

THERMAL DIFFUSIVITY

The reported drilling log for this test borehole indicated that the formation consisted of clay, gravel, limestone and shale. Heat capacity values for limestone and shale were calculated from specific heat and density values listed by Kavanaugh and Rafferty (Ground-Source Heat Pumps - Design of Geothermal Systems for Commercial and Institutional Buildings, ASHRAE, 1997). A weighted average of heat capacity values based on the indicated formation was used to determine an average heat capacity of 32.8 Btu/ft³-°F for the formation. A diffusivity value was then found using the calculated formation thermal conductivity and the estimated heat capacity. The thermal diffusivity for this formation was estimated to be 0.96 ft²/day.

CERTIFICATE OF CALIBRATION

GRTI maintains calibration of the datalogger, current transducer and voltage transducer on a biennial schedule per the manufacturers recommendations. The components are calibrated by the manufacturer using recognized national or international measurement standards such as those maintained by the National Institute of Standards and Technology (NIST).

FTC Unit 207

DA Unit 57

PRIMARY EQUIPMENT		
COMPONENT	LAST CALIBRATION DATE	CALIBRATION DUE DATE
Datalogger	8/7/2014	8/7/2016
Current Transducer	8/8/2014	8/8/2016
Voltage Transducer	8/8/2014	8/8/2016

GRTI periodically verifies the combined temperature sensor/datalogger accuracy via a water bath. Temperature readings are simultaneously taken with a digital thermometer that has been calibrated using instruments traceable to NIST.

DATE	8/15/2014	4/13/2015	10/25/2015	
THERMOCOUPLE 1 (°F)	32.0 32.0 32.0	32.0 32.0 32.0	32.0 32.0 32.0	
THERMOCOUPLE 2 (°F)	32.0 32.0 32.0	31.9 31.9 31.9	32.0 32.0 32.0	
THERMOCOUPLE 3 (°F)	32.0 32.0 32.0	31.9 31.9 31.8	31.9 31.9 31.9	
THERMOCOUPLE 4 (°F)	32.0 32.0 32.0	32.0 32.0 32.0	32.0 32.0 32.0	
DIGITAL THERMOMETER (°F)	32.0 32.0 32.0	32.0 32.0 32.0	32.1 32.1 32.1	



Vault

Project Name: Miami University "Gunlock Athletic"

Project Location: 800 Weeb Ewbank Way
Oxford, OH 45056

Manufacture: ISCO Industries

Product: PE Vault

Architect: Hellmuth, Obata, Kassabaum, P.C.
415 North Front Street
Columbus, OH 43215

Engineer: Prater Engineering
6130 Wilcox Road
Dublin, OH 43016

Submitted by: Ground Loop Solutions, Inc.
P.O. Box 826
Brownsburg, IN 46112

Date: 3/23/16

Please see attached submittal data for specification: 232113.14

Miami University Athlete Performance Center

Prater Engineering Associates, Inc.

A Approved	Proceed with the Work covered by this Submittal provided it complies with the Contract Documents. Comments and corrections do not authorize changes to the Contract Documents.
B Approved as Noted	
C Revise as Noted and Resubmit	Do not proceed with the Work covered by this Submittal. Limit corrections in resubmissions to items noted in this Submittal.
D Rejected	
E Reviewed for Information	This Submittal is for information only. Resubmit only if noted in this submittal.
F Reviewed for Information as Noted	

C ACTION REQUIRED

Review of this Submittal is for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The review is not for determining the accuracy or completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, which remains the Contractor's responsibility. Review shall not constitute approval of safety precautions, or of construction means, methods, and techniques, sequences or procedures. Approval of a specific item shall not indicate approval of an assembly of which the item is a component.

Reviewed By: John.Ahmann 04/05/2016

Submittal File: Vault Submittal Sheet.pdf

CIRCUIT MAKER GEOTHERMAL VAULT® SUBMITTAL DOCUMENT



Miami University- Gunlock Center

ISCO Industries
926 Baxter Avenue
P.O. Box 4545
Louisville, KY 40204
800-345-ISCO | www.isco-pipe.com



GEOTHERMAL
System Solutions

Specifications for ISCO Circuit Maker Vaults®

This document is intended for engineers designing geothermal projects requiring a valved vault. The specification shall govern the materials and fabrication of the ISCO Circuit Maker Vault®, a high density polyethylene (HDPE) valved vault as supplied by ISCO Industries, LLC.

84" cylinder, 8" mains, 4" circuits

Basic Structure

The ISCO Circuit Maker Vault® shall be manufactured from High Density Polyethylene (HDPE) materials. The cylinder shall be HDPE pipe with a nominal diameter of 60 inches to 120 inches. The interior coating of the cylinder shall be a light reflecting color for better visibility. All pipes penetrating the cylinder shall be welded and 100% leak free. End walls shall be made of HDPE and will be no less than 1.5 inches thick and welded to the ends of the cylinder. The fabrication technician will perform work in accordance to butt fusion of high-density polyethylene per ASTM F 2620 and extrusion and hot air welding per ASTM C 1147.

Interior Material

All internal HDPE pipes supplied under this specification shall be PE 3608 or 4710 grade resin. The HDPE material shall conform to ASTM D 3350 with minimum cell classification values of 345464C. Isolation valves shall be butterfly suitable for above ground or buried applications. Valves shall be cast iron, wafer or lug style. Discs shall be aluminum bronze with a stainless steel stem. Flanges shall be ANSI 125/150. Elastomeric seals shall be EDPM or Buna-N for water service rated at 200psi. Valves will be lever operated up to 8 inches and gear operated 10 inches and larger. Valves will have a position indicator and will be suitable for temperatures from 0° to 140° F.

Pressure/Temperature ports will be located on all mains and circuits. Purge valves, 3" and smaller, shall be quarter turn brass, full port. Pressure temperature ports shall be brass and have dual seal cores and rated zero failure from vacuum to 1000psig. Plugs shall be capable of receiving a standard P/T probe.

Manway – H2O Rating

Manufacturer shall submit proof that the structure meets the general requirements of known standards, such as the ASTM F-1759 if applicable, or other burial design requirements. Manufacturer will provide information that demonstrates the vault will withstand



burial and traffic loads. Traffic loads for different applications can vary. Manufacturer will provide instructions and engineered approved detail as required. Manway will be a minimum of 26 inches inside diameter. The ladder shall be OSHA compliant.

Testing

All ISCO Circuit Maker Vaults® will be tested before shipping to be 100% leak free. A certificate indicating the project name, test dates, and completion date will be available on request. The cylinder will be pneumatically tested at 1 psig for 30 minutes to insure that ground water can not enter the cylinder. The manifolds will be hydrostatically tested at 100psig for 30 minutes to insure there will be no system leaks.

Accessories

ISCO Circuit Maker Vaults® are custom made and manufactured with many variations of product components. Engineers designing geothermal systems with vaults can require specific products, model numbers, and capacities. ISCO will meet or exceed those requirements. ISCO does reserve the ability to discuss any product component with specifying engineer.

Accessories which are available include internal electrical components, lighting fixtures, sumps and pumps with discharge piping, grating, and vents with or without exhaust fans.

Warranty

The ISCO Circuit Maker Vault® is factory tested to be leak-free and free of defects before shipment. To ensure leak free condition after installation, a field air test must be performed on the structure after all fusion connections are made and backfilling is complete. A 1" male threaded port will be provided in the manway to use for a low pressure air test (1 psi or less), for a period not to exceed 30 minutes. The installing contractor along with the owner representative and/or general contractor should witness the test and provide a signed document to the manufacturer with the location, date, witnesses and test conditions. The manufacturer or its representative should be contacted to be available to witness the testing, which is expected to occur within 60 days of structure delivery. A successful test will extend the warranty to one year from the test date.

For additional information call: ISCO Industries – 800-345-4726
Ask for the Geothermal Specialist in your area.





SAFETY FIRST

SAFETY IS TOP PRIORITY AT ISCO

www.isco-pipe.com

800-345-ISCO

VERSION 15.1.1

SAFETY

KEEPING OUR EMPLOYEES SAFE IS OF THE UTMOST IMPORTANCE

SAFETY FIRST

At ISCO one of our core values is safety first. Ensuring our employees leave work the same way they arrived is critical to our success. Achieving zero losses whether on a job site or in one of our plants is priority number one. Our employees regularly participate in training and are continuously learning and improving themselves when it comes to safety.

Every employee has the right to work in a safe environment, whether at an ISCO facility or in the field on a jobsite. In accordance with the Occupational Safety and Health Act of 1970, ISCO enforces protective workplace standards and provides our employees with working conditions free of known dangers.

EMR

Each year ISCO's EMR (Experience Modification Rate) is reevaluated to confirm we are operating as safely as possible. EMR is a number used by insurance companies to gauge both past cost of injuries and future chances of risk. A low EMR score is ideal, with the industry average being 1.0. ISCO's EMR score is .77.



AWARDS

The National Safety Council presented ISCO with their "Industry Leader Award" in 2013. An Industry Leader Award recognizes the top 5% of member companies, units and facilities that have met the criteria and qualified for the 2013 Occupational Excellence Achievement Award (based on 2012 calendar year data) from the National Safety Council. Winners are selected based on NAICS code, lowest total incidence rate and employee work hours.

ISCO was recently bestowed the Risk Control Bronze Award by Affinity Insurance, Ltd. To be a member of this insurance group, a company must score in the top 20% of Affinity's criteria. To receive this award, ISCO scored more than 96% on the guidelines provided. Achieving this success took diligent work and discipline.

CERTIFICATIONS

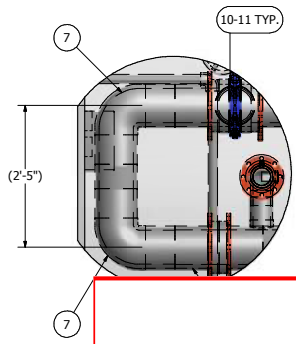
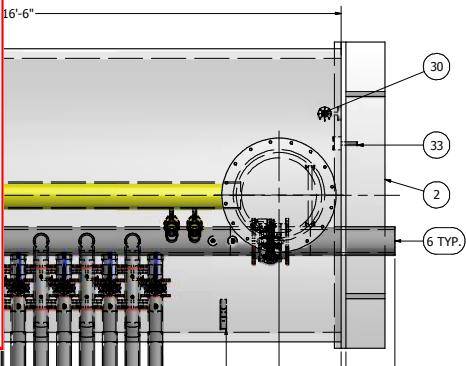
Most of our field fusion technicians and fabricators carry a variety of certifications. We will work with our customers in establishing the safety needs of a particular project or job site and assessing which technician to send to complete the task. Below is a partial list of the certifications some of our employees carry:

- MSHA (Mine Safety & Health Administration) Certification
- 40-Hour OSHA (Occupational Safety and Health Administration) Hazwoper
- OSHA 10
- Confined Space
- First Aid
- CPR
- TWIC (Transportation Worker Identification Credential) Card
- Houston Area Safety Council
- LG&E (Louisville Gas & Electric) Passport Training

www.isco-pipe.com
Toll Free 800-345-4726
Fax 502-714-5406

Circuit Maker Vault® 8" Main w/ (8) 4" Circuits

PROVIDE SLEEVES AND
LINK SEALS AT VAULT WALL
PENETRATIONS PER THE
DRAWINGS.



PROVIDE SWITCHED UTILITY
RECEPTACLE FOR FAN PER THE
DRAWINGS.

PROVIDE MIN. 4" LOCKABLE VALVED
BYPASS UPSTREAM OF
MAIN ISOLATION VALVES
PER THE DRAWINGS.

FLUSHING PORTS SHALL BE 4" SIZE AS
SHOWN ON THE DRAWINGS.

