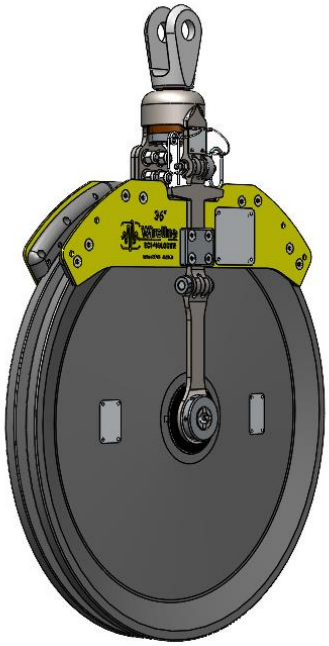
Wireline TECHNOLOGIES

OPERATION MANUAL



32” and 36” Heavy Duty G2 Sheaves

Manufactured by Wireline Technologies Inc.

Doc. #WTI-251 Rev. NC (24 APR 2024)

Introduction

This manual explains the use and care of 32" and 36" rigging sheaves manufactured by Wireline Technologies, Inc. Please read and become familiar with all of the information in this manual before using this equipment.

Features

⇒ 18" bend radius for less wireline bend damage.

⇒ High load capacity of 40,000 lbs.

⇒ Sealed bearings for long maintenance-free operation.

⇒ Corrosion Resistant Materials

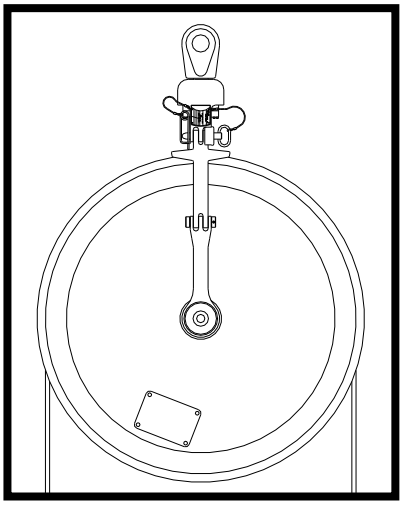
⇒ Non-spoked wheel for safer operation.

Warnings

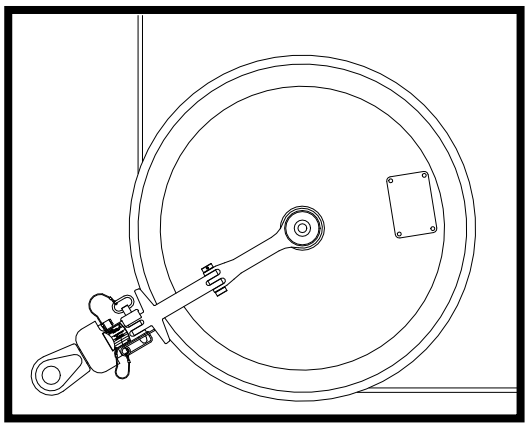
- Read entire manual before operating this equipment.
- If proper procedures are not followed, loads may disengage.
- A falling load can cause serious injury or death.
- Never use this product for hoisting personnel.
- Always anchor or hang the sheave via the clevis, never by way of the side plates or 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 32” or 36” sheave is 40,000 lbs. (18,140 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 approximately 180°, see Figure 1. If the sheave is used as a bottom sheave, it deflects the line approximately 90°, see Figure 2. 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
20,000 lbs (9,070 kg)



Bottom Sheave
Max. Line Tension 28,280 lbs (12,820 kg)

Safe Line Tension for 180-Degree Deflection

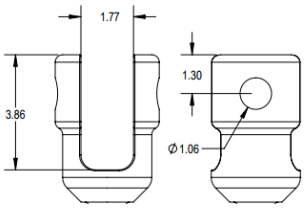
Figure 1

Safe Line Tension for 90-Degree Deflection

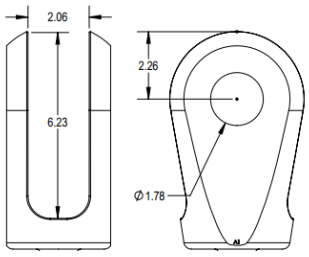
Figure 2

Clevis Options

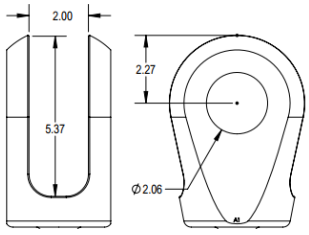
Three clevis swivel assembly options for suspending/anchoring the sheave are available: These options are shown in Figure 3 – Figure 5 below. The opening width of the Clevis-AWS is 1 3/4” with a hole for a 1” pin. The opening width of the Clevis-HLS is 2” with a hole for a 1 3/4” pin. The opening width of the Clevis-SJ is 2” with a hole for a 2” pin.



