

Manufacturer's Warranty



PEARL RIVER LIGHTING WARRANTY

ESL Vision is providing an extended limited warranty to of a total of ten (10) years for the ESL-Sportslighter Fixtures purchased on the below PO number(s) and for the property listed below:

ST. TAMMANY PARISH SCHOOL BOARD
PEARL RIVER HIGH SCHOOL
LIGHTING AT TRACK
PEARL RIVER LA

Fixtures:

12) ESL-SPT-550W-250-50

40) ESL-SPT-550W-250-30

The PO number(s) that these fixtures were purchased on, by Elliott Electric-Covington:

- PO# 137-023327 ESL Order number 1064787

Please see the attached for the remaining warranty.

Thank you,

A handwritten signature in blue ink that reads 'J Vaughn'.

Jodi Vaughn
IS Sales Manager
(888) 493-5559
jodi.vaughn@eslvision.com
6/20/2024



LIMITED WARRANTY FOR LED PRODUCTS AND ACCESSORIES PURCHASED IN NORTH AMERICA

ESL Vision, LLC (hereinafter 'Company'), provides the following limited warranty to those LED lighting products and accessories purchased from Company by any Distributor and/or a Distributor's customers (hereinafter 'Purchaser'). This limited warranty is a Purchaser's exclusive remedy, and applies as follows to new LED Products purchased by Purchasers in the United States or Canada, which are accompanied by this written warranty:

Warranty

Subject to the exclusions contained below, Company warrants its LED lighting lamps / tubes / Fixtures / bulbs and accessories ("Products"), which are sold to Purchaser for the reasonable and customary purpose(s) for commercial and/or residential lighting uses, to be free from defects in materials and workmanship under normal usage for the period(s) outlined below.

Products Covered

Please reference the pages below.

Replacement Policy

ESL Vision, at its option, will, at no charge, repair or replace any Product that does not conform to this warranty. Company has the right to inspect and evaluate any returned product to determine the cause of any warranty claim. If the Company finds that the claim results from an excluded condition and/or act, then the Company shall not be obligated to repair and/or replace the product. Upon finding that the warranty claim is covered by this warranty, then the Company, at its sole option, provide a functionally equivalent reconditioned, and/or a refurbished and/or a pre-owned and/or a new Product for satisfying Company's obligations under this warranty.

If purchaser has any questions regarding further information about ESL Visions policy please email warranty@eslvision.com. Please include a picture of your defective lamp including the manufactured date.

You will receive instructions on how to ship the Product(s), at your expense, to the Company. To obtain the benefits of this warranty service, you must include: (a) a copy of your receipt, bill of sale or other comparable proof of purchase; (b) a written description of the problem; (c) the name of the name and location of the installation facility (if applicable) and, most importantly; (d) your address and telephone number

WARRANTY EXCLUSIONS

Damages or Failures

This warranty does not cover damages or failures caused by acts of God or as a result of any abuse, misuse, abnormal use, or use in violation of any applicable standard, code, and/or instructions for use in installations, including, but not limited to, those contained in the National Electrical Code, the standard for Safety of Underwriters Laboratory, Inc., Standards for the International Electrotechnical Commission, and the Standards for the American National Standards Institute. Company reserves the right to examine any products and/or accessories to determine the cause of failure and patterns of usage. The date of the purchase and installation must be verified to validate the elapsed operating hours if a warranty claim is made. If product life is not validated, the product date code will be used to establish elapsed time based on Company's estimate of usage.

Abuse & Misuse

Defects or damage that result from: (a) improper operation, improper installation, storage, misuse or abuse, accident or neglect, to the product resulting from misuse; (b) contact with liquid, water, rain, (for products that have an Ingress rating less than IP46) or dirt or the like, heat that exceeds the lamps specification requirement, or other extreme environmental conditions; (c) subjecting the Product or accessory to abnormal usage or conditions; or (d) other acts which are not the fault of Company, are excluded from coverage.

Unauthorized Service or Modification

Defects or damages resulting from service, testing, adjustment, installation, maintenance, alteration, including without limitation, modification in any way by someone other than Company, or its authorized distributors, are excluded from coverage.

Limitations

ANY IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE, SHALL BE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY, OTHERWISE THE REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS EXPRESS LIMITED WARRANTY IS THE EXCLUSIVE REMEDY OF THE DISTRIBUTOR AND ITS CUSTOMERS, AND IS PROVIDED IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. IN NO EVENT SHALL COMPANY BE LIABLE, WHETHER IN CONTRACT OR IN TORT (INCLUDING NEGLIGENCE) FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, OR FOR ANY AND ALL INDIRECT, INCIDENTAL, SPECIAL AND/OR CONSEQUENTIAL DAMAGES OF ANY KIND,



AND/OR LOSS OF REVENUE AND/OR PROFITS, LOSS OF BUSINESS, AND/OR OTHER FINANCIAL LOSS ARISING OUT OF AND/OR IN CONNECTION WITH THE ABILITY OR INABILITY TO USE THE PRODUCTS, TO THE FULL EXTENT THESE DAMAGES MAY BE DISCLAIMED BY LAW.

Some states and jurisdictions do not allow the limitation or exclusion of incidental or consequential damages, or limitation on the length of an implied warranty, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state or from one jurisdiction to another. The laws of the state of Utah shall apply to the interpretation and/or enforcement of the terms and provisions of this warranty.

Laws in the United States and other countries preserve for the Company certain exclusive rights for issued and/or patented, trademarked products and/or copyrighted information. No other use of the Product is permitted by the Purchaser, its agents, clients, customers, those acting on behalf of, or at the request of, Purchaser, Purchaser's successors, designees, and/or assigns, including without limitation, the disassembly of such products.

The foregoing warranties constitute the sole and exclusive remedy of the Purchaser, and the sole liability for the Company. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE OR IMPLIED.

Seller reserves the right to modify this warranty from time to time. Any modification of this warranty shall effective for all orders placed with Seller on or after the effective date of such revised warranty.



Individual Lamp Series Limited Warranty:

ESL VISION LIMITED WARRANTY: ESL GENERAL LAMP SERIES (This includes ESL Vision product categories GLV, GDT, CL product lines) ALSO INCLUDING MINI FLOOD LIGHTS & ALL INTERNAL DRIVER FIXTURES. THIS ALSO INCLUDES ALL CONTRACTOR SERIES.

Limited Warranty: ESL Vision warrants that this bulb will be free from defects in material and workmanship and will operate for 5 years based on up to 10 hours average usage per day/7 days per week from the date of purchase. In the event that this lamp does not last the term of the warranty and has met the requirements of the basic warranty ESL Vision will at its option send you a refund or provide a replacement. REPLACEMENT OR REFUND IS ESL VISION'S SOLE WARRANTY OBLIGATION.

ESL VISION LIMITED WARRANTY: ESL QC and TI SERIES (ALL QC LAMPS and TI lamp, TI Retrofit and TI Fixtures)

Limited Warranty: ESL Vision warrants that this product will be free from defects in material and workmanship and will operate for 7 years based on up to 24 hours average usage per day/7 days per week from the date of purchase OR will operate 10 years based upon 12 hours of average usage per day/7 days per week from the date of purchase. In the event that this product does not last the term of the warranty and has met the requirements of the basic warranty ESL Vision will at its option send you a refund or provide a replacement. REPLACEMENT OR REFUND IS ESL VISION'S SOLE WARRANTY OBLIGATION.

ESL VISION LIMITED WARRANTY: ESL MUR, CANOPY, AREA LIGHT, HIGH OUTPUT FLOOD LIGHTS, SPORTSLIGHTERS, AND WALL PACK FIXTURE

Limited Warranty: ESL Vision warrants that this Fixture will be free from defects in material and workmanship and will operate for 10 years based on up to 12 hours average usage per day/7 days per week from the date of purchase. In the event that this lamp or its subcomponents do not last the term of the warranty and has met the requirements of the basic warranty ESL Vision will at its option send you a refund or provide a replacement. REPLACEMENT OR REFUND IS ESL VISION'S SOLE WARRANTY OBLIGATION.

ESL VISION LIMITED WARRANTY: ESL DOWNLIGHT FIXTURE

Limited Warranty: ESL Vision warrants that this Fixture will be free from defects in material and workmanship and will operate for 5 years based on up to 12 hours average usage per day/7 days per week from the date of purchase. In the event that this lamp or its subcomponents do not last the term of the warranty and has met the requirements of the basic warranty ESL Vision will at its option send you a refund or provide a replacement. REPLACEMENT OR REFUND IS ESL VISION'S SOLE WARRANTY OBLIGATION.

ESL VISION LIMITED WARRANTY: ESL SPECTRUM SERIES, RHB SERIES AND LHB SERIES

Limited Warranty: ESL Vision warrants that this product will be free from defects in material and workmanship and will operate for 7 years based on up to 24 hours average usage per day/7 days per week from the date of purchase OR will operate 10 years based upon 12 hours of average usage per day/7 days per week from the date of purchase. In the event that this product does not last the term of the warranty and has met the requirements of the basic warranty ESL Vision will at its option send you a refund or provide a replacement. REPLACEMENT OR REFUND IS ESL VISION'S SOLE WARRANTY OBLIGATION.



ESL VISION LIMITED WARRANTY: EMERGENCY DRIVERS, INDEPENDENT DRIVERS & CONTROLS (INCLUDING WIRED AND WIRELESS KONEX)

Limited Warranty: ESL Vision warrants that this product will be free from defects in material and workmanship and will operate for 5 years from the date of purchase. In the event that this product does not last the term of the warranty and has met the requirements of the basic warranty ESL Vision will at its option send you a refund or provide a replacement. REPLACEMENT OR REFUND IS ESL VISION'S SOLE WARRANTY OBLIGATION

Craftsmanship Warranty



JOHN D. FOURNIER
ELECTRIC
CO. LLC

DATE: 06/25/2024

Job# STPSB PO493

RE: Pearl River High Soccer Field Lighting
PROJECT NAME

39110 Rebel Lane
MALL NAME OR STREET ADDRESS

Pearl River, La 70452
CITY, STATE

John D. Fournier Electric Company, LLC WARRANTEES
WORKMANSHIP AND MATERIAL

USED ON THE ABOVE-MENTIONED PROJECT FOR THE TERM OF ONE-YEAR
COMMENCING ON THE DATE SHOWN ON THE CERTIFICATE OF OCCUPANCY

SIGNED,


President
OFFICER OF SUBCONTRACTOR'S COMPANY
John D. Fournier

John D. Fournier Electric Co. LLC
PLEASE PRINT NAME OF SUBCONTRACTOR'S COMPANY

63403 Old Military Road Suite 1 Pearl River, Louisiana 70452 (985) 863-7577

Insurance Certificates



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
08/16/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).


PRODUCER AssuredPartners Gulf Coast Ins Agency LLC 3300 West Esplanade Avenue Suite 300 Metairie LA 70002		CONTACT NAME: Sandra Chappetta PHONE (A/C, No, Ext): (504) 581-5353 E-MAIL ADDRESS: sandra.chappetta@assuredpartners.com FAX (A/C, No): (504) 588-2954	
		INSURER(S) AFFORDING COVERAGE	
		INSURER A: United Fire & Indemnity Co	NAIC # 19496
		INSURER B: Bridgefield Casualty Insurance Company	10335
		INSURER C:	
		INSURER D:	
		INSURER E:	
		INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** 2023-2024 Liability **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY	Y		88328500	08/30/2023	08/30/2024	EACH OCCURRENCE \$ 1,000,000
	<input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000
							MED EXP (Any one person) \$ 5,000
							PERSONAL & ADV INJURY \$ 1,000,000
GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:							GENERAL AGGREGATE \$ 2,000,000
							PRODUCTS - COMP/OP AGG \$ 2,000,000
							\$
AUTOMOBILE LIABILITY							COMBINED SINGLE LIMIT (Ea accident) \$
<input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS ONLY							BODILY INJURY (Per person) \$
							BODILY INJURY (Per accident) \$
							PROPERTY DAMAGE (Per accident) \$
							\$
UMBRELLA LIAB							EACH OCCURRENCE \$
<input type="checkbox"/> OCCUR							AGGREGATE \$
EXCESS LIAB							\$
<input type="checkbox"/> CLAIMS-MADE							\$
DED RETENTION \$							\$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	N/A		19610861	08/30/2023	08/30/2024	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)						E.L. EACH ACCIDENT \$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE \$ 1,000,000
							E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Sieverding Construction Inc. is named as additional insured as required by written contract prior to a loss.