PROVIDE
RECEPTACLE
CONTINUOUS
PER THE D

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	16.5 ft	20841099	84" RSC250 PIPE
2	2	29010010	1-1/2" END PLATE
3	1	49280010	28" HDPE WATER TIGHT FLANGE SET 35" OD w/(16) 3/4" BH ON 33" BHC (INCLUDES NEOPRENE GASKET & BOLTPACK)
4	2 ft	10283210	28" DR3.5 HDPE PIPE
5	1	98000180	MANHOLE LADDER (MEETS OSHA STANDARDS)
6	35 ft	10081122	8" DR11 HDPE PIPE
7	2	50081123	8" DR 11 MOLDED 90 DEGREE ELBOW
8	8	50081121	8" DR 11 FLANGE ADAPTER
9	8	53080032	8" D.I. BACKUP RING
10	3	59080046	8" NIBCO GEAR OPERATED BFFV
11	6	49081112	8" HDPE VALVE SPACER 2" THICK
12	8	59040099	4" TACO CBV
13	8	50041121	4" DR 11 MOLDED 90 DEGREE ELBOW
14	24 ft	10041121	4" DR11 HDPE PIPE
15	16	50081117	8" x 4" DR 11 BRANCH SADDLE
16	32	50041119	4" DR 11 FLANGE ADAPTER
17	32	53040024	4" D.I BACKUP RING
18	8	59040066	4" NIBCO BFFV
19	2	50081116	8" x 3" DR 11 BRANCH SADDLE
20	2	53031116	3" BRASS MPT TRANSITION
21	2	59030078	3" NIBCO FULL PORT BRASS BALL VALVE
22	8	52000010	1/2" BRASS P/T PORT
23	10	52000019	1/2" BRASS FPT x 3/4" HDPE SOCKET TRANSITION
24	2	98000276	1/2" MPT TEMPERATURE GAUGE
25	2	52000022	1/4" MPT X 3/4" SOCKET PORT
26	2	67020026	1/4" MPT BACK CONNECTION PRESSURE GAUGE
27	1	53000099	ZOELLER N153 SUMP PUMP
28	1	52010043	1-1/2" SOCKET 90 DEGREE ELBOW
29	5 ft	10011137	1-1/2" DR11 HDPE PIPE
30	1	53000147	FLUORESCENT LIGHT, SWITCH, COVER
31	1	53000132	FLUORESCENT LIGHT
32	2	53000039	SINGLE GANG BOX
33	1	53000036	HINGED BOX, GFCI, COVER, GANG BOX
34	1	99999999	ALOHA VENTILATION FAN W/ VENT HOSE
35	1	53011119	1" SS MPT TRANS.
36	1	40161712	16" DR17 END CAP
37	1 ft	10161713	16" DR17 HDPE PIPE
38	4	29010012	HDPE GUSSET FROM 1" SHEET
39	1	99999999	ZOELLER NEMA 4X ENCLOSURE FOR SUMP PUMP
40	1	53011128	1-1/2" BRASS MPT TRANS. WITH CAP

* WATER TEST MANIFOLD TO MINIMUM OF 90 PSI FOR 30 MINUTES

MANHOLE SHALL BE MIN. 34" DIAMETER AS SPECIFIED.
COVER SHALL BE MINIMUM 34" DIAMETER MADE FROM
CORROSION RESISTANT MATERIAL.
COORDINATE MANHOLE EXTENSION
HEIGHT WITH FINAL GRADE ELEVATION
AND HATCH DEPTH

WIDE LEVEL WALKWAY AS
PER THE DRAWINGS.

REVISIONS (LOCK)
HEADER
SHEET 1 OF 1

THIS DRAWING IS INTELLECTUAL PROPERTY OF
("ISCO"). IT IS INTENDED FOR THE IDENTIFICATION
DEPICTED AND SHALL NOT BE CIRCULATED OR REPRODUCED
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SALE SET FORTH AT WWW.ISCO-PIPE.COM/TERMS-AND-CONDITIONS

DRAWN BY	JAYSON
DATE	
REVIEWED	DON M
APPROVED	



S7900 SERIES

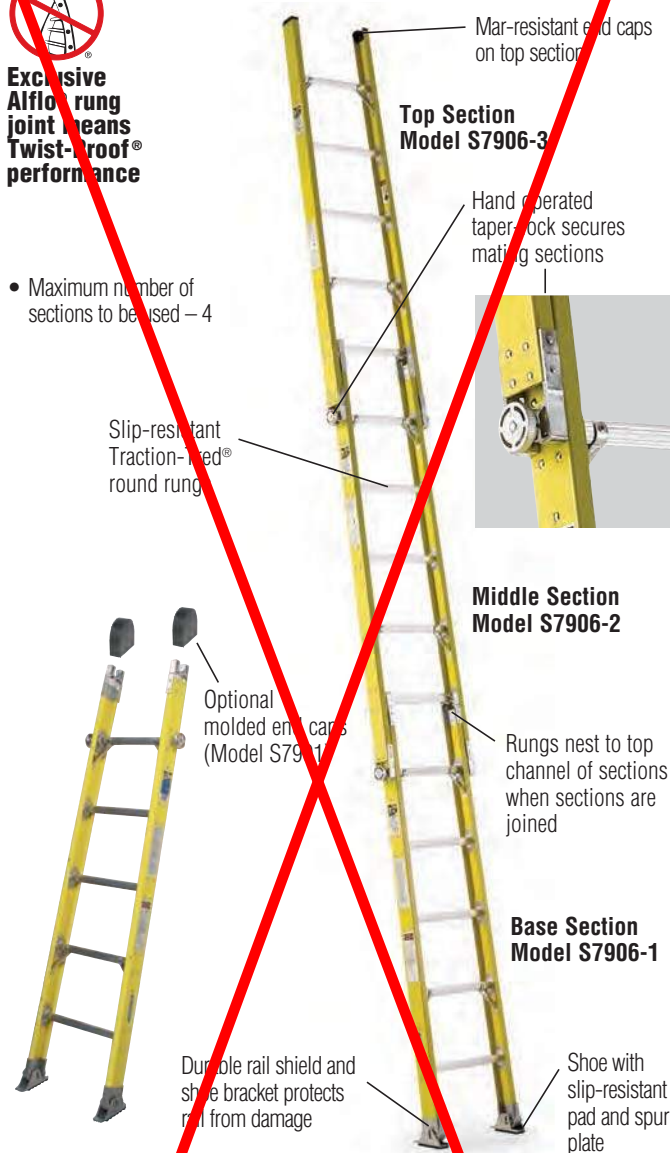
★★★★★ **375 lbs.** LOAD CAPACITY
3 SECTIONS

★★★★★ **300 lbs.** LOAD CAPACITY
4 SECTIONS TYPE I A DUTY RATING

STYLE: Interchangeable Tapered Sectional Ladder

Exclusive
Alloy rung
joint means
Twist-Proof®
performance

- Maximum number of sections to be used — 4



SPECIFICATIONS

Model No.	Description	Top of Section	Bottom of Section	Approx. Cu. Ft. Per Unit	Approx. Shipping Wt. Lbs.
S7906-1	6' tapered base with swivel shoes	15-3/4"	19-3/4"	2.3	17.0
S7906-2	6' intermediate	15-3/4"	18-3/4"	3.5	15.5
S7906-3	6' top with molded end caps	16-3/16"	18-3/4"	3.4	13.0
S7901 (Accessory)	End caps for middle or base sections	N/A	N/A	0.1	1.0 ea.

ASSEMBLY DESCRIPTION

Quantity of Sections	Model No.	Total Assembled Size
1	S7906-1 base	6' 2"
1	S7906-1 base	15' 11"
1	S7906-2 middle	
1	S7906-3 top	
1	S7906-1 base	
2	S7906-2 middle	20' 11"
1	S7906-3 top	

DIMENSIONS

Rails:	3-5/16" wide
Flange:	1-3/16" wide
Rungs:	1-1/4" diameter

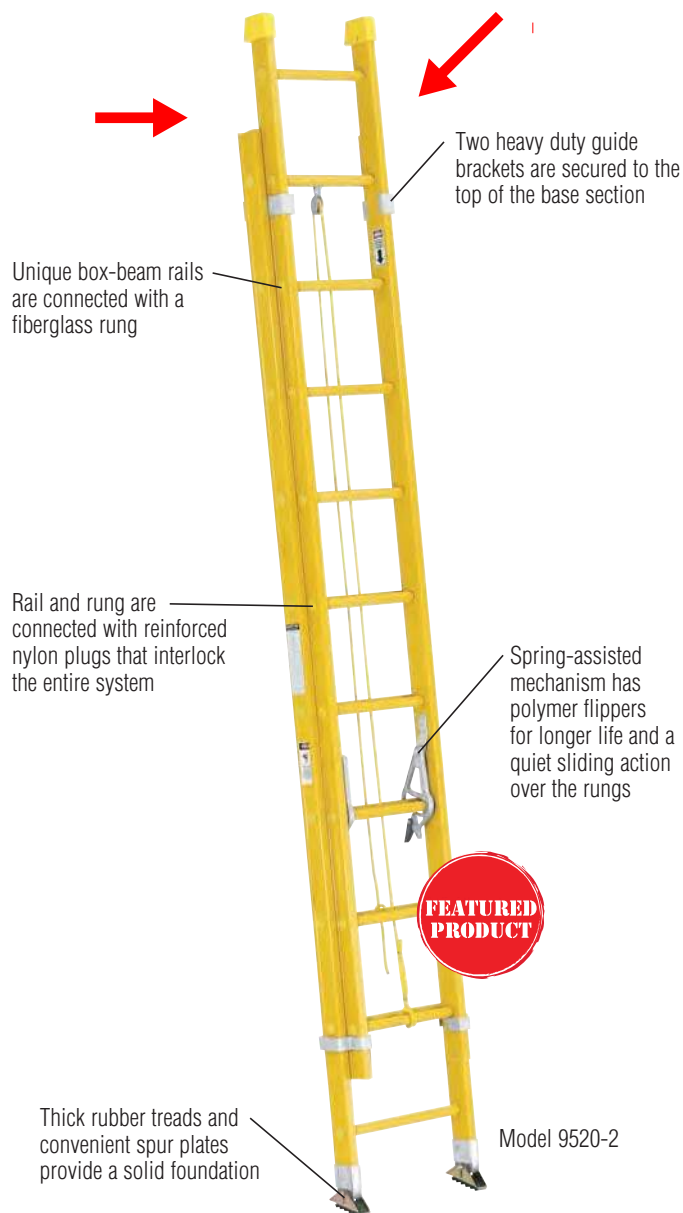
9500-2/9500-1 SERIES

★★★★★ **300 lbs.** LOAD CAPACITY

TYPE I A
DUTY RATING

STYLE: All-Fiberglass Extension/Straight Ladder

Using a fixed, anchored portion



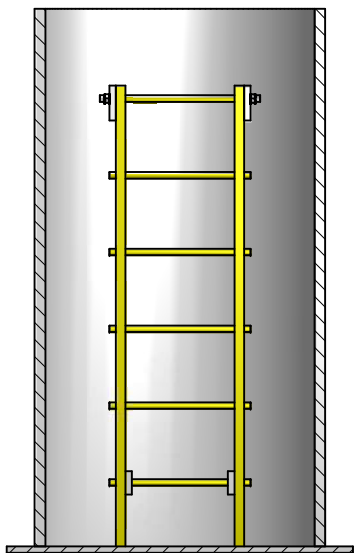
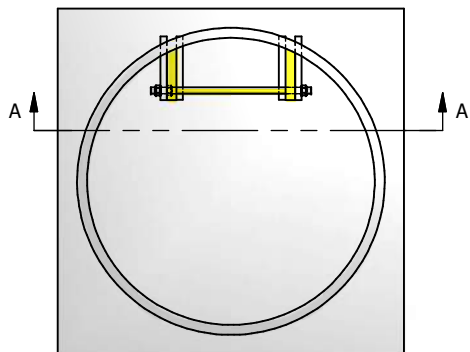
SPECIFICATIONS

Model No.	Total Length of Sections	Max. Working Length	Approx. Cu. Ft. Per Unit	Approx. Shipping Wt. Lbs.	Single Ladder Model No.	Total Length	Approx. Cu. Ft. Per Unit	Approx. Shipping Wt. Lbs.
9516-2	16'	13'	8.3	41.0	9508-1	8'	5.5	18.0
9520-2	20'	17'	10.2	49.0	9510-1	10'	6.8	22.0
9524-2	24'	21'	12.2	56.0	9512-1	12'	8.0	26.0
9528-2	28'	25'	14.1	64.0	9514-1	14'	9.4	30.0
9532-2	32'	29'	16.0	72.0	9516-1	16'	10.7	34.0
					9518-1	18'	11.2	38.0
					9520-1	20'	12.5	42.0

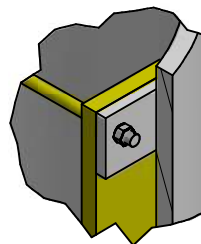
DIMENSIONS

Rails:	3-1/4" wide	Fly Width:	15-1/2" outside rails
Flange:	1-3/16" wide	Base Width:	19" outside shoes
Rungs:	1-1/4"		