Clevis-AWS
Part# RS-36-1252
Figure 3



Clevis-HLS
Part # RS-36-1552
Figure 4

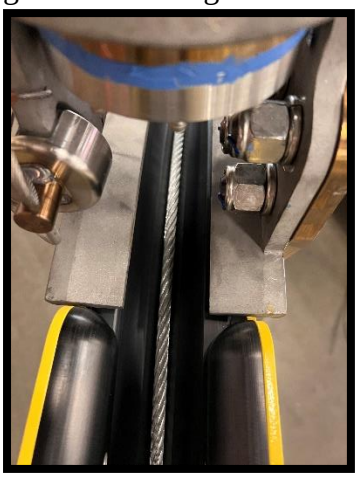


Clevis-SJ
Part # RS-36-1652
Figure 5

Loading

The numbers listed refer to Figure 10 or Figure 11 and Table 1 or Table 2 on pages 8 through 11.

1. Remove safety clip (36) and captured nut assembly (32).
2. Remove the gate pin (54).
3. Open the loading gate (1).
4. Load line into groove of wheel (16). See Figure 6.
5. Close the loading gate, aligning its holes with the holes in the frame cup (53).
6. Install the gate pin through the holes.
7. Replace the captured nut and safety clip making sure the hooked end is clipped over the straight end. See Figure 7.



Properly loaded line
Figure 6

Propely closed gate
Figure 7

Daily Inspection Checklist

Verify the following. If any discrepancies are noted, remove the sheave from service until repairs are completed. The numbers listed refer to Figure 10 or Figure 11 and Table 1 or Table 2 on pages 8 through 11.

- All structural components (1,5,8,9,25,49,50,51,53,54,55,58) are not bent, cracked, or otherwise damaged.
- Loading gate (1) hinges freely through the fingers in the frame cup (53).
- Gate pin (54) can be easily inserted through the holes in the frame cup (53).
- Manufacturing tag on the front of the wheel is in place and readable.
- Inspection tag (10 and 30) is in place and stamped with an inspection date no greater than one year old.
- Spiral pins (6) are in place and securely retain the axle nuts (7) on the axle (9).
- Wheel (16) rotates freely and smoothly. Check for any grinding or sticking, indicating damaged bearings.
- Gate pin (54), captured nut assembly (32) and safety clip (36) are undamaged, lock positively, and are securely attached with lanyards (34).
- Clevis (49,50, or 51) pivots freely and does not have excessive slop (more than 1/4" axially or 1/8" radially).
- All 10 cap screws (29) and lock-washers (28) are tightly in place.
- Bushing (52) is in place and undamaged.
- All four nuts (38) are secure and inspectors laquer is present , showing nut is not loosened.

Preventative Maintenance

WTI suggests the following service. The numbers listed refer to Figure 10 or Figure 11 and Table 1 or Table 2 on pages 8 through 11.

- The wheel bearings (45) 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 6.
- Monthly, apply some light machine oil on the hinge pin (8), between the fingers of the gate frame (5) and the loading gate (1), and onto the gate pin (54).