CERTIFICATE HOLDER Sieverding Construction Inc. 278 General Patton Ave. Mandeville LA 70471	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE 
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Operation and Maintenance



Powering Business Worldwide

PEARL RIVER HS

Operation & Maintenance Manual

Negotiation Number

V3290624X4K1

Volume 1 of 1

Equipment:

Panelboards

Safety Switches



Powering Business Worldwide

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Powering Business Worldwide

Panelboards



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Drawings

**Main Breaker 200A V. Mtd.
PDG23G0200, TMTU**

1	GHB2030	GHB2025	2
3			4
5	GHB2025	GHB1020	6
7		GHB2020	8
9	PROV		10
11	PROV	PROV	12
13	PROV	PROV	14
15	PROV	PROV	16
17	PROV	PROV	18
19	PROV	PROV	20
21	PROV	PROV	22
23	PROV	PROV	24
25	PROV	PROV	26
27	PROV	PROV	28
29	PROV	PROV	30

Blank Cover

Blank Cover
7 inches

General Information

(Section 1 of 1)

Service Voltage: 480Y/277V 3Ph 4W **Enclosure:** Type 3R
Bus Rating & Type: 225A Copper **Neutral Rating:** 225A
Ground Bar: Std. Bolted Aluminum, Al or Cu cable
S.C. Rating: 14k A.I.C. Fully Rated

Main Device Type: Main Breaker - Top Cable Entry
Main Terminals: Mechanical - (1) #4-4/0 (Cu/Al)
Neutral Terminals: Mechanical - (1) #6-300 kcmil (Cu/Al)
Box Catalog No.: GWPBQ2048PR
Trim: Complete Enclosure (Includes Trim)

Surface Mounted

Box Dimensions: 48.00" [1219.2mm]H x 20.00" [508.0mm]W x 6.5" [165.1mm]D
Min. Gutter Size: Top = 5.5" [139.7mm] Bottom = 5.5" [139.7mm]
 Left = 5.75" [146.1mm] Right = 5.75" [146.1mm]

Panel ID Nameplate: (1)
Type: Plastic, adhesive-backed (2) **480Y/277V 3Ph 4W**
Color: White with Black Letters (3)

UL

Trim Lock: T-Handle Lock Assembly
 Circuit Directory: Plastic Sleeve with Card
 This is a Pow-R-Stock Takeoff.
 Material may ship short or be substituted based on availability at the time of manufacturing.
 Main Circuit Breaker Trip Type: Thermal-Magnetic.
 Seismic Label (IBC/CBC Seismic Qualified).
 Heat Loss - Watts (Est.) = 109
 Weight - lbs (Est.) = 110
 Wire shall be based on the ampacity of 75°C rated conductors unless otherwise indicated.

Device Modifications:
 Ref # Description

Branch Devices						
Qty	Poles	Trip	Frame	Amps	kAIC	
1	1	20	GHB	100	14	
1	2	20	GHB	100	14	
2	2	25	GHB	100	14	
1	2	30	GHB	100	14	
21	1		PROV			
Main Devices						
Qty	Poles	Trip	Frame	Amps	kAIC	
1	3	200	Frame 2	225	14	

Notes:

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PREPARED BY GREGORY RAY	DATE 6/24/2024	Eaton			
APPROVED BY	DATE	JOB NAME PEARL RIVER HS			
VERSION 1.0.0.71	TYPE PRL2X	DRAWING TYPE Final			
NEG-ALT Number V3290624X4K1-0000	REVISION 0	DWG SIZE A	G.O.	ITEM	SHEET 1 of 1



Powering Business Worldwide

Instruction Data

Panelboard seismic application guidelines

Equipment representing the products listed below were subjected to seismic testing in accordance with the 2012 International Building Code (IBC) and the 2013 California Building Code (CBC). The results of these tests exceeded the requirements as stated within the IBC and CBC and demonstrated the ability to function after the test. All installation guidelines covered in this document as well as the instruction and operations literature provided with the equipment must be followed to ensure installation suitable for a seismic application.

Certificates for various types of distribution and control equipment along with an application paper, *“Earthquake Requirements and Seismic Capabilities for Eaton’s Electrical Distribution and Control Equipment”* can be found at www.eaton.com/seismic.

Mounting surface and mounting requirements

Proper mounting of the equipment is the single most important factor in withstanding a seismic event. The mounting surface must be designed to withstand the reaction loads imposed on it by the equipment during a seismic event. The mounting bolts, quantity and torque values contained in **Table 1** represent the mounting characteristics for the specimens tested. The anchoring system should be put in place prior to equipment installation to reduce effort associated with anchoring. Wall plan drawings provided for the specific product should be utilized to identify anchoring locations.

Table 1. Equipment hardware and floor plan information (as tested)

Panelboard type	Enclosure type	Bolt type and size	Torque	Bolt quantity	Wall plan drawing #
PRL1a, 1aF, 2a, 2aF, 3a, 3E and F-16	NEMA® 1	SAE grade 5, ½-13	60 lb ft	4	1A32158
PRL1a, 1aF, 2a, 2aF, 3a, 3E and F-16	NEMA 12/3R	SAE grade 5, ½-13	60 lb ft	4	1A84756
PRL1a-LX and 2a-LX	NEMA 1	SAE grade 5, ½-13	60 lb ft	4	1A32472
PRL4	NEMA 1	SAE grade 5, ½-13	60 lb ft	4	1A32157
PRL4	NEMA 12/3R	SAE grade 5, ½-13	60 lb ft	4	6589C50
PRL5P	NEMA 1	SAE grade 5, ½-13	60 lb ft	4	47-35168
PRL5P	NEMA 12/3R	SAE grade 5, ½-13	60 lb ft	4	CE24213



Powering Business Worldwide

Displacement

Not applicable for wall-mounted equipment.

Center of gravity

For seismic calculations, the following dimensions should be used to locate the center of gravity for the equipment.

Table 2. Equipment center of gravity

Axis	PRL1a, 1aF, 1a-LX, 2a, 2aF, 2a-LX, 3a, 3E and F-16	PRL 4 and 5P
Vertical	67 percent of overall enclosure height as taken from the bottom of the enclosure	67 percent of overall enclosure height as taken from the bottom of the enclosure
Left to right	Centerline of product	Centerline of product
Front to back	3 inches from rear mounting plane of enclosure	7 inches from rear mounting plane of enclosure

Equipment weight

The maximum weight of the products is given below. For job-specific weights, see order-specific drawings.

Table 3. Equipment weight

Panelboard type	Panelboard height <=48" width <=20"	Panelboard height <=48" width >20"	Panelboard height >48" width <=20"	Panelboard height >48" width >20"
PRL1a, 2a and F-16	187 lbs.	218 lbs.	392 lbs.	424 lbs.
PRL1aF and 2aF	NA	252 lbs.	NA	457 lbs.
PRL1a-LX and 2a-LX	NA	NA	213 lbs.	NA
PRL3a and 3E	240 lbs.	271 lbs.	504 lbs.	535 lbs.
PRL4	NA	NA	NA	904 lbs.
PRL5P	NA	NA	NA	1,000 lbs.

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 1000 Eaton Boulevard
 Cleveland, OH 44122
 United States
 Eaton.com

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 October 2013



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Powering Business Worldwide

Safety Switches



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Drawings

General Information: Safety Switches

Global Specifications

System Voltage	600 VAC
Switch Type	Single Throw - Heavy Duty
Poles/Blades	3-Pole
Amperage	200
Protection	Non-Fusible with No Neutral
Enclosure Type	NEMA 3R
Special Paint	ANSI-61 (Gray) Standard
Fuse Clips	None
Switch Lugs	(1) 6-250
Fungus Proof Treatment	None
Lock-On Provision	None
Trapped Key Interlock	None
Fuse Pullers	None
Control Pole	None
Ground Lugs	(2) 14-2
Stainless Mechanism	None
Mill Duty	None

Cover Controls

QUANTITY	DESCRIPTION
Nameplate	
Service Entrance Barrier	NEC 230.62 UL98 compliant barrier for additional safety

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PREPARED BY
GREGORY RAY DATE
6/24/2024



APPROVED BY DATE

JOB NAME **PEARL RIVER HS**

DESIGNATION

VERSION
1.0.1.3

TYPE
SSW2

DRAWING TYPE
Customer Appr.

NEG-ALT Number
V3290624X4K1-0000

REVISION
0

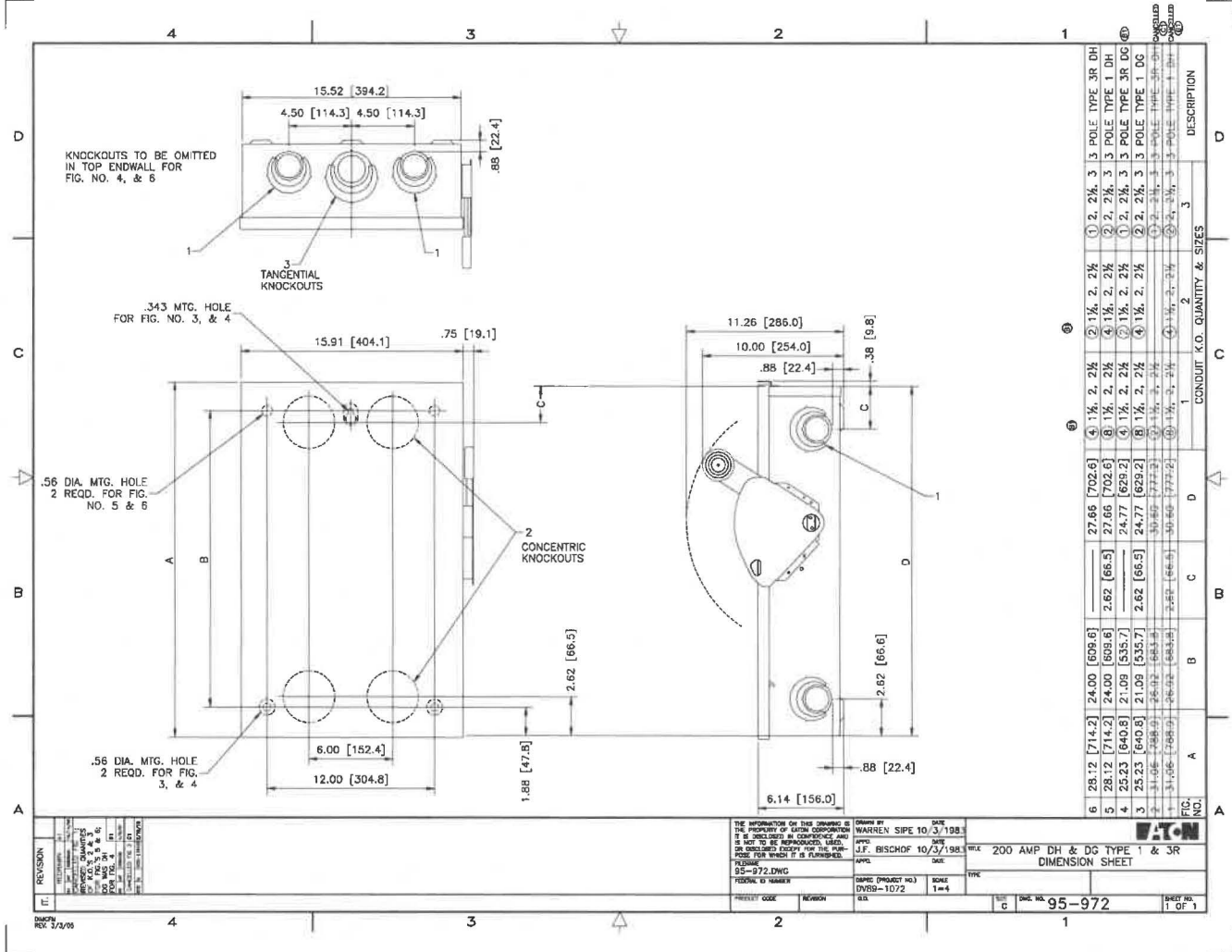
DWG SIZE
A

G.O.

