JOSLYN HI-VOLTAGE CORPORATION
Cleveland, Ohio

Pub. No: I. 765-505
(Joslyn 9945)

JOSLYN HI-VOLTAGE
INSTALLATION AND OPERATING INSTRUCTIONS
FOR
INDOOR AND OUTDOOR LOWERING DEVICES
OPERATED BY JOSLYN 9945 FM or 9945 PM MOTORIZED WINCH

(Fixed Winch Applications With Fixed and Portable Motors)

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This document (Engineering Publication No. I. 765-505) is technically accurate including all text, illustrations , tables and drawings contained herein.

Design Engineer : _____ , Date: _____.

Engineering Manager: _____ , Date: _____.

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DISCLAIMER NOTICE

The purpose of this manual is to present basic and recommended equipment operating information for use by operating personnel utilizing Joslyn Winch Model 9945 for both indoor and outdoor lowering devices having motorized winches (fixed). Operation and maintenance information presented is not intended or implied to be a replacement for the application of common sense in the operation of the equipment mentioned herein.

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Section I: Overview

1.1 Introduction

This manual presents information necessary to familiarize the reader with the Installation and Operation of Joslyn HI-Voltage Lowering Devices incorporating Joslyn 9945 motorized winch for indoor and outdoor installations having fixed winch applications.

Manual content consists of Revision information, Safety Precautions, Inspection Requirements, Operating Instructions, Maintenance and Troubleshooting Procedures, Repair Parts; and reference to Related Engineering Drawings.

It is expected that the user of this manual will adhere to the information contained herein and apply common sense in the operation of equipment.

1.1.1 Revision Information

The following is a listing of engineering revisions incorporated into this issue of the JOSLYN HI-VOLTAGE LOWERING DEVICES Instruction Manual for motorized winch Model 9945. Revisions are as follows:

ECN/Date	Content	Resp. Engr
8356 (6/91) Rev. 0	3142A7710, Sh. 3 & 4	L. Poling
C064 (7/98) Rev. 1	Created new instruction. (Voided 3142A7710, Sh. 3 & 4)	L. Poling
C331 (11/98) Rev. 2	Replace Cable Anchors with Cable. Adapter. Changed Fig 2-1	A. Turner

Section 2: Safety

2.1 Safety Precautions

Read and comply with safety precautions and operational instructions contained in this manual. Keep this manual and all vendor information readily available at all times. Contact the Joslyn Hi-Voltage Corporation, 4000 East 116th Street, Cleveland, Ohio (44105) for additional copies.

WARNING: Exercise extra caution when raising and lowering fixture. Failure to observe the following safety precautions can result in injury to operating personnel and possible death.

Observe, and do not exceed the following Drum Capacities, Cable Diameters, and Motor Characteristics.

Drum Capacity at Cable Diameters of: **3/16".....** 550 ft.
5/32" ..... 750 ft.

Motor Characteristics:	**Drum Wound**	
Load Rating, lbs:	**Two Layers:** 750 lbs.	**Full:** 750 lbs.
Current, amps:.....	**Two Layers:** 3.4 amps.	**Full:** 4.5 amps
Lifting Speed, in/sec.	**Two Layers:** 1.5 in./sec.	**Full** 2.6 in./sec.
Load Limit (Per Joslyn)	**Two Layers:** 200lbs.	**Full:** 200 lbs.

- Visually Inspect and check lubrication before each use.
- Do not stand under any part of fixture while fixture is being raised or lowered, or when lowering device is being latched or unlatched.
- Do not walk under or work under a suspended load, or in the line of force of any load.
- Do not allow persons to walk under a suspended load. Keep persons out of the general work area. If necessary, mark off the work area with safety ribbons and/or barricades.
- Do not divert your attention from the operation. Stay alert to the possibility of accidents. Try to prevent accidents from happening.
- Do not leave a suspended load unattended. Lower the load to the ground.
- Do not use damaged or malfunctioning equipment. Use of damaged or malfunctioning equipment can result in equipment failure and injury to operating personnel and other persons in the general work area.

- Do not modify winch. For example, trying to replace the variable speed drive with a substitute drive, will result in injury to personnel , damage to equipment, or both.
- Do not attempt to stop a falling fixture with your hands or any part of your body. Attempting to stop a falling fixture in this manner can result in serious personal injury.
- Watch the progress of the fixture while operating the variable speed drive (lowering and raising).
- Allow for clearance between the fixture and neighboring structures and equipment.
- Keep hands and clothing away from gears, cable and drum when operating winch.
- Use only the cable supplied by JOSLYN HI-VOLTAGE. The cable supplied is a special high quality, high strength material with very high flexibility.
- Use only the cable adapter supplied.
- For safe operation, maintain a minimum of four wraps on the cable drum. Wind cable from underside of drum (Figure 2-1 and Repair Parts List, Section 7).
- Keep winch and accessories clean and lubricated. Excessive wear and signs of overloading cannot be detected under an accumulation of dirt.
- Do not operate winch with safety guards removed or improperly installed.

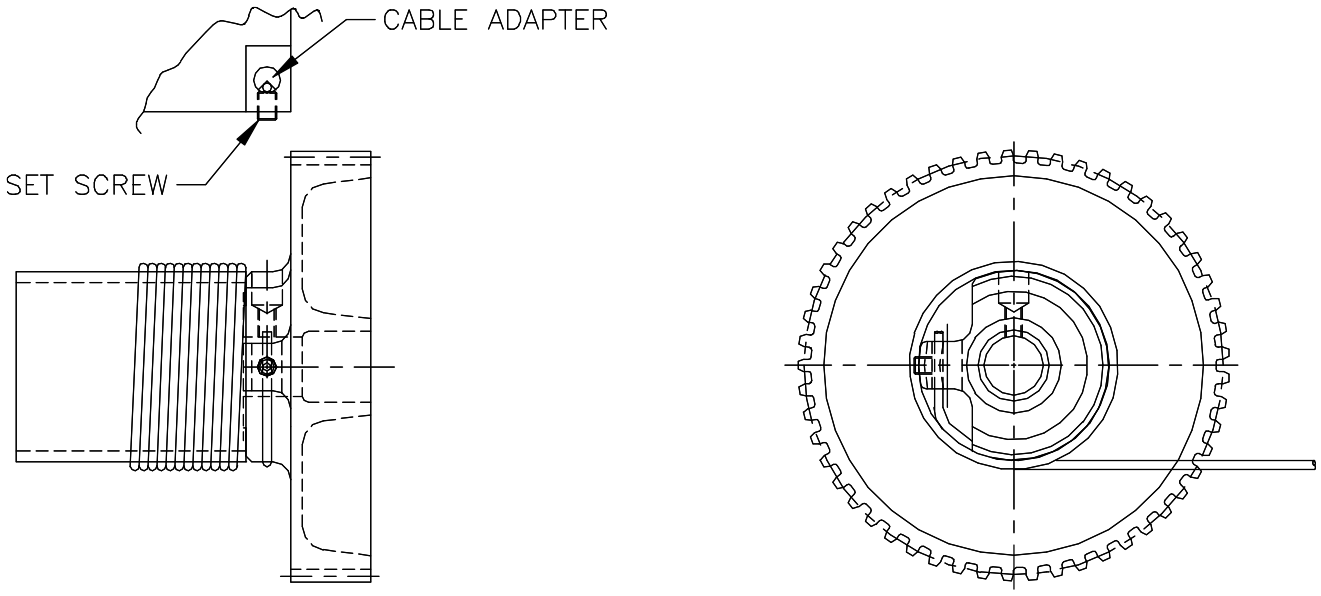


Figure 2-1. Winch Drum and Cable Anchor

Section 3: Inspection

3.1 Inspection of Components

At each use inspect the following :

(1) Inspect winch, winch cable, operating cable; and the variable speed motor (drill motor).

