Wireline TECHNOLOGIES

OPERATION MANUAL

17” G2 Rigging Sheave

Manufactured by Wireline Technologies Inc.

Doc. #WTI-119 Rev. 4 (24 APR 2024)

Introduction

This manual explains the use and care of 17" G2 Rigging Sheaves manufactured by Wireline Technologies, Inc. This sheave has aluminum side plates with Nylon spacers encasing the wheel and line retaining pins to help keep the line in the groove. The sheaves are available with shielded bearings, identified by orange side plates, and have access to a grease fitting. Or, they are manufactured with sealed bearings, and can be identified by yellow side plates. The sealed bearing model can be run for up to a year before repacking with grease. Either is available in two configurations. The half-shroud configuration, shown in Figure 1, has a cable shroud covering part of the wheel to aid in containing the line in the wheel groove. The no-shroud configuration, shown in Figure 2, will allow a rope socket or "torpedo" to pass over the wheel. Please read and become familiar with all of the information in this manual before using this equipment.

Cable Shroud
Figure 1

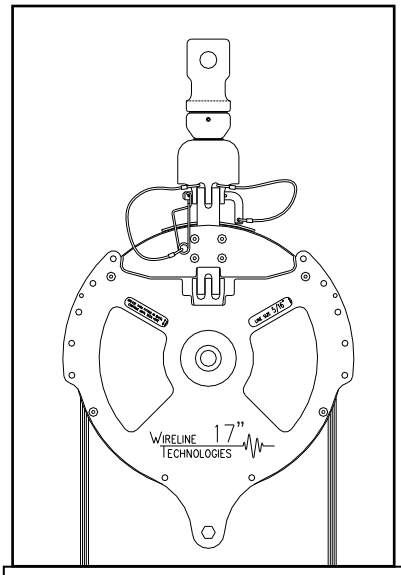
No Shroud
Figure 2

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 cover 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

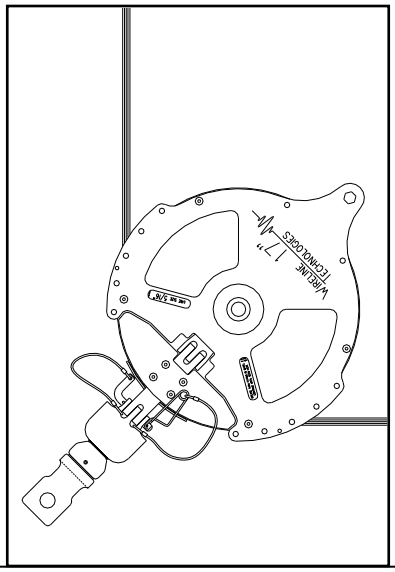
The rated safe working load (SWL) for a WTI 17" sheave is dependent upon the swivel clevis assembly attached. The allowable line pull will depend upon both the SWL and the angle the line is deflected. If the sheave is used as a top sheave, it deflects the line approximately 180°, see Figure 3. If the sheave is used as a bottom sheave, it deflects the line approximately 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.



Top Sheave
Max. line tension
10,000 lbs. (4,530 kg)

SJ Clevis Limit
Max. line tension
5,000 lbs (2,260 kg)