ITEM

SHEET
1 of 1

GOINIG-AH-Date: V3290624X4K1-0000-6/24/2024	Job Name: PEARL RIVER HS
Item Number: DH364URK	Designation:
Catalog Number:	



REV	DESCRIPTION	DATE
1	ISSUED FOR MANUFACTURE	3/2/09
2	REVISED TO ADD DIMENSIONS FOR FIG. NO. 4, 5 & 6	6/24/2024
3	REVISED TO ADD DIMENSIONS FOR FIG. NO. 3, 4	6/24/2024
4	REVISED TO ADD DIMENSIONS FOR FIG. NO. 5 & 6	6/24/2024

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CHECKED BY J.F. RISCHOF 10/3/1981	DATE 10/3/1981
PROJECT CODE 95-972.DWG	SCALE 1=1
SHEET NO. 1 OF 1	DIMENSION SHEET 200 AMP DH & DG TYPE 1 & 3R



Powering Business Worldwide

Instruction Data

NEMA KS 3

GUIDELINES FOR INSPECTION AND PREVENTIVE MAINTENANCE OF SWITCHES USED IN COMMERCIAL AND INDUSTRIAL APPLICATIONS

NEMA Standards Publication KS 3-2010

*Guidelines for Inspection and Preventive Maintenance
of Switches Used in Commercial and Industrial Applications*

Published by:

National Electrical Manufacturers Association
1300 North 17th Street, Suite 1752
Rosslyn, Virginia 22209

www.nema.org

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Section 7 deals with the operation of accessory devices. Failure of an accessory would lead to replacement of that accessory, or switch replacement if accessories are not removable.

In summary, following an automatic overcurrent interruption at or near its interrupting rating, the condition of any protective device should be checked prior to circuit re-energization. Switches that have experienced multiple high short-circuit-current faults, as evidenced by conditions at the source of the faults, should receive a thorough inspection per the guidelines of NEMA KS 3. This document should also be used for recommended, periodic, preventive maintenance.

Introduction

NEMA KS 3 deals with guidelines for inspection and preventive maintenance of switches used in commercial and industrial applications. These guidelines are to be used to identify switches requiring maintenance or replacement. Good practice includes periodic switch maintenance during plant shutdown or during a regular maintenance period as specified, for example, in NFPA 70B. When a switch operates automatically, good practice dictates that the source of the overcurrent should be located, and if it is suspected that the operation was at or near the interrupting rating, the switch condition should be checked prior to circuit re-energization.

When appropriately maintained, switches provide reliable protection for many years. The exact lifetime of the switch, however, is determined by the switch's operational duty and by its environment.

With respect to operational duty, for some circuits there will be occasional overload conditions or low-current fault conditions. Here the operating life will be tens of years. In other circuits, there may be high short-circuit-current faults but it should be noted that bolted faults at the switch interrupting rating are rarely encountered. Short circuit events can significantly reduce the operating life of the switch and may necessitate replacement of the switch. Switches in this Guideline are evaluated to three different UL Standards: UL 98 *Enclosed and Dead-Front Switches*, UL 977 *Fused Power-Circuit Devices*, and UL 1429 *Pullout Switches*. They are subjected to thousands of endurance test operations; overload test operations; and two interrupting tests at maximum short-circuit-current rating. Thus switches have an extensive but finite interrupting capability, and switches that experience multiple high short-circuit-current faults should receive a thorough inspection and be replaced if necessary.

With respect to environmental effects, switches are sometimes exposed to high ambient temperatures, high humidity, and other ambient conditions that are hostile to long term performance. For example, industries may have corrosive environments or could be associated with dusty environments that could affect operating parts.

It is not intended that switches be disassembled for inspection. Rather, NEMA KS 3 should be referenced during periodic maintenance or during specific inspection following a high short-circuit-current fault. This document is intended to ensure that switches are well maintained, and provides guidelines for switch replacement.

This document is divided into separate sections as follows:

Section 1 presents the scope and referenced standards.

Section 2 details the safety procedures to be followed.

Section 3 deals with general guidance.

Section 4 deals with inspection procedures and describes thermal checks (4.2) and visual checks (4.3) of the enclosure and switch condition. Overheating of the switch would necessitate further investigation, and cracks in the insulation systems would certainly necessitate switch replacement.

Section 5 deals with preventive maintenance and ensures that the switch's life is not compromised by external conditions. The objectives are that the switch operates in a clean environment and that the terminals are in good condition (5.2), that fuses (if required) are connected properly (5.3), and that wire connectors are in good condition and are correctly torqued (5.4).

Section 6 deals with non-destructive test procedures that can be used to verify specific operating characteristics of switches. These include the Mechanical Operation Test (6.2), the Insulation Resistance Test (6.3), and the Individual Pole Resistance Test (millivolt drop test) (6.4). Non-compliance to one or more of these tests could necessitate switch replacement.

Section 1 GENERAL

1.1 Scope

NEMA Standards Publication KS 3 sets forth, for use by qualified personnel¹, a number of basic procedures that may be used for the inspection and preventive maintenance of switches used in industrial and commercial applications rated up to and including 600 V 50/60 Hz ac or ac/dc.

NOTE—Consult the manufacturer for other manufacturer-specific ratings.

The *National Electrical Code*[®] defines several switch types: General Use Switch, Isolating Switch, Motor-Circuit Switch, and Double-Throw Switch. In most cases, a switch is capable of interrupting/disconnecting its rated current at its rated voltage. An Isolating Switch does not have an interrupting rating and is actuated after the circuit has been opened by some other means. A Motor-Circuit Switch is rated in horsepower and is capable of interrupting the maximum overload current of a motor with the same horsepower rating.

The methods outlined may be used to verify specific characteristics of a switch that was originally built and tested in compliance with the requirements of NEMA Standards Publication KS 1. These methods are intended for field application and are, therefore, non-destructive in nature. Accordingly, these methods cannot be used to verify all performance capabilities of a switch since verification of some capabilities requires tests of a destructive nature.

Many tests, including those of a destructive nature, as defined in KS 1, are performed on representative samples of switches by the manufacturer, as part of a routine program of factory inspection.

The KS 3 Standards Publication is not intended, nor is it adequate, to verify proper electrical performance of a switch that has been disassembled, modified, rebuilt, refurbished, or handled in any manner not intended or authorized by the original manufacturer. Such switches should be removed from service.

1.2 Referenced Standards

In this publication, reference is made to the latest edition of the standards listed below. Copies are available from the indicated sources.

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169

NFPA 70 *National Electrical Code*[®]
NFPA 70B *Recommended Practice for Electrical Equipment Maintenance*
NFPA 70E *Standard for Electrical Safety in the Workplace*

¹ For purposes of these guidelines, a qualified person is one who has skills and knowledge related to the construction and operation of the electrical equipment and installation and has received training to recognize and avoid the hazards involved. In addition, the person is trained:

- and authorized to test, energize, clear, ground, tag, and lockout circuits and equipment in accordance with established safety practices.
- in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, and flash resistant clothing, in accordance with established safety practices.
- in first aid.

National Electrical Manufacturers Association

1300 North 17th Street
Suite 1752
Rosslyn, Virginia 22209

Evaluating Water-Damaged Electrical Equipment

- NEMA KS 1 *Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum)*
NEMA KS 2 *Distribution Equipment Switch Application and Maintenance Guide, A User's Reference*
NEMA 250 *Enclosures for Electrical Equipment (1000 Volts Maximum)*

Underwriters Laboratories, Inc.

333 Pfingsten Road
Northbrook, IL 60062

- UL 98 *Enclosed and Dead-Front Switches*
UL 977 *Fused Power-Circuit Devices*
UL 1429 *Pullout Switches*

Section 2 SAFETY PROCEDURES

The inspection and preventive maintenance of switches in service require the user to take all necessary precautions to avoid being injured.

2.1 Warning

2.1.1 Switch Testing

WARNING—Hazardous voltages in electrical equipment can cause death or severe personal injury. Turn off and lock out the power supplying this equipment before performing any of the following operations.

Unless otherwise specified in this publication, inspection, preventive maintenance, and testing must always be performed on equipment that is de-energized (note that certain tests require control power to conduct the test). Verify that there is no voltage present on incoming line and load terminals (and on control power terminals, if present) and between these terminals and ground to positively ascertain that the equipment is totally de-energized. The disconnecting or isolating means on the line side of the devices being checked and/or tested must be locked in the OFF position to ensure that the equipment will remain de-energized during these procedures.

Safety related work practices described in NFPA 70E must be followed at all times.

2.1.2 Test Equipment

WARNING—High voltages involved with some test equipment can cause death or serious injury. Do not touch or permit anyone else to touch the switch or the test leads when voltage is applied. Strict adherence to the safety procedures recommended by the manufacturers of the test equipment is required.

2.2 Safety Procedure

In all the following clauses, where removal of the enclosure cover is necessary, the following safety steps must be taken in the sequence shown.

- 2.2.1 Operate the switch to the OFF position. Turn OFF all power supplying the switch to electrically isolate it from all other circuits.
- 2.2.2 Open the enclosure and verify that there is no voltage on the incoming and load conductors (including control power conductors, if present) and between these conductors and ground to positively ascertain that the equipment is de-energized.
- 2.2.3 If disconnection of power and accessory leads, cables, or bus bars is required, be sure to properly identify all connections to ensure safe and accurate reconnection.
- 2.2.4 Before any functional tests are performed, be sure to connect the test switch with properly rated cable torqued to the recommended values marked on the rating label of the switch.

2.3 Reinstallation Safety Procedure

- 2.3.1 Do not re-energize equipment until all connections (power and control) are thoroughly checked for accuracy and tightness (torqued to value listed on the rating label), internal areas of enclosure are cleaned of any conductive loose parts or debris, all switches are turned off, and all enclosure covers are reinstalled.

- 2.3.2** If it is necessary to replace the switch, make sure the new switch is properly rated for the application.

Section 3 GUIDELINES

3.1 To Avoid Damaged or Otherwise Inoperable Switches Being Inadvertently Returned to Service

To avoid damaged or otherwise inoperable switches being inadvertently returned to service, it is suggested that such switches be destroyed.

3.2 Guidance Regarding Inspection and Preventive Maintenance Procedures

Industrial users have requested guidance regarding inspection and preventive maintenance procedures that could be carried out on a regularly scheduled basis. Sections 4 through 7 of this publication set forth guidelines for inspection, preventive maintenance, and testing. These clauses may be applied independently or in combination to establish such a program. For additional assistance, consult the manufacturer's published instructions or NFPA 70B.

3.3 For Information Regarding Switch Performance and Application

For information regarding switch performance and application refer to NEMA Standards Publications KS 1 and KS 2, respectively.

3.4 Water-Damaged Switches

Switches that are known to have been subjected to water damage should be replaced. For additional information, refer to the NEMA document *Evaluating Water-Damaged Electrical Equipment*.

3.5 Switch Inspection Once Each Year

It is recommended to inspect switches once each year or after any short circuit event.

Section 4 INSPECTION PROCEDURES

4.1 General

The following inspection practices are recommended.