CAUTION: Do not use cable that has loose, stretched, or poorly attached connections. Do not use cable that has a reduced diameter due to wear or stretching. **Inspect cable for kinks, cuts, broken strands; and crushed, unstranded, or broken sections which greatly reduce cable strength and thereby system reliability.**

When a fixture is in the raised or lowered position and the operating cable or winch cable is found to be damaged, replace cable before proceeding. JOSLYN HI- VOLTAGE CORPORATION technical representatives are available for advice.

Inspect variable speed drive (drill motor) for proper operation before each use.

(2) Insure that the drill motor power cable is not frayed, cut, and/or damaged. Inspect electrical plugs (male and female) for corrosion and/or damage. Clean and replace electrical cable and plugs (connections) as required. Visually inspect winch variable speed motor (drill motor) for damage. If motor is found to be damaged, replace motor. Contact Joslyn HI-Voltage for technical assistance.

(3) Inspect mounting bracket for bent parts and/or a warped frame. Bracket framework should be straight and square. If framework is bend or warped, contact JOSLYN HI-VOLTAGE for assistance. Insure that all mounting hardware (nuts, bolts, washers, and mounting clamps, etc.) are tight and secure. Tighten and/or replace mounting hardware as required before operation of winch.

CAUTION: Failure to ensure that all mounting hardware (including customer furnished mounting clamps and bolts) is in good working order can result in failure of the lowering system and serious injury to operating personnel and damage to equipment.

(4) Inspect winch shafts and bearings (Figure 7-1).

Note: Shafts should be straight and fit snugly in bushings. Polished areas on shafts are normal where shafts turn in bushings, but a fit that allows the shaft to move from side-to-side more than 1/64" indicates a worn out part which must be replaced. For repair parts see Repair Parts List (Figure 7-2).

(5) Inspect gears, and gear cross pins.

Note: Gears should fit tightly on gear shafts. Cross pins should be intact and tight. The faces of gear teeth should not have excessive wear.

(6) Inspect winch disc brake for worn, damaged, or poorly operating parts (Figure 7-1).

WARNING: Do not use winch if the disc brake shows signs of damage or poor operation. Replace all damaged or poorly operating parts with Joslyn repair parts only. Use of the winch when the disc brake is in poor operating condition can result in injury to operating personnel and damage to equipment.

(7) Listen to disc brake while winch is in operation. When power is applied (to raise the fixture), there should be a firm clicking noise as the ratchet pawl drops from one tooth to another on the ratchet wheel.

CAUTION: If no clicking noise is heard while attempting to raise the fixture, the ratchet was incorrectly installed, or is damaged or worn excessively. Call the JOSLYN HI-VOLTAGE CORPORATION for technical assistance.

If the ratchet makes a weak sound, the spring may not be forcing the ratchet pawl to seat firmly against the bottom of the ratchet teeth. If the ratchet pawl is failing to seat properly this may be caused by rusty, or damaged parts and is a hazardous condition. Repair by cleaning or replacement of parts as applicable (see parts list Figure 7-2).

Section 4: Operating Instructions

4.1 Operation

Note: This instruction is to be used in conjunction with installation guide I.765-303, or I.765-304.

CAUTION: The operating and winch cables are the main components of the lowering system, and subject to more stress than other parts. **Worn or damaged cable will cause failure of the lowering system and damage to equipment.**

The hanger and customer's luminaire should be plumb within 1° of true vertical for trouble free operation of the lowering device.

Exercise care when performing latching procedures. **Jerking or bouncing the lowering system recklessly during latching may damage electrical contact insulators, and/or lamp filaments.**

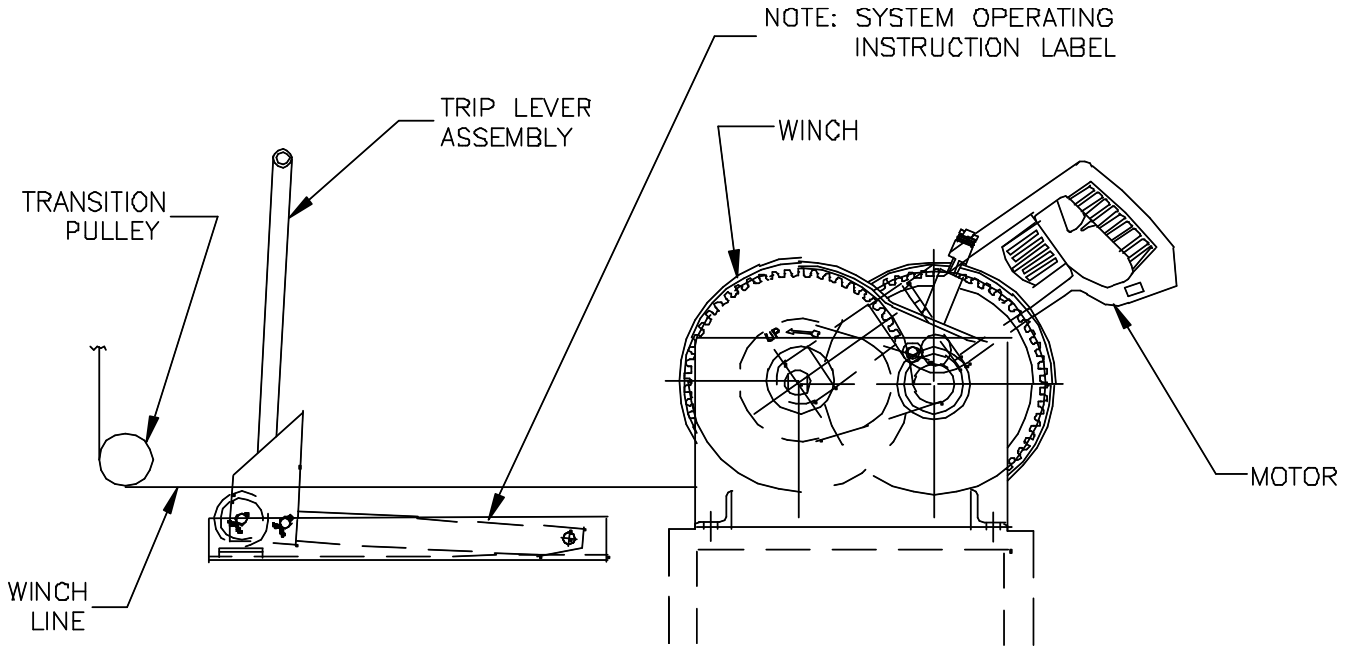
Keep winch and accessories clean and lubricated. **Excessive wear and signs of overloading cannot be detected beneath an accumulation of dirt.**

4.1.1 Mounting of Joslyn 9945 Winch

(1) The winch is always supplied by itself (without bracket), and mounted to the customer's bracketing.