Safe Line Tension for 180-Degree Deflection
Figure 3



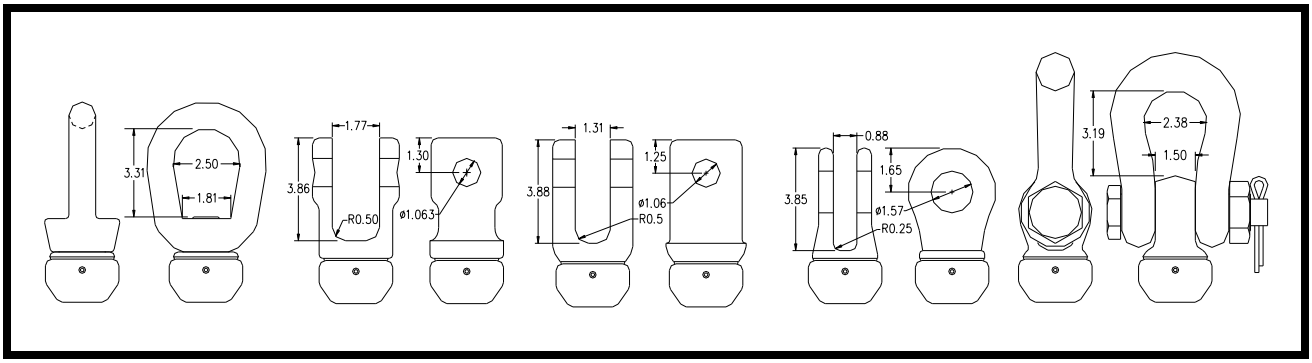
Bottom Sheave
Max. line tension
14,140 lbs. (6,410 kg)

SJ Clevis Limit
Max. line tension
7,070 lbs (3,200 kg)

Safe Line Tension for 90-Degree Deflection
Figure 4

Clevis Options

Five clevis swivel assembly options for suspending/anchoring the sheave are available: These options are shown in figures Figure 5 – Figure 9 below. The Clevis-Eye has an opening about 2.5" X 3.3" for a chain or sling. The opening width of the Clevis -AWS is 1 3/4" with a hole for a 1" pin. The opening width of the Clevis -HLS is 1 1/4" with a hole for a 1" pin. The opening width of the Clevis-SJ is 7/8" with a hole for a 1 1/2" pin. The shackle clevis has about the same opening as the Clevis-Eye.



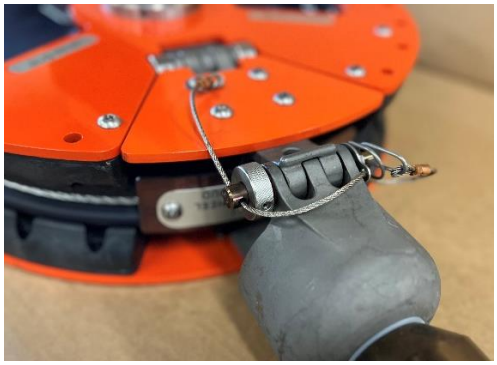
Clevis-Eye Part # RS-1075A Figure 5	Clevis-AWS Part # RS-1252A Figure 6	Clevis-HLS Part # RS-1552A Figure 7	Clevis-SJ Part # RS-1052A Figure 8	Clevis-Shackle Part # RS-1152A Figure 9

Loading

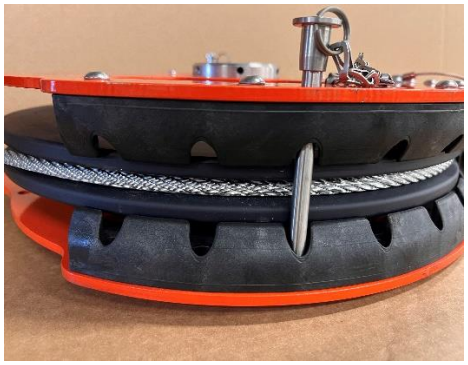
The numbers listed refer to Figure 15 and Table 1 on pages 10 and 11.

1. Remove locking safety clip (12) and the captured nut assembly(13).
2. Remove the gate pin (14).
3. Open the loading gate (2 or 10).
4. Load line into groove of wheel (21). See Figure 10 - Figure 12. Do **NOT** load the line on top of the shroud that covers the wheel.
5. Close the loading gate, aligning its holes with the holes in the frame (66).
6. Install the gate pin (14) through the holes.
7. Install the captured nut assembly(13).
8. Insert the safety clip through the hole in the end of the gate pin.
9. Ensure that the end of the gate pin (14) is retained in the round loop on the locking safety clip (12). See Figure 11.
10. Insert the retaining pins (27) through the holes in the cover plates (32 or 33, 75 or 76). Choose the position that will best retain the wireline without interference. See Figure 12.

