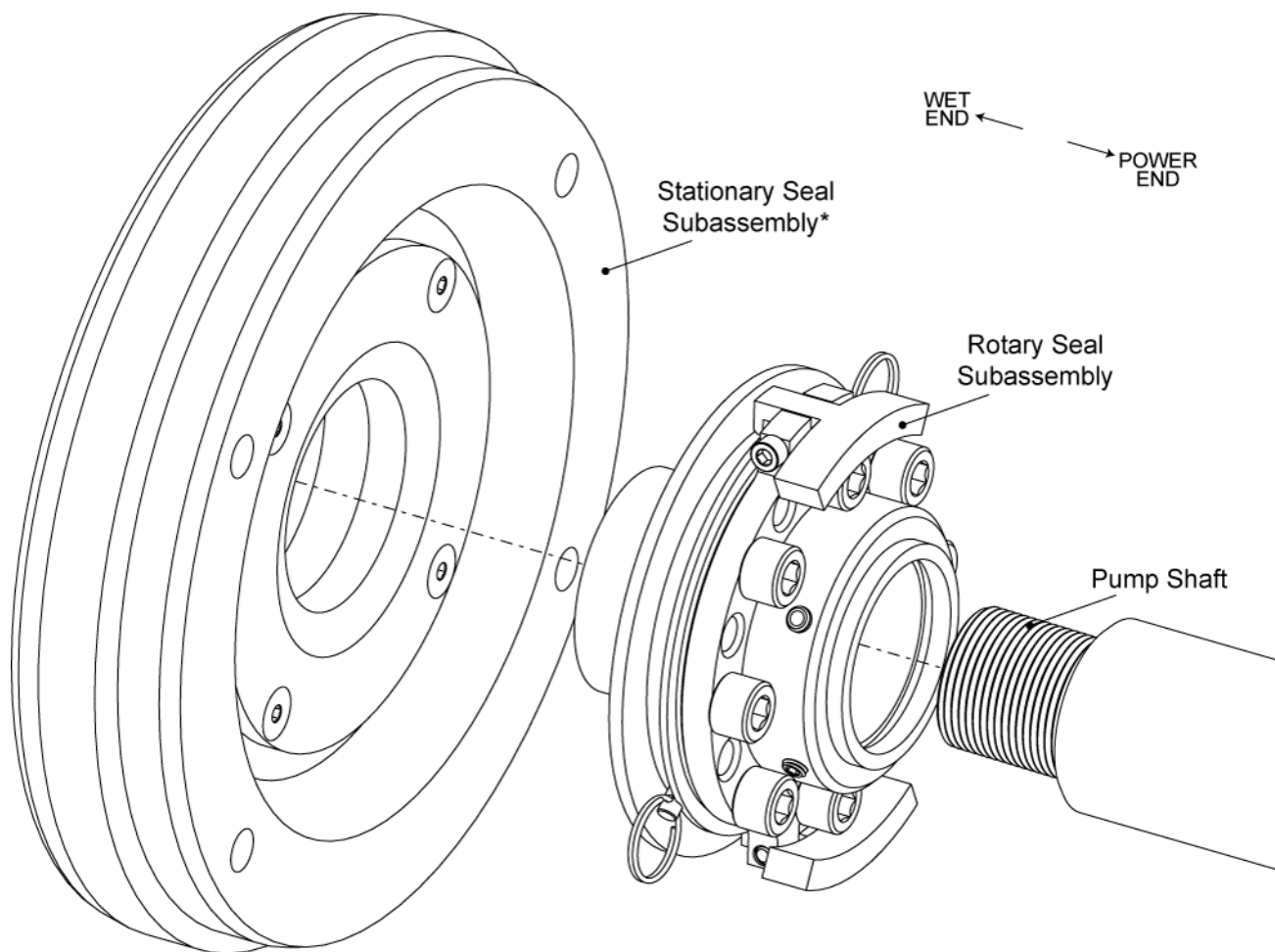


1. Insert pins (S2H) to hold the rotary seal carrier (S2C) and weight spider (S2D) together.
2. Install weights (S2E) using the weight bolts (S2J) making sure the weights (S2E) are hooking onto the lip on the rotary seal carrier (S2C).
3. Install springs (S2G) and spring bolts (S2F), spacing them out evenly.
4. Insert shaft sleeve into the subassembly.