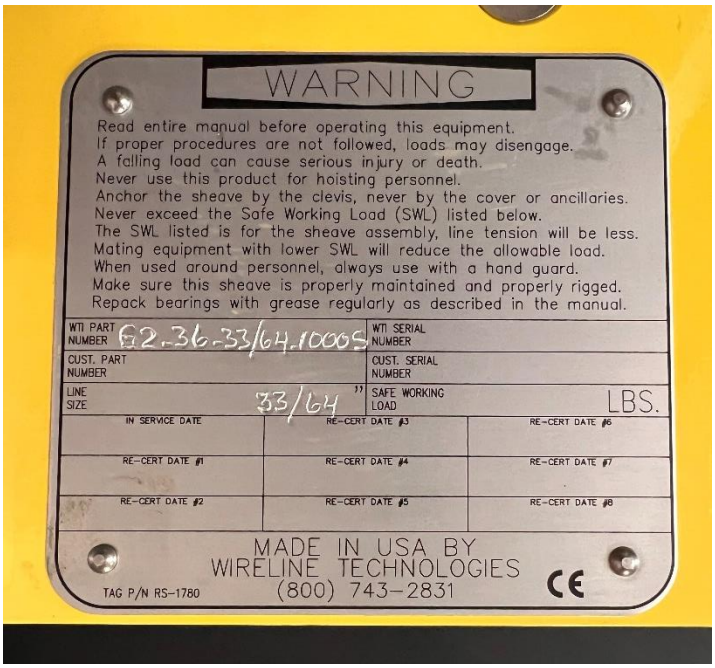
Recertification and Repairs

WTI highly recommends yearly recertification of all rigging sheaves, hanger bars, and clevis pins. Most wireline servicing companies mandate annual recertifications so this should not be overlooked. A tag on the front of the frame cup, shown in Figure 8, provides a visible place to stamp certification dates. In addition the warning tag on the cover plate, shown in Figure 9, also provides place to record certification dates. When a new sheave is placed into service, stamp the current date into both the tags. 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 these tags. Upon completion of a repair or recertification, note the information in the log on 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.

