Wireline TECHNOLOGIES

OPERATION MANUAL

16” & 20” Slickline Sheaves

Manufactured by Wireline Technologies Inc.

Doc. #WTI-113 Rev. 5 (31 OCT 2023)

Introduction

This manual explains the use and care of 16” and 20” slickline sheaves manufactured by Wireline Technologies, Inc. These sheaves feature two types of shrouds, shown in Figure 1 and Figure 2. The shrouds cover part of the wheel to aid in containing the line in the wheel groove. Please read and become familiar with all of the information in this manual before using this equipment.

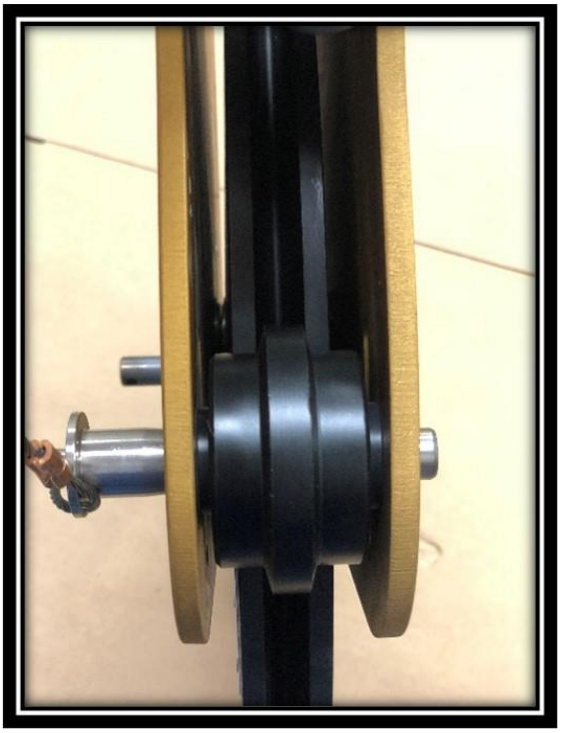

Figure 1. *Roller Shroud Option*

Figure 2. *Hard Shroud Option*

NOTE: THE ROLLER SHROUD IS NOT RETAINED AND WILL FALL WHEN THE BALL LOCK PIN IS REMOVED. WHEN REMOVING THE BALL LOCK PIN ENSURE THAT THE ROLLER IS SECURED TO PREVENT DROP HAZARD.

Warnings

- Read entire manual before operating this equipment.
- If proper procedures are not followed, loads may disengage.
- A falling load can cause serious injury or death.

- Never use this product for hoisting personnel.
- Always anchor or hang the sheave via the clevis, never by way of the side plates or any ancillary equipment.
- Never apply more force than the Safe Working Load (SWL) listed on the affixed tag.
- The listed Safe Working Load is for the sheave assembly; the safe line tension will be less.
- Attachment to other equipment with lower SWL will reduce the allowable load.
- Always use a hand guard when the sheave is used around personnel.
- Always make sure the sheaves are properly maintained and properly rigged.

Safe Working Load

The rated safe working load (SWL) for a WTI 16" or 20" slickline sheave is 6,000 lbs. (2,720 kg.). The allowable line pull will depend upon the angle the line is deflected. If the sheave is used as a top sheave, it deflects the line 180°, see Figure 3. If the sheave is used as a bottom sheave, it deflects the line 90°, see Figure 4. Never exceed the SWL, unless special precautions are taken in accordance with your company's policy. These precautions should include, but are not limited to, clearing the rig floor of all personnel. If the SWL is exceeded, the sheave should be re-certified before it can safely be placed back in service.