(2) Mount winch assembly to mounting surface as shown on applicable engineering drawing 3163B0034 or 3163B0035, and as shown in this instruction.

(3) Check all fasteners and associated hardware (including customer furnished hardware) to make sure that the winch bracket is secured to the mounting surface (wall or pole) properly. In addition, make sure the bracket and winch assemblies are fastened together properly and that all nuts, bolts, and fasteners are tight and secure.



Independently Customer Mounted Winch and Remote Trip Lever

Figure 4-1. Typical Fixed Winch Mounting

4.1.2 Mounting Remote Trip Lever for 9945 Winch

Mount trip lever assembly with mounting base parallel to the winch line (between the winch and the transition pulley) at an elevation such that the winch line has about ¼ inch clearance above the trip lever pulley (Figure 4-2).

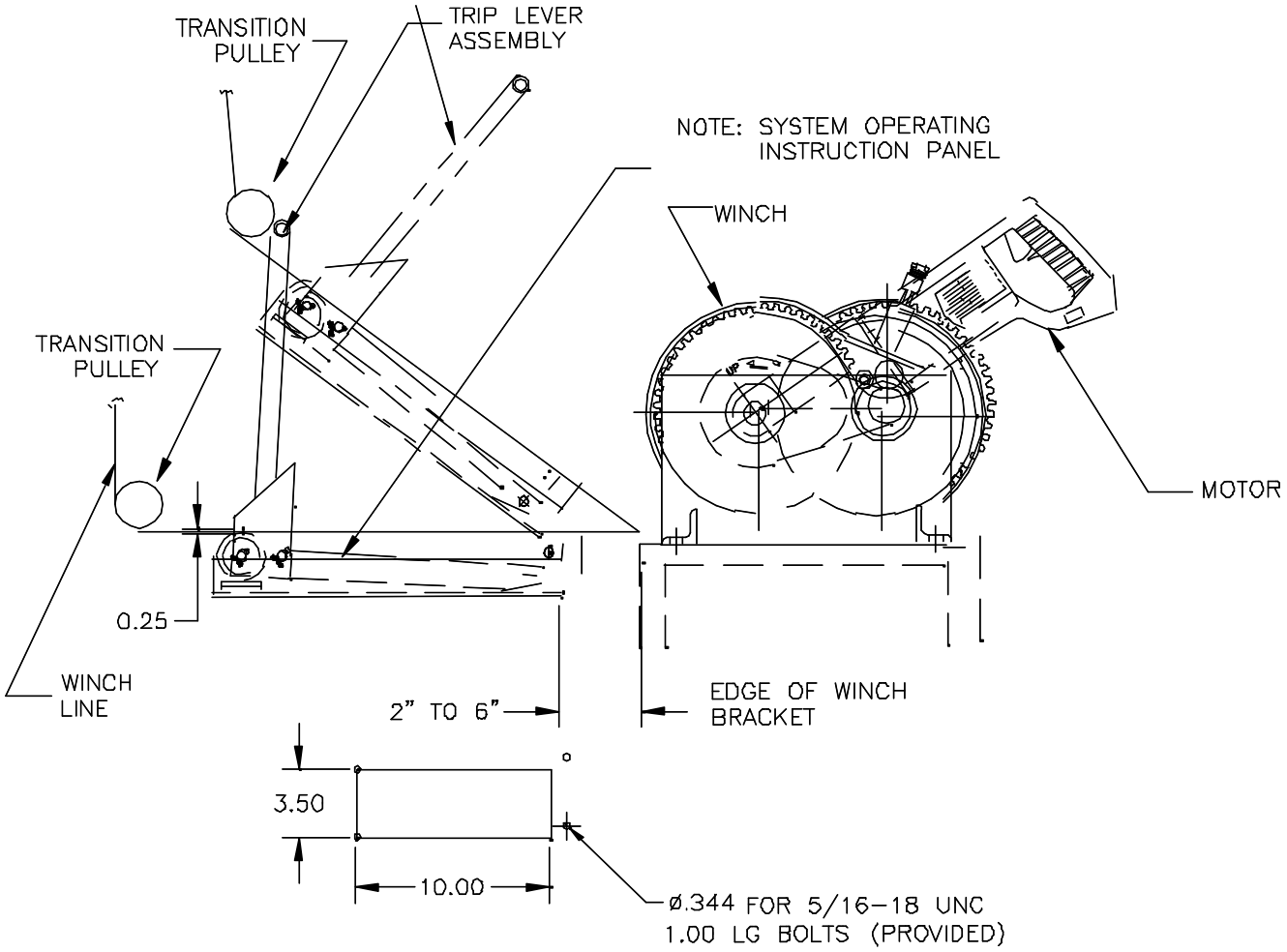


Figure 4-2. Mounting of Remote Trip Levers

4.1.2.1 Trip Lever Installation Check (trip lever handle rotated to latch/unlatch position)

Perform installation check as shown in Figure 4-3.

