
OWNER'S MANUAL

LOAD LIMITER for ER, NER and SNER SERIES ELECTRIC CHAIN HOIST

1/8 Ton through 5 Ton Capacity

⚠ WARNING

This equipment should not be installed, operated or maintained by any person who has not read and understood all the contents of this manual. Failure to read and comply with the contents of this manual can result in serious bodily injury or death, and/or property damage.

HARRINGTON
HOISTS AND CRANES

Table of Contents

Section	Page Number
1.0 Important Information and Warnings.....	2
1.1 Terms and Summary	
1.2 Product Overview	
2.0 Technical Information.....	4
2.1 Product Code	
2.2 Specifications	
2.3 Dimensions	
2.4 Principle of Operation	
2.5 Electrical Circuit	
3.0 Installation	8
3.1 Load Limiter and Suspension Plate	
3.2 Load Limiter Relay	
3.3 Performance Test	
4.0 Adjustment	13
4.1 General	
4.2 Static Set Load	
4.3 Adjust the Load Limiter	
5.0 Parts List.....	17
5.1 Internal Parts	
5.2 Assembly Parts	
5.3 Load Limiter for ERG	
6.0 Warranty.....	21

1.0 Important Information and Warnings

1.1 Terms and Summary

1.1.1 Definition of Terms

This manual provides important information for personnel involved with the installation, operation and maintenance of this product. Although you may be familiar with this or similar equipment, it is strongly recommended that you read this manual before installing, operating or maintaining the product.

Danger, Warning, Caution and Notice

Throughout this manual there are steps and procedures that can present hazardous situations. The following signal words are used to identify the degree or level of hazard seriousness.

▲▲ DANGER Danger indicates an imminently hazardous situation which, if not avoided, **will** result in **death or serious injury**, and property damage.

▲▲ WARNING Warning indicates an imminently hazardous situation which, if not avoided, **could** result in **death or serious injury**, and property damage.

▲▲ CAUTION Caution indicates a potentially hazardous situation which, if not avoided, **may** result in **minor or moderate injury** or property damage.

NOTICE Notice is used to notify people of installation, operation, or maintenance information which is important but not directly hazard-related.

1.1.2 Warnings

▲▲ WARNING

The equipment covered by this manual is a Load Limiter for use with Harrington's ER/NER and SNER electric chain hoists. It is the responsibility of the owner/user to ensure that the Load Limiter is used in accordance with this manual, and the Owner's Manual for the ER/NER and SNER and any other appropriate manuals.

▲▲ DANGER

HAZARDOUS VOLTAGES ARE PRESENT IN THE CONTROL BOX, OTHER ELECTRICAL COMPONENTS, AND CONNECTIONS BETWEEN THESE COMPONENTS.

Before performing ANY mechanical or electrical maintenance on the equipment, de-energize (disconnect) the main switch supplying power to the equipment; and lock and tag the main switch in the de-energized position. Refer to ANSI Z244.1, "Personnel Protection – Lockout/Tagout of Energy Sources".

Only trained and competent personnel should inspect and repair this equipment.

1.2 Product Overview

The product covered by this manual is Harrington's Load Limiter (LL) for use with Harrington's ER/NER and SNER Series of electric chain hoists. The LL is an optional accessory that employs a load sensing device and electric switch. Actuation causes the hoist's lifting circuit to be disabled, while still allowing the hoist to be used in the lower mode. The purpose of the LL is to protect the hoist from damage associated with lifting loads that exceed the hoist's capacity.

⚠ WARNING The Load Limiter does not prevent loads greater than the hoist's rated capacity from being applied to the hoist. The Load Limiter functions only to prevent lifting a load that exceeds the hoist's rated capacity. It does not indicate or prevent the application of such loads. The Operator of the hoist must ensure that the load applied does not and will not exceed the hoist's rated capacity. The principle is illustrated by the following:

A one ton hoist equipped with a Load Limiter is used to lift an empty container weighing 500 lbs. While suspended from the hoist, the container is filled full. After filling is completed, the container weighs 2,500 lbs., which exceeds the 2000-lb. rating of the hoist. The load limiter will not indicate or prevent this condition. It will only prevent lifting the filled container higher.

2.0 Technical Information

2.1 Product Identification

Hoist Capacity Code*	Load Limiter Type
001H	01H
003S	03S
005L	05S
003H	03H
005S	05S
010L	10S
010M	
010S	
015S	15 M
020L	20S
020M	
020S	
025S	25M
030C	30R
030L	30S
030S	
050L	50R

*Refer to ER, NER and SNER Owner's Manual.