Properly loaded Line
Figure 10



Closed Gate
Figure 11



Retaining Pin
Figure 12

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 15 and Table 1 on pages 10 and 11.

- All structural components (2 or 10,14,21,25,26,35,45,46,49,51,52,54,55,56,58,61,66, and 68) are not bent, cracked, or otherwise damaged.
- Loading gate (2 or 10) hinges freely through the fingers in the frame (66).
- Gate pin (14) can be easily inserted through the holes in the frame (66) and can be secured using a captured nut (13) and locking safety clip (12).
- Manufacturing tag (20) and general warning label (72) are in place and are legible.
- Inspection tag (72) is in place on the cover and stamped with an inspection date no greater than one year old.
- Spiral pins (74) are in place and securely retain the axle nuts (73) on the axle (35).
- Wheel (21) rotates freely and smoothly, check for any grinding or sticking, indicating damaged bearings.
- Gate pin (14), captured nut (13), and safety clip (12) are undamaged, lock positively, and are securely attached with lanyards (18).
- Clevis pivots freely and does not have excessive slop (more than 1/8").
- Both set screws (65) are in place, and the clevis is secure in the clevis housing (61).
- Cotter pins (69) is securely retaining the clevis nut (68).
- Cotter pins (71) is securely retaining the jam nut (70).
- Quick-release pins (27) are undamaged, function properly, and are securely attached with sash chains (29).

Preventative Maintenance

WTI suggests the following service. Numbers listed refer to Figure 15 and Table 1 on pages 10 and 11.

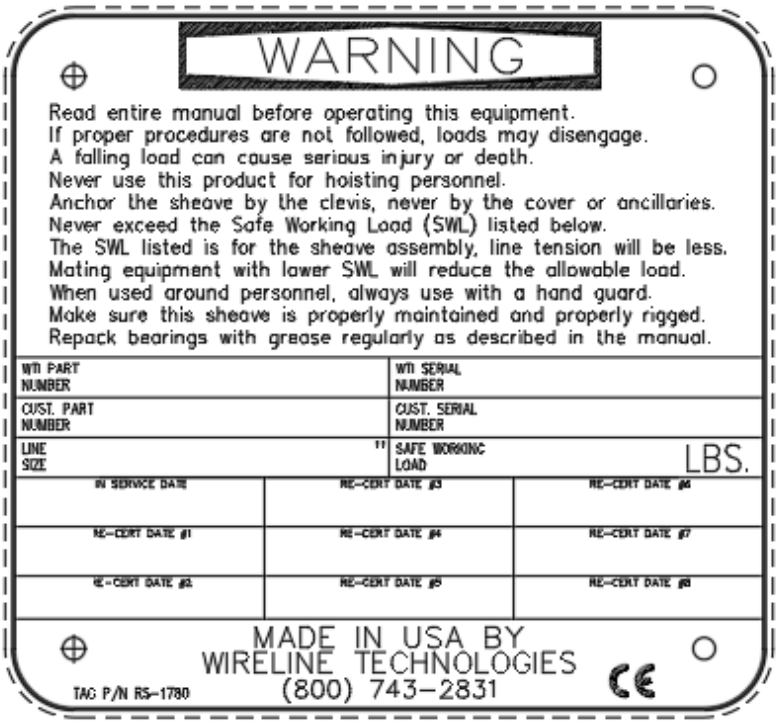
- The wheel bearings (39) of the orange sheaves are shielded and should be re-greased at least once a week, more often in wet or dusty environments. Always re-grease after pressure washing. Grease is injected through a fitting (22) in the wheel (21), accessed through the holes in the front cover plate (32). See Figure 13. Use lithium based No.2 EPHT grease, such as Conoco's Tacna® RX. Make sure enough grease is used to extrude past both front and rear shields (38). The holes on each side of the cover are for checking this.
- The wheel bearings of the yellow sheaves are sealed and only need annual re-packing. This service can be performed at the same time as the annual recertification. See page 8.
- Monthly, apply some light machine oil on the hinge pin (26) between the fingers of the gate frame (25) and the loading gate (2 or 10), onto the gate pin (14), and onto the balls of the quick release pins (27).

