



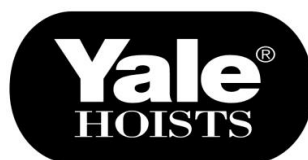
Wire Rope Hoists

Electronically Programmable Limit Switch Manual

Document Number C11878701. REV AB

Before installing hoist, fill in the information below.
Refer to the Hoist and Motor data plates.

Model No. _____
Serial No. _____
Purchase Date _____
Voltage _____
Rated Load _____

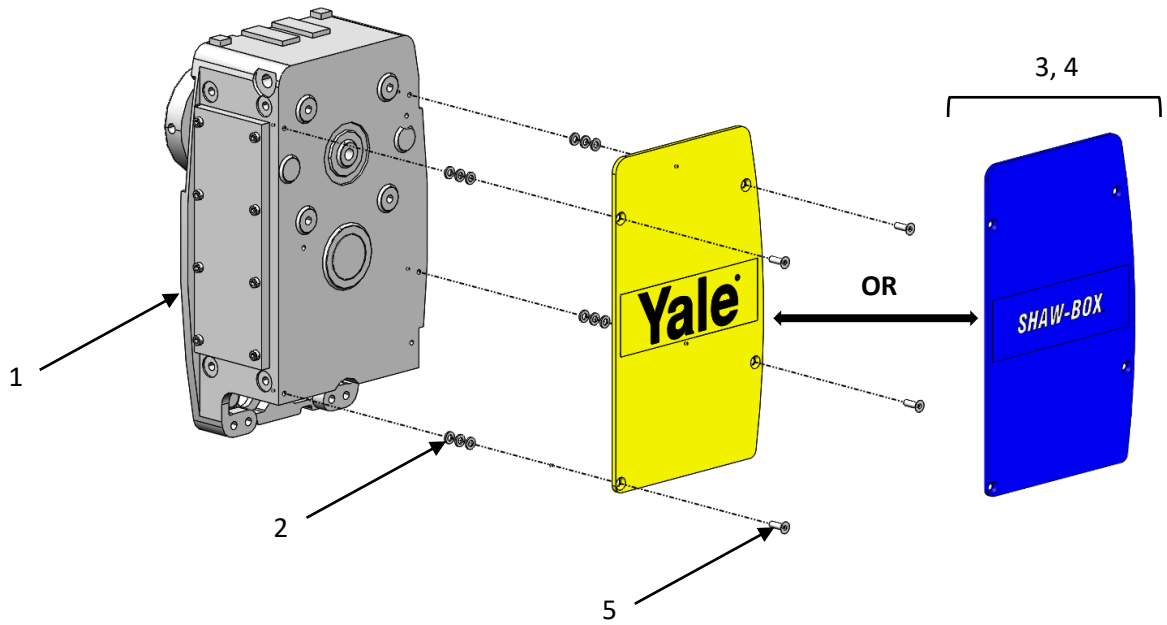


SHAW-BOX®

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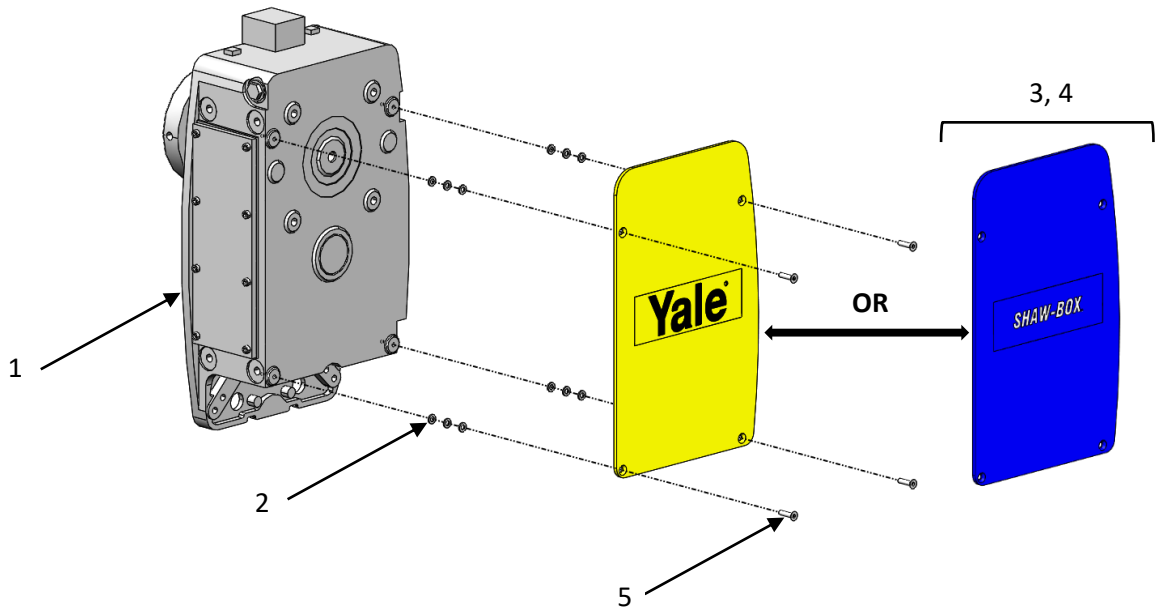
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SH3 Hoist – A16 Panel Replacement