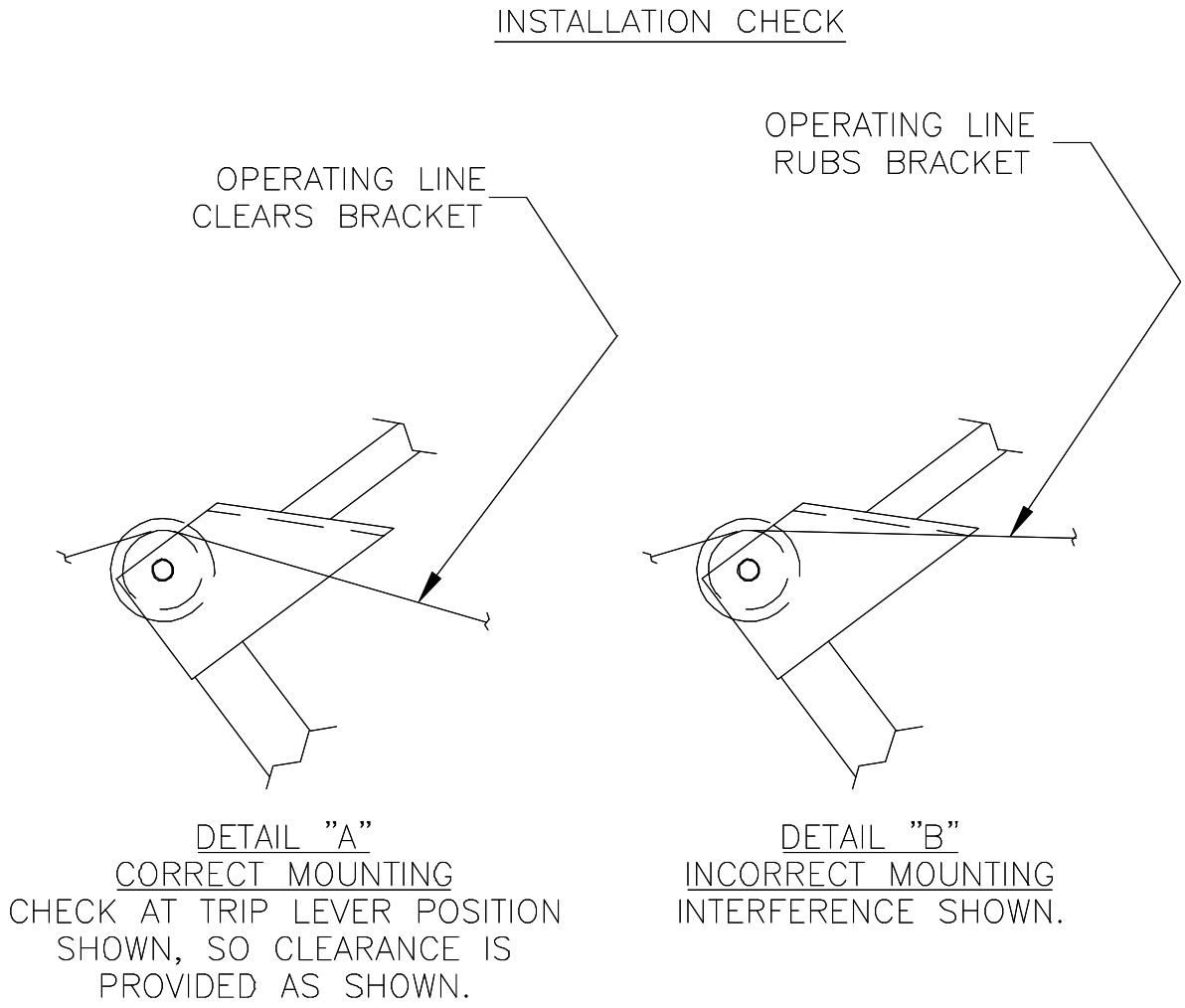


Figure 4-3. Installation Check of Remote Trip Lever

4.1.3 Fixed Motor Winch Operation

Note: The fixed winch installation has one continuous cable from hanger to winch.

4.1.3.1 Unlatching Hanger Assembly and Lowering Fixture

CAUTION: Ensure winch is properly lubricated (see para. 5.1.1). Failure to lubricate winch properly will cause damage to equipment. For the 9945 winch, make sure the manual ratchet (located on top of winch) is disengaged.

WARNING: Never engage the ratchet mechanism while the load is being lowered without first bringing the load to a complete stop. Not bringing the load to a complete stop will cause severely dangerous shock loads to be imposed on the winch.

(1) Set drill motor switch to the forward mode, apply power, and turn winch in the forward direction (clockwise) until a slight resistance is indicated.

(2) Set drill motor to the reverse mode, apply power, and introduce slack in the operating cable by turning winch drum counterclockwise approximately ¼ turn.

(3) Grasp the trip lever handle and pull back firmly with 30 to 40 pounds of force (for a 50 pound fixture [Figure 4-4]). The force required depends on the weight of the fixture.

Note: At this stage the mechanism has raised, unlatched, and is ready for hanger separation.

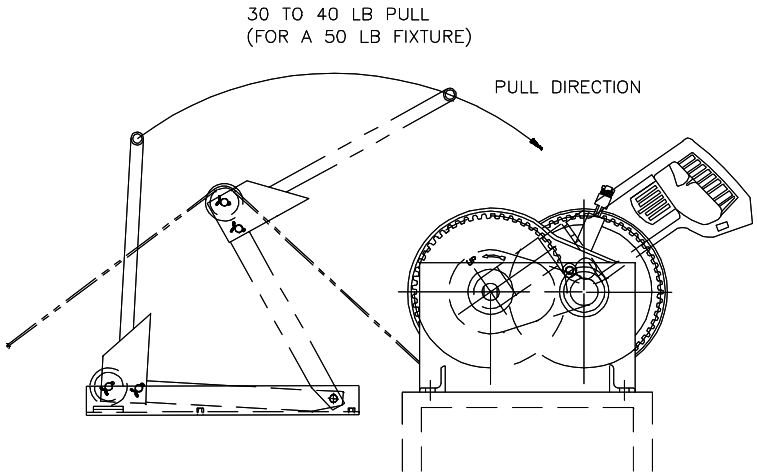


Figure 4-4. Winch and Trip Lever Handle

(4) Release (let go of) the trip lever handle and allow trip lever to suddenly fly downward and stop against the trip lever bracket (Figure 4-4). At this stage the latch is released in the hanger assembly and the two halves are separated.

(5) Gently tug on cable leaving the mounting surface to determine cable tension.

Note: If there is tension on the cable (not slack), the hanger halves have separated and the hanger is unlatched. If the cable is slack, the hanger halves have not separated and the hanger assembly remains latched. In this case (hanger halves still latched), reduce existing cable slack (increase cable tension), and repeat steps (1) through (5).

Note: During lowering operations the fixture may be stopped and held at any desired height by releasing the drill motor trigger. Releasing the drill motor trigger will automatically engage the winch brake and suspend the fixture at its current level. To continue lowering the fixture see step (6).

(6) With drill motor switch in the reverse mode, apply power, and lower fixture to the working level. At this stage fixture lowering procedures are complete.

4.1.3.2 Raising Fixture and Latching the Hanger Assembly

Note: The manual ratchet can be engaged during raising of the fixture, but must be disengaged during latching.

(1) Set the drill motor switch to the forward mode, apply power, and turn winch in a clockwise direction raising the fixture.

CAUTION: Raising the fixture may proceed at a comfortable rate of speed until the housing halves are about six inches apart. **At this stage the rate of speed must be slowed to a near stop for a moment to allow for realignment of the hanger halves to take place.** When realignment begins it can be sensed as a sudden increase in the motor force required at the winch.

Failure to slow the cranking speed will cause damage to contact insulators, and/or lamp filaments; or cause the hanger halves to jam.

(2) Stop raising the fixture when contacts are seated (the winch brake will engage and hold the fixture in place). At this stage, with instant starting fixtures, the seating of contacts is obvious (the fixtures light).