2.2 Specifications

Adjustable Range: 90% to 135% of hoist's rated capacity

Accuracy: +/- 8% of setting

Factory Set: 115% of hoist's rated capacity

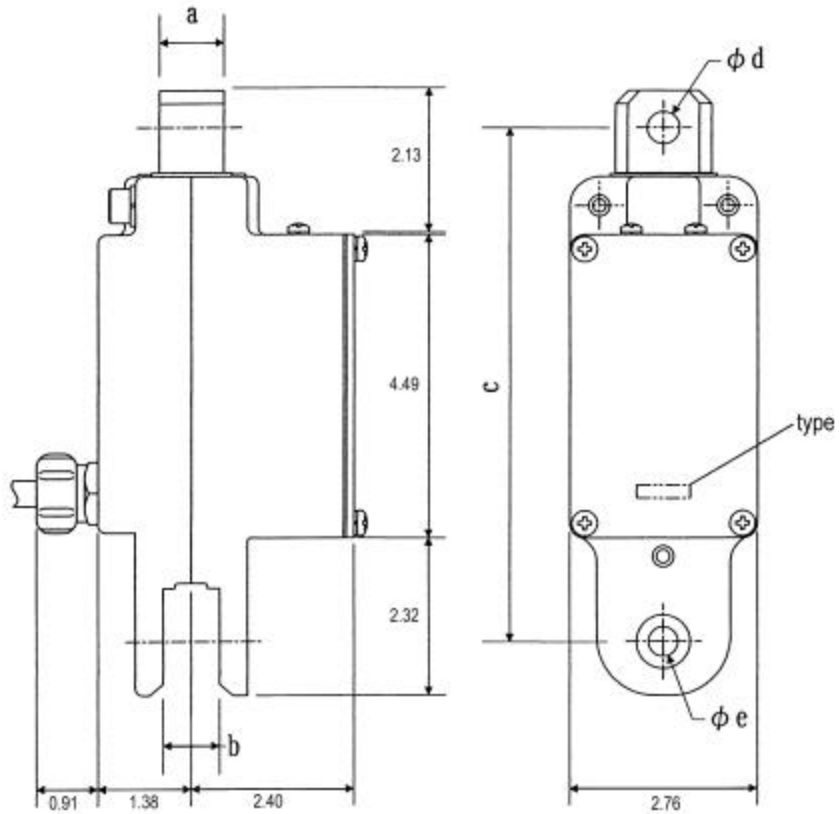
Electrical Rating: 500VAC, 5A

Enclosure Rating: IP55

2.3 Dimensions

2.3.1 Load Limiter

Table 2-2 Load Limiter Dimensions



Load Limiter type	01H, 03S, 03H	05S	10S	15M	20S	30R	25M	50R	
Dimensions (in)	a	0.94							0.47
	b	0.83							0.51
	c	7.60							7.76
	d	0.48							0.51
	e	0.43							0.51
Weight (lb)	9.3			9.5		9.7	9.5	9.7	

2.3.2 Hoist

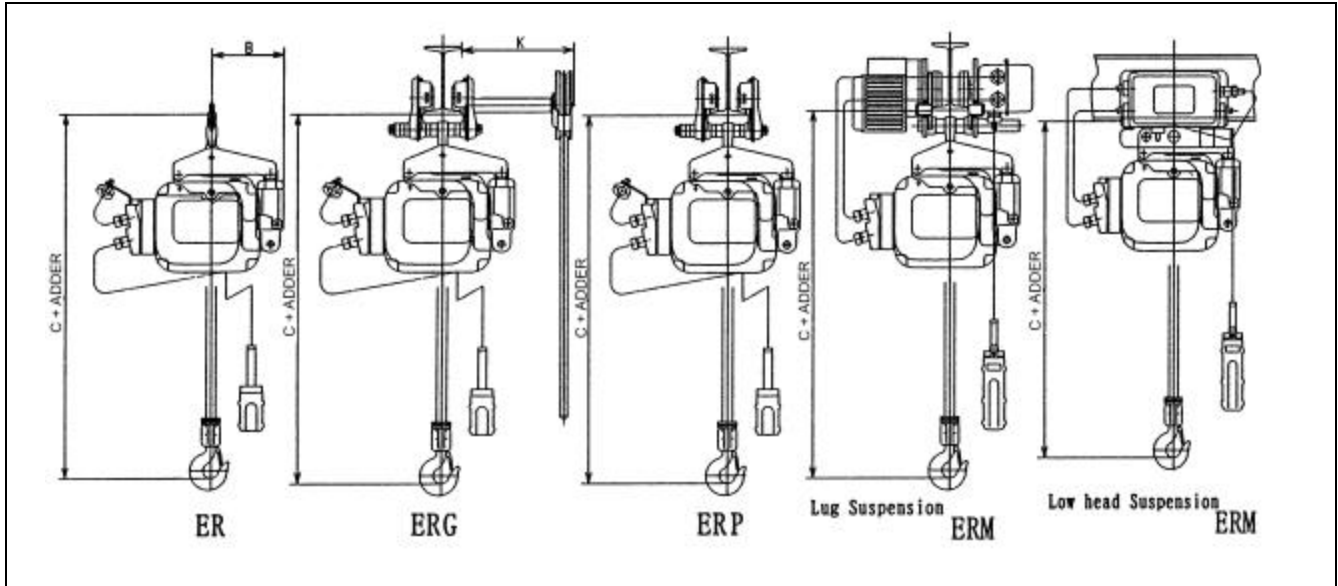


Fig. 2-1 Hoist with LL.