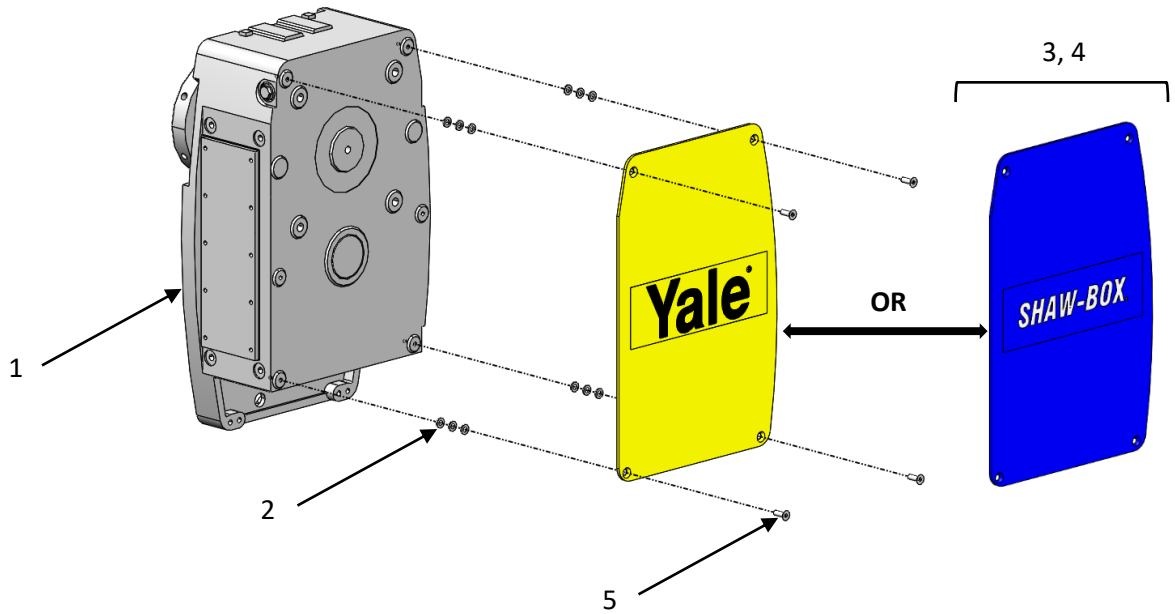
Item	Part Number	Qty.	Description	Specification	Comment
1		1	Gearbox	See parts manual	
2	A5060190	12	Washer	B 6,4-200HV	
3	C0343230830Y	1	Cover Plate	SH3, Yale, Ral 1023 Color	
3	C0343230830B	1	Cover Plate	SH3, Shaw-Box, Blue Ral 5227 Color	
4	C23666109	1	Sticker	SH3&4, Yale, 7.68" X 2.48"	
4	C23666110	1	Sticker	SH3&4, Shaw-Box, 7.68" X 2.48"	
5	A5010090	4	Screw	Countersunk, M6x20	