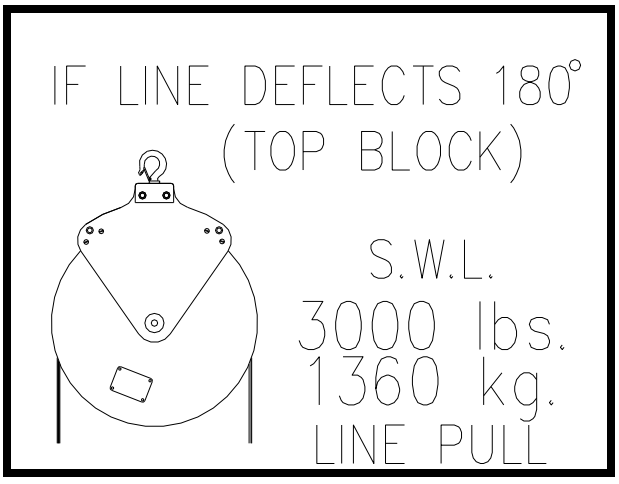

Figure 3. Safe Line Tension for 180-Degree Deflection

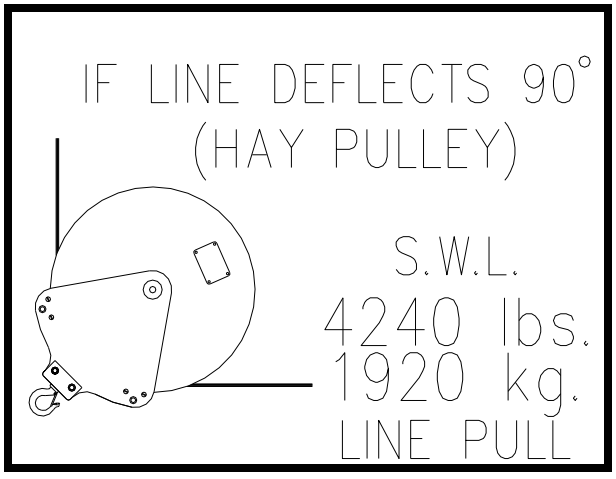

Figure 4. Safe Line Tension for 90-Degree Deflection

Clevis Options

Two clevis options for suspending/anchoring the sheave are available: These options are shown in Figures 5 and 6 below. The hook has a 1.3" wide opening. The Clevis-Eye has an opening about 2.0" X 2.6" for a chain or sling.

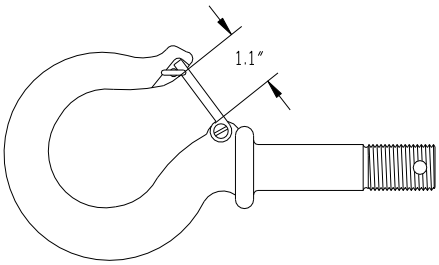

Figure 5. Shank Hook

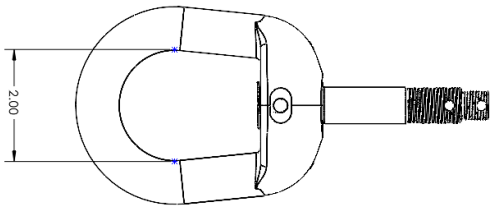

Figure 6. Eye Clevis

Loading

The numbers listed refer to Figure 14 and Table 1 on pages 8 and 9.

1. Pull pins out from rear plate (43).
2. Slide the handles (12) back and down to hold them in the open position. See Figure 7.
3. Rotate front plate (1) out of block at the top the rear plate. See Figure 8.
4. Load line into groove of wheel (17). See Figures 9 and 10. Do **NOT** load the line on top of the shrouds that cover the wheel.
5. Close the front plate, aligning its holes with the holes in the block of the rear plate.
6. Slide the handles back towards the center, allowing springs to push pins back through the front plate. See Figure 11.
7. Make sure the pins return till they are flush with the front surface. See Figure 12.

Figure 7 *Retracted Handles*

Figure 8 *Opening Front Plate*

Figure 9 *Properly Loading Line*

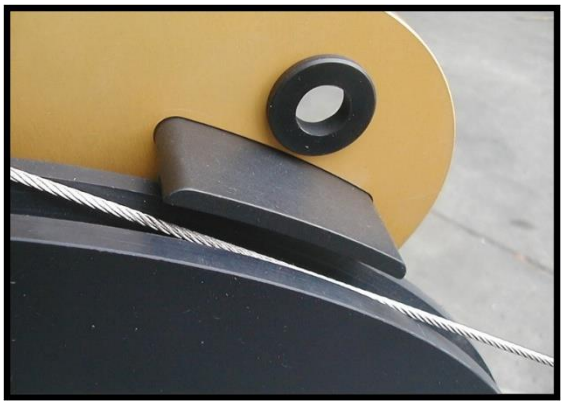

Figure 10 *Line Under Shroud*

Figure 11 *Closed Handles*

Figure 12 *Properly Closed Gates*

Daily Inspection Checklist

Verify the following. If any discrepancies are noted, remove the sheave from service until repairs are completed. Numbers listed refer to Figure 14 and Table 1 (pgs. 8-9).