Note: If the torque limiter setting is surpassed, by excessive force, the motor cannot reverse the winch system. The system must be freed manually. Freeing the system manually can be accomplished by placing the end of the manual crank handle (or rod of suitable diameter and length) in the side hole of the brake hub and turning the hub ¼ to ½ turn ccw. You will feel the system loosen.

(3) Disengage the winch ratchet.

(4) Using 30 to 40 pounds of force (for a 50 pound fixture), pull slowly and firmly on the trip lever handle (Figure 4-4). Stop pulling when a strong resistance is felt; indicating the unit is ready for latching.

CAUTION: In step (5), if the trip lever is not lowered slowly enough, the hanger will not latch.

(5) **Very slowly** lower trip lever handle allowing trip lever to come to rest against the winch bracket. At this stage the hanger should be latched (Figure 4-5).

(6) Set drill motor switch to the reverse mode, and turn winch counter clockwise. The cable should become slack (loose); indicating that the housing halves are properly latched. If the cable is taught (tight), the housing halves are not latched and the procedure must be repeated using slightly more force at the trip lever handle (repeat steps (4) through (6).

(7) When hanger halves are latched, disconnect power source from drill motor. At this stage Raising and Latching procedures are complete.

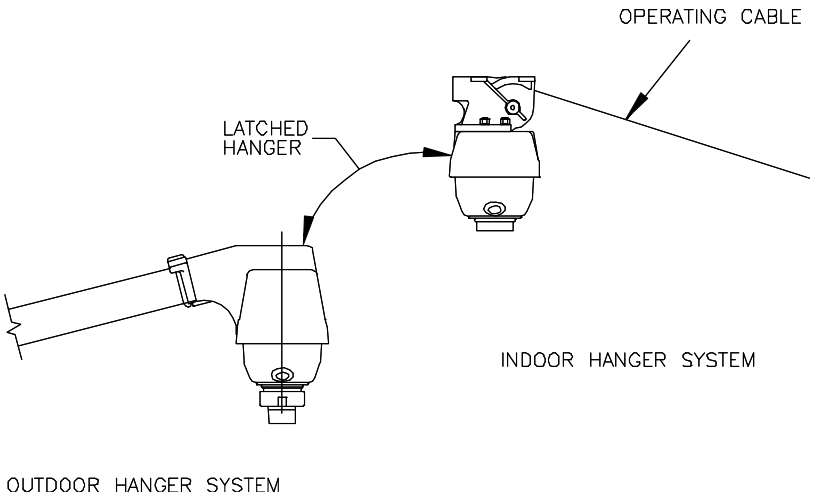


Figure 4-5. Latched Hanger Halves

4.1.4 Portable Winch Operation

Note: this is a fixed winch installation and has one continuous cable from winch to hanger.

4.1.4.1 Portable Motor Installation

(1) (See Figure 4-6 with detail "A".) Remove wing nut "C" and bolt wrench "A." Save spacer "B."

(2) Use hex wrench end of "A" to loosen socket head cap screw "E."

(3) Install end of motor into winch so that square shank engages torque limiter "F" and motor seats as far as possible into collar "D."

(4) Use wrench "A" in screw "E" to make motor slip tight in collar "D."

(5) Move motor so that hole in side is about aligned with anchorage as shown. Insert spacer between "B" between steel bracket and motor housing. Insert bolt end of "A" through bracket and spacer. Move motor as required to align with bolt end of "A" so "A" will start to thread into motor.

(6) While maintaining motor position, remove "A" from assembly and use it to tighten screw "E."

(7) Install "A" back into assembly and tighten into motor.

At this stage the motorized winch is ready for operation.

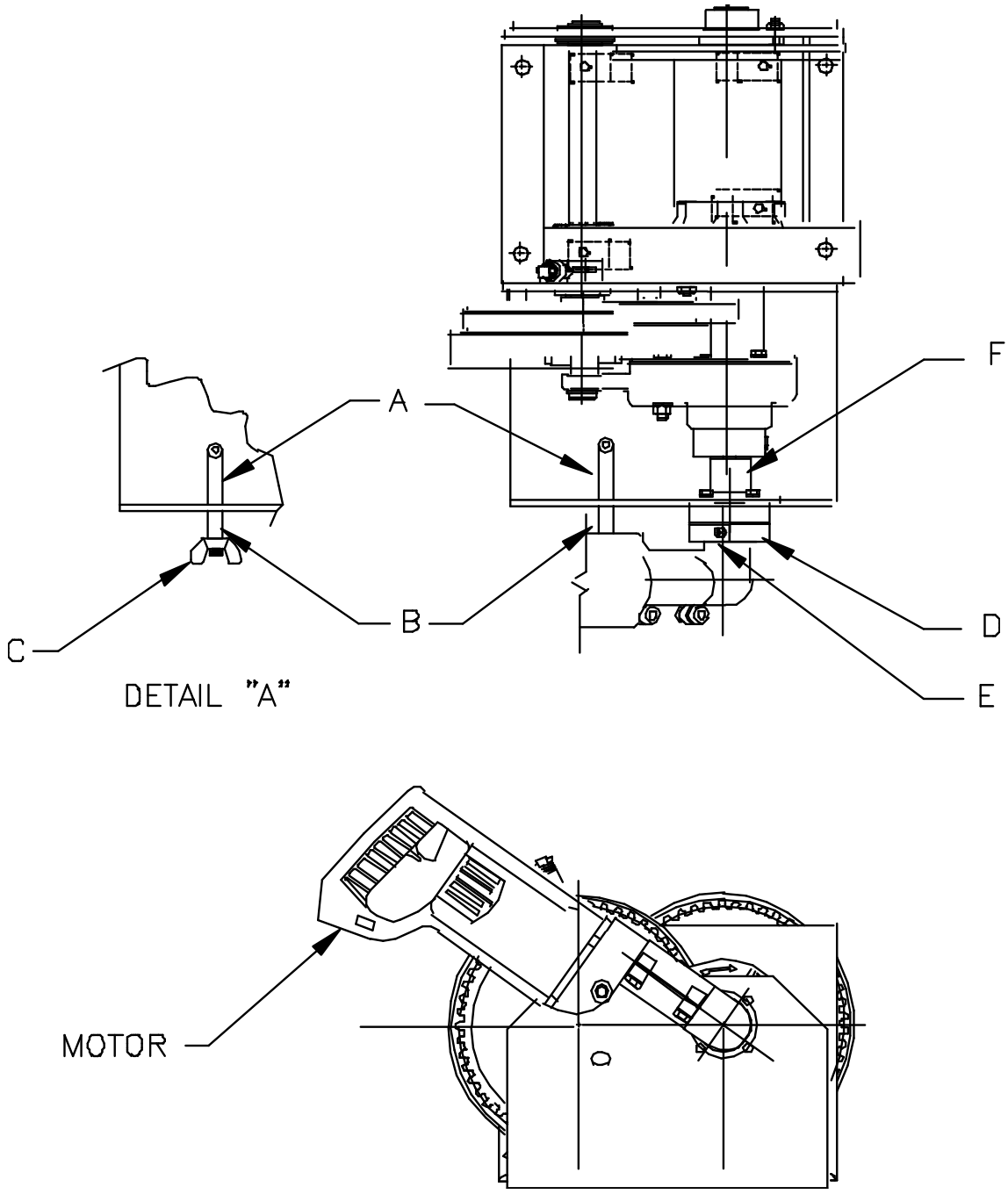


Figure 4-6. Portable Motor Installation and Removal

4.1.4.2 Operation

Operate winch and lowering device as previously stated in Section 4 for fixed motor winch.