SH4 Hoist – A16 Panel Replacement



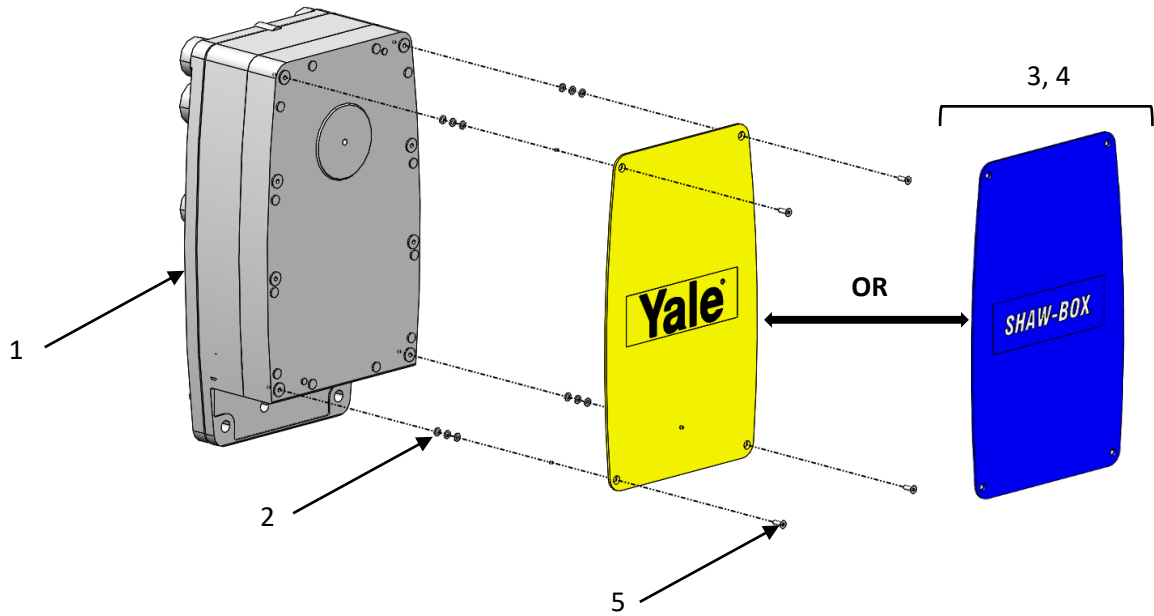
Item	Part Number	Qty.	Description	Specification	Comment
1		1	Gearbox	See parts manual	
2	A5060190	12	Washer	B 6,4-200HV	
3	C0443230830Y	1	Cover Plate	SH3, Yale, Ral 1023 Color	
3	C0443230830B	1	Cover Plate	SH3, Shaw-Box, Blue Ral 5227 Color	
4	C23666109	1	Sticker	SH3&4, Yale, 7.68" X 2.48"	
4	C23666110	1	Sticker	SH3&4, Shaw-Box, 7.68" X 2.48"	
5	A5011390	4	Screw	Countersunk, M6x25	

SH5 Hoist – A16 Panel Replacement



Item	Part Number	Qty.	Description	Specification	Comment
1		1	Gearbox	See parts manual	
2	A5060210	12	Washer	B 8,4-200HV	
3	C0543230830Y	1	Cover Plate	SH5, Yale, Ral 1023 Color	
3	C0543230830B	1	Cover Plate	SH5, Shaw-Box, Blue Ral 5227 Color	
4	C23666111	1	Sticker	SH5&6, Yale, 12.17" X 3.94"	
4	C23666112	1	Sticker	SH5&6, Shaw-Box, 12.17" X 3.94"	
5	A5011360	4	Screw	Countersunk, M8x25	

SH6 Hoist – A16 Panel Replacement



Item	Part Number	Qty.	Description	Specification	Comment
1		1	Gearbox	See parts manual	
2	A5060210	12	Washer	B 8,4-200HV	
3	C0643230830Y	1	Cover Plate	SH6, Yale, Ral 1023 Color	
3	C0643230830B	1	Cover Plate	SH6, Shaw-Box, Blue Ral 5227 Color	
4	C23666111	1	Sticker	SH5&6, Yale, 12.17" X 3.94"	
4	C23666112	1	Sticker	SH5&6, Shaw-Box, 12.17" X 3.94"	
5	A5011360	4	Screw	Countersunk, M8x25	

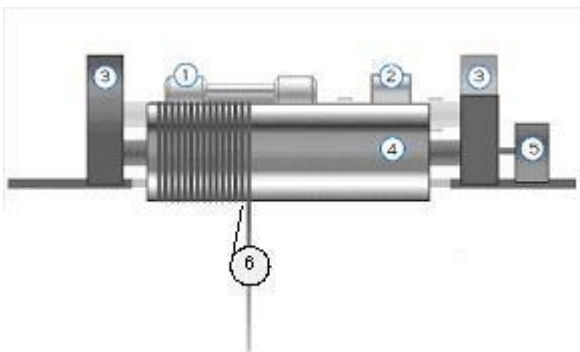
Electronic Programmable Limit Switches – YK Specific