Comparisons to Standard Model (without Load Limiter)

Hoist CapacityCode*	Capacity (Tons)	Weight Adder (lb)					Headroom Adder (in)					additional B (in)		K (in)			
		ER	ERG	ERP	ERM Lug suspension	ERM Low head suspension	ER	ERG	ERP	ERM Lug suspension	ERM Low head suspension	ERM Lug suspension	ERM Low head suspension				
001H	1/8	+18.96					+19.85					+1.61		+0.59		11.9	
003S	1/4																
005L	1/4																
003H	1/4	+18.52					+19.62					+1.61		+0.59		7.7	
005S	1/2																
010L	1																
010M																	
010S	1	+18.52					+18.96					+0.59		12.7			
015S	1.5																
020L	2																
020M																	
020S	2	+20.51					+24.03					+1.44		+1.57		8.5	
025S	2.5																
030C	3																+21.61
030L	3																
030S																	
050S	5	+9.92					+9.92					+/-0		+/-0		3.8	6.1

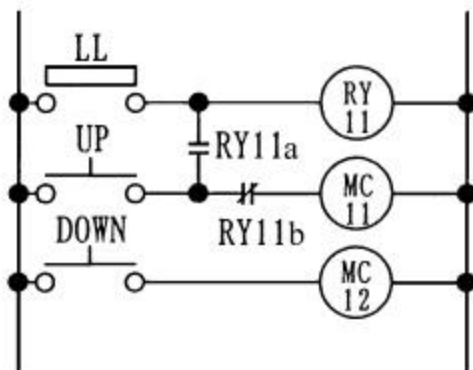
* Refer to the ER/NER and SNER Owner' Manual

2.4 Principle of Operation

Refer to Section 5.0 Parts List for diagram and parts names.

When a load is applied between the Plunger and the Casing, the Plunger acts to compress the Belleville Spring. As the spring compresses, the Adjuster mounted on the Plunger Arm moves toward the Switch. If the load is great enough, the spring will compress enough for the Adjuster to actuate the Switch. When the Switch is actuated, it breaks the hoist's lifting contactor control circuit.

2.5 Electrical Circuit



- LL --- Load Limiter Switch
- RY11 --- Self-hold relay
- MC11 --- Lifting contactor coil
- MC12 --- Lowering contactor coil

Note: MC contactors are mechanically interlocked.

Fig. 2-2

When the load applied to the hoist exceeds the setting of the LL, the LL's Switch will actuate. When the LL Switch actuates, its contacts close. This energizes RY11. When RY11 energizes, contact RY11a closes latching RY11, and RY11b opens disabling MC11. This interrupts the control circuit for the lifting contactor coil MC11, which prevents any further lifting. The lowering contactor coil is unaffected by this, and lowering the load is still possible.

3.0 Installation

3.1 Load Limiter and Suspension Plate

- 3.1.1 **1/8 to 3 Ton ER/NER and SNER except 030C**— ER hoists used with MR trolleys standardly use Suspender T to attach the hoist to the trolley. In this case, the low-head LL Assembly replaces suspender T. For all other applications the hoist is suspended by either a Top Hook or Connection Yoke/Suspender. In these cases the LL assembly is installed between the hoist body and suspension components. Install the LL Assembly as follows:
- 1) Refer to [Figure 3-1](#).
 - 2) Remove the four Controller Cover socket head bolts and allow the cover to swing fully open.
 - 3) Loosen the three or four captive screws holding the electrical component mounting Plate against the main body of the hoist and swing the plate out to access the required components.
 - 4) Loosen one of two Machine Screws attaching Plate A and remove the second Machine Screw. Allow Plate A to rotate out from the retaining slot in the bottom side of the Connection Shaft. Pull out the Connection Shaft and fixing shaft if necessary and remove the Top Hook Assembly or Connection Yoke.
 - 5) Refer to Figure 3-1 and locate the LL Assembly as shown. Line up the holes (LL Assembly and Connection Shaft holes) and re-install the Connecting Shaft. Reinstall the Hoist Fixing Shaft. Note, the Fixing Shaft does not pass through the LL Assembly.
 - 6) For hook mounted hoists install the Top Hook onto the Suspension Plates. For Connection Yoke/Suspender mounted hoists, install the suspender onto the Suspension Plates. Note the Connection Yoke is no longer required.
 - 7) Pass the LL Cable over the hoist body on the control cover side of the suspension plate as shown in Figure 3-1. Keep the electrical component mounting Plate free and control cover open for the installation of the Socket Frame Holder L and to make the necessary electrical connections.