4.1.4.3 Portable Motor Removal (See Figure 4-6)

(1) When finished operating lowering device, remove wrench “A”, loosen screw “E”, and remove motor.

(2) Assemble parts A, B, and C as shown detail “A” and tighten.

Section 5: Maintenance

5.1 Cable Replacement (Joslyn 9945 Winch)

Note: Cable must be replaced when worn or damaged (see **CAUTION** para. 3.1).

5.1.1 Fixed Winch Cable Replacement (Cable Diameters 5/32nd or 3/16th inch)

(1) From Joslyn HI-Voltage, acquire a new cable made to the required length (having appropriate diameter[5/32nd or 3/16th]) with end fitting assembly.

(2) Unlatch hanger and lower fixture to ground level (working level).

(3) To remove old cable from hanger proceed as follows:

(DO NOT DISCONNECT CABLE FROM WINCH AT THIS TIME.)

a. Disconnect fixture from hanger.

b. Push cable down through hanger to expose swivel end fitting.

c. To remove fitting, cut cable above fitting assembly.

d. Pull cable out of hanger.

(4) Acquire new cable assembly, and insert free end (opposite of fitting end) into bottom of hanger. Push cable through hanger and out stem.

(5) Using a butt splice, attach the new cable to the old cable (end to end), and then tape over the cable splice with two or three wraps duct tape.

Note: Because the connection (cable splice) must pass through the pulleys of the lowering device system, the taped connection must be compact. Use judgment when taping the cable splice, do not over tape.

(6) Pull all of the new cable through the hanger to seat the swivel end assembly up inside the hanger.

(7) Reconnect the fixture to the hanger.

(8) At winch location, disconnect cable from winch; and pull old cable through the lowering device system (which will also pull the new cable through the system).

(9) When the splice has been pulled through the system, separate old and new cables. Discard old cable.

(10) Attach end of new cable to winch as follows (see Figure 2-1):

a. Coil cable around drum **(starting from underside of drum)** a minimum of four turns, beyond the number of turns required to lower fixture to the ground servicing level.

b. Pass cable end under drum, through the drum anchor flange hole, and through the cable adapter.

c. Tighten set screw to lock cable and adapter in place.

(11) The cable replacement is now complete. The excess cable can be wound onto the winch using the motor drive, the fixture raised, and the hanger assembly latched.

5.2 Scheduled Maintenance

It is recommended that a regular maintenance schedule be established with an inspection log showing the dates and names of persons assigned to inspection, and the actions taken. A regular maintenance schedule must incorporate the procedures set fourth in this manual and be assigned to a responsible person. Such a maintenance schedule, carefully administered, assures safe and reliable operation of the JOSLYN HI-VOLTAGE Lowering Device System.

On a scheduled basis perform the following maintenance requirements:

- After each use, lubricate bearings on winch at junctions with shafts with 2 or 3 drops of 150 grade gear oil. Rotate winch drum several times to allow oil to penetrate.
- Brush MOBILTEMP SHC 32 (Mobil Oil Corp.) grease, or Sprayon 201 (or equivalent open gear lube) onto gear teeth to maintain a protective coating across the working face of the gears.

  For dirty conditions, clean surfaces and use a dry lubricant such as dry graphite or Moly (Dow Corning).

WARNING: Do not over lubricate brake. Over lubrication of brake will cause oil to leak onto brake friction discs causing discs to operate poorly (slip). This situation can result in possible injury to personnel and damage to equipment and components.

- At brake lubrication point (oil hole in brake housing [Figure 5-1]), lubricate brake bushing with 1 or 2 drops of 150 grade gear oil. Turn the brake several times to allow oil to penetrate.
- Clean on a scheduled basis with oily rag to remove dirt and grease.
- Wipe off excessive amounts of oil to prevent the accumulation of dirt.
- Leave a light film of oil on all surfaces to protect against rust and corrosion.

CAUTION: Do not allow grease or dirt to accumulate. The accumulation of grease or dirt accelerates wear and hides faults that may alert the operator, or maintenance personnel to more dangerous conditions.

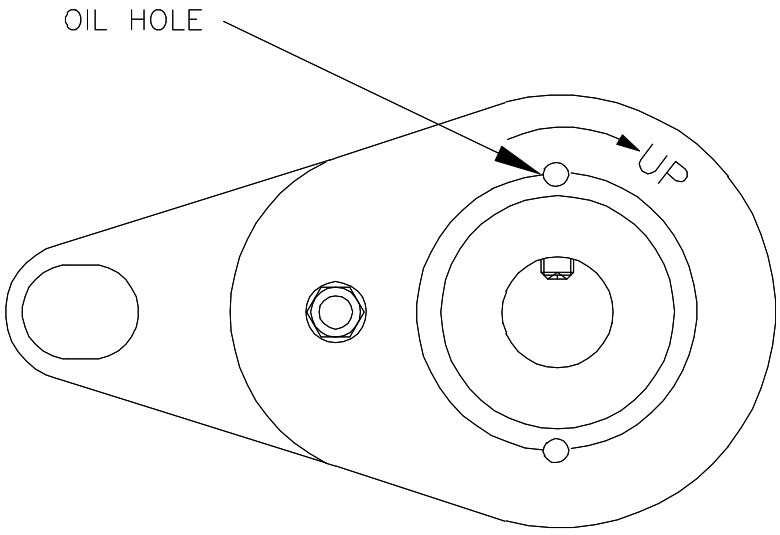


Figure 5-1. Brake Lubrication Point

Section 6: Troubleshooting

The following table presents troubleshooting procedures required for the identification, repair and/or replacement of damaged components that constitute a part of the JOSLYN HI-VOLTAGE Lowering Device System incorporating Joslyn motorized winches for both fixed and portable applications.

Included herein are troubleshooting procedures and information relating to the repair and maintenance of the Joslyn 9945 Motorized Winch which forms a part of the Joslyn Lowering Device System.

Table 6.1 Troubleshooting Procedures

SYMPTOM	POSSIBLE CAUSE	RECOMMENDED ACTION
Lowering system jammed.	1. Hanger did not separate because hanger is not plumb.	Plumb hanger. Hanger should be within 1° of true vertical. Contact Joslyn for technical assistance.
	2. Conduit crooked or bent and/or pulleys bent or out of line.	**Reinstall conduit in straight sections.** Replace bent or damaged pulleys at turns, etc. Contact Joslyn for technical assistance.
	3. Winch cable tangled or wound wrong on drum.	**If fixture is raised and latched.** Unwind cable, then rewind onto drum. If necessary, replace cable (see Section 5). Contact Joslyn for technical assistance.
	4. Worn or damaged operating, or winch cable.	Replace damaged cable (see Section 5). Contact Joslyn for technical assistance.