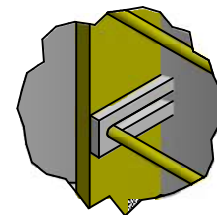
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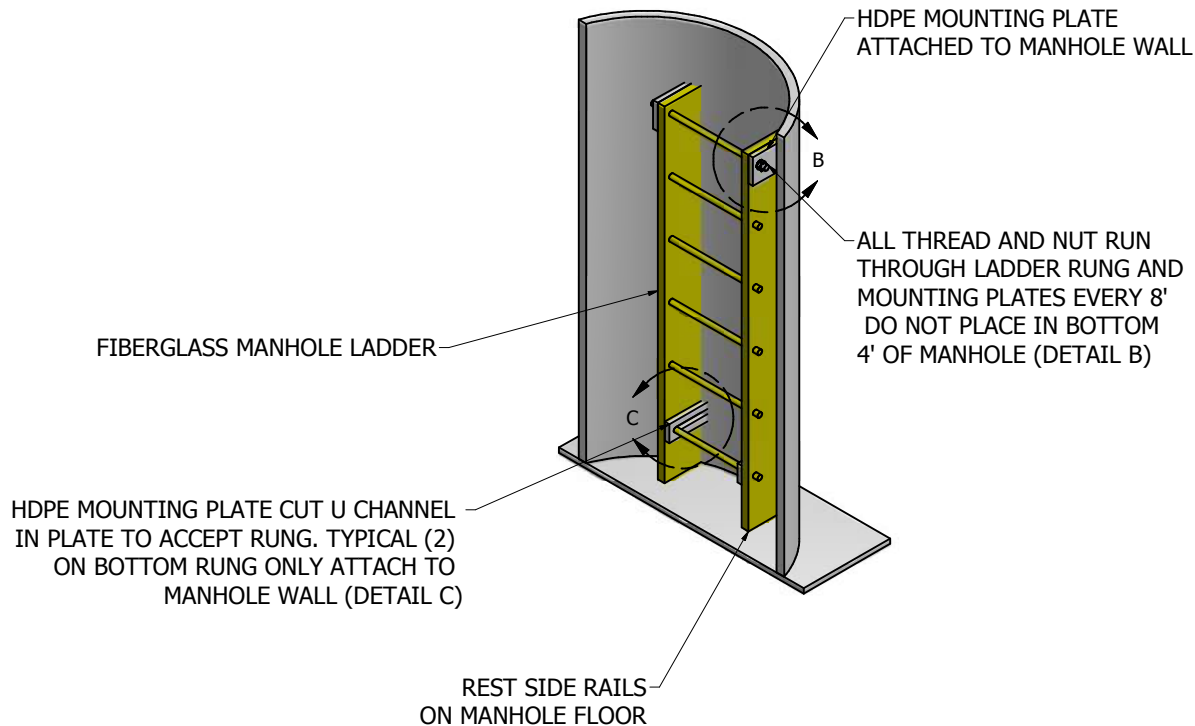
SECTION A-A



DETAIL B



DETAIL C



DRAWN	12/10/2009
NLA	
ORDER #	

CUSTOMER NAME:	
CONCEPT DRAWING	
DRAWING TITLE	
MANHOLE LADDER INSTALLATION DETAIL	
SIZE	FILE LOCATION
C	
SCALE	
SHEET 1 OF 1	

APPROVED BY: _____ DATE _____

200 PSI Butterfly Valves

Cast Iron Body • Extended Neck
Cartridge Seat Liner • Lug Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges†
Bi-directional dead end service rating without a downstream
flange required: 2"-6" 200 PSI, 8" 150 PSI, 10"-12" 100 PSI

DESIGNED TO MEET MSS SP-67 STANDARD

MATERIAL LIST

PART	SPECIFICATION
1. Body	Cast Iron, Epoxy coated ASTM A126 CL.B
2. Body Bushing	Bronze ASTM B584 Grade C83600
3. Liner	EPDM Rubber w/Phenolic Backing Buna-N Rubber Nitrile w/Phenolic Backing
4. Stem	Stainless Steel ASTM A582 Type 416
5. Disc	Alum. Brz. ASTM B148 Alloy C95400 Ductile Iron ASTM A536 Grade 65-45-12 (plated)
6. Taper Pin (2 pin 6" - 12")	Stainless Steel ASTM A582 Type 416
7. Name Plate	Aluminum
8. Shaft Bushing	Bronze ASTM B584 Grade C83600
9. Stem Seal	Buna-N Rubber Nitrile

DIMENSIONS — WEIGHTS

Size	A	Min.	B	C	E	F	G	H	I
In. mm.	Dia.	Pipe I.D.	Dia.	Dia.	D		Body	Seat	Dia.
2 50	2.08	1.38	3.00	3.94	6.34	1.26	10.75	1.655	1.81
2½ 65	2.54	1.95	3.50	4.72	6.89	1.26	11.65	1.759	1.93
3 80	3.10	2.66	4.09	5.00	7.13	1.26	12.12	1.780	1.93
4 100	4.10	3.67	5.32	6.14	7.87	1.26	13.62	2.050	2.18
5 125	4.85	4.48	6.26	7.48	8.39	1.26	14.65	2.140	2.31
6 150	6.12	5.84	7.42	8.35	8.90	1.26	15.62	2.195	2.33
8 200	7.97	7.85	9.38	10.55	10.24	1.77	18.88	2.385	2.52
10 250	9.86	9.76	11.51	12.79	11.50	1.77	21.26	2.584	2.83
12 300	11.87	11.72	13.55	15.87	13.27	1.77	24.57	3.029	3.19

Size	J	K	L	M	R	P	Q	T	Lug Weight
In. mm.	Dia.	B.C. Dia.	Dia.	Dia.	Dia.		Dia.	Flats	Lbs. Kg.
2 50	3.00	1.97	0.28	0.75	4.75	4	¾-11UNC	.350	8.6 3.9
2½ 65	3.03	1.97	0.28	0.75	5.50	4	¾-11UNC	.350	10.8 4.9
3 80	3.03	1.97	0.28	0.75	6.00	4	¾-11UNC	.350	11.4 5.2
4 100	3.62	2.76	0.39	0.75	7.50	8	¾-11UNC	.437	18.9 8.6
5 125	3.62	2.76	0.39	0.88	8.50	8	¾-10UNC	.500	22.8 10.4
6 150	3.62	2.76	0.39	0.88	9.50	8	¾-10UNC	.500	27.1 12.3
8 200	4.50	4.02	0.47	0.88	11.75	8	¾-10UNC	.625	41.2 18.7
10 250	4.50	4.02	0.47	1.00	14.25	12	¾-9UNC	.812	56.3 25.9
12 300	5.50	4.02	0.47	1.00	17.00	12	¾-9UNC	.875	90.3 41.0

†NOTE: LUG STYLE VALVES - Extra care should be used when installing with raised face flanges.
Over-tightening can result in broken lugs.

N200235

Lug Style
EPDM Liner
Aluminum Bronze Disc

N200236

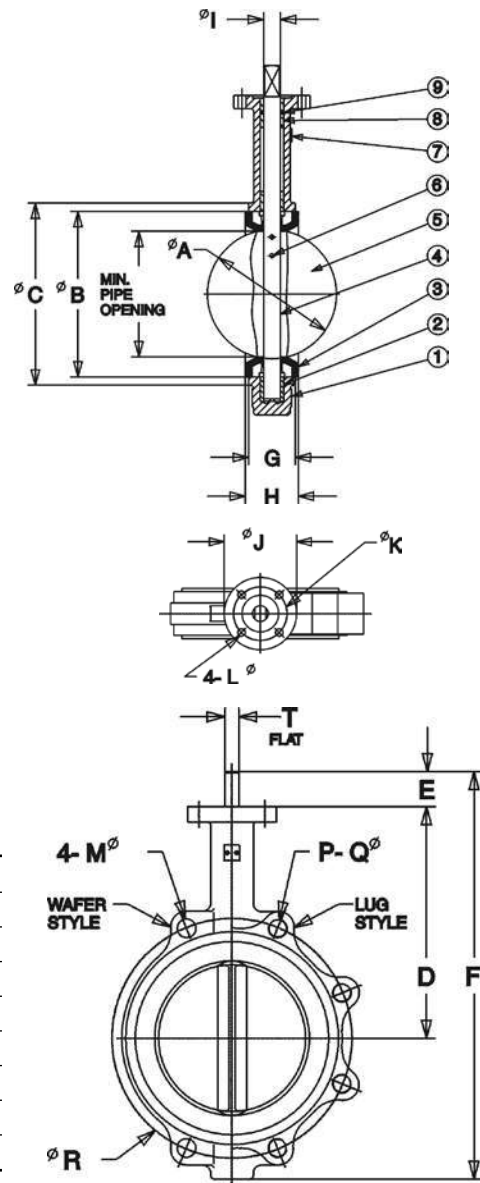
Lug Style
EPDM Liner
Ductile Iron Disc

N200245

Lug Style
Buna Liner
Aluminum Bronze Disc

N200246

Lug Style
Buna Liner
Ductile Iron Disc



NOT RECOMMENDED
FOR STEAM SERVICE



NIBCO® Pressure Rated Valves Warranty

NIBCO INC. 125% LIMITED WARRANTY

Applicable to NIBCO INC. Pressure Rated Metal Valves

NIBCO INC. warrants each NIBCO® pressure rated metal valve to be free from defects in materials and workmanship under normal use and service for a period of five (5) years from date put into service.

In the event any defect occurs which the owner believes is covered by this warranty, the owner should immediately contact NIBCO Technical Services, either in writing or by telephone at 1.888.446.4226 or 1.574.295.3000. The owner will be instructed to return said product, at the owner's expense, to NIBCO INC., or an authorized representative for inspection. In the event said inspection discloses to the satisfaction of NIBCO INC. that said valve is defective, it will be replaced at the expense of NIBCO INC.. Replacements shall be shipped free of charge to the owner. In the event of the replacement of any valve, NIBCO INC. shall further pay the owner the greater of twenty-five (25%) percent of the price of the valve according to the published suggested list price schedule of NIBCO INC. in effect at the time of purchase, or ten (\$10.00) dollars, to apply on the cost of the installation of said replacement valve.

TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY SPECIFICALLY EXCLUDES INCIDENTAL AND CONSEQUENTIAL DAMAGES OF EVERY TYPE AND DESCRIPTION RESULTING FROM ANY CLAIMED DEFECT IN MATERIAL OR WORKMANSHIP, INCLUDING BUT NOT LIMITED TO, PERSONAL INJURIES AND PROPERTY DAMAGES.

Some states or countries do not allow the exclusion or limitation of incidental or consequential damages so these limitations may not apply to you.

TO THE EXTENT PERMITTED BY LAW, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state and country to country.



How to Order

State quantity, figure number and size for each valve or fitting you wish to order. See individual catalog pages for specific or special product designations.

HOW MANY TO ORDER

NIBCO® valves and fittings are decimal packed for your convenience in handling, shipping and stock-keeping. Number in master carton varies with item.

POLICY ON RETURNS TO FACTORY

No NIBCO valves and fittings are to be returned without prior written agreement. Transportation must be prepaid. A 20% charge will be made to cover cost of rehandling and reinspection.

TECHNICAL ASSISTANCE

Engineers, contractors, wholesalers or manufacturers may obtain special or technical assistance from any factory representative of NIBCO. Write, fax or phone.

NIBCO INC.
World Headquarters
1516 Middlebury Street
Elkhart, IN 46516-4740
USA

PH: 1.574.295.3000 or 1.888.446.4226
FAX: 1.574.295.3307 or 1.888.336.4226

To the best of our knowledge, the information contained in this publication is accurate. However, NIBCO does not assume any liability whatsoever for the accuracy or completeness of such information. Final determinations of the suitability of any information or product for the use to be contemplated is the sole responsibility of the user. The manner of that use, and whether there is any infringement of patents, is also the sole responsibility of the user.

NIBCO®

ACCU-FLO Balancing Valve

The Taco Accu-Flo combines superior engineering and design, precision machining and 100% factory testing to ensure the highest quality fixed port venturi balancing valve on the market today. Accuracy of the Taco Accu-Flo is 4-5 times greater than variable orifice balancing valves.