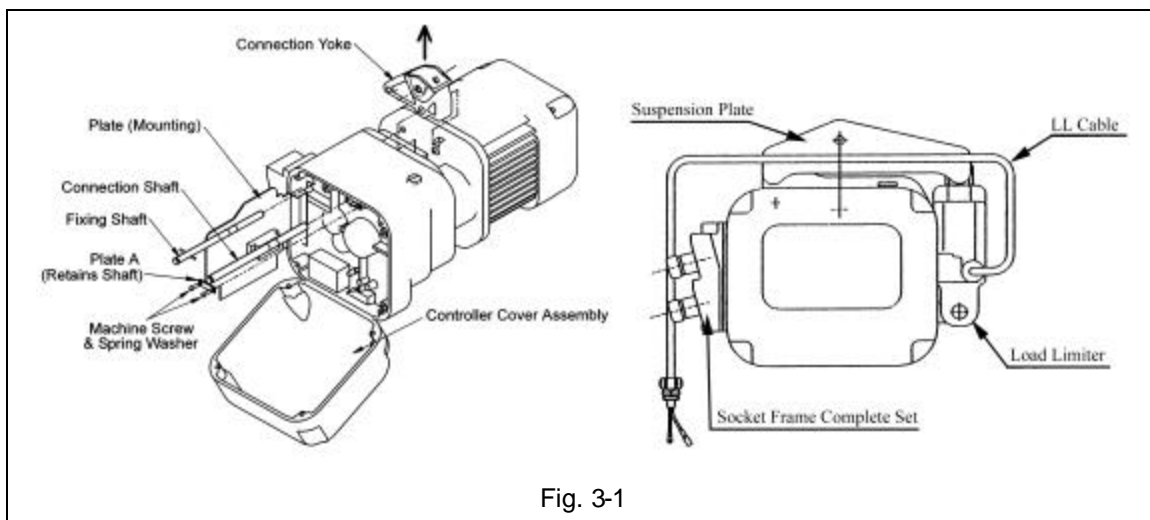


Fig. 3-1

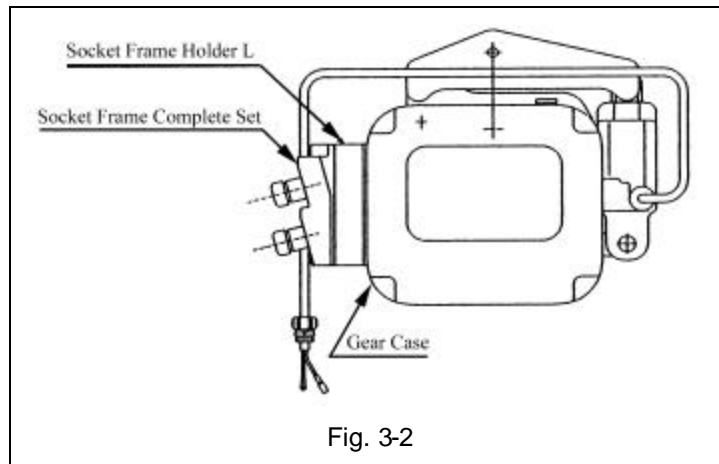
- 3.1.2 **3 and 5 Ton capacity codes 030C and 050L ER/NER and SNER** – These applications retain the standard suspension configuration. LL Suspension Plates and LL Connection Yokes are not required. The LL is installed between the hoist's Connection Yoke and the Load Chain as follows:

- 1) Remove the split pin, slotted nut and chain pin that connect the Load Chain to the Connection Yoke.
- 2) Bolt the LL to the Connection Yoke, orienting the LL Case Cover toward the hoist motor.
- 3) Connect the Load Chain to the LL using the Chain Pin, Slotted Nut and Split Pin. Make sure that the load chain is not twisted. Make sure that the Bottom Hook is not capsized (refer to Figure 3-7 in section 3-2 of the ER, NER and SNER Owner's Manual)
- 4) Remove the Chain Stopper from the load Chain 8 links below the LL. This Stopper is not used when the hoist is equipped with the LL. The other Chain Stopper, on the no-load end of the Load Chain, is still needed. Do NOT remove the Chain Stopper from the no-load end of the Load Chain!
- 5) Pass the LL Cable over the hoist body on the control cover side of the suspension plate as shown in Figure 3-1. Keep the electrical component mounting Plate free and control cover open for the installation of the Socket Frame Holder L and to make the necessary electrical connections.

3.2 Socket Frame holder and Load Limit Relay

3.2.1 The Socket Frame Holder L mounts between the Socket Frame Complete Set and the Gear Case. Refer to Figures 3-2 below and install as follows:

- 1) Remove the Socket Frame Complete Set and 4 & 5 Pin Socket Assemblies by:
 - a) Disconnecting the leads coming from the 4 Socket assemblies.
 - b) Remove the 4 mounting screws.
- 2) Install the Socket Frame Holder L and the Socket Frame Complete Set supplied with the Load Limiter Kit. This Socket Frame Complete Set has longer leads required to make the electrical connections. Be sure to place the packing/gaskets between the Gear Case and Socket Frame Holder L, and between the Socket Frame Holder L and Socket Frame Complete Set.
- 3) Attach the LL cable to the Socket Frame Holder L. Refer to Figure 3-3.



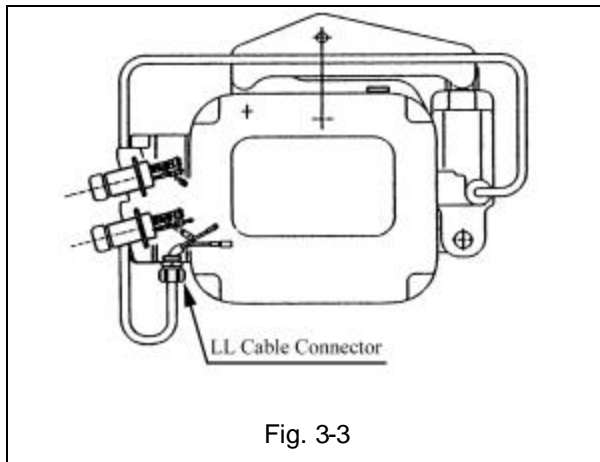


Fig. 3-3

3.2.2 Install the Load limiter Relay as follows:

- 1) Refer to Figure 3-4.
- 2) Loosen and remove the two screws that fasten the Terminal Plate (Fig. No. 11 in Section 10.5 of the ER/NER and SNER Owner's Manual) to the base plate (Fig. No. 4 of the ER/NER and SNER Owner's Manual). Remove the Terminal Plate.
- 3) Insert the Load Limiter Relay into the available slot in the Terminal Plate as shown in Fig. 3-4 and reinstall the Terminal Plate.