Greasing Fitting
Figure 13

Recertification and Repairs

WTI highly recommends yearly recertification of all Sheaves, Hanger Bars, and Clevis Pins. Most wireline servicing companies mandate annual recertification of load bearing equipment so this should not be overlooked. A tag on the back cover plate, shown in Figure 14, 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. Re-certification 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.



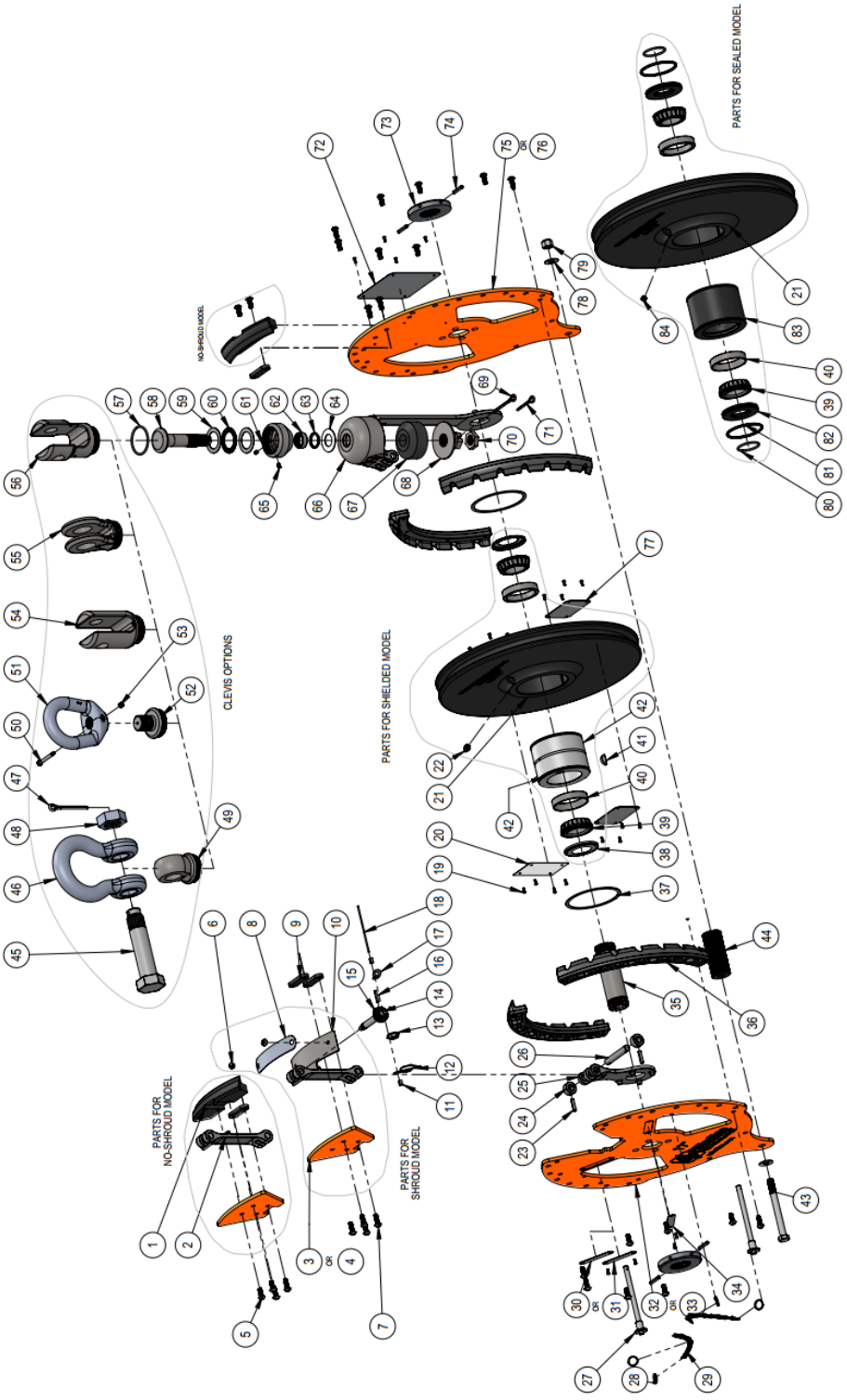
Warning / Inspection Tag

Figure 14

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 15 on page 10 to identify parts. The numbers in the circles correspond to the item numbers in Table 1 on page 11.



17” G2 Sheave Assembly

Figure 15

BILL OF MATERIALS FOR 17" SIZE MODELS						
ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY			
			G2		G2S	
			1000	2000	1000	2000
1	G2-17-305	SHROUDED MIDDLE SPACER RING - 17"	-	2	-	2
2	RS-14/17-1025	LOADING GATE - 14"/17"	-	1	-	1
3	G2-17-301-O	GATE COVER PLATE - 17"	1	1	-	-
4	G2-17-301-Y	GATE COVER PLATE - 17" SEALED	-	-	1	1
5	G2-113	BUTT. HD. SCREW 5/16"-18 X 3/4"	16	20	16	20
6	G2-107	BUTT. HD. SCREW 5/16"-18 X 3/16"	2	-	2	-
7	G2-108	BUTT. HD. SCREW 5/16"-18 X 7/8"	6	2	6	2
8	RS-1180	SHROUD WARNING LABEL	1	-	1	-
9	G2-110	FRONT PLATE	3	1	3	1
10	RS-17-1007H	GATE ASSEM. (HALF SHROUD) - 17"	1	-	1	-