Inspection Tag

Figure 8



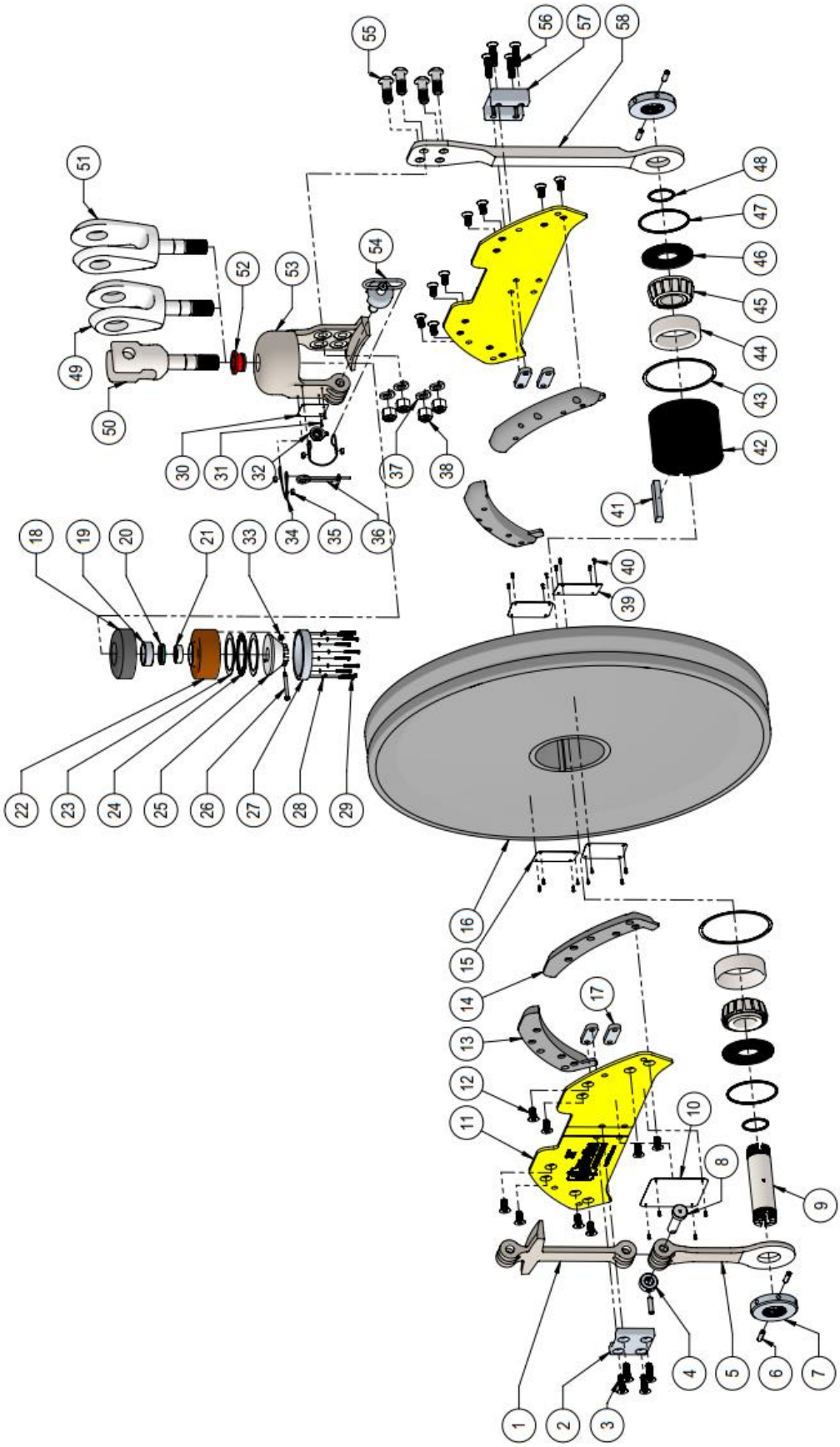
Inspection Tag

Figure 9

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

- Send the sheave to Wireline Technologies, Inc. Please call to make arrangements.
- Send the sheave 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 10 or Figure 11 on pages 8 or 10 to identify parts. The numbers in the circles correspond to the item numbers in Table 1 or Table 2 on pages 9 or 11.



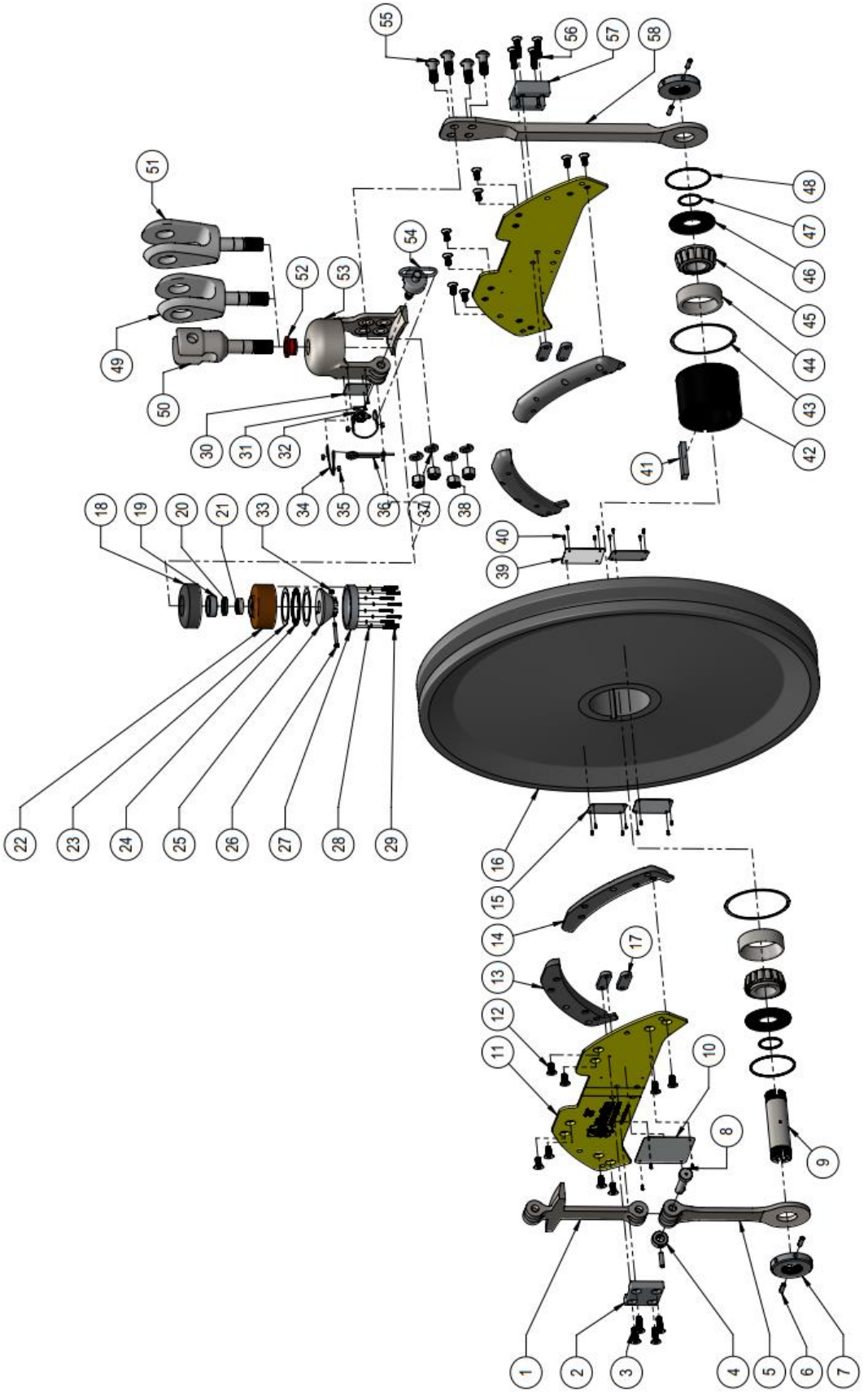
32” G2 Sheave Assembly Drawing
Figure 10.

