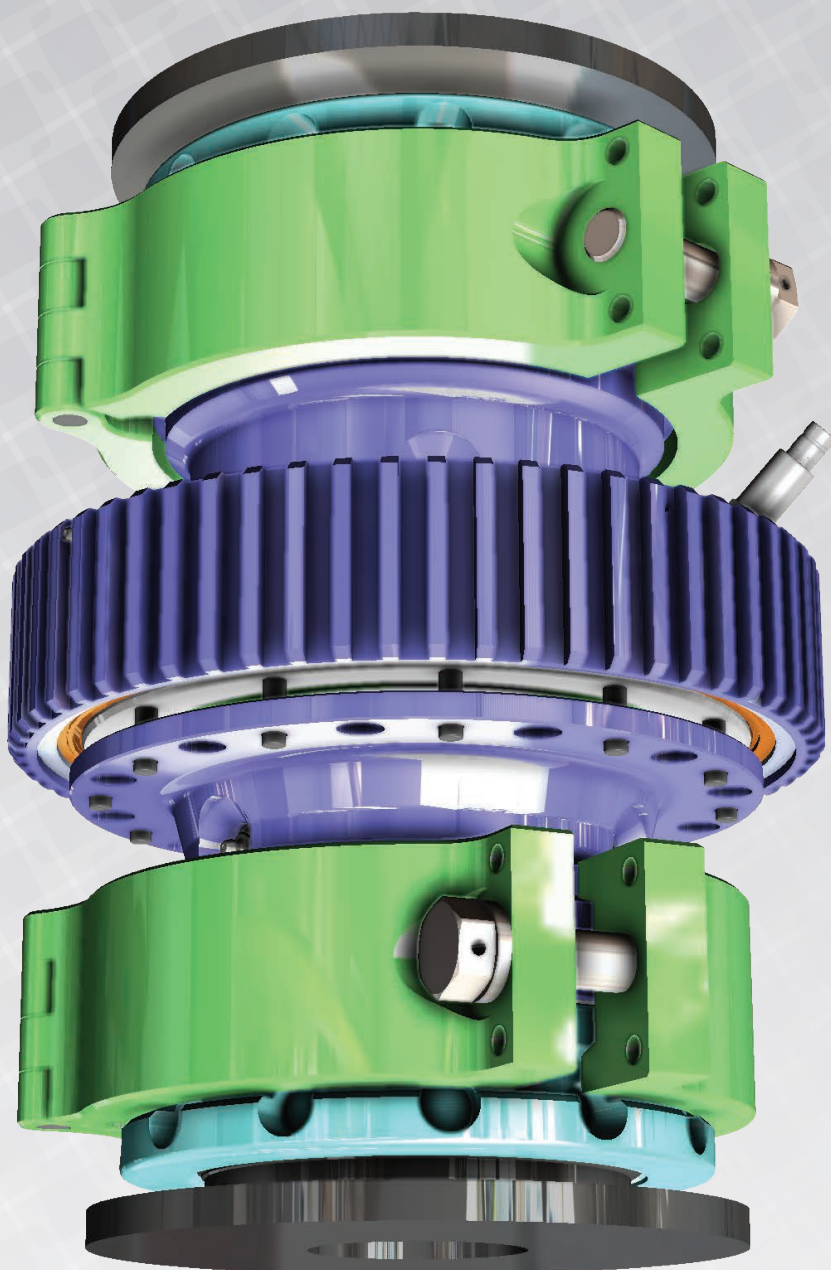
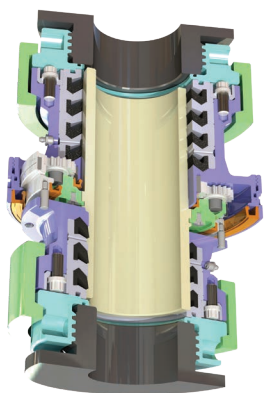


Sur-Drive™




PREMIUM
Oilfield Technologies

Sur-Drive™ Epicyclic Swivel



Premium designed the Sur-Drive™ Epicyclic Swivel System to address multiple problems that drillers have with their top drive washpipe cartridge assemblies.

These seal systems are one of the most common causes of downtime for a drilling rig. The unique epicyclic design of the Sur-Drive offers a solution to these problems by slowing down internal speeds within the cartridge, for any given top drive rotational speed, increasing seal life and significantly reducing related issues.

RPM on Packing Seals Reduced

A planetary gear is integrated into the lower housing. The carrier holds the washpipe and by design rotates 40% slower. This allows the rotational speed to be split 60/40 between lower and upper housings. This raises the Pressure-Velocity values for your existing seals which increases seal life.