Table 6.1 Troubleshooting Procedures

SYMPTOM	POSSIBLE CAUSE	RECOMMENDED ACTION
Fixture lights will not illuminate.	1. Fixture halves not aligned and latched properly.	Hanger is not plumb (should be within 1° of true vertical). Review Section 4, and repeat procedure. Contact Joslyn for technical assistance.
	2. Fixture contacts damaged.	Replace contacts. Contact Joslyn for tech. assistance.
	3. If fixture is not self illuminating, main power or fixture switch may be in "OFF" position	Check fixture power switch. Check main power panel circuit breakers, etc.
	4. If fixture still will not light.	Contact Joslyn for technical assistance.
Winch not secure on mounting surface.	1. Fasteners and associated hardware not secured properly.	Secure all fasteners, and mounting hardware to ensure that equipment is in good operating condition (all nuts and bolts tight and secure, etc.).
Unable to disconnect operating cable link from winch cable link.	1. Hanger halves unlatched (tension on cable).	**Make sure that hanger halves are latched together** (see Section: 4).

Table 6.1 Troubleshooting Procedures

SYMPTOM	POSSIBLE CAUSE	RECOMMENDED ACTION
Winch turns, cable drum does not turn.	1. Loose or broken spring pins, stripped or broken gears.	Inspect winch and brake, repair as necessary. Contact Joslyn for technical assistance.
Winch turns hard or not at all.	1. Load to heavy (see para. 2.1)	Lighten load. Contact Joslyn for technical assistance.
	2. Hanger and luminaire hang crooked.	Plumb hanger and luminarie within 1° of true vertical. Contact Joslyn for technical assistance.
	3. Spring pins loose or broken on winch or brake.	Repair as necessary. Contact Joslyn for technical assistance.
	4. Disc brake damaged or locked.	Inspect brake and repair as necessary. Contact Joslyn for technical assistance.
	5. Gears or bearings broken or locked.	Inspect and repair as necessary. Contact Joslyn for technical assistance.
While operating winch, winch experiences excessive backlash.	1. Load to heavy.	Lighten load. Contact Joslyn for tech. assistance.
	2. Poor lubrication of gears or bearings.	Inspect and lubricate (see para. 5.2). If gears or bearings are in poor condition, replace. Contact Joslyn for technical assistance

Table 6.1 Troubleshooting Procedures

SYMPTOM	POSSIBLE CAUSE	RECOMMENDED ACTION
Brake does not operate properly	1. Friction discs worn or damaged.	Inspect and replace as necessary. Contact Joslyn for technical assistance.
	2. Friction discs damaged from over lubrication.	Inspect and repair as necessary. Contact Joslyn for technical assistance.
	3. Disc brake ratchet pawl damaged.	Inspect and replace as necessary. Contact Joslyn for technical assistance.
Winch overheating.	1. Operating to fast	Allow winch to cool. Slow down operating speed.
	2. Poor lubrication.	Inspect and lubricate as required. See para. 5.2 for lubricating instructions. Contact Joslyn for technical assistance.
	3. Load to heavy.	Contact Joslyn for technical assistance.
Unusual noises. (high pitched squeak or grinding noise.)	1. Poor lubrication	Inspect and lubricate as required. (refer to para. 5.2). Contact Joslyn for technical assistance.
	2. Contaminated lubricants.	Clean and/or repair as required.

Table 6.1 Troubleshooting Procedures

SYMPTOM	POSSIBLE CAUSE	RECOMMENDED ACTION
Unusual noises, high pitched squeak or grinding noise (cont'd).	3. Dirt in brake or winch gears.	Clean and/or repair as required. Contact Joslyn for technical assistance.
	4. Broken or misaligned gears or bearings.	Clean and repair as required. Contact Joslyn for assistance.
Rattling noise or uneven clicking noise in brake.	1. Loose bolts, set screws, or fasteners.	Tighten all loose bolts, set screws and fasteners as necessary.
	2. Broken gear tooth in brake.	Inspect brake gear teeth. If gear teeth are broken, replace brake gear. Contact Joslyn for technical assistance.
	3. Spring or ratchet pawl dirty or damaged.	Inspect, clean, and/or repair as required. Contact Joslyn for technical assistance.
	4. Worn brake ratchet pawl, gear, or spring.	Inspect and replace as required. Contact Joslyn for technical assistance.
No clicking noise in brake.	1. Ratchet installed wrong.	Disassemble and install correctly. Contact Joslyn for technical assistance.
	2. Ratchet pawl damaged or worn excessively.	Inspect and replace as required. Contact Joslyn for technical assistance.

Section 7: Repair Parts

7.1 Parts Replacement (Joslyn 9945FM and 9945PM Motorized Winches)

Replace damaged or malfunctioning parts of winch and disk brake with Joslyn repair parts only. Locally manufactured repair parts may not meet design requirements, or required safety margins.

WARNING: Substitution of locally manufactured parts for original factory parts is potentially dangerous to persons and property. It is the responsibility of the owner of the Joslyn HI-Voltage Lowering Device System to determine that repairs to malfunctioning components have been properly made; and the Lowering Device System has been returned to a safe operating condition.

Proper cable selection is essential to safe operation of the fixture lowering system. Cable used in Joslyn Lowering Systems is specifically designed for strength and flexibility. **Do not substitute cable assemblies from any other source. Cable assemblies from the Joslyn Hi-Voltage Corporation assure safe and reliable operation of the Joslyn Lowering Device System.**

7.1.1 Repair Parts Lists (Joslyn 9945 Motorized Winch)

For repair parts listings see the following:

- Objects drawings (Figure 7-1and 7-1a).
- Parts list (Figure 7-2).