The shaft sleeve item number varies with pump model:

PUMP	ITEM NO.
A7	39
A9	5A
AF	14
EMW®	14
HD	17
Kpro®	19C
S3	39

3.0 Pump Assembly

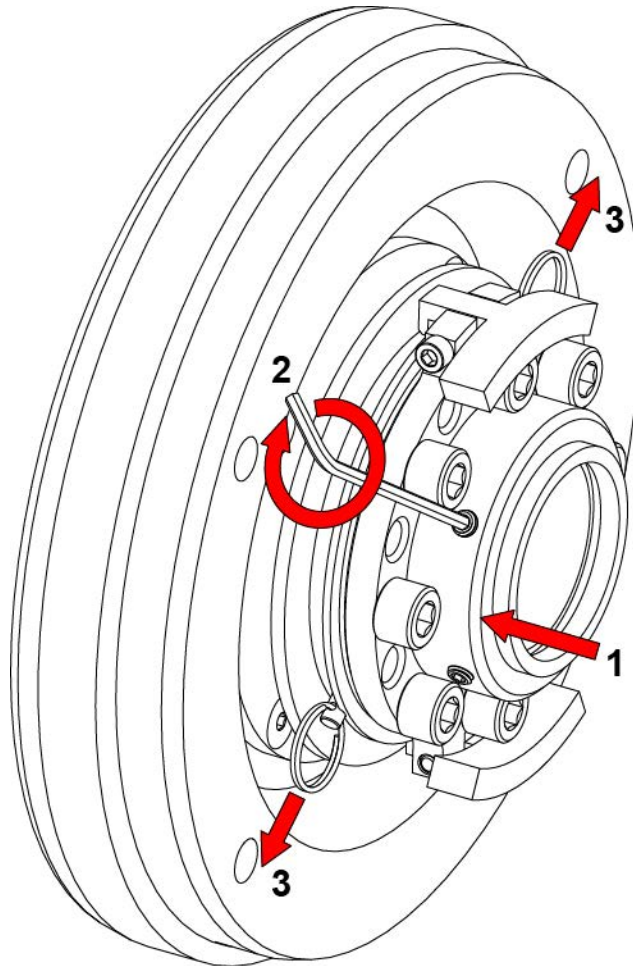


1. Assemble pump according to the pump IOM manual until the step to install the seal assembly is reached.
2. Install rotary seal subassembly onto the pump shaft so that the rotary seal (S2A) is facing away from the power end of the pump. Do not tighten the four set screws (S2P) on the subassembly.
3. Install stationary seal subassembly onto the pump so that the stationary seal (S1D) is facing towards the power end of the pump.
4. Complete final assembly of the pump according to the pump IOM manual.
5. Set the impeller clearances according to the pump IOM manual.
6. Proceed to next section to set the seal clearances.

*Stationary seal subassembly varies with pump model (Kpro® shown above)

4.0 SolidLock® Seal Adjustment

The seal **MUST** be adjusted and locked **AFTER** the pump has been assembled **AND** the impeller clearance has been set according to pump IOM. Before you begin, ensure that the set screws (S2P) are loose and that the rotary seal subassembly can freely move axially along the shaft sleeve.



1. Firmly push the rotary seal subassembly against the stationary subassembly until the seal faces come into contact.
2. Evenly tighten the four set screws (S2P) to lock the position of the rotary seal subassembly.
3. Pull the two pins (S2H) out of the rotary seal subassembly. It may be necessary to pull on the weights (S2E) to be able to pull the pins (S2H).

****The pump is now ready for use****

When resetting pump clearances, performing maintenance, or disassembling the pump, the rotary seal subassembly must be reset with the pull pins (S2H). First ensure that the pump casing is void of fluid and pressure. Pulling up on the weight (S2E) nearest the hole with the pin (S2H) will help line up the two radial holes. Once both pins (S2H) are in, the set screws (S2P) may be loosened and the rotary seal subassembly may be adjusted or disassembled from the pump.