- All structural components (10 or 21,16,13,43,24,1,2,34,17) are not bent, cracked, or otherwise damaged.
- Front plate (1) pivots freely through the block of the rear plate (13).
- Locking pins (24) retract, pivot, and return easily.
- Manufacturing label (9) is in place and readable.
- Inspection label (44) is in place on the rear plate and stamped with an inspection date no greater than one year old.
- Spiral pins (3) are in place and securely retain the slotted nuts (4) on the axle shaft (34).
- Wheel (17) rotates freely and smoothly, check for any grinding or sticking, indicating damaged bearings.
- Clevis (10 or 21) pivots freely and does not have excessive slop (more than 1/8").
- Spiral pin (3) is securely retaining the slotted nut (16) and left handed jam nut (18) on the clevis.

Preventative Maintenance

WTI suggests the following service. Numbers listed refer to Figure 14 and Table 1 (pgs. 9-10).

- The wheel bearings (30) are sealed and only need annual re-packing. Use lithium based No.2 EPHT grease, such as Conoco's Tacna® RX. This service can be performed at the same time as the annual recertification. See page 8.
- Monthly, squirt some light machine oil on both ends of the locking pins (11).

Recertification and Repairs

WTI highly recommends yearly recertification of all slickline sheaves. Most companies mandate annual recertifications so this should not be overlooked. A tag on the rear of the sheave, shown in Figure 13, provides a visible place to stamp certification dates. When a new sheave is placed into service, stamp the current date into this tag. When the date becomes a year old, the sheave should be re-certified. Each time the sheave is re-certified a new date will be stamped in this tag. Upon completion of a repair or recertification, note the information in the log in the back of this manual. Recertification involves the following:

1. Proof testing.
2. Disassembly.
3. Cleaning
4. NDT inspection of all of the load-bearing components.
5. Replacement or repair of any damaged or worn components.
6. Updating components for safety and easier use.
7. Packing the bearings with grease.
8. Re-assembly.
9. Pre-loading the bearings.
10. Documentation of all changes.
11. Final Inspection.
12. Issuance of a new certification.

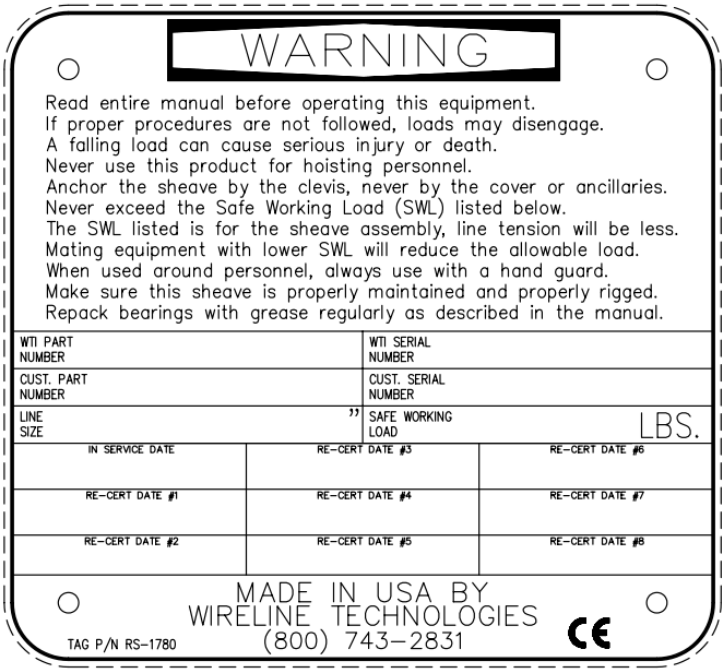

Figure 13. Inspection Tag

Recertification and/or repairs can be done one of three ways.

- Send the device to Wireline Technologies, Inc. Please call to make arrangements.
- Send the device to an authorized service center. Call to determine the nearest location.
- Determine if your company will allow recertification on site. If so, WTI can supply you with the training and documents needed.

Call Wireline Technologies Inc. (800) 743-2831. Use the drawings in Figure 14 on page 8, to identify parts. The numbers in the circles correspond to the item numbers in Table 1 on page 9.