SUPER

JOB

QUAN



- Fixed port venturi orifice balance
- Flow measurement function indicator
- Ball valve construction: Allows Accurate shut-off service in closed hot or cold
- Valve can be installed in any position.
- Blow-out proof stem.
- Fully-Assembled: Shipped ready for installation
- Internal seats: Teflon® seats prevent leakage and
- Calibrated nameplate: Easy to read. Memory stop, resetting if shut-off feature is used. Calibrated to actual

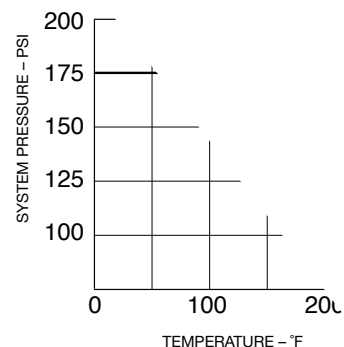
ACCESSORIES

- Readout Meter
- Slide Rule

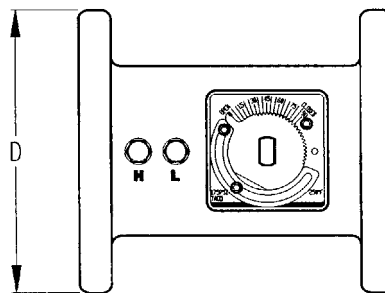
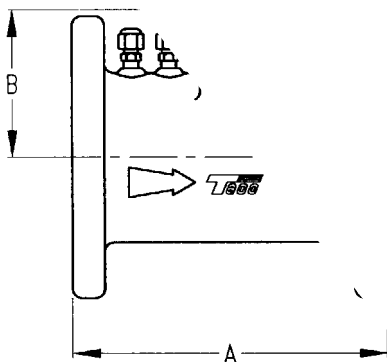
All dimensions shown are subject to change and should not be used for pre-piping. Contact your local Taco representative should certified dimensional drawings be required.

SPECIFICATIONS

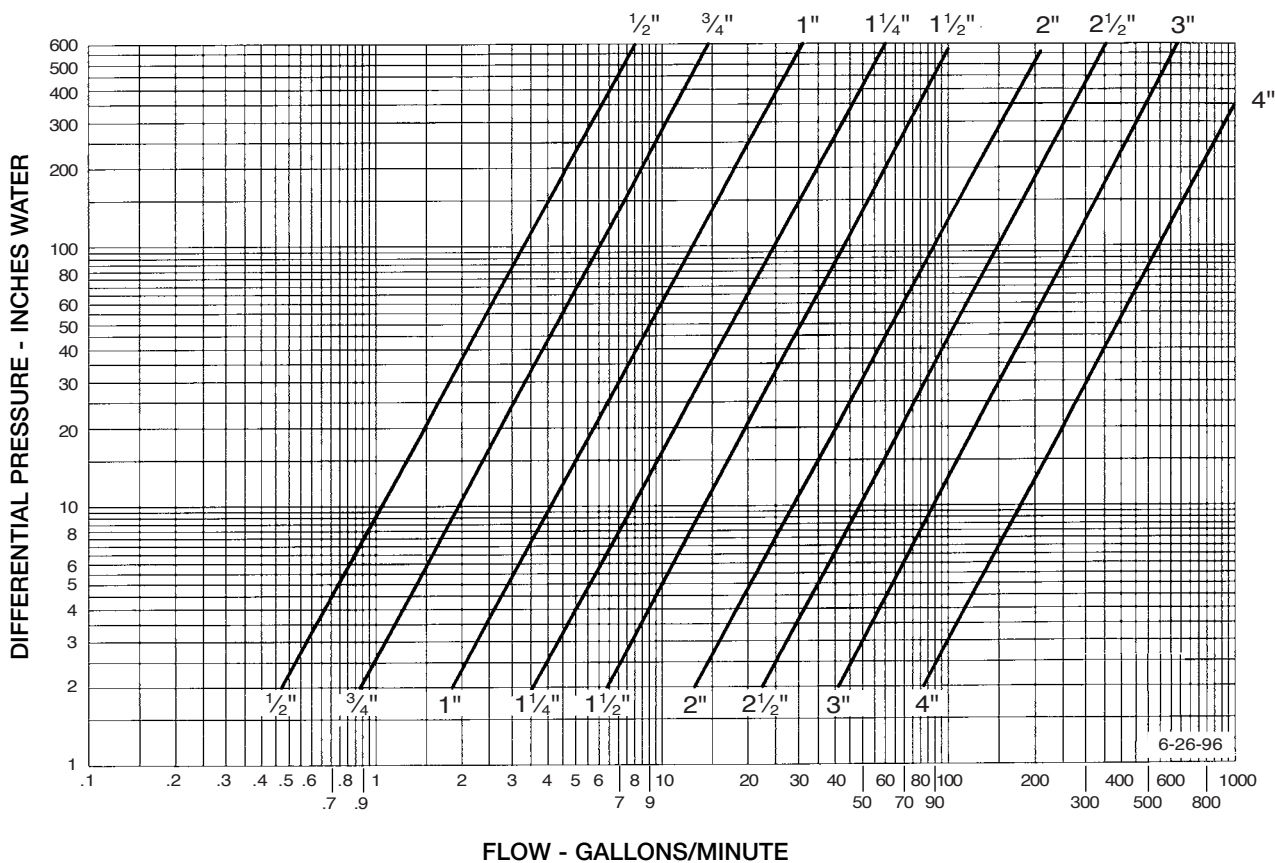
SIZES	2½", 3", 4"
BODY	CAST IRON
INTERNAL COMPONENTS	BRASS, TEFLON®, EPDM, NORYL®
SEATS	TEFLON®
CONNECTIONS	FLANGED
SCHRADER VALVE CONNECTIONS	BRASS ¼"
INDICATOR PLATE	STAINLESS STEEL
POINTER	DIE CAST ZINC
PRESSURE/TEMPERATURE RATING	CLASS 125 (See Chart)



SIZE	
2 1/2"	AC
3"	ACU
4"	ACUF



FLOW M.



All dimensions shown are subject to change and should not be used for pre-piping. Contact your local Taco representative should certified dimensional drawings be required.

Do it Once. Do it Right.

Taco Inc., 1160 Cranston Street, Cranston, RI 02920 Telephone: (401) 942-8000 Fax: 942-2360

Taco (Canada), Ltd., 6180 Ordan Drive, Mississauga, Ontario L5T 2B3 Telephone: (905) 564-9422 Fax: (905) 564-9436

Visit our website at: www.taco-hvac.com

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SUPERSEDE

PLANT I.D. 001-

VALVE INSTALLATION

1. The valve may be installed in a position which allows the valve to be opened to the pressure port connection. Use pressure gauge hoses, easy to use screws, and easy reading of the valve.
2. Caution should be used when the valve is installed to prevent overheating the valve with a sharp pointed flame. Direct the flame so that the valve body is not subjected to the heat. The valve should be in the closed position when brazing. The use of low temperature solders is recommended. These valves should not be brazed.

VALVE OPERATION

1. For presetting, use the appropriate slide rule setting to achieve the desired pressure drop.
2. To measure flow, connect the TACO PRESSURE GAUGE (No. 779 0-10", 0-100" dual recommended, No. 775 0-135", 0-100' for higher pressure drops as an alternate) to the pressure port connections.

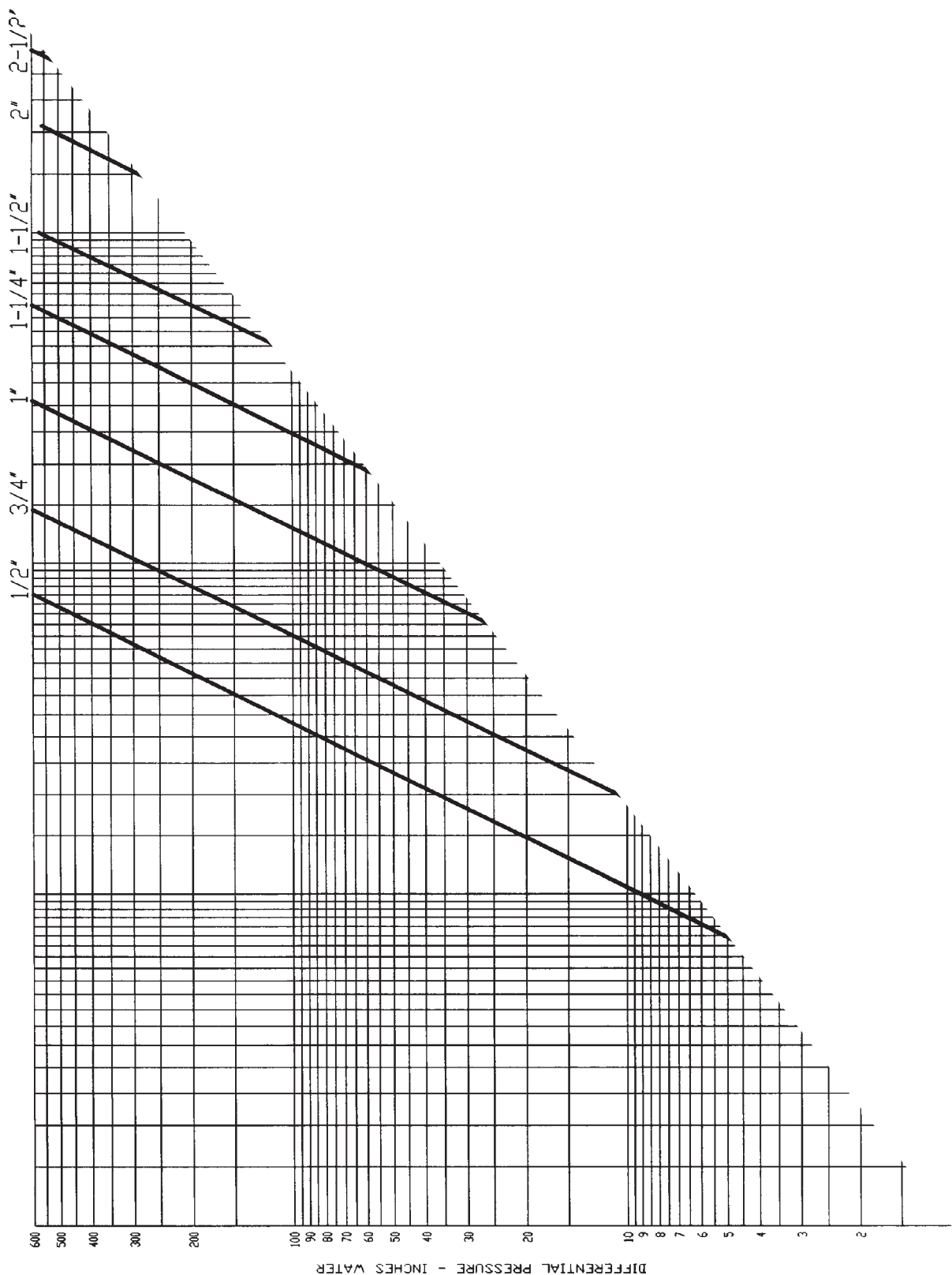
A—Position the meter case in a safe location adjacent to the valve.

CAUTION:

B—Take care in removing the pressure port connection caps on the ACCU-FLO valve, since they will be at the same temperature as the pipeline. There may be some fluid trapped behind the cap. Slowly unscrew the caps and look for continuous leakage. Continuous leakage may indicate a failure of the stem seal in the pressure port connection. Process fluid at temperature and under pressure may be present. If continuous leakage is present, do not remove the cap. Appropriate corrective action must be taken.

1. Review the operation of the valve to indicate the correct use of the valve.

2. Review the use of the hoses and the valve.



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TACO (Canada), Ltd., 6180 Ordan Drive, Mississauga, Ontario L5T 2B3. Telephone: 905/564-9422. FAX: 905/564-9436.

Visit our web site at: <http://www.taco-hvac.com>

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TACO, Inc.

Accu-Flo Balancing Valve Warranty Terms

Taco, Inc. will repair or replace without charge (at the company's option) any product or part which is proven defective under normal use within one (1) year from the date of start-up or one (1) year and six (6) months from date of shipment (whichever occurs first).

In order to obtain service under this warranty, it is the responsibility of the purchaser to promptly notify the local Taco stocking distributor or Taco in writing and promptly deliver the subject product or part, delivery prepaid, to the stocking distributor. For assistance on warranty returns, the purchaser may either contact the local Taco stocking distributor or Taco. If the subject product or part contains no defect as covered in this warranty, the purchaser will be billed for parts and labor charges in effect at time of factory examination and repair.