BILL OF MATERIALS			
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	RS-36-1025	LOADING GATE - 36"	1
2	G2-36-102	LOADING GATE BACKING PLATE	1
3	RS-48-1040	FLAT HD. CAP SC. 1/2"-13 X 1.5"	4
4	RS-36-1006	HINGE COLLAR	1
5	RS-32-1024-M	GATE FRAME - 32"	1
6	RS-36-1072	SPIRAL PIN 3/8" X 1 1/2"	5
7	RS-36-1011-A	AXLE NUT - ADJUSTABLE	2
8	RS-36-1005	HINGE PIN - 36"	1
9	RS-36-1009	AXLE SHAFT	1
10	RS-1780	GENERAL WARNING & INSPECTION LABEL	1
11	G2-32-101	COVER PLATE	2
12	G2-36-109	FLAT HD. CAP SC. 1/2"-13 X 1"	16
13	G2-36-105	LEFT SHROUD	2
14	G2-36-106	RIGHT SHROUD	2
15	G2-180	REFLECTOR	3
16	RS-32-1008-XX	WHEEL - 32" (XX - DENOTES GROOVE)	1
17	G2-36-107	SUPPORT PLATE	4
18	RS-36-1018	SHOCK CUSHION	1
19	RS-36-1019	CLEVIS RING	1
20	RS-36-1057	BEARING SEAL CR-12363	1
21	RS-36-1056	NEEDLE ROLLER BEARING	1
22	RS-36-1053	CLEVIS HOUSING	1
23	RS-36-1058	THRUST WASHER	2
24	RS-36-1059	THRUST BEARING	1
25	RS-36-1055	CLEVIS NUT	1
26	RS-36-1078	HEX SOC. SHOULDER SC. 1/4" X 2"	1
27	RS-36-1050	HOUSING CAP	1
28	RS-36-1067	SPLIT LOCK WASHER #8	10
29	RS-36-1068	SOC. HD. CAP SC. #8-32 X 1 1/8"	10

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
30	RS-1179	WTI INSPECTION LABEL	1
31	RS-1090	RIVET 1/8" X 1/2"	2
32	RS-36-1140	CAPTURED NUT ASSY.	1
33	RS-1087	NYLON INSERT LOCKNUT #10-24	1
34	RS-1031	LANYARD 3/32"	2
35	RS-1032	COPPER FERRULE 3/32"	4
36	RS-1399	SAFETY CLIP	1
37	RS-32/36-1036	SPLIT LOCK WASHER - 3/4"	4
38	RS-32/36-1037	NYLON INSERT LOCKNUT 3/4-16 UNF	4
39	RS-1077	MANUFACTURING LABEL	1
40	RS-1071	DRIVE SCREW #6 X 3/8"	20
41	RS-36-1110	KEY	1
42	RS-36-1045	HUB	1
43	RS-32/36-1012	RETAINING RING 6" EXT.	2
44	RS-36-1083	BEARING CUP	2
45	RS-36-1084	BEARING CONE	2
46	RS-36-1007	O-RING SEAT	2
47	RS-36-1048	O-RING #243	2
48	RS-36-1049	O-RING #226	2
49	RS-36-1652	CLEVIS - SCHLUMBERGER	1
50	RS-36-1252	CLEVIS - AWS	1
51	RS-36-1552	CLEVIS - HALLIBURTON	1
52	RS-36-1020	FLANGED BUSHING	1
53	RS-32/36-1028	FRAME CUP CAST - 32"/36"	1
54	RS-36-1216	GATE PIN	1
55	RS-32/36-1034	BOLT	4
56	G2-36-108	FLAT HD. CAP SC. 1/2"-13 X 2"	4
57	G2-36-110	FRAME STRAP BACKING PLATE	1
58	RS-32-1029	FRAME STRAP - 32"	1