4.2 Exposed Surfaces Temperature Check

4.2.1 Purpose

To determine if there is excessive temperature on the external cover of a switch.

CAUTION—Severe burns can result from high temperatures. Do not hold hand or fingers in contact with surfaces if excessive heat is felt.

4.2.2 Procedure

A switch that has been carrying its regular load for at least 3 hours just prior to inspection should be tested by feeling the external deadfront surfaces with the palm of the hand.

4.2.3 Results

If the temperature of these surfaces does not permit you to maintain contact for at least 3 seconds, this may be an indication of trouble and investigation is necessary. Thermographic (infrared) scanning has become a useful method of investigating thermal performance. Further investigation may be necessary. Proceed to 4.3.

4.3 Inspection of Enclosure Interior

4.3.1 Purpose

To evaluate the operating environment, the apparent condition of the switch, that proper conductors have been used, and if there is any visual indication that overheating has occurred.

4.3.2 Procedure

WARNING—Follow all safety procedures described in Section 2.

- 4.3.2.1 After being properly isolated, verify that the switch has been properly applied within its marked ratings. If the switch has not been applied within its ratings, it should be replaced with a switch suitable for the application.
- 4.3.2.2 Examine the switch surfaces for the presence of dust, dirt, soot, grease, or moisture. If such contamination is found, the surfaces should be cleaned. Refer to 5.2.2.1 for cleaning and precautionary instructions.
- 4.3.2.3 Examine the switch bases for cracks. The integrity of the base is important in withstanding the stresses imposed during operation. Switches should be replaced if cracks are found.
- 4.3.2.4 Verify that the conductors are of the correct size and type for the application. Visually check all electrical connections to the switch to be certain that such connections are clean and secure. Loose or contaminated connections increase electrical resistance, which can damage insulation and conductors and interfere with proper switch operation. Increased electrical resistance causes overheating of a connection. Such overheating is indicated by discoloration or cracks of the switch bases, discoloration or flaking of external metal parts, or melting or blistering of adjacent wire insulation. Pitting or melting of connection surfaces is a sign of arcing due to a loose or otherwise poor connection. (See Figures 1 and 2.)

- a. If there is no evidence of looseness, e.g., overheating, do not disturb or tighten the connections.
- b. If there is evidence of overheating (as noted in 4.2) or arcing, an investigation of the cause should be made and corrective steps taken. (See Section 5.)

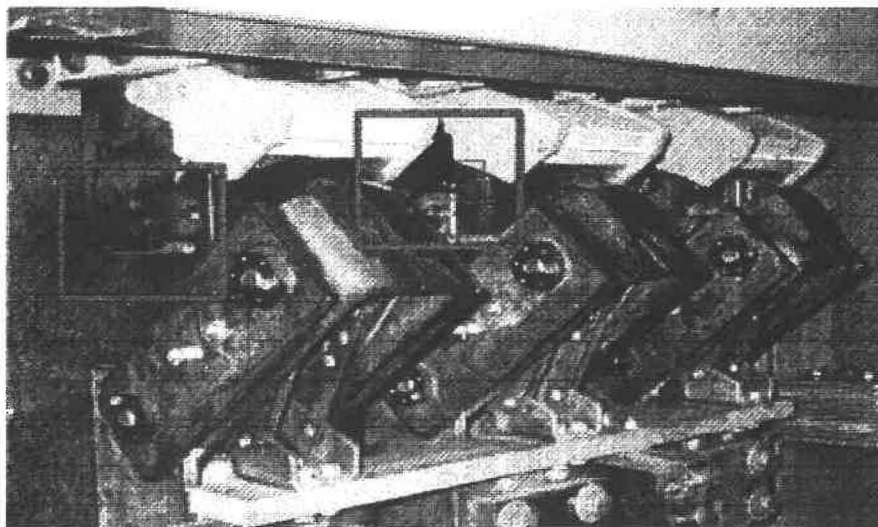


Figure 1
Pitting

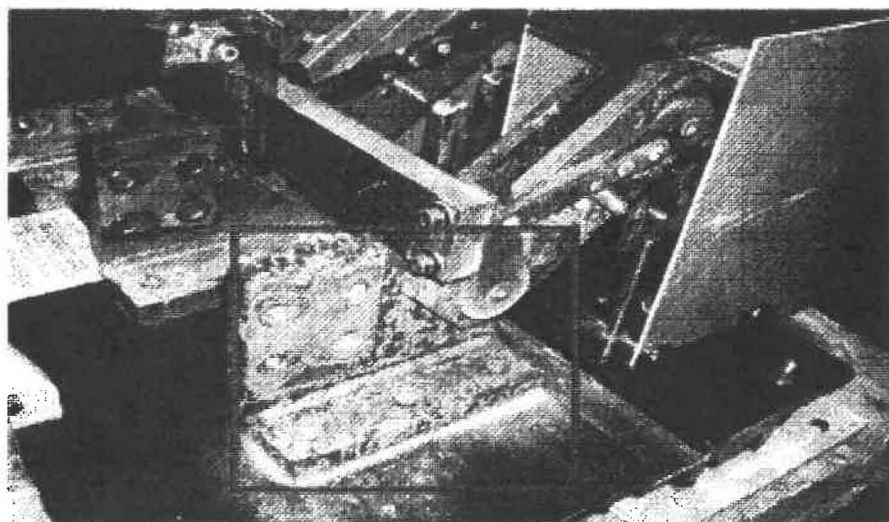


Figure 2
Heat Damage

4.3.2.5 Examine the switch for evidence of a high short circuit closing operation. Any of the following observations will warrant performing the Section 6 Test Procedures or the replacement of the switch. In some cases, switch interior renewal parts can be obtained from the manufacturer to bring the assembly back to a serviceable condition.

Evidence of excessive high current switch closing operation includes:

- Bright metal or metallic deposits on insulating surfaces or the enclosure interior
- An excessive number of small, bright metal balls resting on the enclosure bottom end wall
- Excessive black film on insulating surfaces or the enclosure interior adjacent to the contact air gap or arc chute exhaust
- Enclosure shape distortion caused by excessive internal pressure
- Contacts not fully engaging or closing
- Rough mechanism operation

4.3.2.6 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the installation safety procedures given in 2.3 in conjunction with any installation instructions provided by the manufacturer.

Section 5 PREVENTIVE MAINTENANCE

5.1 General

Under normal conditions, properly applied switches require maintenance only for verification of environmental conditions and that the correct enclosure type for those conditions is being used. However, when inspections determine an abnormal condition and indicate the possibility of damage, it may be necessary to perform certain maintenance steps. This clause is intended to assist the user in performing these steps.

These steps cover the only maintenance that should be performed on switches unless specifically authorized by the switch manufacturer.

5.2 Environmental Evaluation

5.2.1 Purpose

To examine the operating environment and the switch's physical condition. Preventive maintenance and corrective actions are included as appropriate.

5.2.2 Procedure

WARNING—Follow all safety procedures described in Section 2.

The switch enclosure must be opened to perform the following steps and, in some cases, it will be necessary to remove the switch from the enclosure.

5.2.2.1 After being properly isolated, examine the switch surfaces for dust, dirt, soot, or moisture. If evidence of contaminants or moisture is found, or more than a thin film of dust, dirt, or soot is seen, the switch should be cleaned as suggested below.

The insulating surfaces of the switch should be cleaned using a lint free dry cloth, brush, or vacuum cleaner. Avoid blowing material into the switch or into surrounding equipment.

CAUTION—Commercial cleaners and lubricants may attack and damage the plastic insulating materials of the switch. Therefore, such cleaners should not be used. Only the methods described in 5.2.2.1 should be used. Follow manufacturer's recommendations for the use of grease.

Steps should be taken to eliminate the source of the contamination or to provide an appropriate enclosure that will protect against the future entry of contaminants. With respect to the prevention of moisture, the switch should be housed in an enclosure appropriate for the environment.

5.2.2.2 Examine the switch and terminations for signs of overheating as described in 4.3.2.4. If such evidence is found, the following maintenance steps should be performed.

5.2.2.2.1 Copper switch terminals and connecting straps (wire connectors and bus bars) can normally be cleaned. They should be carefully disassembled, cleaned, and dressed, following the manufacturer's instructions. All metal and abrasive particles should be removed before reassembling. Care should be taken to ensure that the switch terminals and connecting straps are properly torqued during re-installation.

CAUTION—When performing this procedure, extreme care should be exercised to prevent any damage to plated connections or mechanical disturbance to the switch and to prevent any particles from entering the switch mechanism, contacts, or arc suppression areas.

If the damage is extensive, or cannot be corrected by dressing the surfaces, the damaged parts should be replaced if they are intended by the manufacturer to be replaceable. If the damaged parts are not intended to be replaceable, the complete switch and/or bus connections should be replaced.

5.2.2.2.2 Aluminum wire connectors and bus bars cannot be cleaned or repaired; therefore, they must be replaced.

5.2.2.2.3 If wire conductors are damaged, the damaged lengths of the conductors should be cut off before reinstalling the conductors. (See 5.4.)

5.3 Fuse Provisions

5.3.1 If the switch has fuses and a fuse base, visually check the fuse connections to the switch for evidence of looseness, overheating, or arcing on the fuse clips or mounting arrangements for the fuse. (See 4.3.2.4.)

5.3.2 If the connecting surfaces show evidence of overheating, the switch and fuses should be replaced.

5.3.3 If there is no evidence of overheating or looseness, do not disturb or tighten the connections.

5.4 Wire Connectors

5.4.1 If conductors are removed from the wiring connectors, the following steps should be performed.

5.4.1.1 Examine wire connectors. If the wire connectors appear to be in good condition, they may be reused. If the connectors, screws, or their plating appear worn or damaged, or there is evidence of cross threading or binding, the connector assembly should be replaced.

5.4.1.2 If the wire conductors are damaged, the damaged wires should be repaired or replaced.

5.4.1.3 When required, an oxide inhibiting compound should be applied.

5.4.1.4 All wire connectors should be torqued in accordance with the nameplate marking or the switch manufacturer's instructions.

5.5 Reinstallation Procedure

If the switch needs to be reinstalled or replaced, follow the safety installation procedures given in 2.3.

Section 6 TEST PROCEDURES

6.1 General

The KS 3 Standards Publication is not intended, nor is it adequate, to verify proper electrical performance of a switch that has been disassembled, modified, rebuilt, refurbished, or handled in any manner not intended or authorized by the original switch manufacturer. The following non-destructive tests may be used to verify specific operational characteristics of switches: mechanical operation test, insulation resistance test, and individual pole resistance test (millivolt drop test).

6.2 Mechanical Operation Test

6.2.1 Purpose

To verify that the switch mechanism is operating freely.

6.2.2 Equipment

Appropriately rated continuity indicating device.

6.2.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

- 6.2.3.1 After disconnecting and locking out all power, operate the switch ON and OFF 2 or 3 times. The switch handle should operate smoothly without binding.
- 6.2.3.2 Using an ohmmeter or other indicating device, verify that all switch contacts are open when the handle is in the OFF position and closed when the handle is in the ON position.
- 6.2.3.3 For switches that are provided with mechanical trip provisions (generally indicated by a test button), operate the tripping means according to the manufacturer's instructions. With the switch in the tripped position, verify that the contacts are open using an ohmmeter (or other indicating device). Reset the switch according to the manufacturer's instructions and operate the switch to the ON and OFF positions. Use an ohmmeter (or other indicating device) to verify that all the contacts are closing and opening respectively.

6.2.4 Results

The switch must be repaired or replaced if:

- a. The contacts are not open with the switch in the OFF position
- b. The contacts are not closed with the switch in the ON position
- c. The switch does not reset
- d. The mechanical trip provisions (if provided) do not trip the switch

6.2.5 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the safety installation procedures given in 2.3.

6.3 Insulation Resistance Test

CAUTION—If applied incorrectly, the voltages utilized in the insulation resistance tests may damage electronic or other accessory components. Refer to the manufacturer's instructions for guidelines.