1. Introduction

The IMPULSE VG+ Series 4 firmware allows the programming of electronic limit switches to slow down, operating stop and emergency stop hoist motions at preset locations where historically a position geared limit switch was used to accomplish this. The positions can be defined as follows:

- Upper Limit Emergency Stop (UL3)
- Upper Limit Operating Stop (UL2)
- Upper Limit Slow Down (UL1)
- Lower Limit Slow Down (LL1)
- Lower Limit Operating Stop (LL2)
- Lower Limit Emergency Stop (LL3)

A redundant secondary Upper Limit Switch (separate hardware) is required in case of failure of the primary upper limit stop. As illustrated in the hoist below, if the geared limit switch at UL2 failed to stop the hook, it would physically contact item # 6 which lifts a counterweight and in turn opens an electrical contact. This contact is wired into multi-function digital input (MFDI) S5 on the drive.



1. Motor/Encoder
2. Brake
3. Gear Reduction
4. Drum
5. Typical Geared Limit Switch
6. Weighted / Paddle Limit Switch (Failsafe)

Figure 1.

The Electronic Programmable Limit Switch (EPLS) function makes it possible to eliminate the geared limit switches (item #5 in Figure 1.). Geared limit switches keep track of the drum position and have electrical contacts that open/close by adjustable cams to trip the switches at preset locations. These switches are in turn wired to the multi-function digital inputs of the drive or in series with raise/lower (forward/reverse) run commands. Since these geared limit switches are mechanical devices, they are subject to wear and vibration, which can cause loose screws on cams.

The weighted / paddle limit switch (item #6 in Figure 1) is independent of the geared limit switch and cannot be eliminated. The weighted / paddle limit switch establishes the Hook Height Home position and is wired into multi-function digital input S5 on the drive and is programmed in the drive to reset the hook position.

UL1, UL2, UL3, LL1, LL2, and LL3 are programmed (without the use of rotary limit switches). The Electronic Programmable Limit Switch (EPLS) function utilizes a stored height measurement (U1-51). When a Revolutions parameter has a setting other than zero (0), the ELPS function will be enabled for that limit.

WARNING!

The EPLS function should NOT take the place of the failsafe weighted / paddle limit. UL3 set point is for redundancy only!

2. Settings

2.1. Setpoints

To establish the EPLS setpoints adjust the lower block to the desired position for slow down (UL1/LL2), operational stop (UL2/LL2), and emergency stops (UL3/LL3). Note the motor revolutions at these discrete points in monitor parameter U1-51 and enter value into parameters C3-16 through C3-21 for each desired position. The Hook Height Home position in parameter C3-22 is the position where the upper block limit switch is activated. Position the lower block to the position where the block limit switch is triggered and note the motor revolutions in U1-51 and enter the value into C3-22. The standard setpoint dimensions for limit switches can be found in the Hoist Operation and Service manual.

2.2. Parameters

Parameter	Name	Content	Range	Default Setting
C3-08	UL3/LL3 StopMthd	0:Decel / Alarm 1:Coast / Alarm 2:Use B3-03/Alarm 3:Decel / Fault 4:Coast / Fault 5: Use B3-03/Fault	0-5	1
C3-09	UL3/LL3 Dec Time			1.0
C3-14	Hook Height Home	Selects the position of the hook when at Home. The position is reset on the rising edge of the input. This also requires a delay at power-up to prevent slow NC inputs from resetting the height. 0: Home = UL2 N.O. (C3-22 → U1-51) 1: Home = LL2 N.O. (C3-13 → U1-51) 2: Home MFDI Upper (C3-22 → U1-51) 3: Home MFDI Lower (C3-13 → U1-51) 4: Home = UL3 N.O. (C3-22 → U1-51)	0-4	2
C3-15	Hook Height Out	0: 0 Revs = 0% 1: 0 Revs = 100%	0-1	0
C3-16	UL2 Revolutions	Motor revs from Home position to UL2	0-65535	0
C3-17	UL1 Revolutions	Motor revs from Home position to UL1	0-65535	0
C3-18	LL1 Revolutions	Motor revs from Home position to LL1	0-65535	0
C3-19	LL2 Revolutions	Motor revs from Home position to LL2	0-65535	0
C3-20	UL3 Revolutions	Motor revs from Home position to UL3	0-65535	0
C3-21	LL3 Revolutions	Motor revs from Home position to LL3	0-65535	0
C3-22	HHH Revolutions	Motor Revolutions to set in U1-51 when HHH input is triggered and C3-14 = 0, 2 or 4. The Home position must be at or above the UL2 stop point.	0-65535	0