5.0 Quantity of Springs Based on Operating Speed

Use the table below to determine the quantity of springs required for your application. If you are using a variable frequency drive and are operating the pump as various speeds, use your lowest operating speed to determine the quantity of springs.

1A7 – 2A7 1A9 – 2A9 1AF – 4AF EMW50 – EMW75 1Kpro – 3Kpro		3A7 – 4A7 3A9 EMW100 4Kpro – 5Kpro		4A9 – 5A9 EMW150 6Kpro 1S3		EMW200 – EMW250 HD8x4 – HD8x6 8Kpro 2S3	
Small Weight		Medium Weight		Medium Weight		Large Weight	
Speed	Spring Qty.	Speed	Spring Qty.	Speed	Spring Qty.	Speed	Spring Qty.
< 1,400	4	< 600	6	< 600	4	< 400	4
1,400-1,600	6	600-800	8	600-700	8	400-500	6
1,600-1,800	8	800-900	10	700-800	12	500-600	8
1,800-2,000	10	900-1,000	12	800-900	14	600-700	10
> 2,000	12	1,000-1,100	14	900-1,100	16	700-800	12
		1,100-1,200	16	Small Weight		800-900	16
		Small Weight		Speed	Spring Qty.	900-1,000	20
		Speed	Spring Qty.	1,100-1,300	8	1,000-1,100	24
		1,200-1,400	6	1,300-1,500	10	Medium Weight	
		1,400-1,700	8	1,500-1,700	12	Speed	Spring Qty.
		1,700-2,000	10	1,700-1,900	14	> 1,100	24
		2,000-2,200	12	> 1,900	16		
		2,200-2,400	14				
		> 2,400	16				

Notes:

SolidLock assemblies are shipped with the correct quantity of springs and weight size for your application.