Any Taco product or part not installed or operated in conformity with Taco instructions or which has been subject to misuse, misapplication, the addition of petroleum-based fluids or certain chemical additives to the systems, or other abuse, will not be covered by this warranty.

If in doubt as to whether a particular substance is suitable for use with a Taco product or part, or for any application restrictions, consult the applicable Taco instruction sheets or contact Taco at [401-942-8000].

Taco reserves the right to provide replacement products and parts which are substantially similar in design and functionally equivalent to the defective product or part. Taco reserves the right to make changes in details of design, construction, or arrangement of materials of its products without notification.

TACO OFFERS THIS WARRANTY IN LIEU OF ALL OTHER EXPRESS WARRANTIES. ANY WARRANTY IMPLIED BY LAW INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS IS IN EFFECT ONLY FOR THE DURATION OF THE EXPRESS WARRANTY SET FORTH IN THE FIRST PARAGRAPH ABOVE.

THE ABOVE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR STATUTORY, OR ANY OTHER WARRANTY OBLIGATION ON THE PART OF TACO.

TACO WILL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF ITS PRODUCTS OR ANY INCIDENTAL COSTS OF REMOVING OR REPLACING DEFECTIVE PRODUCTS.

This warranty gives the purchaser specific rights, and the purchaser may have other rights which vary from state to state. Some states do not allow limitations on how long an implied warranty lasts or on the exclusion of incidental or consequential damages, so these limitations or exclusions may not apply to you.

Taco, Inc.
1160 Cranston Street
Cranston, RI 02920
1.401.942.8000

Brass Ball Valves

Two-Piece Body • Full Port • Blowout-Proof Stem • PTFE Seats

1/4"-2" 600 PSI/41.4 Bar Non-Shock Cold Working Pressure

2 1/2"-4" 400 PSI/27.6 Bar Non-Shock Cold Working Pressure

CSA CERTIFIED TO ASME B16.44
AND CR91-002 (THREADED 1/4"-4") • UL LISTED (THREADED 1/4"-4")
• FM APPROVED (THREADED 1/4"-2")

Threaded

CSA (1/4" - 4"):

- CR91-002: 1/2 psig, 2 psig, and 5 psig (these are specific approved categories)
- ASME B13.44: 125 psig (maximum)
- Temperature is -4° F to 194° F

Threaded

FM (1/4" - 2"):

- 175wvp Threaded

UL, Gas and Oil (1/4" - 4"):

- YQNZ, Compressed Gas Shutoff Valves: 250 psi
- YRBX, Flammable Liquid Shutoff Valves: 250 psi
- YRPV, Gas Shutoff Valves: 250 psi
- YSDT, LP-Gas Shutoff Valves: 250 psi
- MHKZ, Manual Valves: 250 psi

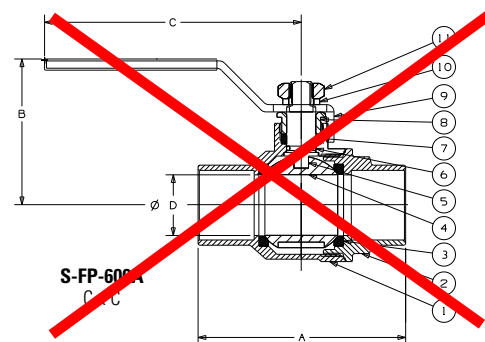
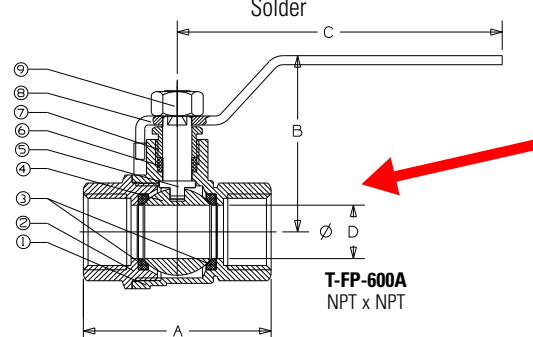
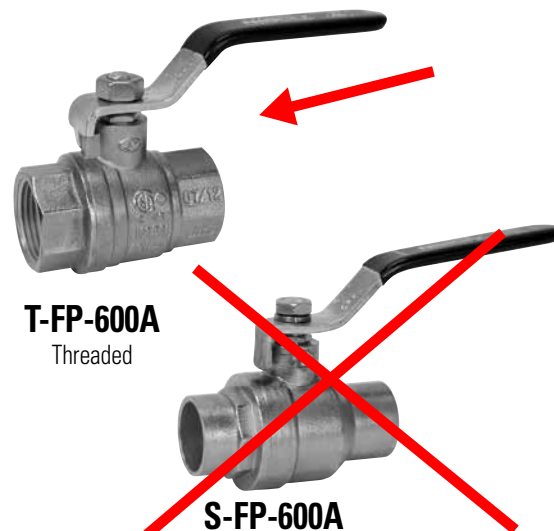
MATERIAL LIST

PART	SPECIFICATION
1. Body	Forged Brass ² CU > 57%
2. End Cap	Forged Brass ² CU > 57%
3. Ball Seat	PTFE
4. Ball	Brass, Chrome Plated
5. Stem	Brass
6. O-Ring (Stem Seal)*	Fluorocarbon (FKM)
7. Stem Packing	PTFE
8. Packing Nut	Brass
9. Lever Handle ¹	Steel, Plated
10. Lock Washer*	Stainless Steel
11. Handle Nut ¹	Stainless Steel

Note: * Parts 6 and 10 are applicable of S-FP-600A only.

¹ Due to Standard Approvals, Lever Handles and Nuts are not interchangeable between Solder and Threaded.

² For Material Certification, contact NIBCO Technical Services.



DIMENSIONS—WEIGHTS—QUANTITIES

Dimensions

Size		T-FP-600A		S-FP-600A		T-FP-600A		S-FP-600A		T-FP-600A		S-FP-600A		Port D		T-FP-600A		S-FP-600A		T-FP-600A		S-FP-600N	
		A		A		B		B		C		C											
In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	Lbs.	Kg.	Lbs.	Kg.	Ctn.	Qty.	Ctn.	Qty.
¼	8	1.76	45	—	—	1.73	44	—	—	3.54	90	—	—	.39	10	.33	.15	—	—	18		—	
⅜	10	1.76	45	1.75	44	1.73	44	1.58	40	3.54	90	3.78	96	.39	10	.30	.14	.38	.17	18		18	
½	15	2.05	52	2.01	51	1.92	49	1.78	45	3.54	90	3.78	96	.59	15	.44	.20	.40	.18	18		18	
¾	20	2.36	60	2.74	70	2.09	53	2.13	54	3.78	96	3.98	101	.75	19	.66	.30	.67	.30	12		12	
1	25	2.76	70	3.35	85	2.56	65	2.52	64	4.53	115	4.41	112	.98	25	1.10	.50	1.12	.51	6		6	
1¼	32	3.31	84	3.78	96	2.95	75	2.65	67	4.53	115	5.04	128	1.26	32	1.57	.71	1.49	.67	4		4	
1½	40	3.66	93	4.42	112	3.35	85	3.12	79	5.51	140	6.22	158	1.57	40	2.40	1.09	2.38	1.08	2		2	
2	50	4.18	106	5.34	136	3.68	93	3.41	87	5.51	140	6.22	158	1.97	50	3.37	1.53	3.62	1.64	2		2	
2½	65	5.38	137	6.28	160	4.76	121	4.76	121	8.66	220	8.66	220	2.56	65	7.60	3.45	6.36	2.88	3		3	
3	75	6.04	153	7.15	182	5.08	129	5.08	129	8.66	220	8.66	220	2.95	75	9.36	4.24	8.32	3.77	2		2	
4	100	7.39	188	—	—	5.87	149	—	—	9.61	244	—	—	3.89	99	16.85	7.64	—	—	1		—	

NOT FOR USE WITH POTABLE DRINKING WATER APPLICATIONS AFTER JANUARY 3, 2014.



Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



PUMP COMPANY

Zoeller Family of Water Solutions™

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SECTION: 2.20.047

FM1919

0414

Supersedes

0110

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COMPARE THESE FEATURES

- Durable cast iron construction
- Model 151 comes standard with a glass-filled polypropylene base
- Corrosion resistant powder coated epoxy finish
- Stainless steel lifting handle
- Assembled with stainless steel bolts
- Non-clogging engineered thermoplastic vortex impeller design
- Model 151 - 1/3 HP passes 1/2" spherical solids
- Model 152 - .4 HP passes 3/4" spherical solids
- Model 153 - 1/2 HP passes 3/4" spherical solids
- Motor - 60 Hz, 3450 RPM, oil-filled, hermetically sealed, automatic reset thermal overload protected
- Carbon/Ceramic seals
- Upper sleeve bearing and lower ball bearing running in bath of oil
- 20 ft. UL Listed power cord with molded 3-wire plug
- 1 1/2" NPT vertical discharge
- BN and BE standard models include a 20 ft. variable level float switch
- Operates at temperatures to 130°F (54°C) in effluent applications
- All models include a 1 1/2" x 2" PVC adapter fitting

Note: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps.

ALL MODELS ARE COMPLETELY SUBMERSIBLE HERMETICALLY SEALED

Watertight - dust tight. Permanently oiled bearings.

VARIABLE LEVEL CONTROL SYSTEMS AVAILABLE

Note: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps.

151/152/153 EFFLUENT SERIES

(For Pump Prefix Identification see News & Views 0052)

"DOSE-MATE"

FOR SEPTIC TANK - LOW PRESSURE PIPE (LPP)
AND ENHANCED FLOW STEP SYSTEMS



Tested to UL Standard UL775
and Certified to CSA
Standard CSA22.2 No. 108

EFFLUENT

SUBMERSIBLE

1 1/2" NPT DISCHARGE



Model N152/N153
High Head
Effluent



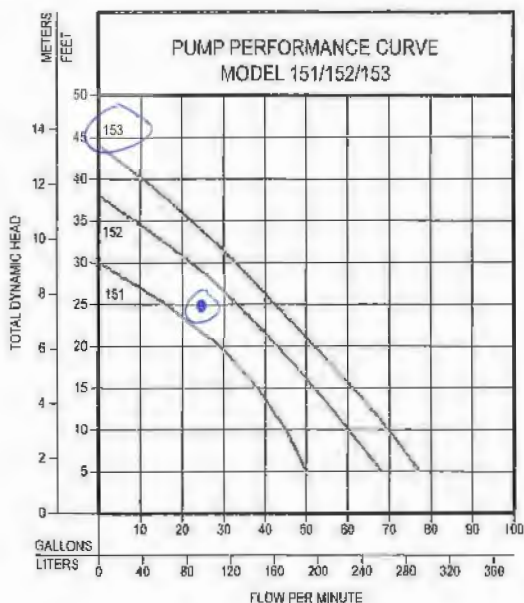
MODELS AVAILABLE

- N151/N152/N153 & E151/E152/E153 nonautomatic
- BN151/BN152/BN153 & BE151/BE152/BE153
packaged with Piggyback Variable Level Float Switch
- 1/3, .4 & 1/2 HP, 1Ph 115V or 230V

**POWDER
COATED
TOUGH™**

Model BN152/BN153
High Head
Effluent





TOTAL DYNAMIC HEAD/FLOW
PER MINUTE
EFFLUENT AND DEWATERING

MODEL		151		152		153	
Feet	Meters	Gal.	Liters	Gal.	Liters	Gal.	Liters
5	1.5	50	189	69	261	77	291
10	3.0	45	170	51	231	70	265
15	4.6	38	144	53	201	61	231
20	6.1	29	110	44	167	52	197
25	7.6	16	61	34	129	42	159
30	9.1	—	—	23	87	33	125
35	10.7	—	—	—	—	22	85
40	12.2	—	—	—	—	11	42
Shut-off Head:		30 ft. (9.1m)		38 ft. (11.6m)		44 ft. (13.4m)	

014508B

CONSULT FACTORY FOR SPECIAL APPLICATIONS

- Timed dosing panels available
- Electrical alternators, for duplex systems, are available and supplied with an alarm
- Variable level control switches are available for controlling single phase systems
- Double piggyback variable level float switches are available for variable level long and short cycle controls
- Sealed Qwik-Box available for outdoor installations - See FM1420
- Over 130°F (54°C) special quotation required

151/152/153 Series

151/152/153 MODELS				Control Selection		
Model	Volts-Ph	Mode	Amps	Simplex	Duplex	
N151	115	1	Non	6.0	1	2 or 3
BN151	115	1	Auto	6.0	Included	2 or 3
E151	230	1	Non	3.2	1	2 or 3
BE151	230	1	Auto	3.2	Included	2 or 3
N152	115	1	Non	8.5	1	2 or 3
BN152	115	1	Auto	8.5	Included	2 or 3
E152	230	1	Non	4.3	1	2 or 3
BE152	230	1	Auto	4.3	Included	2 or 3
N153	115	1	Non	10.5	1	2 or 3
BN153	115	1	Auto	10.5	Included	2 or 3
E153	230	1	Non	5.3	1	2 or 3
BE153	230	1	Auto	5.3	Included	2 or 3

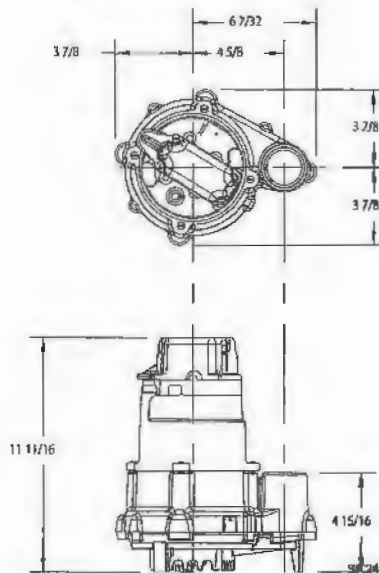
SELECTION GUIDE

1. Single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
2. See FM0712 for correct model of Electrical Alternator E-Pak.
3. Variable level control switch 10-0743 used as a control activator, specify duplex (3) or (4) float system.