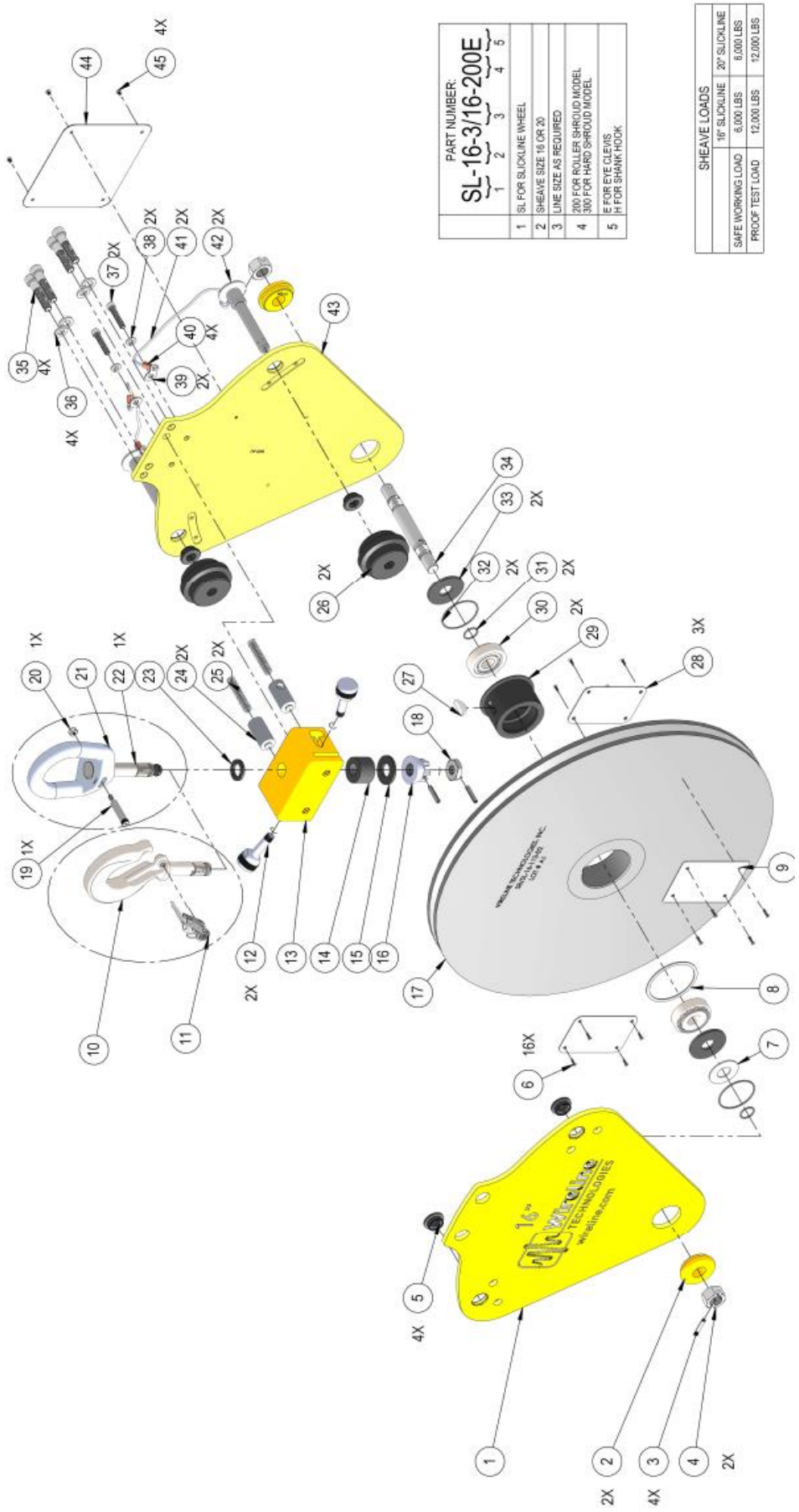

Figure 14. 16" and 20" Slickline sheaves

BILL OF MATERIALS FOR 16" MODEL

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SL-16-104	16" FRONT PLATE	1
2	SL-128	REINFORCEMENT RING	2
3	SB/SL-106	SPIRAL PIN 3/16" X 1"	4
4	SB/SL-108	SLOTTED NUT 5/8" - 18	2
5	SL-117	BUSHING	4
6	SL-1071	SLICKLINE TAG SCREW	16
7	SB/SL-107	FLAT WASHER 5/8"	1
8	SB/SL-1012	RETAINING RING - 16"	1
9	SL-16-1077	MANUFACTURING LABEL	1
10	SL-111	SHANK HOOK (3 TON S.W.L.)	1
11	SL-118	LATCH KIT	1
12	SL-1228	HANDLE (16/20" SLICKLINE)	2
13	SL-1038	BLOCK 16"/20" - SIDE-LOCK	1
14	SL-127	SHOCK CUSHION 0.625" X 1.3" X 0.83"	1
15	SL-120	FLAT WASHER 21/32" X 1 3/8" X 1/8"	1
16	SL-138	SLICKLINE CLEVIS NUT (16/20)	1
17	SB/SL-16-113	16" WHEEL (-XX FOR LINE SIZE)	1
18	SL-146	LEFT HANDED JAM NUT 7/16"-20 (SLICKLINE 16/20)	1
19	SL-144	SHOULDER BOLT (SL EYE)	1
20	RS-1087	NYLON INSERT LOCKNUT 10-24	1