Self-Aligning

The Sur-Drive cartridge assembly system has a unique feature for self-centering during installation which compensates for lateral misalignment between the gooseneck and main shaft pilots.

Pre-Compressed Packing Seals

The Sur-Drive cartridge assembly allows for the seals to be compressed on the ground prior to installation by way of eight low torque screws. No special tools are needed to compress these seals.

Hammerless installation

The Sur-Drive cartridge assembly can be inserted horizontally and secured into place with two hub clamps by permanently installing our adapter hubs.

Competitively Priced

True through-bore versions do very well versus ceramic seal based washpipe assemblies costing tens of thousands of dollars more.

Sealed Gear Box

All gear box components are submerged in gear oil which provides constant lubrication and eliminates the need for costly space-consuming roller bearings. Rotary shaft seals are used to keep the oil in, and the dirt out.

Rated to 10,000 PSI

The Sur-Drive cartridge assembly is the only through-bore washpipe system in the industry rated to 10K. Upgrading to 10K from 7500 psi Sur-Drive is as simple as swapping out to a slightly thicker washpipe for easy adoption.

Sur-Drive™ Rental Program

Premium's Sur-Drive™ rental program* helps ensure uptime with your drilling rig by removing the worry and labor out of Sur-Drive rebuilds and replacements. Each rig has 2 Sur-Drive cartridge assemblies, one installed and one spare. Sur-Drive cartridge assemblies are averaging 3-6 months before failure; however if the rig greases the packing daily and gearbox weekly, it is possible for the Sur-Drive to last longer.

When it's time for the rig to install the spare, Premium will pick up the leaking Sur-Drive for rebuild and replace the spare inventory. The spare is to be used when the Sur-Drive fails or leaks, and not during a standard rig inspection/top drive inspection. If the Sur-Drive is swapped out before failure, a tear down fee will apply for that billing cycle.

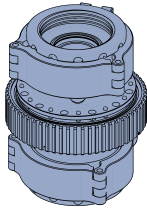
*Rental rate is \$110/day. Rig is responsible for all charges related to grease and special tooling.

Sur-Drive™ 3" and 4"

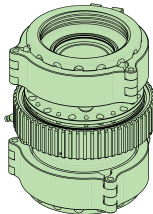
Item	Product Number		Product Description		QTY
	Sur-Drive 3" ID	Sur-Drive 4" ID	Sur-Drive 3" ID	Sur-Drive 4" ID	
1	401-0162	401-0154	Adapter Hub		2
2	3N7-2252*	3V7-2242*	O-Ring, 2-242 Viton 75 Duro	O-Ring, 2-252 NBR 70 Duro	2
3	401-0164	401-0055	Clamp Assembly		2
3A	401-0165	401-0056	Clamp Segment, THD, HGD		1
3B	401-0166	401-0057	Clamp Segment, Hole, HGD		1
3C	401-0167	401-0058	Clamp Segment, Link, HGD		1
3D	601-0114		Dowel, .500 X 3.000		2
3E	203-1491-DH	203-1491-DH	HEX CS, .750-10 X 3.50 LG Drilled		1
3F	208-007		Lock Washer 3/4		1
4	401-0187	401-0087	Housing Assembly, Upper		1
4A	401-0188	401-0089	Housing, Upper		1
4B	401-0182	401-0081	Packing Retainer Ring		1
4C	204-841		12PT CS, .500-13 X 1.00 LG		8
4D	601-0172		DOWEL, .375 X .500 LG		1
5	401-0169	401-0248	Housing Assembly, Lower		1
5A	401-0170	401-0063	Housing, Lower		1
5B	401-0064		Sun Gear		1
5C	601-0227		Spring Pin, .188 X .625 LG		6
5D	3N7-2274		O-Ring 2-274 Nbr 70 DURO		1
5E	401-0082	401-0081	Packing Retainer Ring		1
5F	204-841		12pt Cs, .500-13 X 1.00 LG		8
5G	601-0172	601-0172	Dowel, .375 X .500 LG		1
5H	601-0128	601-0128	Plug, 1/8 NPT		2
5J	601-0025	601-0025	Relief Fitting, 1/8 NPT (5 Psi)		1
5K	601-0633	601-0633	45° Adapter, 1/8 NPT	Male x Female Adapter, 1/8 NPT	1
5L	601-0635	601-0635	Male Diag. Coupler, 1/8 NPT		1
5M	n/a	601-0635		Male Diag. Coupler, 1/8 NPT	1
6	401-0203	401-0203	Carrier Assembly		1
6A	401-0204	401-0204	Carrier Ring		1
6B	601-0116	601-0228	Dowel, .625 X .750 LG		6
6C	601-0118		Rotary Seal 130x150x10		1
6D	401-0205	401-0099	Retainer Plate, Washpipe		1
6E	401-0069		Planet Gear		6
7	401-0075		Ring Gear Assembly		1
7A	401-0072		Ring Gear		1
7B	601-0228		Spring Pin, .188 X .50 LG		12
7C	401-0076		Holding Ring		1
7D	601-0119	?????	Rotary Seal 190x210x10	Rotary Seal 190x220x10	1
7E	601-0177		Dowel, .313 X 1.25 LG		12
7F	601-0128		Plug, 1/8 NPT		4
8	401-0077		Retainer Ring Assembly		1
8A	401-0078		Retainer Ring, Gearbox		1
8B	601-0120		Rotary Seal 240x270x15		1
8C	601-0176		Snap Ring		1
8D	601-0227		Spring Pin, .188 X .625		2
9	401-0193	n/a	Bearing Ring AL-BR		1
10	401-0183		Upper Packing Spacer		2
11	401-0184		Middle Packing Spacer		3
12	401-0185		Lower Packing Spacer		2
13	3N7-2348*		O-Ring, 2-348 NBR 70 DURO		2
14	401-0043		Packing Seal		7
15	601-0158		Grease Fitting 5/16-24 UNF		6
16	401-0190	401-0220	Washpipe, Caliber 7500 psi	Washpipe, Caliber 10k	1