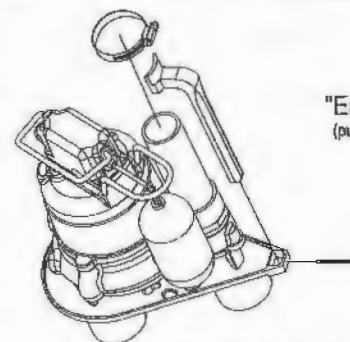
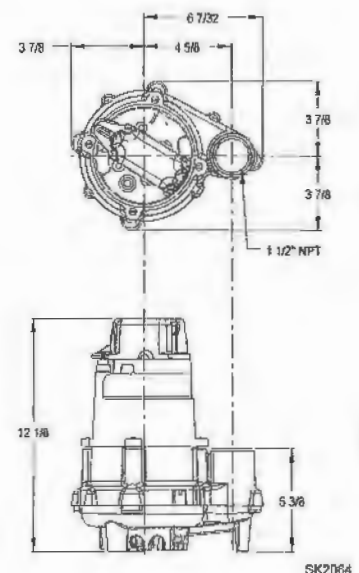
CAUTION

All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

Model 151



Models 152 / 153



OPTIONAL PUMP STAND P/N 10-2421

- Reduces potential clogging by debris
 - Replaces rocks or bricks under the pump
 - Made of durable, noncorrosive ABS
 - Raises pump 2" off bottom of basin
 - Provides the ability to raise intake by adding sections of 1 1/2" or 2" PVC piping
 - Attaches securely to pump
 - Accommodates sump, dewatering and effluent applications
- NOTE: Make sure float is free from obstruction.

RESERVE POWERED DESIGN

For unusual conditions a reserve safety factor is engineered into the design of every Zoeller pump.

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



PUMP COMPANY

Zoeller Family of Water Solutions™

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www.zoeller.com

ELECTRICAL ALTERNATOR CONTROL PANEL - FOR DUPLEX INSTALLATIONS

An Electrical Alternator is used on a Duplex pump application where automatic alternation of the pumps is desired for added protection in residential or commercial applications. With one pump operating to handle normal flow, a second pump becomes operational in the event the water level continues to rise. The built-in alarm system, a standard feature, can be connected to sound when the second pump becomes operational (3-float switch system) or independently (4-float switch system). All electrical systems must be installed by a qualified electrician and according to the National Electrical Code. (See Section 430-71 through 430-113, plus any others that apply.)

Control Panel Features:

- Hand-Off-Auto Toggle Switch for each pump
- Green pump run light for each pump
- Alarm test and silence switches
- Red pilot light (Nema 1 Only) and audible alarm with 83 to 85 decibel rating for a high water condition
- Red Alarm Beacon included with Nema 4X enclosure
- Auxiliary Dry Contact
- High Water Alarm
- On Single Phase - Circuit breaker for each pump
- On Three Phase - Motor protective switch with overload protection
- Magnetic starter for each pump
- Alternating mechanism
- Numbered terminal strip for connecting pumps and variable level float switches
- Nema 1 - general purpose or Nema 4X - Watertight enclosures available
- Integral auxiliary terminal board connections (dry contact) for remote alarm devices
- 3 or 4 variable level float switch control operation
- Three 20' float switches included with single phase panels
- 2 Year Warranty
- The use of off-the-shelf components provide for relatively easy field maintenance and repair
- Float switches not included with three phase panels (See FM0526)

CONTROL PANEL USED WITH SINGLE PHASE PUMPS

NEMA 1 ENCLOSURE WITH 20' FLOAT SWITCH			
Order No.	Dimensions H x W x D	Volts	Amp Range
10-1039	12" x 10" x 6"	115	7-15
10-1040	12" x 10" x 6"	115	15-20
10-0092	12" x 10" x 6"	115/200/230	0-20

NEMA 4X ENCLOSURE WITH 20' FLOAT SWITCH			
Order No.	Dimensions H x W x D	Volts	Amp Range
10-1041	12" x 10" x 6"	115	7-15
10-1042	12" x 10" x 6"	115	15-20
10-1043	12" x 10" x 6"	115/200/230	0-7
10-1044	12" x 10" x 6"	115/200/230	7-15
10-1045	12" x 10" x 6"	115/200/230	15-20
10-1046	12" x 10" x 6"	115/200/230	20-30
10-0093	12" x 10" x 6"	115/200/230	0-20

* Branch circuit protection provided by installing electrician.

Products may not be exactly as illustrated

NOTE: 600 and X600 Series single phase pumps require special panels that include start components. See Selection Guide FM0712 for correct panel selection.

NOTE: All variable level float switches in this section are mechanically activated and do not contain mercury.

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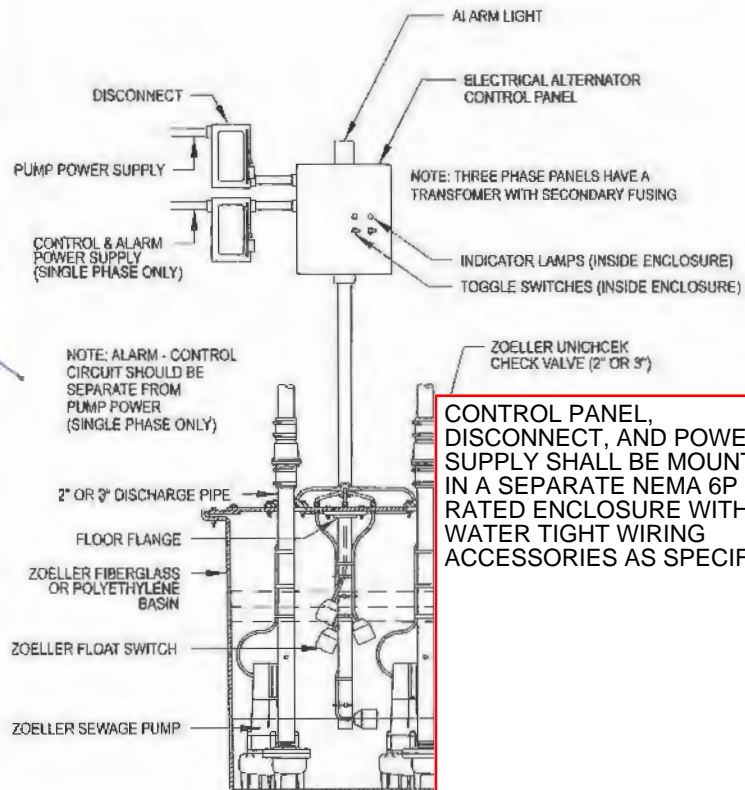


CONTROL PANEL USED WITH THREE PHASE PUMPS

NEMA 4X ENCLOSURE (Float Switches not included)			
Order No.	Dimensions H x W x D	Volts*	Amp Range
10-1102	14" x 12" x 6"	200/230/460	1.0 - 1.6
10-1104	14" x 12" x 6"	200/230/460	1.6 - 2.5
10-1108	14" x 12" x 6"	200/230/460	2.5 - 4.0
10-1108	14" x 12" x 6"	200/230/460	4.0 - 6.3
10-1110	14" x 12" x 6"	200/230/460	6.0 - 10.0
10-1111	14" x 12" x 6"	200/230/460	9.0 - 14.0
10-1112	14" x 12" x 6"	200/230/460	13.0 - 18.0
10-1114	14" x 12" x 6"	200/230/460	17.0 - 23.0
10-1115	14" x 12" x 6"	200/230/460	20.0 - 25.0
10-1183	14" x 12" x 6"	200-208	23.0 - 32.0
10-1154	14" x 12" x 6"	575	1.6 - 2.5
10-1156	14" x 12" x 6"	575	2.5 - 4.0
10-1158	14" x 12" x 6"	575	4.0 - 6.3

*Three phase panel has multi-tap transformer with secondary fusing.

DUPLIX ELECTRICAL ALTERNATING SYSTEM



Sequence of Operation for Duplex Panel

- Operation can begin after the following:
 - Correct voltage is supplied to Panel
 - Panel is properly grounded
 - Pumps are connected correctly to Panel
 - Panel Circuit Breakers are closed
 - Floats are installed properly
 - Overload Protection is adjusted to Pump nameplate amps
 - Pump HOA Switches are set to "Auto"
 - Control On/Off Switch is set to "On"
- When the "Stop" and "Lead" floats are closed Pump 1 will energize and the Pump 1 Pump Run Light will illuminate. Pump 1 will remain operational until the "Stop" float opens.
- The next time the "Stop" and "Lead" floats are closed the Alternating Circuit will energize Pump 2 and the Pump 2 Pump Run Light will illuminate. Pump 2 will remain operational until the "Stop" float opens. This cycle will repeat each time the fluid level rises and falls.
- If the fluid level continues to rise after the first pump has been energized the "Lag" float will close. When the "Lag" float has closed the second Pump will Energize. Both Pumps will remain operational until the "Stop" float opens.
- In a three float system when the "Lag" float is closed the following will also occur:
 - The External High Water Light will illuminate
 - The Audible High Water Horn will sound
 - The Auxiliary Dry Contacts will close
- In a four float system, the alarm float should be the third float causing an alarm to sound when the lead pump fails to operate or the rate of in flow into the basin exceeds the capacity of one pump. When the alarm float is closed the following will occur:
 - The External High Water Light will illuminate
 - The Audible High Water Alarm will sound
 - The Auxiliary Dry Contacts will close

As the liquid level continues to rise the fourth float will close, energizing the lag pump. The lag pump and the lead pump will remain energized until the "Stop" float opens.

NOTE: In Duplex systems where it is considered normal for two pumps to operate in tandem during peak flow conditions, the third and fourth float may be reversed.
- The Audible High Water Horn can be silenced by pressing the Alarm Silence Button. When the "Alarm" float opens the External High Water Light, Audible High Water Horn and Dry Auxiliary Contacts will be reset.

WARNING All electrical systems must be installed by a qualified licensed electrician and according to the National Electrical Code. (See section 430-71 through 430-113 plus any others that apply)

Refer to FM0712 for correct selection of Electrical Alternator.



Q Standard Utility Blower — 8in., 1/4 HP, 1575 CFM, Model# 39008

Item# 177770

Was \$99.99

Sale \$79⁹⁹

Order Today and Save \$20.00

Guaranteed Lowest Prices

In Stock Online

Not Available in Stores

★★★★★ 4.9 / 5

27 of 27 would recommend this product to a friend

PROVIDE SUBMERSIBLE CONDUITS AND BOX FOR WIRING OF SWITCHED POWER FOR VENT FAN SYSTEM. PROVIDE SUBMERSIBLE CORD KIT FOR PLUG. FAN SHALL BE SWITCHED WITH LIGHTS.

Product Summary

This Q Standard Utility Blower features a rolled steel opening and auto reset thermal protection for optimal use.