NOTE—Where the switch can be safely isolated as installed, the test may be performed with the switch in its equipment.

See Figure 3 for typical test set-up.

6.3.1 Purpose

To determine the adequacy of the insulation between line and load terminals, between poles, and between each pole and ground.

6.3.2 Equipment

Perform dielectric tests in accordance with the manufacturer's instructions.

This test requires an insulation resistance tester capable of applying a voltage of at least 500 volts. It should also be noted that more in-depth information can be obtained when 1000 volt testers are used since they are more likely to detect deteriorated insulation systems. (See Figure 3.)

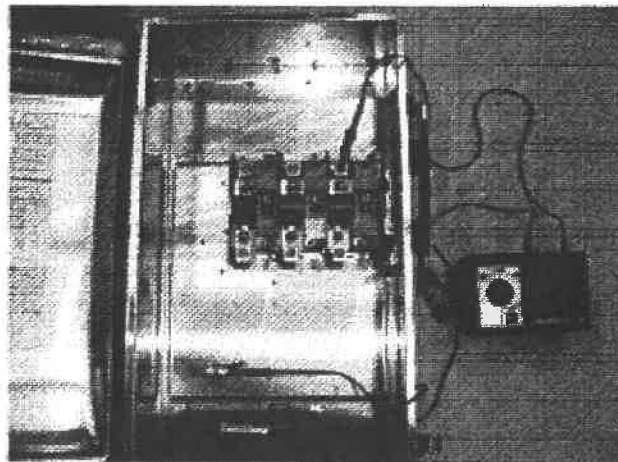


Figure 3
Typical Insulation Resistance Test Set-Up

6.3.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

CAUTION—If applied incorrectly, the voltages utilized in the insulation resistance test may damage electronic or other accessory components. To avoid such damage, the following procedure should be adhered to closely. Do not apply test voltages to accessory terminals.

6.3.3.1 After disconnecting and locking out all power supplying the device to be tested, remove the switch from the electrical system. In cases where the switch can be safely isolated/disconnected from line and load connections as installed, the test may be performed with the switch in its equipment.

6.3.4 Test

- 6.3.4.1** All exposed metal parts except line, load, and accessory terminals should be electrically connected together.
- 6.3.4.2** Using an insulation resistance tester, apply a voltage of at least 500 volts to determine the resistance. Voltage is to be applied as follows.

WARNING—High Voltage—Do not touch switch or leads. See 2.1.2 for proper safety procedure.

- 6.3.4.2.1** Between line and load terminals of each individual pole with the switch in the OFF position and tripped position if possible.
- 6.3.4.2.2** Between terminals of adjacent poles with the switch in the ON position.
- 6.3.4.2.3** From line terminals to the metal enclosure with the switch in the ON position.

6.3.5 Results

All resistance readings should be one megohm or greater for each measurement. If any reading is less than one megohm, the switch should be replaced or the manufacturer should be consulted before restoring the switch to service. Any reading less than one megohm may indicate contaminated, unsound, or cracked insulating material.

6.3.6 Reinstall Switch

If applicable, reinstall the switch following the manufacturer's instructions. Also refer to 5.4 for information on reinstalling wire connectors and/or conductors.

6.3.7 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the safety installation procedures given in 2.3.

6.4 Individual Pole Resistance Test (Millivolt Drop)

See Figure 4, Figure 5, and Figure 6 for typical test set up.

NOTE—The switch should be removed from the equipment for this test. In cases where the switch can be safely isolated as installed, the test may be performed with the switch in its equipment.

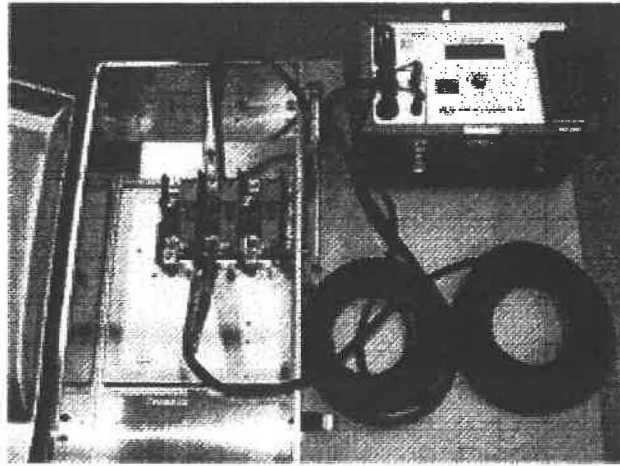


Figure 4
Individual Pole Resistance Test Set-Up

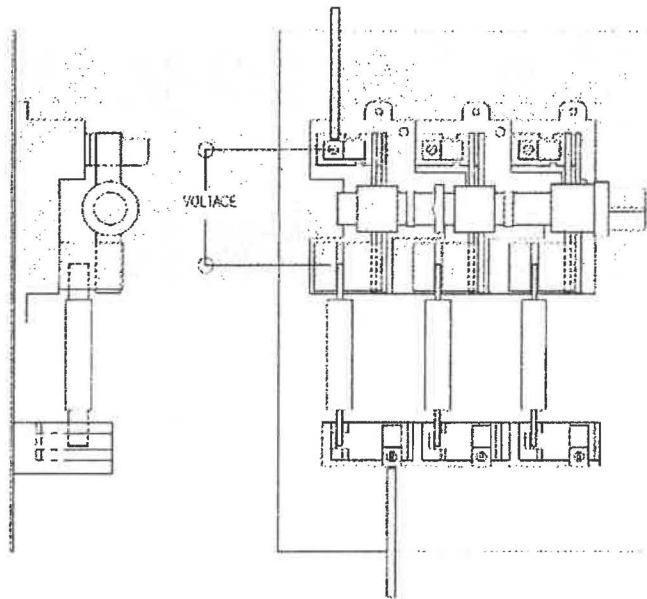


Figure 5
Fused Switch Individual Pole Resistance Test Set-Up

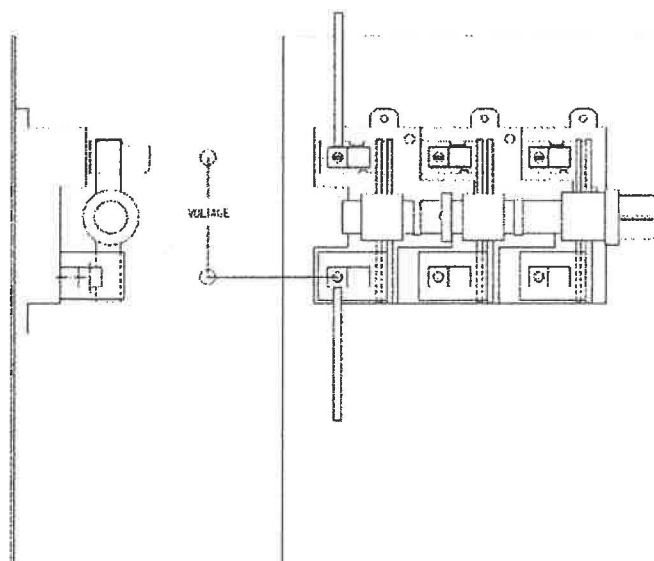


Figure 6
Non-Fused Switch Individual Pole Resistance Test Set-Up

6.4.1 Purpose

To assess the electrical integrity of internal connections and contacts in a switch. This can be done by conducting a millivolt drop test across the line and load terminals of each pole with the switch contacts closed.

The millivolt drop (resistance) of a switch pole can vary significantly because of inherent variability in the extremely low resistance of the electrical contacts and connectors. Such variations do not necessarily predict unacceptable performance and should not be used as the sole criteria for determination of acceptability.

6.4.2 Equipment

6.4.2.1 This test should be conducted using a 24 volt, or less, direct current power supply capable of supplying the rated current of the switch. For switch rated higher than 500 amperes, the power supply should be capable of delivering no less than 500 amperes.

6.4.2.2 If the above equipment is not available for field tests, a Digital Low Resistance Ohmmeter (DLRO), or 4-point tester, capable of 10 to 100 amperes (dc) may be used.

NOTE—Use of a multimeter or low current ohmmeter in place of the power supply will not provide an accurate or reliable measurement of millivolt drop and should not be used.

CAUTION—Do not exceed the current rating of the fuse where the fuse cannot be isolated from the test circuit.

6.4.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

6.4.3.1 After being properly isolated, remove the switch from the enclosure. In cases where the switch can be safely isolated/disconnected as installed, the test may be performed with the switch in its equipment.

6.4.4 Test

NOTE—If the switch is equipped with an under-voltage trip release, energize the trip release to allow proper operation of the switch.

6.4.4.1 The test is performed as follows.

6.4.4.1.1 Apply test current across a pole equal to the switch rating (or 500 Amperes minimum for switch rated in excess of 500 Amperes). Record the millivolt drop and the test current. Do not maintain current for more than 1 minute. If this equipment is not available, use the following test.

6.4.4.1.2 Apply test current across a pole of 10 Amperes, or the Ampere rating of the switch, for switch rated less than 100 Amperes. For switch rated more than 100 Amperes, apply a test current across a pole of 100 Amperes. Record the millivolt drop and the test current, or resistance. Do not maintain current for more than 1 minute.

6.4.4.1.3 De-energize the test circuit. Manually operate the switch to the OFF and then ON positions.

6.4.4.1.4 Repeat steps 6.4.4.1.1 and 6.4.4.1.2 for a total of three readings on the pole being tested.

6.4.4.1.5 Repeat steps 6.4.4.1.1 through 6.4.4.1.3 for each of the remaining poles of the switch.

6.4.5 Results

Test results will vary according to the switch ampere rating and manufacturer. The manufacturer should be consulted to determine the maximum allowable voltage drop. If the average test values of any pole of the switch exceed the maximum allowable drop, the switch may have reached the end of life and additional tests may have to be conducted.

NOTE—Inconsistent readings could be the result of oxide films or foreign material on the contact surfaces, depending on the service history of the switch. If high millivolt or high resistance readings are detected, refer to the manufacturer's recommendations, and if necessary, clean and/or lubricate the contact surfaces, then repeat tests in this section. If results are still out of acceptable range, the switch should not be returned to service.

6.4.6 Reinstall Switch

If applicable, reinstall the switch following manufacturer's instructions. Also refer to 5.4 for information on reinstalling wire connectors and/or conductors.

6.4.7 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the safety installation procedures given in 2.3.

Section 7 ACCESSORY DEVICE TEST PROCEDURES

7.1 General

If testing instructions for the specific accessory being tested are available from the manufacturer, those instructions should be followed to verify the operation of the accessory. If the manufacturer's instructions are not available, the tests described below may be used to verify the basic operation of the accessory.

7.2 Shunt Trip Release Tests

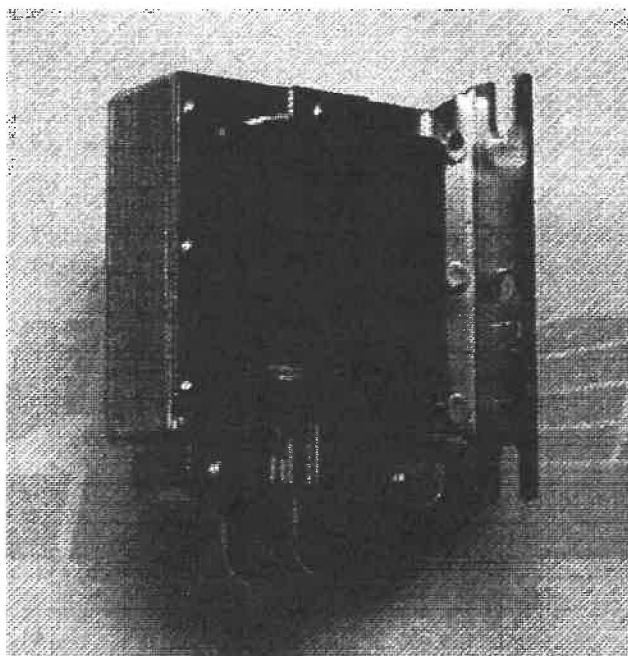


Figure 7
Sample Shunt Trip Release

7.2.1 Purpose

To verify that the shunt trip release device (Figure 7) will trip the switch when energized.