SUR-DRIVE 3" AND 4" PAGE 1

**Sur-Drive
3" ID**

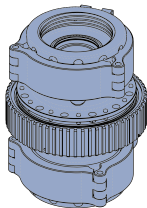


**Sur-Drive
4" ID**

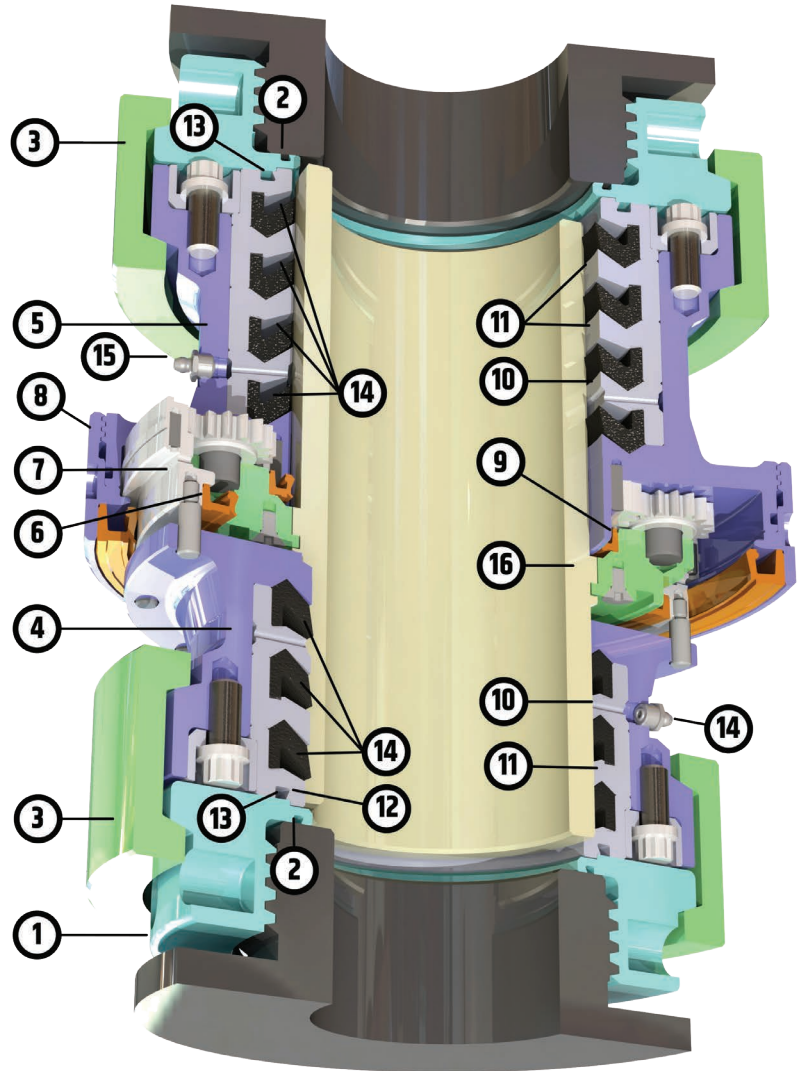
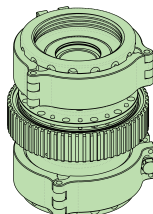