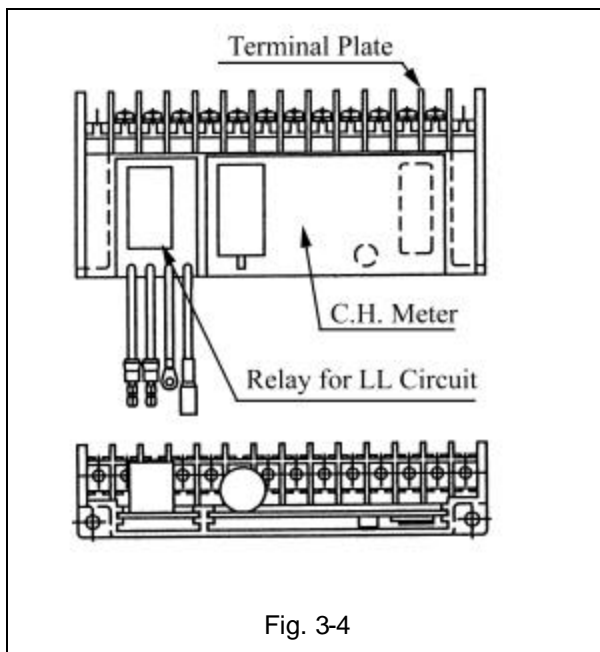


Fig. 3-4

3.3 Electrical Connections

- 3.3.1 Refer to wiring diagram for ER/NER 61137 or SNER 61370 provided here for basic single speed hoist connections. For Dual speed hoists or other applications, refer to the diagram provided with the hoist or system.
- 3.3.2 After confirming all electrical connections are made correctly, reassemble the hoist making sure that wires are not pinched.

3.2 Performance Test

Confirm via load testing that the LL actuates within approximately +/- 8% of its setting.

4.0 Adjustment

4.1 General:

The general sequence for adjusting is to determine the Static Set Load (SSL), then use the SSL to adjust the Load Limiter (LL).

4.2 Determine Static Set Load

4.2.1 General

The general formula for determining the SSL is

$$\text{SSL} = \text{RC} \times \text{SP} \times f$$

Where

RC is Rated Capacity of either LL or hoist. (see sections 4.2.2 or 4.2.3)

SP is the percentage of the hoist's rated capacity at which the LL is to actuate (Factory set at 1.15%)

f is the Dynamic Load Factor to account for small load increases due to acceleration while lifting.

4.2.2 Prior to Load Limiter installation:

If the LL is to be adjusted prior to installation on the hoist, then determine SSL using f and the LL's RC from Table 4-1.

4.2.3 After Load Limiter installation:

If the LL is to be adjusted after installation on to the hoist, then determine the SSL using f and the hoist's RC from Table 4-1.

Table 4-1				
Hoist Capacity Code*	Load Limiter Type	Rated Capacity		f
		LL (lbs.)	Hoist (Tons)	
001H	01H	99	1/8	1.55
003S	03S	198	1/4	1.45
005L	05S	397	1/4	1.30
003H	03H	198	1/4	1.65
005S	05S	397	1/2	1.30
010L	10S	794	1	1.30
010M				
010S				
015S	15 M	972	1.5	1.15
020L	20S	1296	2	1.30
020M				
020S				
025S	25M	1620	2.5	1.25
030C	30R	3307	3	1.10
030L	30S	1944		1.10
030S				
050L	50R	5512	5	1.10

*Refer to ER/NER and SNER Owner's Manual.

4.3 Adjust the Load Limiter

- 4.3.1 Refer to Figure 4-1.
- 4.3.2 Remove the LL's case cover.
- 4.3.3 Loosen the setscrew with a hex wrench and Rotate the adjuster clockwise to obtain a sufficient gap between the adjuster and the electrical switch plunger.
- 4.3.4 Apply the Static Set Load determined in section 4.2 above.
- 4.3.5 Rotate the adjuster counter clockwise until the electrical switch is activated or clicks to make contact. A circuit tester may be used to verify the making of contact.
- 4.3.6 Tighten the setscrew to lock the adjuster to the plunger arm.
- 4.3.7 Test the LL setting. Place a test load equivalent to the Set Point Load (RC X SP) on the floor directly beneath the hoist. Connect the load to the hoist's bottom hook such that there is no slackness in the hoist's load chain. Operate the hoist in the up direction to verify that the Load Limiter actuates and prevents the hoist from lifting the load. Readjust if necessary.