Bill of Material for 32" Sheave

Table 1.



36” G2 Sheave Assembly Drawing

Figure 11.

BILL OF MATERIALS			
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	RS-36-1025	LOADING GATE - 36"	1
2	G2-36-102	LOADING GATE BACKING PLATE	1
3	RS-48-1040	FLAT HD. CAP SC. 1/2"-13 X 1.5"	4
4	RS-36-1006	HINGE COLLAR	1
5	RS-36-1024	GATE FRAME - 36"	1
6	RS-36-1072	SPIRAL PIN 3/8" X 1 1/2"	5
7	RS-36-1011-A	AXLE NUT - ADJUSTABLE	2
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13	G2-36-105	LEFT SHROUD	2
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15	G2-180	REFLECTOR	3
16	RS-36-1008-XX	WHEEL - 36" (XX - DENOTES GROOVE)	1
17	G2-36-107	SUPPORT PLATE	4
18	RS-36-1018	SHOCK CUSHION	1
19	RS-36-1019	CLEVIS RING	1
20	RS-36-1057	BEARING SEAL CR-12363	1
21	RS-36-1056	NEEDLE ROLLER BEARING	1
22	RS-36-1053	CLEVIS HOUSING	1
23	RS-36-1058	THRUST WASHER	2
24	RS-36-1059	THRUST BEARING	1
25	RS-36-1055	CLEVIS NUT	1
26	RS-36-1078	HEX SOC. SHOULDER SC. 1/4" X 2"	1
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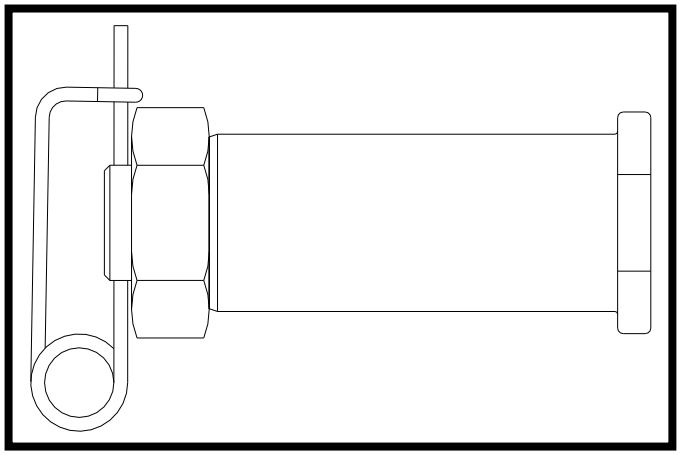
32	RS-36-1140	CAPTURED NUT ASSY.	1
33	RS-1087	NYLON INSERT LOCKNUT 10-24	1
34	RS-1031	LANYARD 3/32"	2
35	RS-1032	COPPER FERRULE 3/32"	4
36	RS-1399	SAFETY CLIP	1
37	RS-32/36-1036	SPLIT LOCK WASHER - 3/4"	4
38	RS-32/36-1037	NYLON INSERT LOCKNUT 3/4-16 UNF	4
39	RS-1077	MANUFACTURING LABEL	1
40	RS-1071	DRIVE SCREW #6 X 3/8"	20
41	RS-36-1110	KEY	1
42	RS-36-1045	HUB	1
43	RS-32/36-1012	RETAINING RING 6" EXT.	2
44	RS-36-1083	BEARING CUP	2
45	RS-36-1084	BEARING CONE	2
46	RS-36-1007	O-RING SEAT	2
47	RS-36-1049	O-RING #226	2
48	RS-36-1048	O-RING #243	2
49	RS-36-1652	CLEVIS - SCHLUMBERGER	1
50	RS-36-1252	CLEVIS - AWS	1
51	RS-36-1552	CLEVIS - HALLIBURTON	1
52	RS-36-1020	FLANGED BUSHING	1
53	RS-32/36-1028	FRAME CUP CAST - 32"/36"	1
54	RS-36-1633 K	THREADED GATE PIN	1
55	RS-32/36-1034	BOLT	4
56	G2-36-108	FLAT HD. CAP SC. 1/2"-13 X 2"	4
57	G2-36-110	FRAME STRAP BACKING PLATE	1
58	RS-36-1029	FRAME STRAP - 36"	1