7.2.2 Equipment

This test requires a power supply capable of maintaining the rated voltage.

7.2.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

CAUTION—Switches and accessory devices can be damaged if power is applied to the wrong terminals. The specific lead wires or terminals for each accessory must be properly identified before conducting any of the following tests.

7.2.3.1 After disconnecting and locking out all power, isolate the shunt trip solenoid leads from the control circuit for testing.

7.2.3.2 Connect a test power supply to the terminals (or leads) of the shunt trip release device.

WARNING—High Voltage. Do not touch switch or test leads while voltage is applied.

7.2.3.3 Operate the switch to the ON position.

7.2.3.4 Set the power supply voltage to 75% of the rated voltage of the shunt trip and energize. The switch should open. If the switch with shunt trip release is used in a ground fault relay system, use 55% of the rated voltage instead of 75% of the rated voltage.

CAUTION—If the switch does not open within 1 to 2 seconds, turn off the test power supply to prevent possible damage to the shunt trip release coil.

7.2.3.5 When the test is completed, turn off the test power supply, disconnect it from the shunt trip release device terminals (or leads), and reconnect the control circuit wires to the shunt trip release device terminals (or leads). If an under-voltage trip release device was connected during the test, turn off the test power supply, disconnect the test power supply wires, and reconnect the control circuit wires to the under-voltage release device.

7.2.4 Results

The switch should open when the power supply to the shunt trip release is turned on. If the switch does not open, check the connections and repeat the test. If the switch still does not open, replace the shunt trip release, if replaceable. If it is not possible to replace the shunt trip release, the switch should be replaced.

7.2.5 Reinstallation Procedure

If the switch needs to be reinstalled or replaced, follow the safety installation procedures given in 2.3 and the manufacturer's instructions.

7.3 Electrical Operator Tests

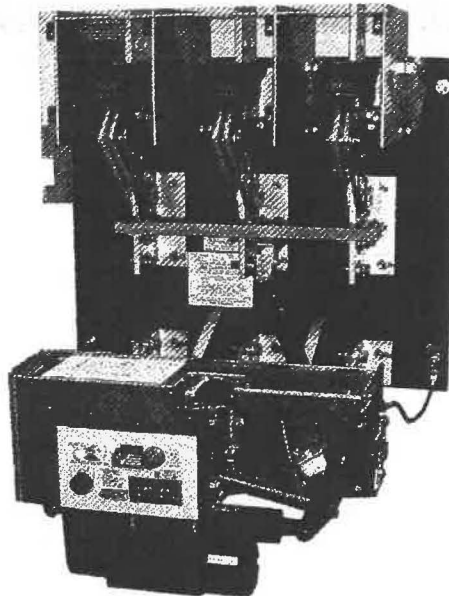


Figure 8
Sample Electrical Operator / Switch Assembly

7.3.1 Purpose

To verify that the electrical operator (Figure 8) will operate the switch to the ON and OFF positions.

7.3.2 Equipment

This test requires a power supply capable of maintaining the rated voltage.

7.3.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

CAUTION—Switches and accessory devices can be damaged if power is applied to the wrong terminals. The specific lead wires or terminals for each accessory must be properly identified before conducting any of the following tests.

7.3.3.1 After disconnecting and locking out all power, remove the control circuit wires from the terminals of the electrical operator.

7.3.3.2 Set test power supply to the rated voltage of the electrical operator and connect to the terminals of the electrical operator marked "common" and "close" or "on."

7.3.3.3 With the switch in the OFF position, turn on the test power supply. The switch contacts should close.

WARNING—High Voltage. Do not touch switch or test leads while voltage is applied.

7.3.3.4 Turn the test power supply off. Disconnect its leads to the electrical operator.

7.3.3.5 Connect the test power supply leads to the terminals of the electrical operator marked "common" and "open" or "off."

7.3.3.6 With the switch in the ON position, turn on the test power supply. The switch contacts should open.

7.3.3.7 When the test is completed, turn off the test power supply, disconnect it from the electrical operator terminals, and reconnect the control circuit wires to the electrical operator terminals.

NOTE—It may also be possible to test the operation of the electrical operator by leaving the control circuit wiring in place and energized and pushing the "open" and "close" buttons on the operator. Follow step 7.3.3 to ensure that the main power to the switch is disconnected, but the power to the control circuits would be left in place.

7.3.4 Results

The switch should operate to the ON and OFF positions when the above steps are followed. If the switch does not operate properly, check the connections and ensure that there is no obvious obstruction of the operating mechanism and repeat the test. If the electrical operator still does not operate properly, it should be replaced.

7.3.5 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the safety installation procedures given in 2.3.

7.4 Auxiliary Switch Tests



Figure 9
Sample Auxiliary Switch

7.4.1 Purpose

To verify that the contacts of the auxiliary switch(es) (see Figure 9) change status when the main switch contacts are opened and closed.

7.4.2 Equipment

This test requires an ohmmeter or low voltage continuity tester.

7.4.3 Procedure

WARNING—Follow all safety procedures described in Section 2.

- 7.4.3.1 Remove the control circuit wires from the terminals (or leads) of the auxiliary switch(es).
- 7.4.3.2 Starting with the main switch in the OFF position, use an ohmmeter or continuity tester connected to the terminals (or leads) of each auxiliary switch, to verify that its contact position (open or closed) is in agreement with the wiring diagram provided by the manufacturer.
- 7.4.3.3 Connect the ohmmeter or low voltage continuity tester to the terminals (or leads) of one auxiliary switch to monitor the contact.
- 7.4.3.4 Operate the main switch to the ON position. The auxiliary switch contact should change position.
- 7.4.3.5 Repeat steps 7.4.3.2 through 7.4.3.4 for each auxiliary switch.

7.4.3.6 When the test is completed, reconnect the control circuit wires to the terminals (or leads) of the auxiliary switch(es). If an under-voltage trip release device was connected, refer to 7.2.3.5 for instructions.

7.4.4 Results

Each auxiliary contact should change position (move from open to closed or vice versa) as the main switch is operated from the OFF to ON or ON to OFF positions. If the auxiliary switches do not perform correctly, check the connections and repeat the test. If performance is still incorrect, the auxiliary switches should be replaced; or if the auxiliary switch is not replaceable, replace the complete switch.

7.4.5 Reinstallation Procedure

For reinstallation or replacement of the switch and/or accessories, follow the safety installation procedures given in 2.3.

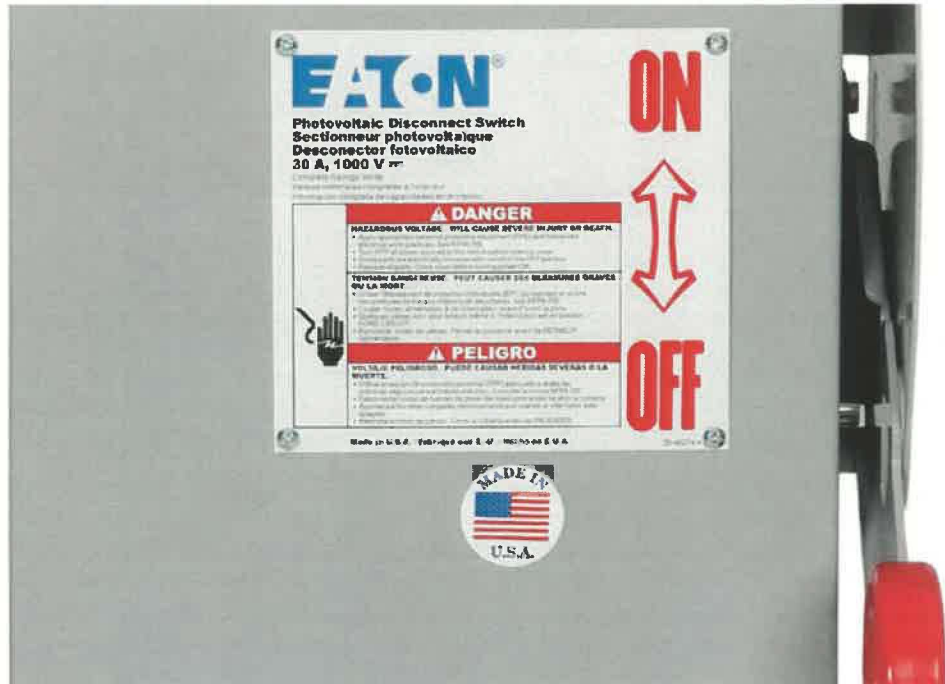
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Powering Business Worldwide