What's Included

(1) Fan

Features + Benefits



- Rolled steel opening
- Auto reset thermal protection

- Industrial-grade grounded cord
- Durable carry handle

Key Specs

Item#	177770
Ship Weight	20.0 lbs
Blower Type	Utility blower
Fan Diameter (in.)	8

Watts	165
Amps	1.38
Volts	120
Speeds (qty.)	2



Q Standard Ventilating Hose for 8in. Utility Blower, Item# 177770 — 20ft., Model# 00008

Item# 177772

Was \$79.98

Sale \$69⁹⁹

Order Today and Save \$9.99

Guaranteed Lowest Prices

In Stock Online

 Not Available in Stores

★★★★★ 4.8 / 5

5 of 5 would recommend this product to a friend.

Product Summary

This Q Standard Ventilating Hose is a lightweight and flexible solution to vent fumes out of closed-in areas and can be easily moved. Ideal for industrial air movement and fume control. Made of double-ply PVC-coated polyester fabric to resist water and reinforced with spring steel wire helix to keep it rigid, allowing air to move easily. Designed for an impressive temperature range of -22°F to 212°F. Resists oil and solvents, ozone, fungus, alkalis and water to use in many applications.

What's Included

(1) Hose

Features + Benefits

- For 8in. utility blower, Item# 177770
- Lightweight, flexible ventilating hose directs fumes out of closed-in areas
- Can be easily moved
- For industrial air movement and fume control
- Made of double-ply PVC-coated polyester fabric to resist water
- Reinforced with spring steel wire helix to keep hose rigid, allowing air to move easily
- Designed for temperature range of -22°F to 212°F
- Resists oil and solvents, ozone, fungus, alkalis and water to use in many applications
- 20 feet long to help move air long distances
- Not recommended for continuous flexing

Key Specs

Item#	177772
Ship Weight	9.0 lbs
Accessory Type	Blower accessory
Compatible With Item Number (s)	177770
Material Type	Double-ply PVC

Temperature Range (°F)	-22–212
Pipe Diameter (in.)	8
Length (ft.)	20
Dimensions L x H (in.)	20 x 8



**KODIAK
CONTROLS
INCORPORATED**

KODIAK CONTROLS

**SERVICE
IS THE
KEY TO
SUCCESS**

MODEL 'KC102D', BACK CONNECTED GAUGE

- An inexpensive utility gauge for the broad commercial and industrial markets.
- Suitable for air, water, oil, gas or any other media not corrosive to brass.
- Other connection locations, mounting styles and accessories available.
- Ready for immediate shipment upon request.

AVAILABLE DIAL SIZES:

1 1/2", 2", 2 1/2", 3 1/2", 4 1/2"

AVAILABLE CONNECTION SIZES:

1/8"NPT on 1 1/2" and 2"Dial Sizes

1/4"NPT on 2" Thru 4 1/2"Dial Sizes

GENERAL SPECIFICATIONS:

Black Steel Case With Chrome Bezel
(Stainless Steel Case Available)

Brass Socket And Movement

Phosphor Bronze Bourdon Tube

Dry Non-Fillable

3-2-3 % Accuracy

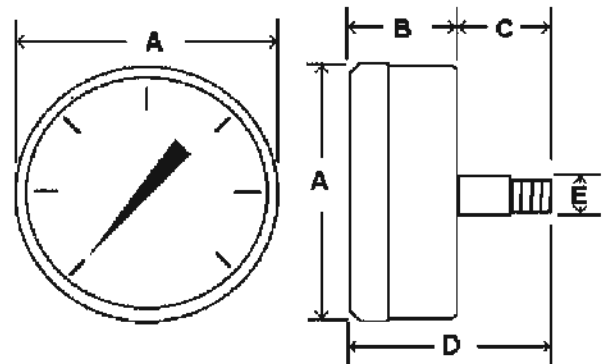
Ambient Temperature: -50 to 160°F

DIAL SCALE:

DUAL SCALE: PSI & BAR (x100=kPa) STANDARD

SINGLE SCALE: PSI ONLY AVAILABLE

OTHER: BY SPECIAL REQUEST



RANGE	CODE	Major Inc.	Minor Inc.
30/0/VAC	A	5" hg	.5" hg
30/0/15	CB	10"hg / 5 psi	1"hg / .5 psi
30/0/30	CC	10"hg / 10 psi	1"hg / 1 psi
30/0/60	CD	10"hg / 10 psi	2"hg / 1 psi
30/0/100	CE	30"hg / 20 psi	5"hg / 2 psi
30/0/150	CF	30"hg / 20 psi	5"hg / 2 psi
30/0/300	CH	30"hg / 50 psi	10"hg / 5 psi
0/15	B	2 PSI	.2 PSI
0/30	C	5 PSI	.5 PSI
0/60	D	10 PSI	1 PSI
0/100	E	20 PSI	2 PSI
0/160	F	20 PSI	2 PSI
0/200	G	40 PSI	5 PSI
0/300	H	50 PSI	5 PSI
0/400	I	50 PSI	5 PSI
0/600	K	100 PSI	10 PSI
0/1000	M	200 PSI	20 PSI
0/1500	N	200 PSI	20 PSI
0/2000	O	400 PSI	50 PSI
0/3000	P	500 PSI	50 PSI
0/5000	R	1000 PSI	100 PSI
0/6000	S	1000 PSI	100 PSI
0/10,000	U	2000 PSI	200 PSI

		A	B	C	D	E
1"	In	.99"	.64"	.46"	1.10"	1/8"
	MM	25	16	12	28	MNPT
1 1/2"	In	1.64"	.93"	.63"	1.56"	1/8" or 1/4"
	MM	42	24	16	39	MNPT
2"	In	2.07"	1.03"	.83"	1.86"	1/4"
	MM	53	26	21	47	MNPT
2 1/2"	In	2.50"	1.17"	.86"	2.03"	1/4"
	MM	63	30	22	52	MNPT
3 1/2"	In	3.97"	1.19"	.83"	2.02"	1/4"
	MM	101	30	21	51	MNPT
4 1/2"	In	4.5"	1.34"	.84"	2.18"	1/4"
	MM	114	34	21	55	MNPT



**KODIAK
CONTROLS
INCORPORATED**

BIMETAL THERMOMETER ADJUSTABLE ANGLE TYPE 'BxAx'

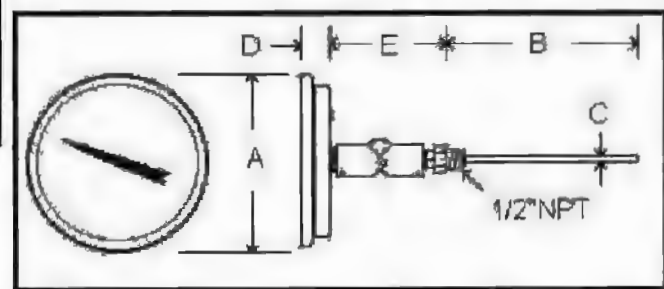
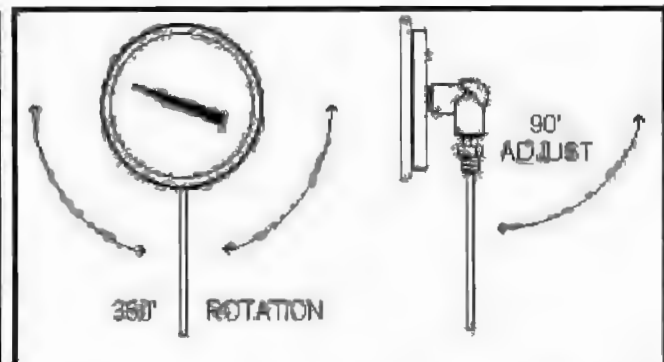
STANDARD FEATURES

All Stainless Construction
With Glass Lens
Anti-Parallax Dial
Vibration Resistant (Reduced Needle Flutter)
Fast Response To Temperature Change
Hermetically Sealed (Moisture Proof)
+/- 1 % Full Scale Accuracy
Stem Welded To Connection



PART NUMBER*	STEM LENGTH *	STANDARD RANGES*	
		CODE	RANGE
B5A2	2 1/2"	AA	-40/120 F & C
B5A4	4"	BB	-40/160 F & C
B5A6	6"	EE	0/150 F & C
B5A9	9"	GG	0/200 F & C
B5A12	12"	JJ	20/240 F & C
B5A15	15"	II	0/250 F & C
B5A18	18"	MM	50/300 F & C
B5A24	24"	PP	50/400 F & C
		RR	50/550 F & C
		SS	150/750 F & C
		TT	200/1000 F & C

* For 3" Dial Size change 'B5A' to 'B3A'



*NOTE:

- 1.) Other ranges, stem lengths and configurations are available upon request.
- 2.) Thermowells of all types and materials of construction available also
- 3.) Please call with any inquiries.

Dial		A	B	C	D	E
5"	IN.	5.13"	STEM LENGTH	1/4"	.67"	3.3"
	MM	130.39	STEM LENGTH	6.45	16.95	83.87
3"	IN.	3.13"	STEM LENGTH	1/4"	.67"	3.3"
	M	78	STEM LENGTH	6.45	16.95	83.87



The operating principle behind this pressure/temperature port was to save you time & money. This plug provides access to fluids in closed systems without disruption and the added expense of installing permanent test equipment.

The dual core design allows the bottom seal to close, sealing your system before the probe is fully removed through the top core. The membrane connection the two separate cores maintains true alignment for increased ease when inserting probes.

Use anywhere you can use a schrader valve. Can also be used to bleed air from lines.

Pressure/ Temperature Ratings:

MAX 1000 PSI / MAX 350 Deg.

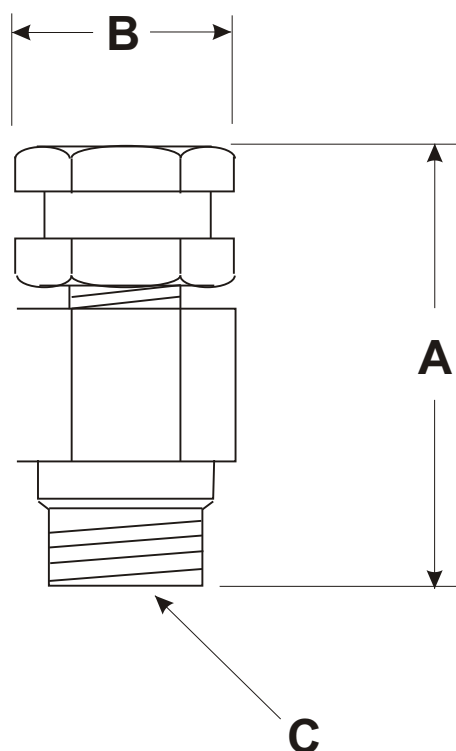
Optional accessories:

Plastic cap retainer

Extruded brass extension

Dimensional Information & Material Specifications:

Model #	A	B	C
SP-B	1.425	.564	1/4" NPT
Body:	Extruded Brass		
Core:	Nordel		

**Typical Specifications:**

Furnish and install where indicated on plans **SP-B** pressure/temperature port as provided by **Hydronic Components, Inc.** Test plugs shall be of solid brass with dual seal core of Nordel rated for 350 Deg, Max / 1000 PSI Max water. Plug shall be capable of receiving a pressure or temperature probe.

JOB: _____ ENGINEER: _____
REP: _____ CONTRACTOR: _____


red dot
Device Boxes, Covers & Accessories
T&B Catalog Number:
IH3-1-LM
UPC Number:
04226939215
Status:
Active
Description:
1-gang 17.3 cu. in. Universal weatherproof Box with Three 1/2 in. Holes and Mounting Lugs - Silver
Features

Alloy A380 aluminum, certified zinc alloy and stainless steel springs provide increased corrosion resistance

Die Cast construction and industrial design combine to produce a rugged protective enclosure for devices.

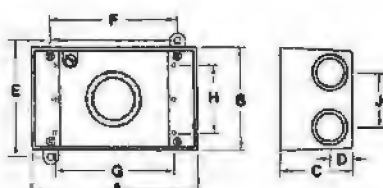
Clean cover edges provide good gasket sealing.

Precision cast and machined surfaces permit safer wire pulling.