21	SL-211	CLEVIS EYE FOR SLICKLINE	1
22	SL-511	EXTENDED CLEVIS EYE STUD	1
23	SL-126	FLAT WASHER 5/8" X 1" X 1/8"	1
24	SL-1338	PIN	2
25	SL-1258	SPRING	2
26	SL-115	ROLLER 16"/20" SLICKLINE	2
27	RS-1010	WOODRUFF KEY #807	1
28	G2-180	REFLECTOR	3
29	SB/SL-114	HUB	1
30	SB/SL-142	BEARING CUP AND CONE - 16"/20"	2
31	SB/SL-141	INNER O-RING - 16"/20"	2
32	SB/SL-140	OUTER O-RING - 16"/20"	2
33	SB/SL-109	O-RING SEAT	2
34	SB/SL-116	AXLE SHAFT	1
35	SL-137	SOC. HD. CAP SC. 3/8"-24 X 1 3/4"	4
36	SL-136	MODIFIED SPLIT LOCK WASHER	4
37	SL-135	SOC. HD. CAP SCREW 1/4-28 X 1.25"	2
38	TH-29	SPLIT LOCK WASHER 1/4" X 0.062" THICK	2
39	SL-1042	LANYARD WASHER (SLICKLINE)	2
40	RS-1032	COPPER FERRULE 3/32"	4
41	RS-1031-11	LANYARD 11"	2
42	RS-1016	BALL LOCK PIN (1/2" X 2") S/S	2
43	SL-16-101B	16" REAR PLATE	1
44	RS-1780	GENERAL WARNING & INSPECTION LABEL	1
45	RS-1271	DRIVE SCREW #6 X 3/16"	4