Bill of Material for 36" Sheave

Table 2.

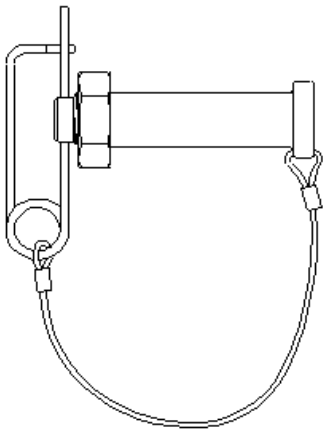
Clevis Pin

Three pins are approved for attachment to a clevis. Clevis Pin Kit – 36 SJ, shown in Figure 12, is 2” in diameter and is to be used with Clevis-SJ. Clevis Pin Kit, shown in Figure 13, is 1” in diameter and is to be used with Clevis-AWS. Another pin with an integrated locking mechanism is 1.75” in diameter and is to be used with Clevis-HLS Figure 14. All of these 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-36-1199

Figure 12



Clevis Pin Kit Part # RS-1899

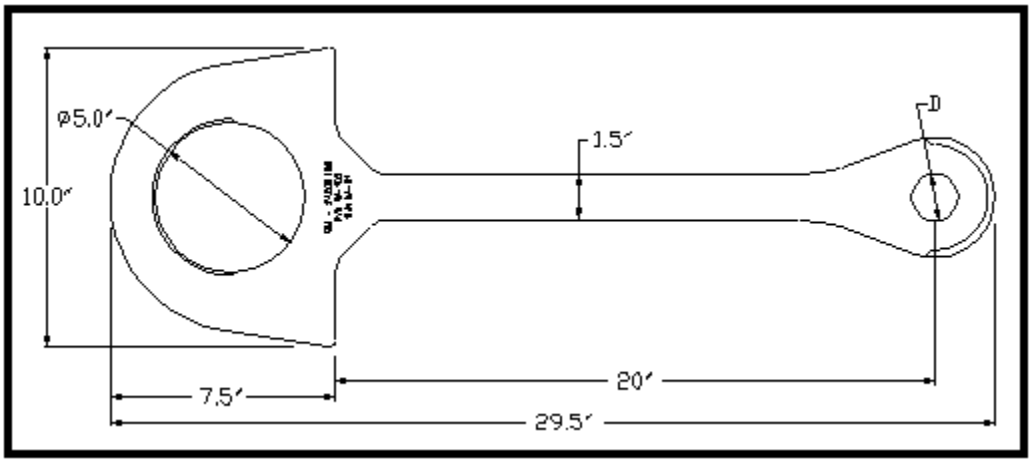
Figure 13

Clevis Pin HAL Part# LLP-400

Figure 14.

Hanger Bar

The hanger bar hangs from a crown block or elevator and provides a place to attach the rigging sheave. See Figure 15. Part # SH-36-100 has a hole (D) that is 2.06" and fits the 36" SJ clevis. Part # SH-36-400 has a hole (D) that is 1.83" and fits the 36" HLS clevis. Part # SH-36-300 has a hole (D) that is 2.06" and fits the SJ clevis but is 14" wide for use in large elevators. All three of these sheave hangers are load bearing components and should be re-certified annually.



Hanger Bar

Figure 15

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 page 12, through the holes.
4. Properly lock the pin in place.

Hand Guard/ Stabilizer

Perhaps the most important accessory to a rigging 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 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 and can be left in place when the sheave is not in use. See Figure 17 on page 16.