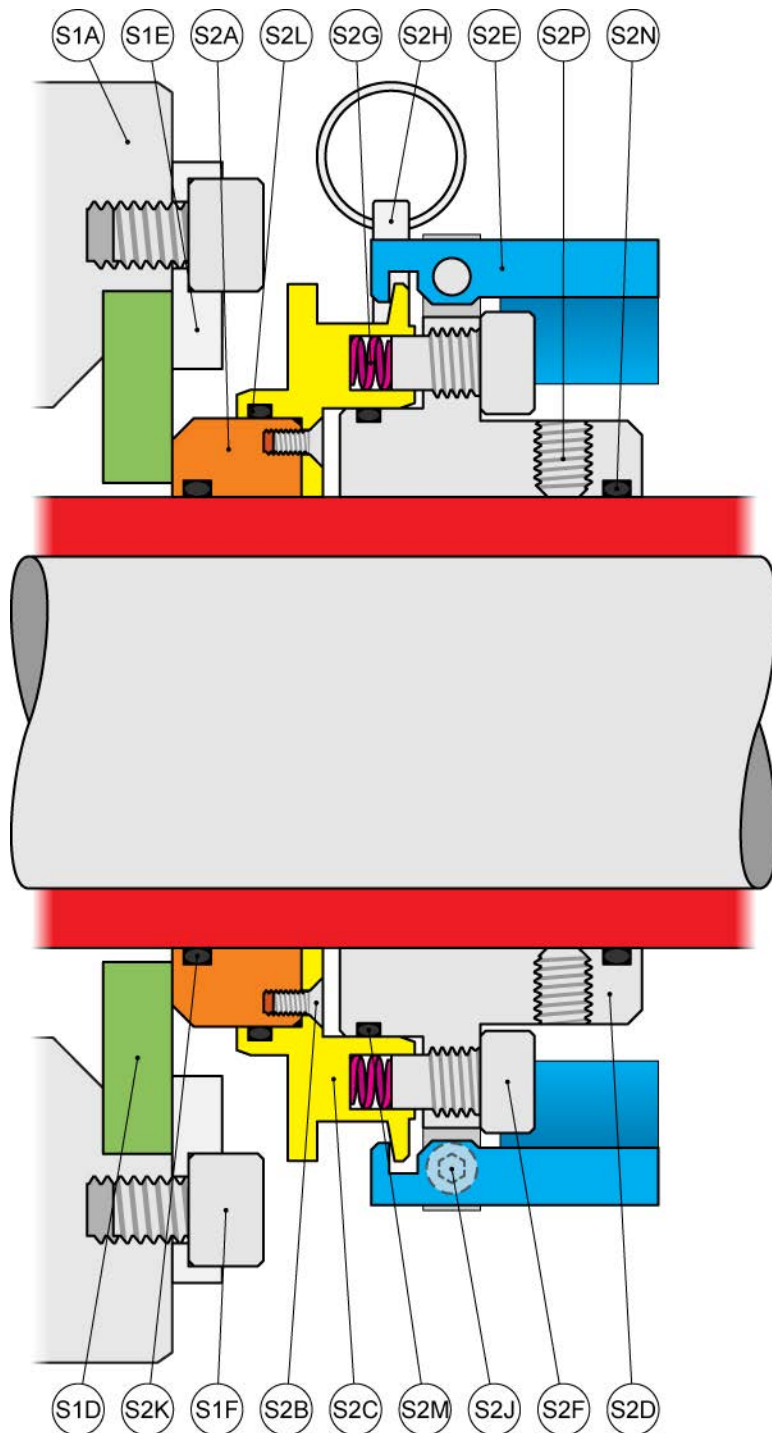
Small weight = A3193

Medium weight = A3199-02

Large weight = A3199

6.0 Cross Section

6.1 Standard Configuration



Item No.	Description	Qty.
S1A	Stationary Seal Housing	1
S1D	Stationary Seal	1
S1E	Seal Lock	1
S1F	Stationary Seal Bolt	3-8
S2A	Rotary Seal	1
S2B	Rotary Seal Bolt	4
S2C	Rotary Seal Carrier	1
S2D	Weight Spider	1
S2E	Weight	2
S2F	Spring Bolt	TBD ¹
S2G	Spring	TBD ¹
S2H	Pull Pin	2
S2J	Weight Bolt	2
S2K	O-Ring, Rotary Seal	1
S2L	O-Ring, Rotary Seal Carrier	1
S2M	O-Ring, Weight Spider	1
S2N	O-Ring, Weight Spider to Shaft Sleeve	1
S2P	Shaft Sleeve Set Screw	4
TBD ²	Shaft Sleeve	1