BILL OF MATERIALS FOR 20" MODEL

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SL-20-104	20" FRONT PLATE	1
2	SL-128	REINFORCEMENT RING	2
3	SB/SL-106	SPIRAL PIN 3/16" X 1"	4
4	SB/SL-108	SLOTTED NUT 5/8" - 18	2
5	SL-117	BUSHING	4
6	SL-1071	SLICKLINE TAG SCREW	16
7	SB/SL-107	FLAT WASHER 5/8"	1
8	SB/SL-1012	RETAINING RING - 16"	1
9	SL-20-1077	MANUFACTURING LABEL	1
10	SL-111	SHANK HOOK (3 TON S.W.L.)	1
11	SL-118	LATCH KIT	1
12	SL-1228	HANDLE (16/20" SLICKLINE)	2
13	SL-1038	BLOCK 16"/20" - SIDE-LOCK	1
14	SL-127	SHOCK CUSHION 0.625" X 1.3" X 0.83"	1
15	SL-120	FLAT WASHER 21/32" X 1 3/8" X 1/8"	1
16	SL-138	SLICKLINE CLEVIS NUT (16/20)	1
17	SB/SL-20-113	20" WHEEL (-XX FOR LINE SIZE)	1
18	SL-146	LEFT HANDED JAM NUT 7/16"-20 (SLICKLINE 16/20)	1
19	SL-144	SHOULDER BOLT (SL EYE)	1
20	RS-1087	NYLON INSERT LOCKNUT 10-24	1
21	SL-211	CLEVIS EYE FOR SLICKLINE	1
22	SL-511	EXTENDED CLEVIS EYE STUD	1
23	SL-126	FLAT WASHER 5/8" X 1" X 1/8"	1
24	SL-1338	PIN	2
25	SL-1258	SPRING	2
26	SL-115	ROLLER 16"/20" SLICKLINE	2
27	RS-1010	WOODRUFF KEY #807	1
28	G2-180	REFLECTOR	3
29	SB/SL-114	HUB	1
30	SB/SL-142	BEARING CUP AND CONE - 16"/20"	2
31	SB/SL-141	INNER O-RING - 16"/20"	2
32	SB/SL-140	OUTER O-RING - 16"/20"	2
33	SB/SL-109	O-RING SEAT	2
34	SB/SL-116	AXLE SHAFT	1
35	SL-137	SOC. HD. CAP SC. 3/8"-24 X 1 3/4"	4
36	SL-136	MODIFIED SPLIT LOCK WASHER	4
37	SL-135	SOC. HD. CAP SCREW 1/4-28 X 1.25"	2
38	TH-29	SPLIT LOCK WASHER 1/4" X 0.062" THICK	2
39	SL-1042	LANYARD WASHER (SLICKLINE)	2
40	RS-1032	COPPER FERRULE 3/32"	4
41	RS-1031-11	LANYARD 11"	2
42	RS-1016	BALL LOCK PIN (1/2" X 2") S/S	2
43	SL-20-101B	20" REAR PLATE	1
44	RS-1780	GENERAL WARNING & INSPECTION LABEL	1
45	RS-1271	DRIVE SCREW #6 X 3/16"	4

Table 1. Bill of Material

Hand Guard/ Stabilizer

Perhaps the most important accessory to a rigging sheave is the hand guard / stabilizer. This accessory helps prevent accidental entanglement of personnel into the sheave wheel. It is also very helpful at directing the line into the wheel groove to prevent jumping and helps upright the sheave after slack line is tightened. See figures 15 and 16. A hole in the bushing allows the line to pass, but larger objects such as hands and clothing are stopped. The hand guard features split bushings and slotted blocks so it installs quickly. See figure 17. Depending on the type of shroud installed on the sheave, **use SHG-100 on sheaves with hard shrouds and use SHG-200 on sheaves with roller shrouds.**

Figure 15 *Hand Guard (SHG-100) Hard Shrouds*

Figure 16 *Hand Guard (SHG-200) Roller Shroud*

NOTE: THE ROLLER SHROUD (SL-115) WILL NEED TO BE REMOVED BEFORE USING SHG-200)

Instructions for Use

1. Remove the split bushing by unthreading it from the block.

2. Install the arm between the plates of the sheave so the hole lines up with the holes in the plates.
3. Insert the ball-lock pin through the holes.
4. Make sure the ball is extended out of the pin and the pin is locked in place. See Figure 18.
5. Pull the bushing apart then re-assemble them around the wireline. See Figure 17.
6. Thread the bushing back into the block. See Figure 19.

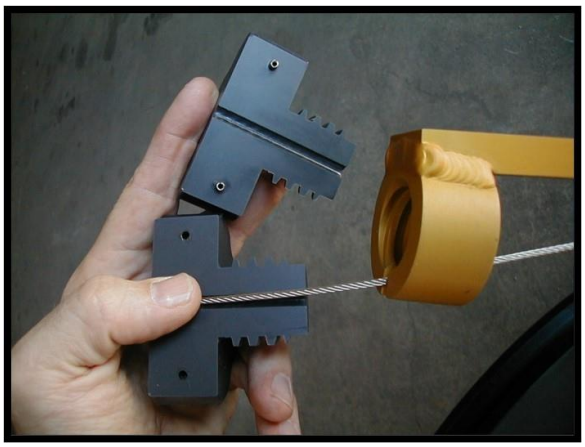

Figure 17 *Split Bushing*

Figure 18 *Secured Ball-lock*

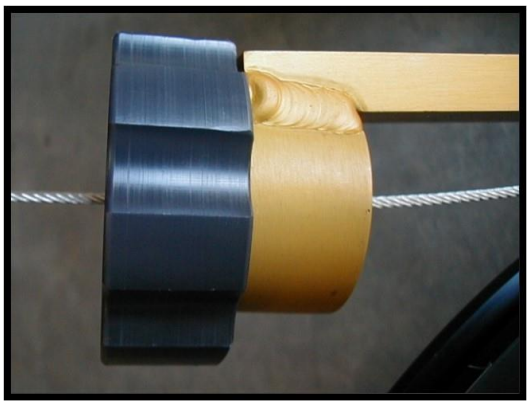

Figure 19 *Installed Bushing*

Maintenance

 Replace the split bushings if the holes wear close to the threads.