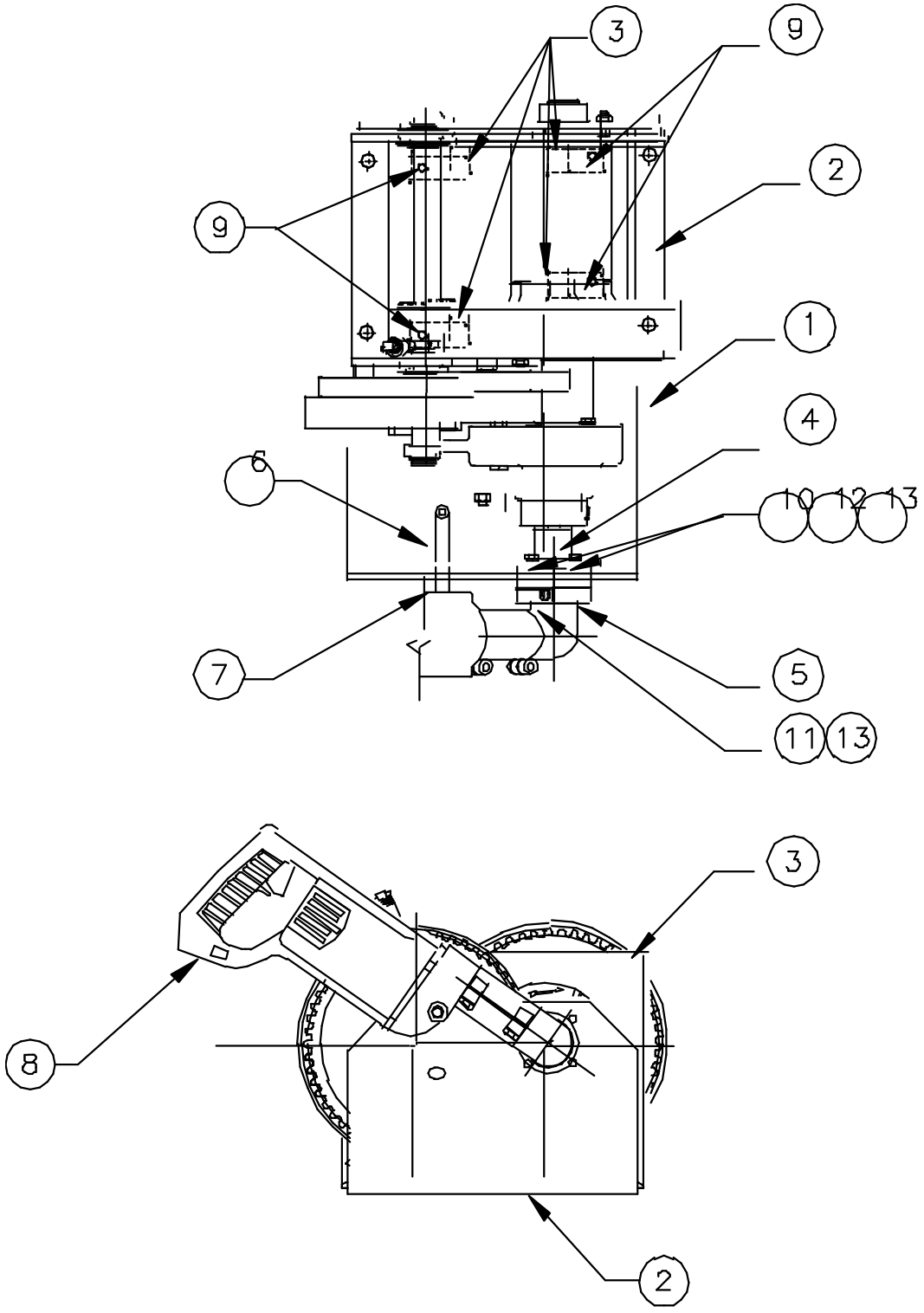
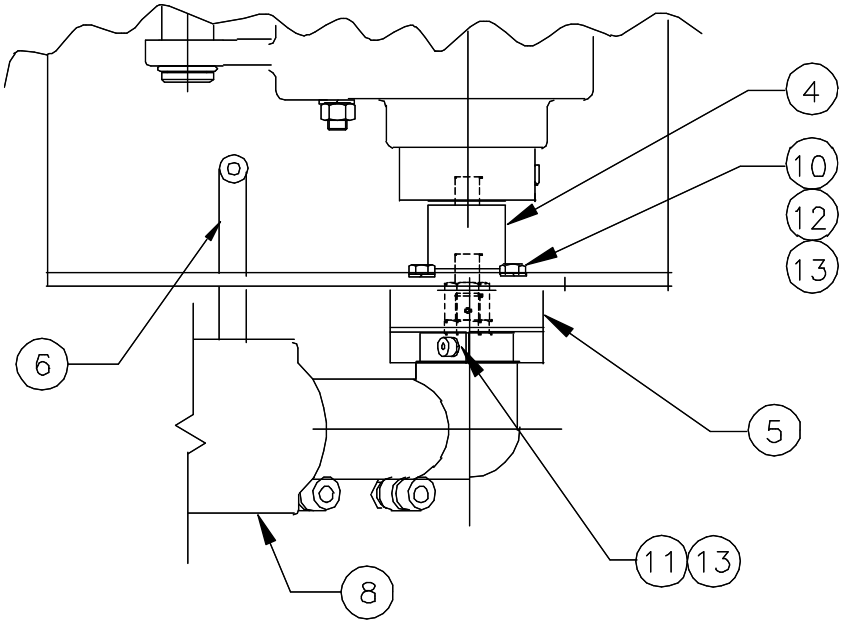
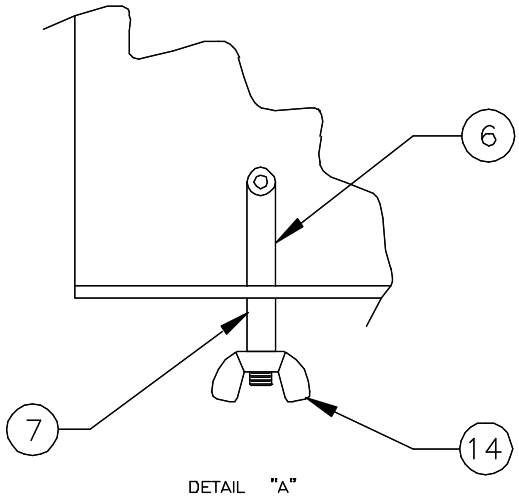


Figure 7-1. Joslyn 9945 FM Motorized Winch



ENLARGEMENT OF TORQUE LIMITER AND ADJACENT PARTS AND CONNECTIONS



DETAIL "A"

Figure 7-1a. 9945 Winch Objects Drawings

P/N	NAME	QTY	DESCRIPTION
1	MOUNTING BRACKET	1	3163C0030P1
2	WINCH SUBASSEMBLY	1	3163B0032G1
3	CLAMP	4	3163A0028P1
4	TORQUE LIMITER	1	3070A0477P3
5	DRILL MOUNT	1	3163B0029P1
6	BOLT WRENCH	1	3163B0033G2
7	SPACER	1	3163A0003P2
8	DRILL MOTOR ASS'Y	1	3163B0031G1
9	CAP SCRW, HEX HD.	4	5/16–18 UNC X .50 LG SST.
10	CAP SCRW, HEX HD.	4	1/4–20 UNC X .875 LG SST.
11	CAP SCRW, SCKT HD.	1	1/4–20 UNC X 1.25 LG SST.
12	WASHER, PLAIN	4	3070A0406P1 SST.
13	LOCKWASHER	5	1/4 STD SPLIT SST.
14	NUT, WING	1	3070B0588P21

Figure 7-2. Joslyn 9945 Motorized Winch Repair Parts List