1. Quantity varies with pump size and operating speed.

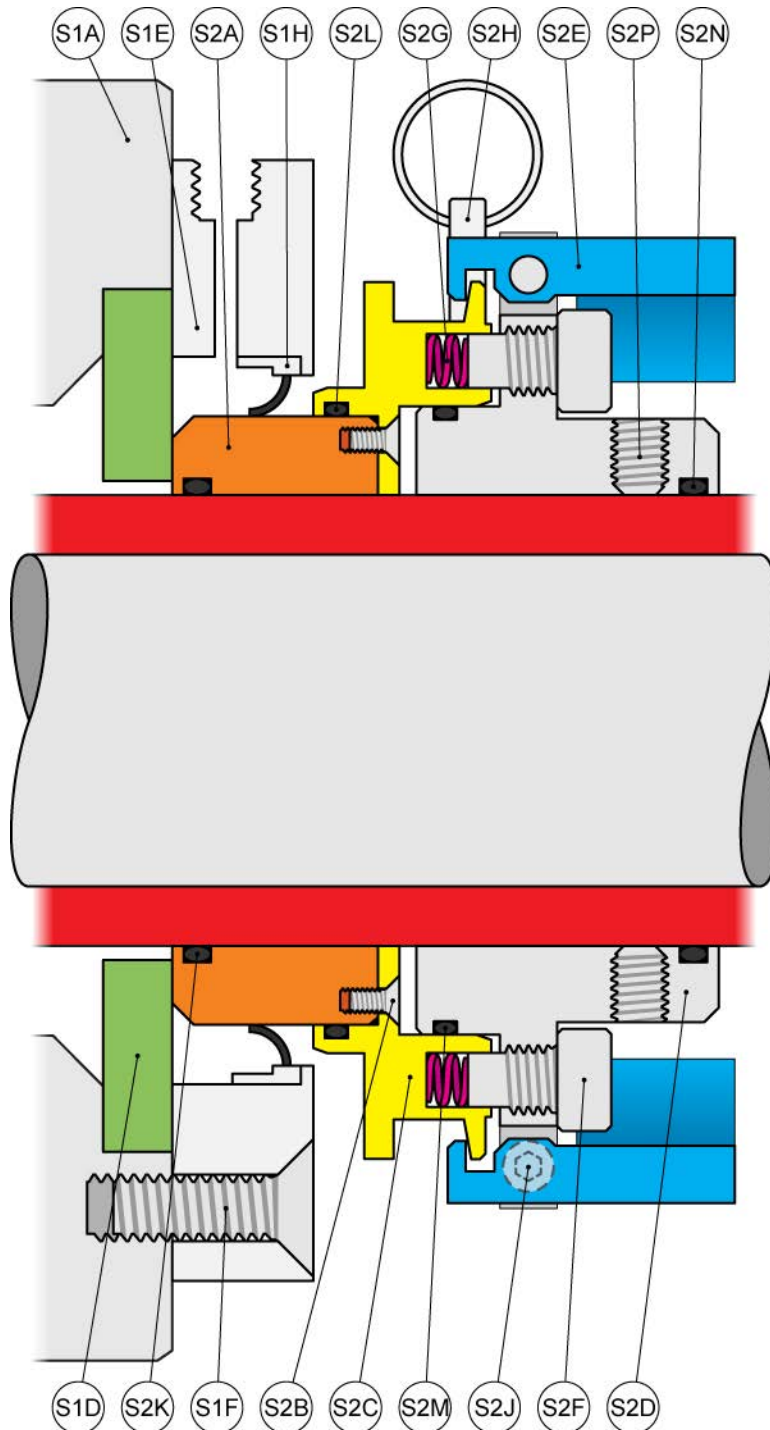
2. Item number varies with product line.

Not all components are used on each product line.

Shaft Sleeve Item Numbers:

PUMP	ITEM NO.
A7	39
A9	5A
AF	14
EMW®	14
HD	17
Kpro®	19C
S3	39

6.2 Purge Port Configuration



Item No.	Description	Qty.
S1A	Stationary Seal Housing	1
S1D	Stationary Seal	1
S1E	Seal Lock	1
S1F	Stationary Seal Bolt	3-8
S1H	Lip Seal	1
S2A	Rotary Seal	1
S2B	Rotary Seal Bolt	4
S2C	Rotary Seal Carrier	1
S2D	Weight Spider	1
S2E	Weight	2
S2F	Spring Bolt	TBD ¹
S2G	Spring	TBD ¹
S2H	Pull Pin	2
S2J	Weight Bolt	2
S2K	O-Ring, Rotary Seal	1
S2L	O-Ring, Rotary Seal Carrier	1
S2M	O-Ring, Weight Spider	1
S2N	O-Ring, Weight Spider to Shaft Sleeve	1
S2P	Shaft Sleeve Set Screw	4
TBD ²	Shaft Sleeve	1

1. Quantity varies with pump size and operating speed.

2. Item number varies with product line.

Not all components are used on each product line.

Shaft Sleeve Item Numbers:

PUMP	ITEM NO.
A7	39
A9	5A
AF	14
EMW®	14
HD	17
Kpro®	19C
S3	39

7.0 Revision History

Revision	Description	Date
0	Initial Release	Feb. 2015
1	Purge port configuration added to Kpro® and EMW® A7, A9, HD, and S3 product lines added	July 2015
2	Removed sections regarding SolidLock® Lite Section 3.0 (Pump Assembly) added	May 2017