 Lubricate the balls and button of the ball-lock pin with light machine oil to keep them moving freely.

Line Wiper

The line wiper is used to wipe the slickline clean from oil and fluids. Figures 20 and 21 shows a line wiper attached to a sheave. Depending on the type of shroud installed on the sheave, **use LW-100 on sheaves with hard shrouds and use LW-200 on sheaves with roller shrouds.**

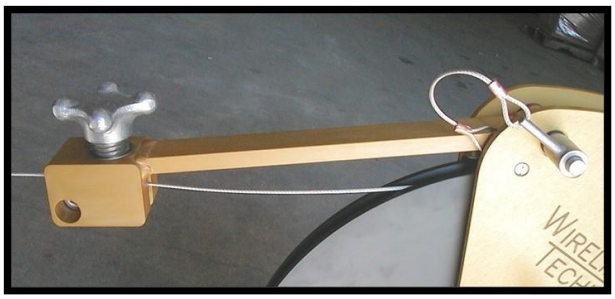

Figure 20. *Hand Guard (LW-100) Hard Shrouds*

Figure 21. *Hand Guard (LW-200) Roller Shroud*

NOTE: THE ROLLER SHROUD (SL-115) WILL NEED TO BE REMOVED BEFORE USING LW-200)

Instructions for Use

1. Install the line wiper between the plates of the sheave and insert the ball-lock pin to secure it in place. See Figures 20 and 21.
2. Make sure the ball-lock is locked. See Figure 18 on page 11.
3. Retract the keeper and insert the slickline. See Figure 22.
4. Pull the slickline into the split in the rubber wiper. See Figure 23.
5. Center the line in the wiper and tighten the clamping knob to create pressure around the line. See Figure 24.

Figure 22 *Sloading the Slickline*

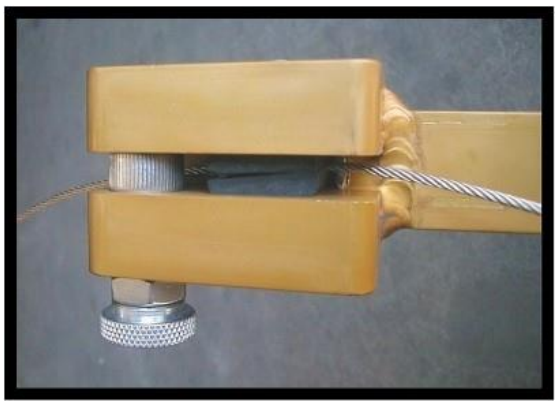

Figure 23 *Installing into Wiper*

Figure 24 *Centering and Clamping*

Maintenance

 Replace the wiper if it has worn and no longer wipes the line properly.

 Lubricate the clamping knob threads and the balls and button of the ball-lock pin with light machine oil to keep them moving freely.

Floor Stand

The floor stand is used to keep the sheave upright and in position when the line is slack. Figure 25 shows a sheave mounted in a floor stand. Because the floor stand is open on one side, the line can be loaded into the sheave after the floor stand has been attached.

Instructions for Use

1. Slide the sheave into the hole of the floor stand.
2. Align the hole in the axle of the sheave with the hole in the floor stand. See Figure 26.
3. Install the clip through the holes. See Figure 27.
4. Lock the clip. See Figure 28.