11	RS-1032	COPPER FERRULE 3/32"	2	2	2	2
12	G2-1043	LOCKING SAFETY CLIP	1	1	1	1
13	G2-1140	CAPTURED NUT ASSY.	1	1	1	1
14	RS-1617	MODIFIED GATE PIN (NO BEND)	1	1	1	1
15	RS-1717	GATE PIN COLLAR	1	1	1	1
16	SB/SL-106	SPIRAL PIN 3/16" X 1"	1	1	1	1
17	G2-1042	LANYARD WASHER	1	1	1	1
18	RS-1031	LANYARD - 3/32" X 16"	1	1	1	1
19	RS-1071	DRIVE SCREW #6 X 3/8"	24	24	24	24
20	RS-1077	MANUFACTURING LABEL - 17"	1	1	1	1
21	RS-17-1208-XX	SHEAVE WHEEL - 17"	1	1	1	1
	WHERE XX IDENTIFIES THE GROOVE SIZE					
22	RS-1039	GREASE FITTING 1/8" NPT	1	1	-	-
23	RS-1172	SPIRAL PIN 1/4" X 1"	2	2	2	2
24	RS-1006	COLLAR	2	2	2	2
25	RS-17-1024	GATE FRAME - 17"	1	1	1	1
26	RS-1105	HINGE PIN	1	1	1	1
27	G2-109	BALL LOCK PIN - 3/8" X 4.5"	2	2	2	2
28	G2-112	SPLIT RING 0.82" X 0.14"	4	4	4	4
29	G2-1031	SASH CHAIN 8"	2	2	2	2
30	RS-1480	REPACK WARNING LABEL	1	1	1	1
31	RS-1380	GREASE WARNING LABEL	1	1	-	-
32	G2-17-302-O	FRONT COVER PLATE - 17"	1	1	-	-
33	G2-17-302-Y	FRONT COVER PLATE - 17" SEALED	-	-	1	1
34	RS-1580	LINE SIZE LABEL	1	1	1	1
	CHOOSE LABEL TO MATCH GROOVE SIZE					
35	RS-1109	AXLE SHAFT	1	1	1	1
36	G2-17-304	SHROUDED SIDE SPACER RING - 17"	4	4	4	4
37	RS-14/17-1212	RETAINING RING - 14"/17"	2	2	2	2
38	RS-14/17-1029	NILOS GREASE RING - 14"/17"	2	2	-	-
39	RS-1084	BEARING CONE - 14"/17"	2	2	2	2
40	RS-1083	BEARING CUP - 14"/17"	2	2	2	2
41	RS-1010	WOODRUFF KEY #807	1	1	1	1

ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY			
			G2		G2S	
			1000	2000	1000	2000
42	RS-17-1245	HUB - 14"/17"	1	1	-	-
43	G2-111	HEX HD. CAP SC. 1/2"-13 X 5"	1	1	1	1
44	G2-106	HANDLE	1	1	1	1
45	RS-1152B	SHACKLE BOLT	1	1	1	1
46	RS-1152S	CLEVIS - SHACKLE	1	1	1	1
47	RS-1152P	COTTER PIN 1/4" X 2 1/2"	1	1	1	1
48	RS-1152N	SHACKLE NUT	1	1	1	1
49	RS-1115	SHACKLE STUD	1	1	1	1
50	RS-1086	SHOULDER SCREW 1/4" X 1 3/4"	1	1	1	1
51	RS-1075	CLEVIS - EYE	1	1	1	1
52	RS-1015	CLEVIS STUD	1	1	1	1
53	RS-1087	NYLON INSERT LOCKNUT 10-24	1	1	1	1
54	RS-1552	CLEVIS - HLS	1	1	1	1
55	RS-1652	CLEVIS - SJ	1	1	1	1
56	RS-1252	CLEVIS - AWS	1	1	1	1
57	RS-1098	O-RING #227	1	1	1	1
58	RS-1254	CLEVIS SHAFT	1	1	1	1
59	RS-1058	THRUST WASHER	2	2	2	2
60	RS-1059	THRUST BEARING	1	1	1	1
61	RS-1053	CLEVIS HOUSING	1	1	1	1
62	RS-1056	CLEVIS BEARING	1	1	1	1
63	RS-1057	CLEVIS BEARING SEAL	1	1	1	1
64	RS-1020	CLEVIS WASHER	1	1	1	1
65	RS-1068	SET SCREW - CUP 1/4"-28 X 3/8"	2	2	2	2
66	RS-17-1028	FRAME - 17"	1	1	1	1
67	RS-1218	SHOCK CUSHION - 1.4" THICK	1	1	1	1
68	RS-1055	CLEVIS NUT	1	1	1	1
69	RS-1378	COTTER PIN 3/16" X 2"	1	1	1	1
70	RS-1155	LEFT HANDED JAM NUT	1	1	1	1
71	AS-750P	COTTER PIN 3/16" X 1.25"	1	1	1	1
72	RS-1780	GENERAL WARNING & INSPECTION LABEL	1	1	1	1
73	RS-1011A	AXLE NUT - ADJUSTABLE	2	2	2	2
74	RS-1272	SPIRAL PIN 1/4" X 1 1/4"	4	4	4	4
75	G2-17-303-O	REAR COVER PLATE - 17"	1	1	-	-
76	G2-17-303-Y	REAR COVER PLATE - 17" SEALED	-	-	1	1
77	G2-180	REFLECTOR	3	3	3	3
78	SB-137	7/16" FLAT WASHER	2	2	2	2
79	SB-138	NYLOC NUT 1/2"-13	1	1	1	1
80	RS-14/17-1049	O-RING INNER - 14"/17"/26"	-	-	2	2
81	RS-14/17-1048	O-RING OUTER - 14"/17"	-	-	2	2
82	RS-14/17-1067S	O-RING SEAT - 14"/17"	-	-	2	2
83	RS-14/17-1245S	HUB SEALED - 14"/17"	-	-	1	1
84	RS-1039S	GREASE FITTING PLUG (1/8" NPT) (SEALED)	-	-	1	1