Hand Guard (HGG2-HD-100)
Figure 16

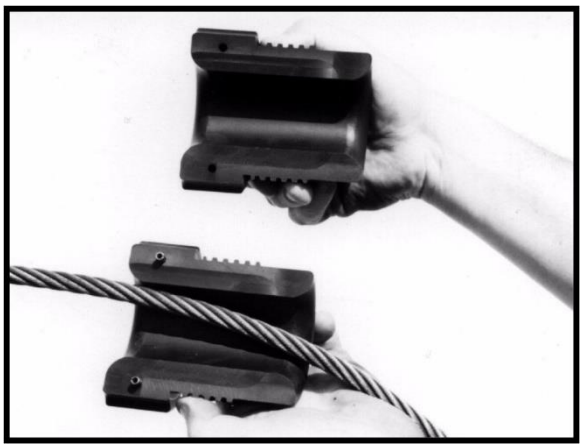
Instructions for Use

1. Remove the split bushings by unthreading them from the blocks.
2. Install the hand guard around the side plates of the sheave so the holes in the plates line up with the holes in the hand guard.
3. Insert the ball-lock pins through the holes. See Figure 18 on page 16.
4. Make sure the balls of the ball-lock pin have locked into place. See Figure 19 on page 16.
5. Pull the bushing apart, then re-assemble them around the wireline. See Figure 17 on page 16.
6. Thread the bushings back into the blocks.

Maintenance

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

◊ Replace ball lock pins if they are not functioning correctly.



Split Bushing

Figure 17

Properly Installed Pin

Figure 18

Locked Balls

Figure 19

Floor Stand

The floor stand is used to keep the sheave upright and in position when the line is slack. Figure 20 shows a sheave mounted in a floor stand. A floor stand can be used with a hand guard. This floor stand, made for 32” and 36” sheaves, is heavy duty and is hinged so line can be loaded into the sheave after the floor stand has been attached. See Figure 21.

Instructions for Use

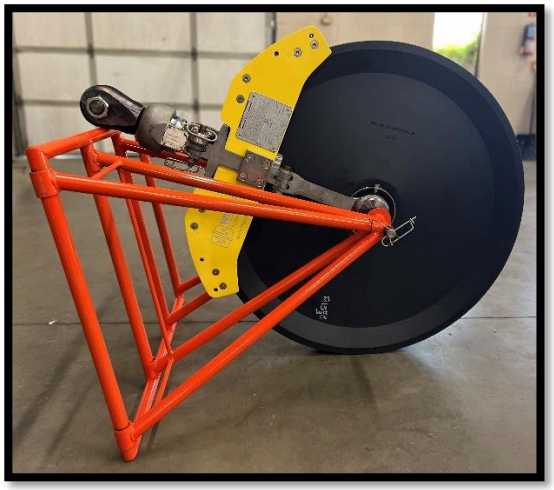
1. Stand the sheave on edge.
2. Place the floor stand around the wheel with the hinged gate and sheave’s gate on the same side. See Figure 22.
3. Align the holes in the floor stand with the hole through the sheave’s axle.
4. Install the pivot pin through the holes.
5. Tip the floor stand upright.
6. Retract the pivot pin far enough to release the hinged side of the floor stand.
7. Open the hinged side of the floor stand. See Figure 21.
8. Load the line onto the sheave wheel and secure the loading gate as described on page 4.
9. Close the hinged side of the floor stand and push the pivot pin through from the other side.
10. Install the safety clip through the hole in the end of the pin and lock it in place. See Figure 23.

32”/36” Floor Stand

Figure 20

Hinged Gates

Figure 21



Attaching the floor stand

Figure 22

Properly Locked.

Figure 23

Rig-up Yoke

The rig-up yoke is used to carry the sheave and to stabilize it when in use. Figure 24 shows the yoke being used to carry the sheave. Never use it to anchor the sheave or apply load through it. It is designed to carry the weight of the sheave only and can be used with or without a hand guard.

Rig-up Yoke (RY-36-100)
Figure 24

Properly locked Pivot Pin
Figure 25

Instructions for Use

1. Install the 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 the retaining nut. Finally, install the cotter pin through the hole in the pivot pin, and lock it in place by bending the ears. See Figure 25 on page 19.
4. 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.

<u>Recertification and Repair Log</u> Serial Number______

Date	Recert	Repair	Performed by:	Notes
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	☐	☐		
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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 32” or 36” 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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