Figure 25 *Floor Stand (SFS-100)*

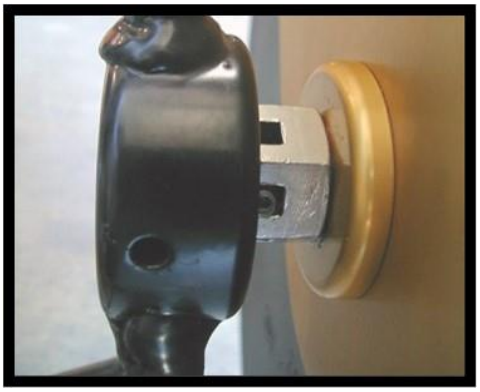

Figure 26 *Align Holes*

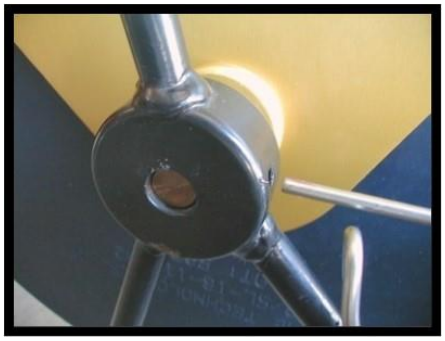

Figure 27 *Install Clip*

Figure 28 *Lock Clip*

Rig-up Yoke

The rig-up yoke is used to lift the slickline sheave into position or to stabilize the sheave when in use. Figure 29 shows a yoke being used to stabilize a slickline sheave. A rig-up yoke can be used with or without a hand guard or a line retainer.

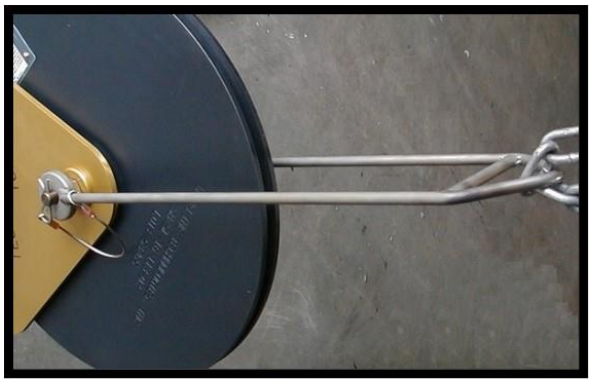

Figure 29 Rig-up Yoke (SY-100)

Instructions for Use

1. Install the yoke on either side of the sheave and hook each end over the ends of the axle shaft. See Figure 30.
2. Install the two clips through the holes in either end of the axle of the sheave. See Figure 31.
3. Secure the yoke to hold the sheave in the desired position.

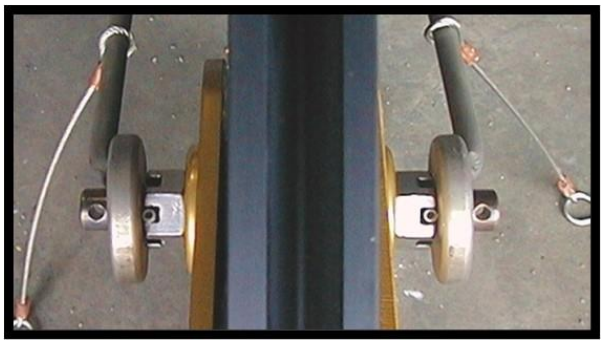

Figure 30 *Attaching Yoke*

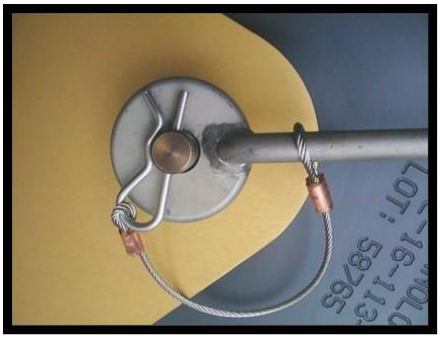

Figure 31 *Installed Clips*

Warnings

- Never use the rig-up yoke as a substitute for the clevis. It is not designed to hold loads.
- Never pull the sheave to the side with the rig-up yoke. Always keep it aligned with the wireline.
- Never pull on the rig-up yoke harder than is required to hold the sheave in position.

Recertification and Repair Log Serial Number______

Date	Recert	Repair	Performed by:	Notes
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Warranty

For a period of one year from the date of purchase, Wireline Technologies, Inc., will repair or replace, at its option, any 16” or 20” slickline sheave of its manufacture that fails because of a defect in materials or manufacture, or which fails to conform to any implied warranty not excluded herein. This warranty does not cover damages caused by abuse, misuse, neglect, or overloading; and does not cover any incidental damages caused by a failure of this product.

EC Declaration of Conformity

This equipment complies with the essential requirements of The European Union Machinery Directive 2006/42/EC.

Brian Mace (Q.A. Manager)

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