SUR-DRIVE 10K 3" AND 4" PAGE 2

**Sur-Drive
10K
3" ID**



**Sur-Drive
10K
4" ID**



Sur-Drive

Patent Pending

Recommended Tools (not pictured)	Item
Kluber Lube Applicator Assembly W/Lanyard	601-0575
Grease Gun, Cordless 2 Speed, Sur-Drive Packing w/Lanyard	601-0868
Tool, Lifting, Sur-Drive, 3"	603-0138
Wrench, Spanner, For Adapter Hub, Sur-Drive 3" Swivel	401-0213

* Includes item #9

** Fits all models of Varco TDS series as well as Lewco
DDTD500 - National PS350/500-Bowen TD350PBE - Tesco EMI 400

Sur-Drive™ 10k - 3" and 4"

Item	Product Number		Product Description		QTY
	Sur-Drive 3" 10K	Sur-Drive 4" 10K	Sur-Drive 3" 10K	Sur-Drive 4" 10K	
1	401-0162	401-0154	Adapter Hub		2
2	3V7-2242*	3N7-2252*	O-Ring, 2-242 Viton 75 Duro	O-Ring, 2-252 NBR 70 Duro	2
3	401-0164	401-0055	Clamp Assembly		2
3A	401-0165	401-0056	Clamp Segment, THD, HGD		1
3B	401-0166	401-0057	Clamp Segment, Hole, HGD		1
3C	401-0167	401-0058	Clamp Segment, Link, HGD		1
3D	601-0114		Dowel, .500 X 3.000		2
3E	203-1491-DH	203-1491-DH	HEX CS, .750-10 X 3.50 LG Drilled		1
3F	208-007		Lock Washer 3/4		1
4	401-0187	401-0250	Housing Assembly, Upper		1
4A	401-0188	401-0251	Housing, Upper		1
4B	401-0182	401-0182	Packing Retainer Ring		1
4C	204-841		12PT CS, .500-13 X 1.00 LG		8
4D	601-0172		DOWEL, .375 X .500 LG		1
5	401-0169	401-0248	Housing Assembly, Lower		1
5A	401-0170	401-0249	Housing, Lower		1
5B	401-0064		Sun Gear		1
5C	601-0227		Spring Pin, .188 X .625 LG		6
5D	3N7-2274		O-Ring 2-274 Nbr 70 DURO		1
5E	401-0082	401-0082	Packing Retainer Ring		1
5F	204-841		12pt Cs, .500-13 X 1.00 LG		8
5G	601-0172	601-0172	Dowel, .375 X .500 LG		1
5H	601-0128	601-0128	Plug, 1/8 NPT		2
5J	601-0025	601-0025	Relief Fitting, 1/8 NPT (5 Psi)		1
5K	601-0633	601-0633	45° Adapter, 1/8 NPT	Male x Female Adapter, 1/8 NPT	1
5L	601-0635	601-0635	Male Diag. Coupler, 1/8 NPT		1
5M	n/a	601-0635		Male Diag. Coupler, 1/8 NPT	1
6	401-0203	401-0203	Carrier Assembly		1
6A	401-0204	401-0204	Carrier Ring		1
6B	601-0116	601-0228	Dowel, .625 X .750 LG		6
6C	601-0118		Rotary Seal 130x150x10		1
6D	401-0205	401-0099	Retainer Plate, Washpipe		1
6E	401-0069		Planet Gear		6
7	401-0075		Ring Gear Assembly		1
7A	401-0072		Ring Gear		1
7B	601-0228		Spring Pin, .188 X .50 LG		12
7C	401-0076		Holding Ring		1
7D	601-0119		Rotary Seal 190x210x10		1
7E	601-0177		Dowel, .313 X 1.25 LG		12
7F	601-0128		Plug, 1/8 NPT		4
8	401-0077		Retainer Ring Assembly		1
8A	401-0078		Retainer Ring, Gearbox		1
8B	601-0120		Rotary Seal 240x270x15		1
8C	601-0176		Snap Ring		1
8D	601-0227		Spring Pin, .188 X .625		2
9	401-0193		Bearing Ring AL-BR		1
10	401-0183		Upper Packing Spacer		2
11	401-0184		Middle Packing Spacer		3
12	401-0185		Lower Packing Spacer		2
13	3N7-2348*		O-Ring, 2-348 NBR 70 DURO		2
14	401-0043		Packing Seal		7
15	601-0158		Grease Fitting 5/16-24 UNF		6
16	401-0191		Washpipe, Caliber 10k		1

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PATRIOT™



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