Renewal Parts

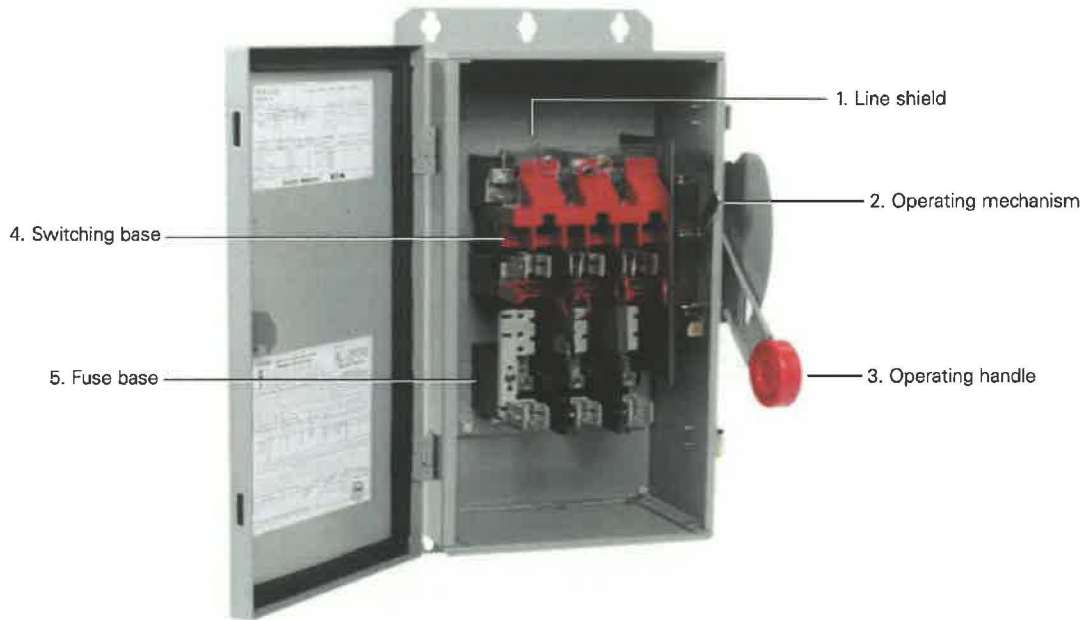
Safety switch renewal parts



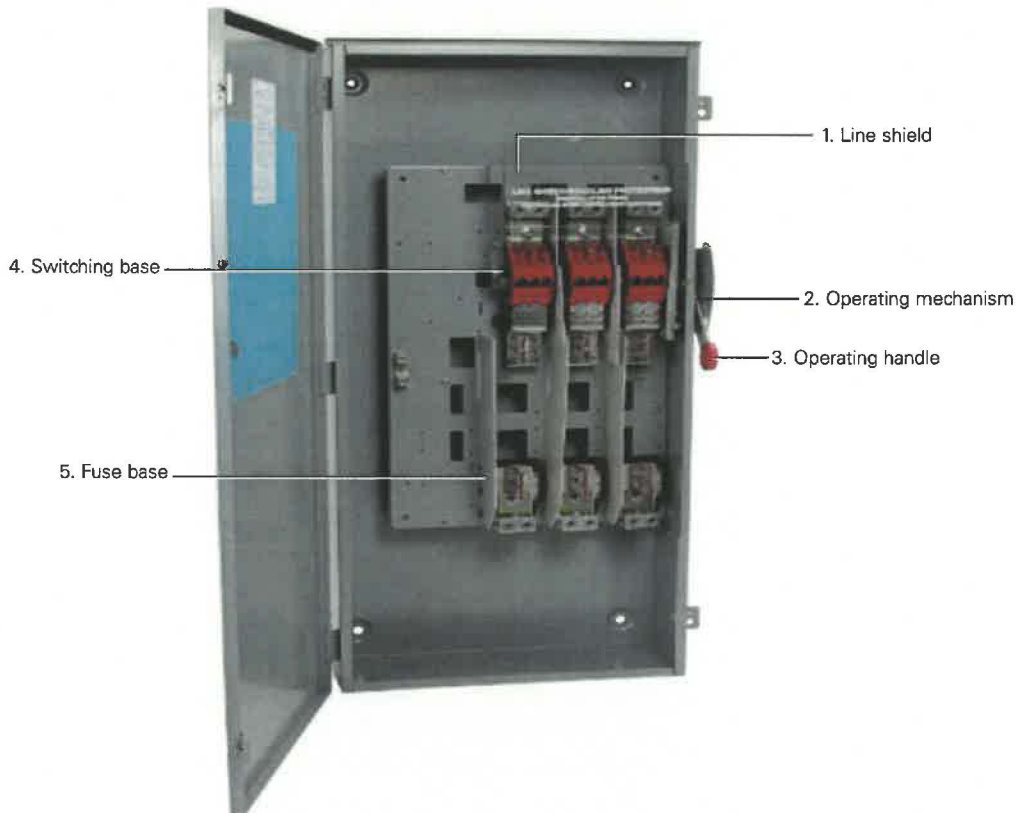
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Heavy-duty switch



30/60/100 A heavy-duty switch



200-1200 A heavy-duty safety switch

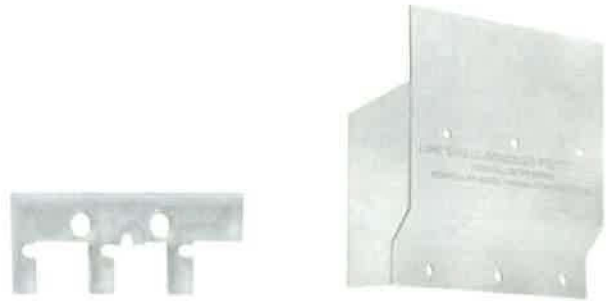
Table 1. Line shield

Switch ampere rating	Part number
General-duty two- and three-pole	
400	70-8063-8
600	70-8064-8
Heavy-duty two- and three-pole ①	
30–60	70-7758-34
100	70-7758-35
200	70-7759-11
400	70-8063-8
600–800	70-8064-8
1200	70-8453-4
Double-throw two- and three-pole ②	
30–100	70-7758-35
200	70-7759-11
400	70-8063-8
600	70-8064-8

① Two used for four- and six-pole configurations.

② Two used per switch.

Note: 30–200 A general-duty switches do not have line shields installed as standard from the factory.



30–100 A line shield

200–1200 A line shield

Table 2. Operating mechanism

Switch ampere rating	NEMA rating	Part number
Heavy-duty switches		
30–100 ①	NEMA® 1/3R/12/4X	70-7813
200	NEMA 1/3R/12/4X	70-7833-4
400	NEMA 1/3R/12/4X	70-7833-5
600–800	NEMA 1/3R/12/4X	70-7833-6
Stainless steel mechanism		
30–100 ①	NEMA 4X EnviroLine	70-8304
200	NEMA 4X EnviroLine	70-8305
400	NEMA 4X EnviroLine	70-8305-2

① For internal window replacement mechanisms, see **Table 6**.

Note: Replacement mechanisms are not available for general-duty or double-throw switches.



30–100 A operating mechanism

200–1200 A operating mechanism

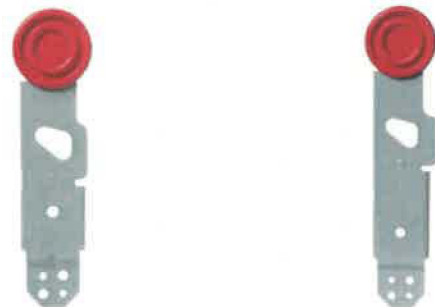
Table 3. Operating handle

Switch ampere rating	NEMA rating	Part number
General-duty switches		
200–600	NEMA 1 and 3R	70-7833-2
Heavy-duty switches		
30–100 ①	NEMA 1/3R/12	70-7813-2
30–100	NEMA 4X	70-7813-3
200–800	NEMA 1/3R/12	70-7833-2
200–800	NEMA 4X	70-7833-3
1200 ②	Consult factory	

① For internal window replacement handles, see **Table 6**.

② No replacement handles available for the flange style handle on 1200 A switches manufactured prior to 2015.

Note: Replacement handles are not available for general-duty or double-throw switches.



30–100 A operating handle

200–1200 A operating handle



30-100 A switching base



200-1200 A switching base



30-100 A fuse base



200-1200 A fuse base

Table 4. Heavy-duty fusible switches

Amperes	NEMA rating	4. Switching base	5. Fuse base
Two-pole 240 V			
30	All	70-7758-16	70-7758-29
60	All	70-7758-36	70-7997-4
100	All	70-7758-7	70-7758-23
200	NEMA 1 and 3R	70-8266-3	70-7820-4 ①
200	NEMA 4X and 12	70-7759-7	70-7759-4 ①
400	All	70-8063-3	70-8063-7 ①
600	All	70-8064-3	70-8064-7 ①
800	All	70-8065-3	70-8065-7 ①
Three-pole 240 V			
30	All	70-7758-14	70-7758-26
60	All	70-7997	70-7997-5
100	All	70-7758-3	70-7758-21
200	NEMA 1 and 3R	70-8266	70-7820-4 ①
200	NEMA 4X and 12	70-7759	70-7759-4 ①
400	All	70-8063-4	70-8063-7 ①
600	All	70-8064-4	70-8064-7 ①
800	All	70-8065-4	70-8065-7 ①
1200	All	70-8821	70-8453-3 ①
Two-pole 600 V			
30	All	70-7758-17	70-7758-30
60	All	70-7997-3	70-7997-6
100	All	70-7558-9	70-7558-25
200	NEMA 1 and 3R	Consult factory	70-7820-4 ①
200	NEMA 4X and 12	Consult factory	70-7759-5 ①
400	All	70-8063-5	70-8063-7 ①
600	All	70-8064-5	70-8064-7 ①
800	All	70-8065-5	70-8065-7 ①
Three-pole 600 V			
30	All	70-7758-12	70-7758-27
60	All	70-7997-2	70-7997-7
100	All	70-7758-3	70-7758-21
200	NEMA 1 and 3R	70-8266	70-7820-4 ①
200	NEMA 4X and 12	70-7759	70-7759-5 ①
400	All	70-8063-6	70-8063-7 ①
600	All	70-8064-6	70-8064-7 ①
800	All	70-8065-6	70-8065-7 ①
1200	All	70-8821	70-8453-3 ①

Table 4. Heavy-duty fusible switches, continued

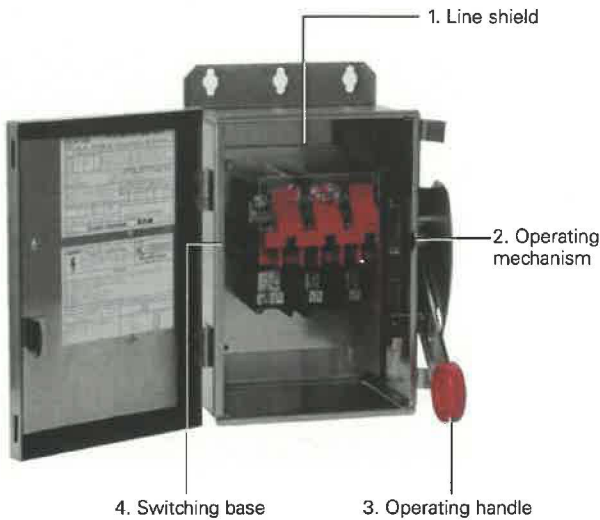
Amperes	NEMA rating	4. Switching base	5. Fuse base
Four-pole 240 V			
30	All	70-7758-16 ②	70-7758-29 ②
60	All	70-7758-36 ②	70-7997-4 ②
100	All	70-7758-7 ②	70-7758-23 ②
200	NEMA 1 and 3R	Consult factory	70-7820-4 ①
200	NEMA 4X and 12	70-7759-9	70-7759-4 ①
400	All	70-8270	70-8063-7 ①
600	All	70-8271	70-8064-7 ①
800	All	Consult factory	70-8065-7 ①
Four-pole 600 V			
30	All	70-7758-36 ②	70-7758-38 ②
60	All	70-7997-2 ②	70-7758-39 ②
100	All	70-7758-7 ②	70-7758-23 ②
200	NEMA 1 and 3R	Consult factory	70-7820-4 ①
200	NEMA 4X and 12	70-7759-9	70-7759-5 ①
400	All	70-8270-2	70-8063-7 ①
600	All	70-8271-2	70-8064-7 ①
800	All	Consult factory	70-8065-7 ①
Six-pole 600 V			
30	All	70-7758-12 ②	70-7758-27 ②
60	All	70-7758-2 ②	70-7758-20 ②
100	All	70-7758-3 ②	70-7758-21 ②
200	NEMA 1 and 3R	Consult factory	Consult factory
200	NEMA 4X and 12	Consult factory	70-7759-5 ①
400	All	Consult factory	70-8063-7 ①
600	All	Consult factory	70-8064-7 ①
800	All	Consult factory	70-8065-7 ①

① Order one per pole.

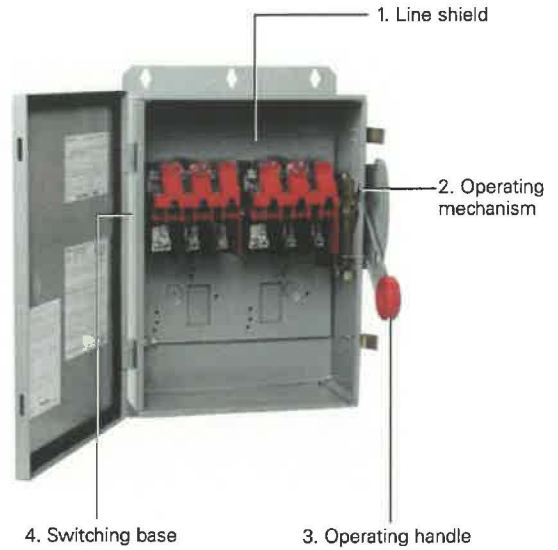
② Order two.

Note: General-duty replacement bases are not available.

Note: Please contact the TRC for technical questions concerning replacement parts at 1-877-386-2273, option 2 (Technical).