2.3. MFDI

Setting	Name	Content
77H	Hook Height Home	Sets motor revolutions when C3-14 = 2 or 3
73H	LL2/UL2 Bypass	Bypasses LL2 and UL2 stop limits (MFDI and EPLS).
77H	HkHghtHome N.C.	NC version of 67H

2.4. MFDO

Setting	Name	Content
133H	!UL3/LL3 Active	Opens M2-M3 fault output to disable main contactor

2.5. OPE

Code	Error Name	Corrective Action
OPE20 EPLS Setting	Motor revolution values for EPLS settings must be in order (unless set to 0).	Verify C3-20 < C3-16 < C3-17 < C3-18 < C3-19 < C3-21 Verify C3-22 is less than all but C3-20

3. Usage

3.1. Limits Bypass

Bypassing the Upper or Lower Limits can be done to allow the following without the use of jumpers or re-programming of the drive parameters:

- To allow the testing of the weighted / paddle limit switch (UL3), or re-homing the Height Measurement function.
- To allow changing of the wire ropes (spooling all the rope off the hoist drum).

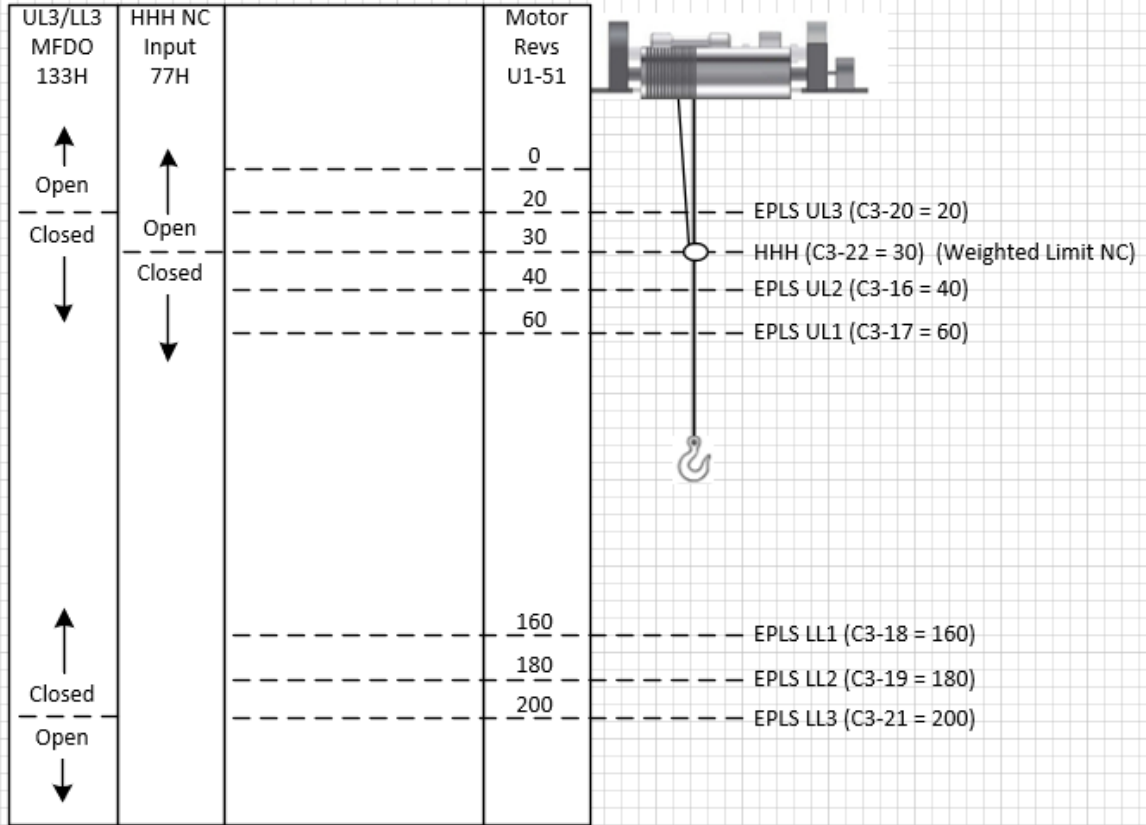
When a MFDI is set to 73H 'LL2 / UL2 Bypass', and the input is ON, the following are bypassed:

- UL2 detected by Electronic Limit Switch (C3-16)
- LL2 detected by Electronic Limit Switch (C3-19)

UL3 and LL3 are emergency limits and are integrated with the main contactor by a multi-function digital output (MFDO) output M2-M3. When UL3, LL3 is reached the main contactor is disabled and panel mounted pushbutton S261 must be held while moving off the limit point. When position is above UL3 or below LL3 the M2-M3 output will change state, the pushbutton can be released, and main contactor will be held energized for normal operation.

To test the emergency limit points a panel mounted bypass pushbutton S260 is wired to a multi-function digital input and must be held to bypass the UL2, LL2, and weighted / paddle limit to test operation and position of the emergency limit points.

3.2. Hook Height Diagram



- Note 1: Hook Height Home input is triggered on the edge only.
 Note 2: There is a 1 second delay at startup for NC inputs to engage. A Run command shall end the delay.
 Note 3: Motor revolutions do not go negative.

RECOMMENDED SPARE PARTS

Certain parts of your hoist will, in time, require replacement under normal wear conditions. It is suggested that the following parts be purchased for your hoist as spares for future use.

- One Brake Friction Disc
- One Brake Control Module
- One Brake Hardware Kit
- One Set of Contactors
- One Transformer
- One Wire Rope Assembly
- One Hook Latch Kit

Note: When ordering parts always furnish Hoist Serial Number, Catalog Number, Motor power, Voltage, Phase, Frequency and Rated Load of Hoist on which the parts are to be used.

PARTS AND SERVICES ARE AVAILABLE IN THE UNITED STATES AND IN CANADA

Parts for your hoist or trolley are available from your local authorized repair station. For the name of the nearest parts or service center, visit our website www.cmworks.com or call the Columbus McKinnon customer service department at (800) 888-0985.

<h1 style="margin: 0;">WARRANTY</h1>	
LIMITATION OF WARRANTIES, REMEDIES AND DAMAGES	
<p>INDEMNIFICATION AND SAFE OPERATION</p> <p>Buyer shall comply with and require its employees to comply with directions set forth in instructions and manuals furnished by Seller and shall use and require its employees to follow such instructions and manuals and to use reasonable care in the use and maintenance of the goods. Buyer shall not remove or permit anyone to remove any warning or instruction signs on the goods. In the event of personal injury or damage to property or business arising from the use of the goods, Buyer shall within 48 hours thereafter give Seller written notice of such injury or damage. Buyer shall cooperate with Seller in investigating any such injury or damage and in the defense of any claims arising therefrom.</p> <p>If Buyer fails to comply with this section or if any injury or damage is caused, in whole or in part, by Buyer's failure to comply with applicable federal or state safety requirements, Buyer shall indemnify and hold Seller harmless against any claims, loss or expense for injury or damage arising from the use of the goods.</p> <p>CMCO Warranty (HOISTS)</p> <p>A. 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This warranty is limited and provided only to the original end user. Each Good must be registered within sixty (60) days of receipt of each product to establish eligibility. Please register at www.cmworks.com/hoist-warranty-registration or submit registration card via US mail.</p> <p>F. Any action against Seller for breach of warranty, negligence or otherwise in connection with the electrical components of any Good must be commenced by Buyer within one (1) year after: (a) the date any alleged claim accrues; or (b) the date of delivery of the Goods to Buyer, whichever is earlier. Any action against Seller for breach of warranty, negligence or otherwise in connection with the mechanical components of any Good must be commenced by Buyer within one (1) year after the date any alleged claim accrues.</p> <p>G. This warranty is contingent upon Buyer's proper maintenance and care of the Goods, and does not extend to normal wear and tear. Seller reserves the right, at its option, to void this warranty in the event of Buyer's use with the Goods of parts or accessories other than those supplied by Seller.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">⚠ WARNING</p> <p>Alterations or modifications of equipment and use of non-factory repair parts can lead to dangerous operation and injury.</p> <p>TO AVOID INJURY:</p> <ul style="list-style-type: none"> • Do not alter or modify equipment. • Do use only factory replacement parts. </div>



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