4.3.8 Replace the casing cover.

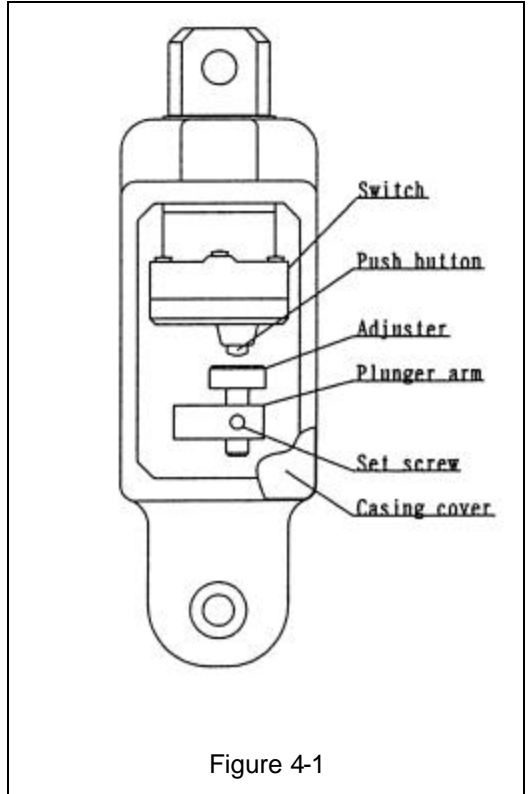


Figure 4-1

This Page Intentionally Left Blank

5.0 Parts List

5.1 Internal Parts List

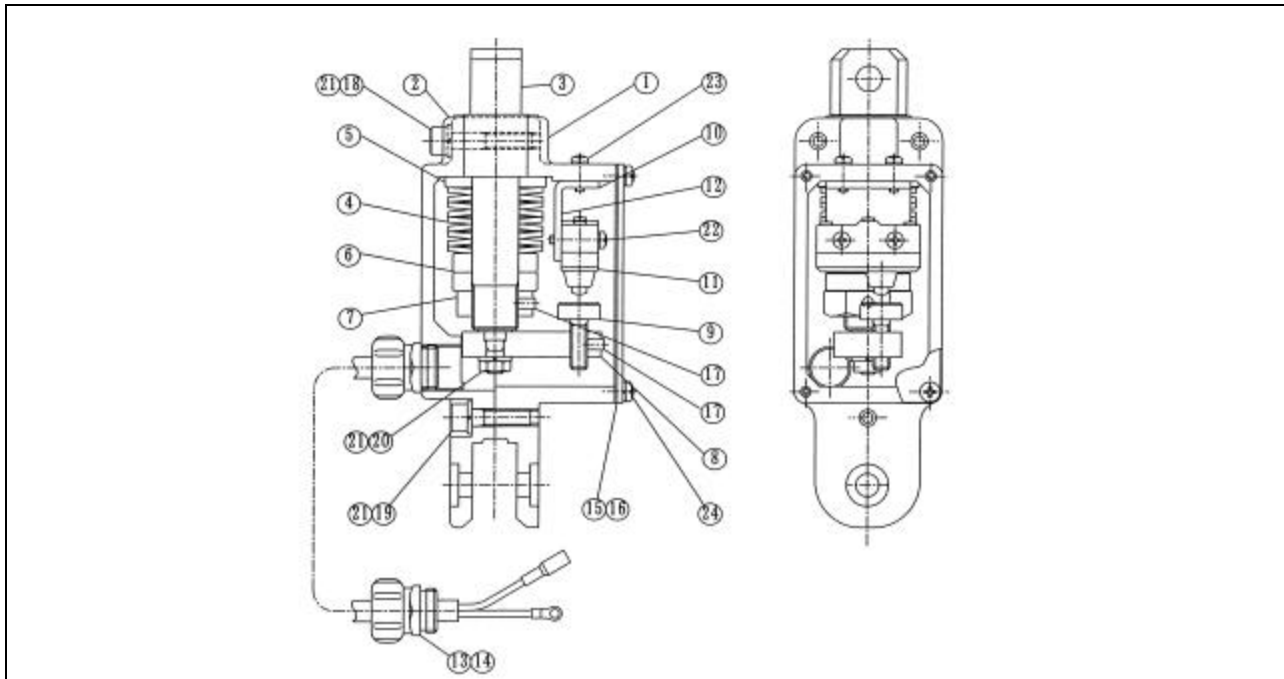


Figure Number	Part Name	Type	Quantit y	Load Limiter type										
				01H,	03S, 03H	05S	10S	15M	20S	30R	25M,30S	50R		
1	Casing A		1											
2	Casing B		1											
3	Plunger		1											
4*	Belleville spring	S-22	(x)	(14)										
		L-22	(x)		(14)	(7)								
		H-22	(x)				(9)							
		H-25	(x)					(10)	(8)	(2 x 6)	(6)	(15)		
5	Spring support U		1											
6*	Spring support D	A	(x)		(1)		(3)	(2)						
		B	(x)					(1)	(2)	(1)	(3)			
		C	(x)										(1)	
7	Set nut		1											
8	Plunger arm		1											
9	Adjuster		1											
10	Switch bracket		1											
11	Switch		1											
12	Insulation plate		1											
13	Connector		2											
14	Power supply cable 2C		1											
15	Casing packing		1											
16	Casing cover		1											
17	Set screw		2											
18	Socket bolt		2						M8x40x22(mm)					
19	Socket bolt		1						M8x30x22(mm)					
20	Nut		1						3-M8					
21	Spring washer		4						2-M8					
22	Machine screw		2						M4 x 24 x 24(mm)					
23	Machine screw		2						M4 x 14 x 14(mm)					
24	Machine screw		4						M5x10x10(mm)					

*Quantities in parentheses.