Bill of Material – 17" G2 SHEAVE

Table 1

Clevis Pin

Four pins are approved for attachment to a clevis. The Clevis Pin Kit - SJ, shown in Figure 16, is 1.5” in diameter and is to be used with Clevis-SJ. The Clevis Pin Kit, shown in Figure 17, is 1” in diameter and is to be used with Clevis-AWS or Clevis-HLS. Two integrated locking load pins, LLP-100 and LLP-200, shown in Figure 18 and Figure 19, are also available. All four pins are manufactured from precipitation hardened, high strength, stainless steel alloy. These Clevis Pins are load bearing and should be re-certified annually with the rigging sheave.

Clevis Pin Kit – SJ
Part # RS-1699
Figure 16

Clevis Pin Kit
Part # RS-1899
Figure 17

Locking Load Pin
Part # LLP-100
Figure 18

Locking Load Pin
Part # LLP-200
Figure 19

Instructions for Use for RS-1699 and RS-1899

1. Insert the pin through the clevis and the hanger bar or chain to be attached.
2. Thread the nut onto the end of the pin.
3. Install the safety clip through the hole in the end of the pin and lock it in place.

Instructions for Use for LLP-100 and LLP-200

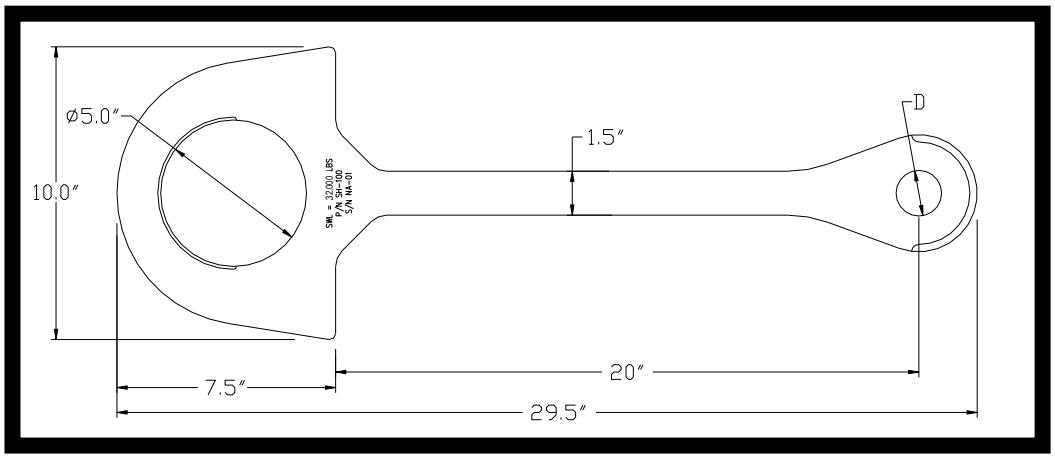
1. Insert the pin through the clevis and the hanger bar or chain to be attached.
2. Rotate the hinge plate perpendicular to the pin.
3. Install the safety clip through the hole in the end of the pin and lock it in place.
4. To uninstall, remove the safety clip, push the hinge plate on the rounded end, and rotate it parallel to the length of the pin.
5. Remove the pin out of the clevis.

Hanger Bar

The Hanger Bar hangs from a crown block or elevator and provides a place to attach the rigging sheave. See Figure 20. For use with Clevis-SJ, order Part # SH-100, hole (D) is 1.56". For use with Clevis-AWS or Clevis-HLS, order Part # SH-200, hole (D) is 1.06". The Hanger Bar bears the same loads as the rigging sheave and should be re-certified annually.

Instructions for Use

1. Install the Hanger Bar in a safe position.
2. Line the holes in the clevis up with the hole in the end of the Hanger Bar.
3. Insert an approved pin, shown on pages 12 and 13, through the holes.
4. Properly lock the pin in place.