30-100 A heavy-duty non-fusible switch



30-100 A heavy-duty six-pole non-fusible switch

Table 5. Heavy-duty non-fusible switches

Amperes	NEMA rating	4. Switching base	5. Lower base ①
Two-pole 600 V			
30	All	70-7758-18	
60	All	70-7758-18	
100	All	70-7758-11	
200	NEMA 1 and 3R	70-8266-2	
200	NEMA 4X and 12	70-7759-2	70-7759-6 ②
400	All	70-8063	
600	All	70-8064	
800	All	70-8065	
Three-pole 600 V			
30	All	70-7758-13	
60	All	70-7758-13	
100	All	70-7758-5	
200	NEMA 1 and 3R	70-8266-2	
200	NEMA 4X and 12	70-7759-2	70-7759-6 ②
400	All	70-8063-2	
600	All	70-8064-2	
800	All	70-8065-2	
1200	All	70-8820	

Table 5. Heavy-duty non-fusible switches, continued

Amperes	NEMA rating	4. Switching base	5. Lower base ①
Four-pole 600 V			
30	All	70-7758-40	
60	All	70-7758-41	
100	All	70-7758-42	
200	NEMA 1 and 3R	Consult factory	
200	NEMA 4X and 12	70-7759-10	70-7759-6 ②
400	All	70-8270-3	
600	All	70-8271-3	
Six-pole 600 V			
30	All	70-7758-13 ③	
60	All	70-7758-13 ③	
100	All	70-7758-5 ③	
200	NEMA 1 and 3R	Consult factory	
200	NEMA 4X and 12	70-7759-13	70-7759-6 ②

① Only used in 200 A, NEMA 4X and NEMA 12 switch combinations.

② Order one per pole as needed.

③ Order two.

Note: Please contact the TRC for technical questions concerning replacement parts at 1-877-386-2273, option 2 (Technical).

Internal window replacement parts for safety switches with windows produced prior to May 2015



30-60 A internal window

External window replacement parts



30-60 A external window

Table 6. Internal window replacement parts

Switch ampere rating	NEMA rating	Part number
Operating mechanism		
30-100	NEMA 12 and 4X	70-7813-4
30-100	NEMA 4X Enviroline	70-8305
Operating handle		
30-100	NEMA 12	70-7833-2
30-100	NEMA 4X	70-7833-3

Table 7. Internal replacement window kits

Switch ampere rating	NEMA rating	Part number
30-60	NEMA 12 and 4X	70-8564
30-60	NEMA 4X Enviroline	70-8564-2
100	NEMA 12 and 4X	70-8564-3
100	NEMA 4X Enviroline	70-8564-4

Note: For internal window switches, use the replacement fuse bases listed on pages 4 and 5. Replacement bases are NOT interchangeable between standard switches and visible blade/external window switches.

Note: For Internal window replacement parts, use standard replacement parts unless otherwise specified in the table above.

Note: Please contact the TRC for technical questions concerning replacement parts at 1-877-386-2273, option 2 (Technical).

Table 8. External replacement window kits

Switch ampere rating	NEMA rating	Part number
30-60	NEMA 12	70-8889
30-60	NEMA 4X and 4X Enviroline	70-8889-2
100-1200	NEMA 12	70-8889-3
100-1200	NEMA 4X and 4X Enviroline	70-8889-4

Enhanced visible blade and exterior window replacement bases

Replacement bases shown below can ONLY replace bases in existing enhanced visible blade/exterior window style switches.



30-60 A exterior window switch



100-1200 A exterior window switch



30-100 A replacement switching base



200-1200 A replacement switching base

Table 9. Heavy-duty fusible switches

Amperes	NEMA rating	4. Switching base	5. Fuse base
Two-pole 240 V			
30	All	70-8835	70-7758-29
60	All	70-8838	70-7997-4
100	NEMA 4X and 12	70-8829	70-7758-23
200	NEMA 1 and 3R	70-8856	70-7820-4 ①
200	NEMA 4X and 12	70-8845	70-7759-4 ①
400	All	70-8864	70-8063-7 ①
600	All	70-8870	70-8064-7 ①
800	All	70-8876	70-8064-8 ①
Three-pole 240 V			
30	NEMA 4X and 12	70-8834	70-7758-26
60	All	70-8851	70-7997-5
100	All	70-8825	70-7758-21
200	NEMA 1 and 3R	70-8854	70-7820-4 ①
200	NEMA 4X and 12	70-8843	70-7759-4 ①
400	All	70-8865	70-8063-4 ①
600	All	70-8871	70-8064-7 ①
800	All	70-8877	70-8065-7 ①
1200	All	70-8887	70-8453-3 ①
Two-pole 600 V			
30	All	70-8836	70-7758-30
60	All	70-8853	70-7997-6
100	All	70-8830	70-7558-25
200	NEMA 1 and 3R	Consult factory	70-7820-4 ①
200	NEMA 4X and 12	Consult factory	70-7759-5 ①
400	All	70-8866	70-8063-7 ①
600	All	70-8872	70-8064-7 ①
800	All	70-8878	70-8065-7 ①
Three-pole 600 V			
30	All	70-8832	70-7758-27
60	All	70-8852	70-7997-7
100	All	70-8825	70-7758-21
200	NEMA 1 and 3R	70-8854	70-7820-4 ①
200	NEMA 4X and 12	70-8843	70-7759-5 ①
400	All	70-8867	70-8063-7 ①
600	All	70-8873	70-8064-7 ①
800	All	70-8879	70-8065-7 ①
1200	All	70-8887	70-8453-3 ①

Table 9. Heavy-duty fusible switches, continued

Amperes	NEMA rating	4. Switching base	5. Fuse base
Four-pole 240 V			
30	All	70-8835 ②	70-7758-29 ②
60	All	70-8838 ②	70-7997-4 ②
100	All	70-8829 ②	70-7758-23 ②
200	NEMA 1 and 3R	70-8856	70-7820-4 ①
200	NEMA 4X and 12	70-8846	70-7759-4 ①
400	All	70-8880	70-8063-7 ①
600	All	70-8883	70-8064-7 ①
800	All	Consult factory	70-8065-7 ①
Four-pole 600 V			
30	All	70-8838 ②	70-7758-38 ②
60	All	70-8839 ②	70-7758-39 ②
100	All	70-8829 ②	70-7758-23 ②
200	NEMA 1 and 3R	70-8857	70-7820-4 ②
200	NEMA 4X and 12	70-8846	70-7759-5 ③
400	All	70-8881	70-8063-7 ③
600	All	70-8884	70-8064-7 ③
800	All	Consult factory	70-8065-7 ③
Six-pole 600 V			
30	All	70-8832 ②	70-7758-27 ②
60	All	70-8824 ②	70-7758-20 ②
100	All	70-8825 ②	70-7758-21 ②
200	NEMA 1 and 3R	Consult factory	Consult factory
200	NEMA 4X and 12	Consult factory	70-7759-5 ③
400	All	Consult factory	70-8063-7 ③
600	All	Consult factory	70-8064-7 ③
800	All	Consult factory	70-8065-7 ③

① Order one per pole.

② Order two.

③ Order one per pole as needed.

Note: The replacement bases listed on pages 7 and 8 CANNOT be used as replacement bases in standard or interior window style safety switches. If the existing switch has a red colored arc shield, then the standard replacement base must be used. If the existing switch has a yellow colored arc shield, then a replacement base must be selected from the tables on pages 7 and 8.

Note: Please contact the TRC for technical questions concerning replacement parts at 1-877-386-2273, option 2 (Technical).

Enhanced visible blade and exterior window replacement bases

Replacement bases shown below can ONLY replace bases in existing enhanced visible blade/exterior window style switches.

Table 10. Heavy-duty non-fusible switches

Amperes	NEMA rating	4. Switching base	5. Lower base ①
Two-pole 600 V			
30	All	70-8837	
60	All	70-8837	
100	All	70-8831	
200	NEMA 1 and 3R	70-8855	
200	NEMA 4X and 12	70-8844	70-7759-6 ②
400	All	70-8862	
600	All	70-8868	
800	All	70-8874	
Three-pole 600 V			
30	All	70-8833	
60	All	70-8833	
100	All	70-8827	
200	NEMA 1 and 3R	70-8855	
200	NEMA 4X and 12	70-8844	70-7759-6 ②
400	All	70-8863	
600	All	70-8869	
800	All	70-8875	
1200	All	70-8886	
Four-pole 600 V			
30	All	70-8840 ③	
60	All	70-8841 ③	
100	All	70-8842 ③	
200	NEMA 1 and 3R	Consult factory	
200	NEMA 4X and 12	70-8847	70-7759-6 ②
400	All	70-8882	
600	All	70-8885	
800	All	Consult factory	
Six-pole 600 V			
30	All	70-8833 ③	
60	All	70-8833 ③	
100	All	70-8827 ③	
200	NEMA 1 and 3R	Consult factory	
200	NEMA 4X and 12	70-8848	70-7759-6 ②
400	All	Consult factory	
600	All	Consult factory	
800	All	Consult factory	

① Only used in 200 A, NEMA 4X and NEMA 12 switch combinations.

② Order one per pole.

③ Order two.

Note: Please contact the TRC for technical questions concerning replacement parts at 1-877-386-2273, option 2 (Technical).

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Final Permit



TOWN OF PEARL RIVER

39460 Willis Alley

Pearl River, Louisiana 70452

(985) 863-5800

CERTIFICATE OF COMPLETION

Property Owner: ST TAMMANY PARISH SCHOOL BOARD

PERMIT # WP 2024-28

Contractor: JOHN D FOURNIER ELECTRIC CO LLC

COMPLETION: 06/25/2024

ADDRESS: 39110 REBEL LANE
PEARL RIVER, LA 70452

DESCRIPTION: INSTALLATION OF LIGHTS IN THE BALL FIELD

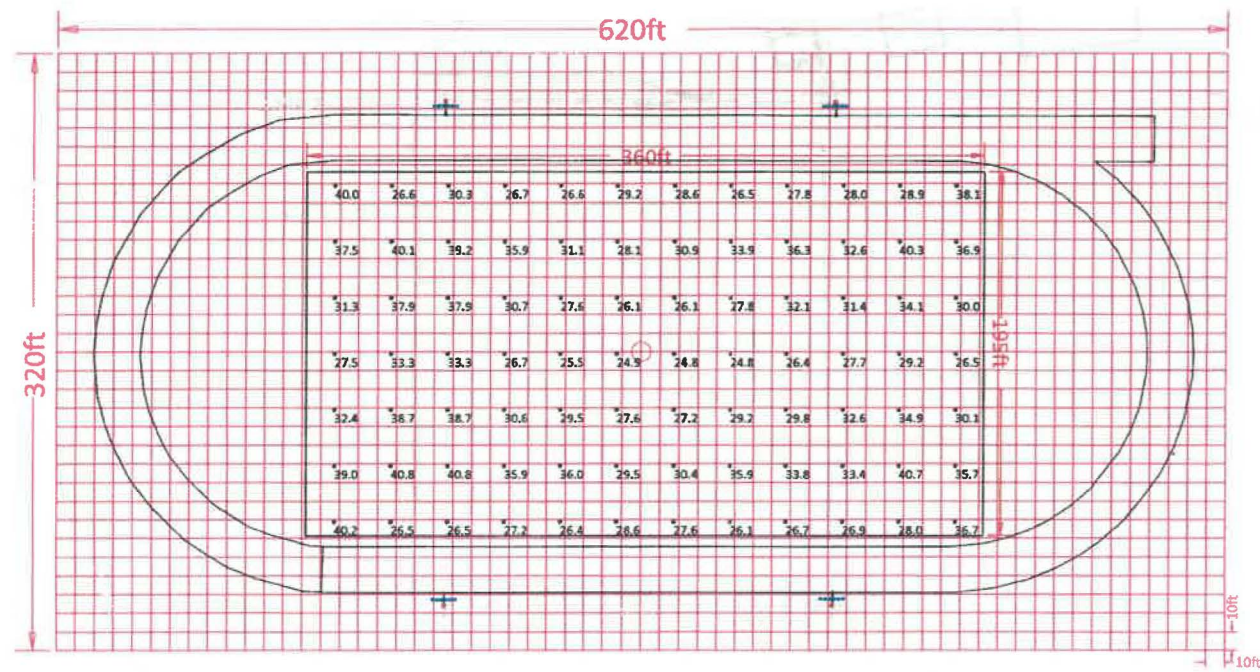

Permit Department

Photometrics



Pearl River HS Track (Soccer Field)
39110 Rebel Ln. Pearl River, LA 70452

Date: 06/26/2024



Field Plan
Scale: 1 inch= 30 Ft.