5.2 Assembly Parts List

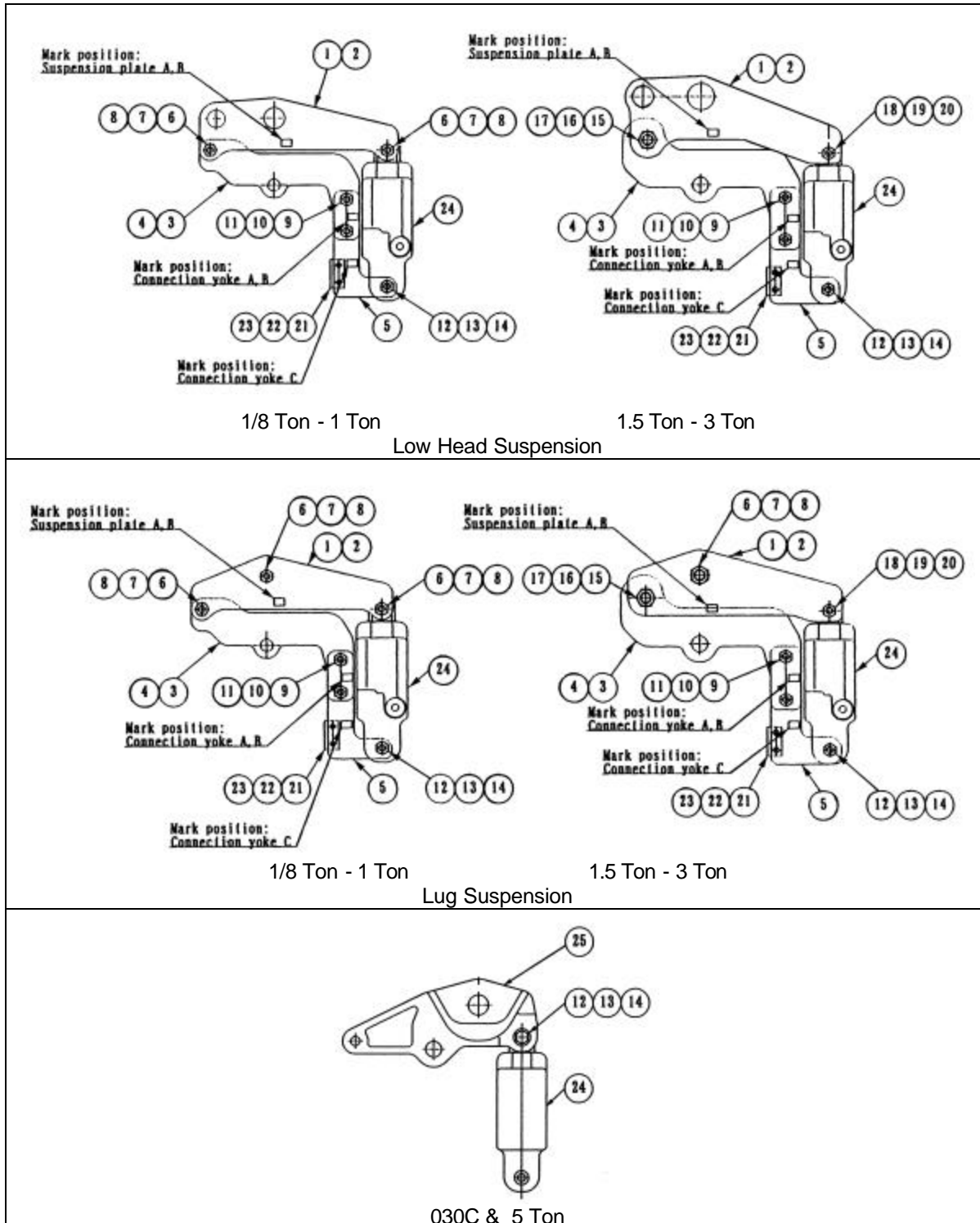


Table 5-2 Parts list

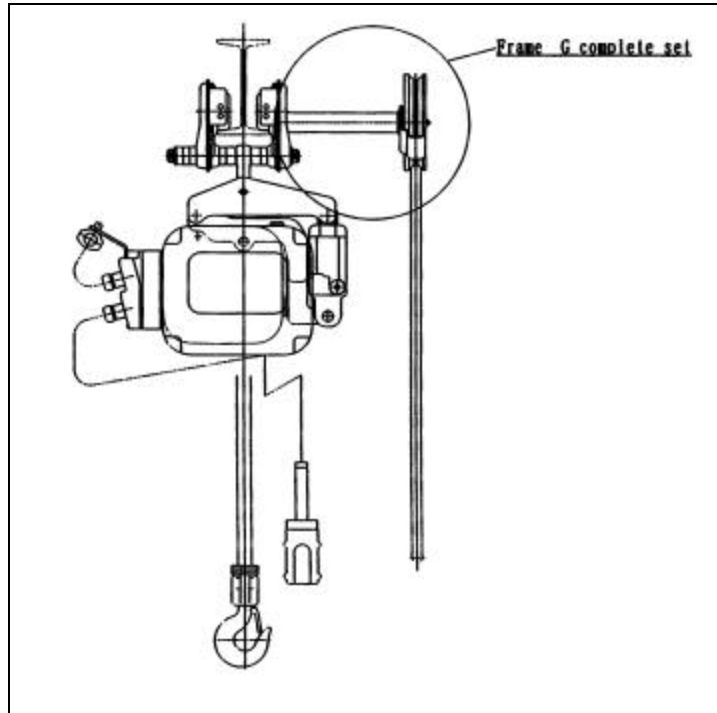
Fig. No.	Part Name	Qty	ER-B			ER-C			ER-D				ER-E					
			001H	003S	005L	003H	005S	010M 010L	010S	020M 015S	020L	030C	020S	025S	030L	030S	050L	
			1/8	1/4	1/2	1/4	1/2	1 ton	1.5 ton	2 ton	3 ton	2 ton	2.5 ton	3 ton	5 ton			
1	Suspension plate A,B	1 set	BS						ES				ES	Low head: FS				
2														Log suspension: ES				
3	Connection yoke A,B	1 set	BS			CS			DS	DL			ES					
4																		
5	Connection yoke C	1	BS						ES				ES					
6*	Connection bolt	(x)	Low head: 2, Lug suspension: 3						Low head: 0, Lug suspension: 1		Low head: 0, Lug suspension: 1							
7*	Slotted nut	(x)	Low head: 2, Lug suspension: 3						Low head: 0, Lug suspension: 1		Low head: 0, Lug suspension: 1							
8*	Split pin	(x)	Low head: 2, Lug suspension: 3						Low head: 0, Lug suspension: 1		Low head: 0, Lug suspension: 1							
9	Bolt	2	M10x40x26(mm)						M10x50x26(mm)				M10x50x26(mm)					
10	Spring washer	2	2-M10						2-M10									
11	Nut	2	1-M10						1-M10									
12	Chain pin	1																
13	Slotted nut	1																
14	Split pin	1																
15	Connection rod B	1																
16	Slotted nut	1																
17	Split pin	1																
18	Connection rod A	1																
19	Slotted nut	1																
20	Split pin	1																
21	Buffer	1																
22	Bolt	2	M6x15x15(mm)						M6x15x15(mm)									
23	Spring washer	2	2-M6						2-M6									
24	Load Limiter Assembly	1 set	01H	03S	05S	03H	05S	10S	15M	20S	30R	20S	25M	30S	50R			
25	Connection yoke D	1										†						†

*Quantities in parentheses.

†Supplied with the hoist.

5.3 Load Limiter for ERG

1. ERG hoists with Load Limiter for 1/8 Ton (except 030C) to 3 ton use the extended hand wheel trolley that has the special Frame G complete set.
2. Load Limiter-equipped ERG hoists for 5 Ton use the standard GT.



6.0 Warranty

All products sold by Harrington Hoists, Inc. are warranted to be free from defects in material and workmanship from date of shipment by Harrington for the following periods:

Manual Hoists & Trolleys - 2 years

Air and Electric Powered Hoists, Trolleys, and Crane Components - 1 year

Spare / Replacement Parts - 1 year

The product must be used in accordance with manufacturer's recommendations and must not have been subject to abuse, lack of maintenance, misuse, negligence, or unauthorized repairs or alterations.

Should any defect in material or workmanship occur during the above time period in any product, as determined by Harrington Hoist's inspection of the product, Harrington Hoists, Inc. agrees, at its discretion, either to replace (not including installation) or repair the part or product free of charge and deliver said item F.O.B. Harrington Hoists, Inc. place of business to customer. Customer must obtain a Return Goods Authorization as directed by Harrington or Harrington's published authorized repair center prior to shipping product for warranty evaluation. An explanation of the complaint must accompany the product. Product must be returned freight prepaid. Upon repair, the product will be covered for the remainder of the original warranty period. If it is determined there is no defect, or that the defect resulted from causes not within the scope of Harrington's warranty, the customer will be responsible for the costs of returning the product.

Harrington Hoists, Inc. disclaims any and all other warranties of any kind expressed or implied as to the product's merchantability or fitness for a particular application. Harrington will not be liable for death, injuries to persons or property or for incidental, contingent, special or consequential damages, loss or expense arising in connection with the use or inability whatever, regardless of whether damage, loss or expense results from any act or failure to act by Harrington, whether negligent or willful, or from any other reason.



www.harringtonhoists.com

Harrington Hoists, Inc.
401 West End Avenue
Manheim, PA 17545
Phone: 717-665-2000
Toll Free: 800-233-3010
Fax: 717-665-2861

Harrington Hoists - Western Division
2341 Pomona Rincon Rd. #103
Corona, CA 92880-6973
Phone: 909-279-7100
Toll Free: 800-317-7111
Fax: 909-279-7500

ERLLOM