Hanger Bar,
Figure 20

Hand Guard

Perhaps the most important accessory for a sheave is the Hand Guard. The Hand Guard 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. See Figure 21. 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 and can be left in place when the sheave is not in use. See Figure 22 on page 16.

Instructions for Use

1. Remove the split bushings by unthreading them from the blocks.
2. Install the arms on either side of the sheave so the quick release pins in the handguard line up with the holes cover plates.
3. Install the quickrelease pins through any outer holes on each cover plate, ensuring the angle of the handguard does not interfere with the line operation. See Figure 21 on page 16.
4. Pull the bushing apart then re-assemble them around the wireline. See Figure 22 on page 16.
5. Thread the bushings back into the blocks.
6. After tension is applied to the wireline, the arms will reposition so bushings are in good alignment with the wireline.

Maintenance

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

◊ Lubricate the pins with light machine oil to keep them moving freely.

Hand Guard, Part # HGG2-200
Figure 21

Split Bushing
Figure 22

Properly Installed Quick Release Pin
Figure 23

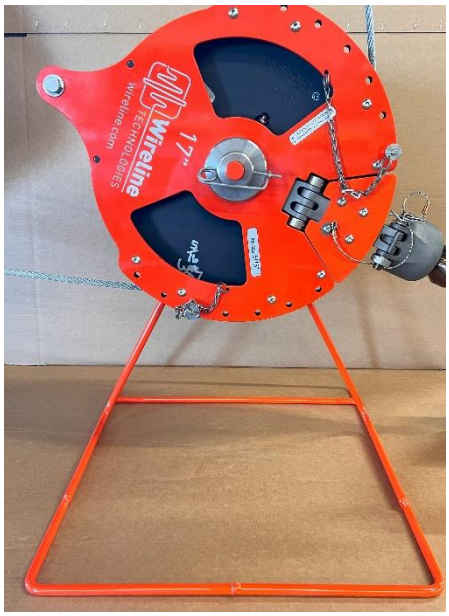
Floor Stand

The Floor Stand is used to keep the sheave upright and in position when the line is slack. Figure 24 shows a sheave mounted in a Floor Stand. A Floor Stand can be used with a Hand Guard. Because the Floor Stand is open on one side, the line can be loaded into the sheave after the Floor Stand has been attached. See Figure 25.

Instructions for Use

1. Slide the sheave onto the protruding pin of the Floor Stand.
2. Place the collar on the end of the pin.
3. Align the holes in the collar with the hole in the end of the pin.
4. Install the safety clip through the holes and lock it in place.

Floor Stand Part # FS-100
Figure 24



Floor Stand, (Open Side)
Figure 25

Rig-up Yoke

The Rig-up Yoke is used to lift the rigging sheave into position or to stabilize the sheave when in use. Figure 26 shows a yoke being used to stabilize a rigging sheave. A Rig-up Yoke can be used with or without a Hand Guard.

Instructions for Use

1. Install the Rig-up Yoke on either side of the sheave so the holes line up with the hole in the axle shaft.
2. Insert the pivot pin through the holes and out the other side of the yoke.
3. Install the washer and thread the slotted nut onto the end of the pivot pin.
4. Install the cotter pin through the hole in the pivot pin, then spread the ends to secure it. See Figure 27 on page 19.
5. Secure the yoke to hold the sheave in the desired position.

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.

Rig-Up Yoke, Part # RYA-100
Figure 26

Properly Locked Pivot Pin
Figure 27

Storage Rack

A storage rack, sometimes called a truck stand, is a convenient device for holding a sheave securely while traveling. See Figure 28.

Instructions for Use

1. Position the clevis under the loop.
2. Rest the axle nuts of the sheave in the V-shaped supports.
3. Install the pin through the supports and the center of the sheave.
4. Install the safety clip through the hole in the end of the pin and lock it in place.

Storage Rack, Part # TS-17-100
Figure 28

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 17” Rigging 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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