Clear UL and cubic content markings speed approval by inspectors

Convenient mounting lugs for a variety of mounting methods

Securely fastened mounting plates reduce-costly call backs


Application

Dry-lite boxes and covers protect wiring devices, switches, electronic components and terminal blocks in dry, damp and wet locations

Accessible wiring chamber provides a convenient location to maintain or change a system, pull conductors and make splices

Junction box for branch conduits

General

Material Die Cast Aluminum

Finish Powder-coated

Color Silver

Volume (cu.in.) 17

Number of Gangs One

Dimension Information

Hub Size (inches) 1/2

A (inches) 4 9/16

B (inches) 2 13/16

C (inches) 2

D (inches) 5/8

E (inches) 3 13/16

F (inches) 3 1/2

G (inches) 3 1/4

H (inches) 1 7/8

J (inches) 1 1/2

**Vapor Tight Fixture, CFL, 42 W, Wall**

Vapor Tight Fixture, Lamp Quantity 1, Compact Fluorescent Lamp Type, 42 Lamp Watts, 42 Fixture Wattage, Voltage 120, Clear Glass Globe Lens Type, Cast Aluminum Housing Material, Gray Housing Finish, Lamp Included, Wall, 3/4 In Conduit Mounting, Length 11 7/8 In., Height 8 3/4 In., Width 5 3/4 In., Standards UL Listed for Wet Location, CSA Standard

Grainger Item #	2PYK5
Your Price (ea.)	\$86.40
Brand	LITHONIA
Mfr. Model #	VW42L M6
Ship Qty.	1
Sell Qty. (Will-Call)	1
Ship Weight (lbs.)	7.51
Usually Ships	Today
Catalog Page No.	551

Additional Info**Vapor-Tight Vandal-Resistant Fixtures**

Housing has twist-on guard, fully enclosed, gasketed glass globe, and a premium porcelain socket.

Made to withstand extreme physical assault and environmental abuse. Ideal for high-traffic, dirty, dusty, or weather-exposed areas. Fit on 3/4" conduit, or 1/2" conduit with included 1/2" NPT reducer bushing. UL Listed. No. 1UKB8 is specifically designed for use in marine applications and meets applicable standards. Nos. 3RB17 and 3RB18 are prewired with leads for flush mounting (4" round or octagonal boxes).

- 120V
- Gray finish

Tech Specs

Item: Vapor Tight Fixture

Lamp Quantity: 1

Lamp Type: Compact Fluorescent

Lamp Watts: 42

Fixture Wattage: 42

Voltage: 120

Lens Type: Clear Glass Globe

Housing Material: Cast Aluminum

Housing Finish: Gray

Suggested Lamp Item No.: 1PHA9

Lamp Included: Lamp Included

Mounting: Wall, 3/4" Conduit

Length (In.): 11 7/8

Height (In.): 8 3/4

Width (In.): 5 3/4

Standards: UL Listed for Wet Location, CSA Standard

Notes & Restrictions

Note: Not recommended for use in commercial or industrial range hoods or ovens.

MSDS

This item does not require a **Material Safety Data Sheet (MSDS)**.

Required Accessories

There are currently no required accessories for this item.

Optional Accessories

Lamp, F42TBX/841/A/ECO, CFL, Plug-In, 42W

Item #: 1PHA9

Brand: GENERAL ELECTRIC

Usually Ships: Today

Your Price (ea): \$19.74

Alternate Products

Vapor Tight Fixture, CFL, 42 W, Ceiling

Item #: 2PYJ4

Brand: LITHONIA

Usually Ships: Today

Your Price (ea): \$86.40



Vapor Tight Fixture, CFL, 42 W, Pendant

Item #: 2PYJ9

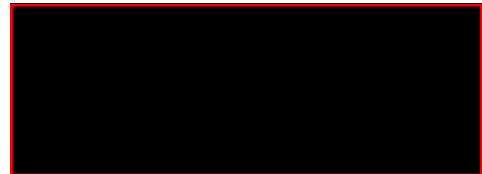
Brand: LITHONIA

Usually Ships: 1-3 Days

Your Price (ea): \$86.40

Repair Parts

A Repair Part may be available for this item. Visit our Repair Parts Center or contact your local branch for more information.




Device Boxes, Covers & Accessories
T&B Catalog Number:
CCG
UPC Number:
04226935020
Status:
Active
Description:
1-gang weatherproof Horizontal Mount GFCI Receptacle Box Cover - Silver
Features

Die Cast construction and industrial design combine to product a rugged protective enclosure for devices.

Clean cover edges provide good gasket sealing. Precision cast and machined surfaces permit safer wire pulling.

Convenient mounting lugs for a variety of mounting methods and securely fastened mounting plates reduce costly call backs.

Application

Dry-tite boxes and covers protect wiring devices, switches, electronic components, and terminal block in Dry, Damp and Wet Locations.

Accessible wiring chamber provides a convenient location to maintain or change a system, pull conductors and make splices.

General

Material	Die Cast Aluminum
Finish	Aluminum lacquer
Color	Silver
Mounting	Device Mount
Number of Gangs	One

Packaging

T&B Inner Pack	1
Package in Units	25
T&B Sold in UOM	Each
T&B Weight Per UOM	33.4 lbs. per 100

Application Support

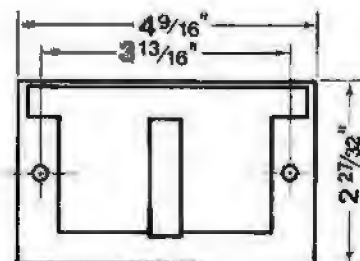
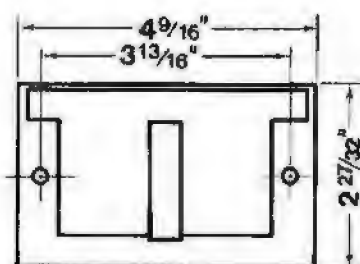
D-Pak Merchandising System	Available on Website
Industry Cross Reference	Available on Website

Notes

Rain tight when used with appropriate Red Dot covers.

Certifications


File Nbr.
E 28688



Switches

HBL® Extra Heavy Duty Industrial Grade

Features and Benefits

ALL ELECTRICAL COMPONENTS SHALL HAVE A NEMA 6P RATING OR BE MOUNTED IN A NEMA 6P ENCLOSURE AS SPECIFIED.

captive
mounting screw.

Steel, nickel plated bridge is corrosion resistant.

Prominent amperage marking allows easy identification of rating.

Abuse resistant nylon toggle.

Color coded base identifies amperage when terminating connections, 15A-Blue, 20A-Red, and 30A-Green.

One piece rivetless copper alloy spring contact arm and terminal plate assures proper contact alignment providing long life.

One piece integral grounding terminal with #8 brass screw provides a low resistance ground path.

Stainless steel automatic grounding clip assures grounding continuity between mounting strap and metal wall box.

Strip gauge for accurate wiring.

Large silver alloy contacts reduce contact erosion providing long life.

Back wire entrance points for terminations accept two wires for feed through capability, avoiding pigtail.

Large brass binding head screws with deep slots secure wire connections.



One piece rivetless copper alloy spring contact arm and terminal plate assures proper contact alignment reducing heat rise. Large silver alloy contacts reduce contact erosion and prevent welding, providing long life.



Thermoplastic elastomer rocker assures quiet operation and precise timing. Permanently lubricated assembly provides long life and trouble free operation.



Heavy duty nylon toggle resists abuse and chemical attack making it suitable for use in the toughest environments.



One piece integral grounding terminal with #8 brass screw allows compliance to NEC®. Stainless steel automatic grounding clip assures grounding continuity between mounting strap and metal wall box. Steel nickel plated mounting strap provides a corrosion resistant finish.

NEC® is a registered trademark of the National Fire Protection Association (NFPA)

Dimensions in Inches (mm)

www.hubbell-wiring.com



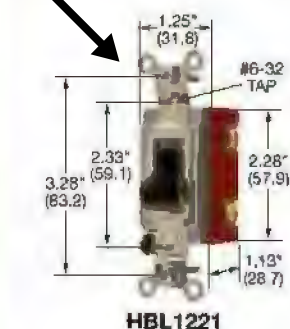
Wiring Device-Kellems

C-7

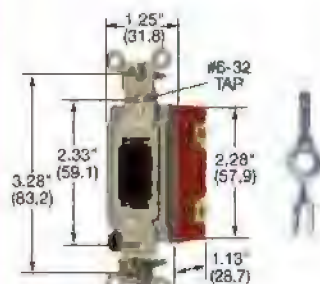
Switches

15, 20 and 30 Ampere, 120-277 Volts AC

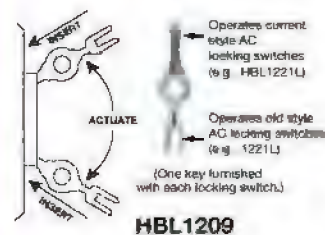
HBL® Extra Heavy Duty Industrial Series



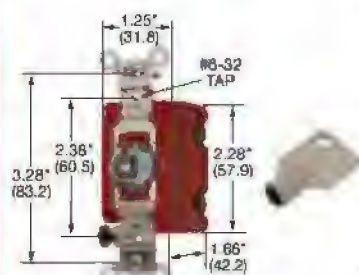
HBL1221



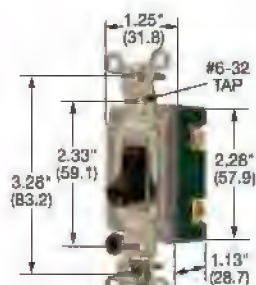
HBL1221L and Key



HBL1209



HBL1222RKL and Key



HBL3031

HBL Extra Heavy Duty Industrial Series, Back and Side Wired

HBL1203GY

15A, 120-277V AC

Description	Toggle Color	Single Pole	Double Pole	Three Way	Four Way
Toggle, back and side wired.	Almond	HBL1201AL	—	HBL1203AL	—
	Black	HBL1201BK	—	HBL1203BK	HBL1204BK
	Brown	HBL1201	HBL1202	HBL1203	HBL1204
	Gray	HBL1201GY	—	HBL1203GY	HBL1204GY
	Ivory	HBL1201I	HBL1202I	HBL1203I	HBL1204I
	Light Almond	HBL1201LA	—	—	—
	Red	HBL1201R	—	—	—
	White	HBL1201W	—	HBL1203W	HBL1204W

20A, 120-277V AC

Description	Toggle Color	Single Pole	Double Pole	Three Way	Four Way
Toggle, back and side wired.	Almond	HBL1221AL	HBL1222AL	HBL1223AL	HBL1224AL
	Black	HBL1221BK	HBL1222BK	HBL1223BK	HBL1224BK
	Brown	HBL1221	HBL1222	HBL1223	HBL1224
	Gray	HBL1221GY	HBL1222GY	HBL1223GY	HBL1224GY
	Ivory	HBL1221I	HBL1222I	HBL1223I	HBL1224I
	Light Almond	HBL1221LA	HBL1222LA	HBL1223LA	HBL1224LA
	Office White	HBL1221OW	HBL1222OW	HBL1223OW	HBL1224OW
	Red	HBL1221R	HBL1222R	HBL1223R	HBL1224R
	White	HBL1221W	HBL1222W	HBL1223W	HBL1224W

HBL Extra Heavy Duty Industrial Locking Series, Back and Side Wired

15A, 120-277V AC

Description	Key Guide Color	Single Pole	Double Pole	Three Way	Four Way
Key Guide, back and side wired.	Black	HBL1201L	HBL1202L	HBL1203L	HBL1204L
	Gray	HBL1201LG	HBL1202LG	HBL1203LG	HBL1204LG
	Ivory	HBL1201LI	HBL1202LI	HBL1203LI	HBL1204LI
	White	HBL1201LW	HBL1202LW	HBL1203LW	HBL1204LW

Key for Locking switch. HBL1209*

20A, 120-277V AC

Description	Key Guide Color	Single Pole	Double Pole	Three Way	Four Way
Key Guide, back and side wired.	Black	HBL1221L	HBL1222L	HBL1223L	HBL1224L
	Gray	HBL1221LG	HBL1222LG	HBL1223LG	HBL1224LG
	Ivory	HBL1221LI	HBL1222LI	HBL1223LI	HBL1224LI
	White	HBL1221LW	HBL1222LW	HBL1223LW	HBL1224LW

Key for Locking switch. HBL1209*

HBL Extra Heavy Duty Industrial AC Barrel Key Locking Switch, Back and Side Wired

20A, 120-277V AC

Description	Key Guide Color	Single Pole	Double Pole	Three Way	Four Way
Chrome operator, back and side wired.	Chrome	HBL1221RKL**	HBL1222RKL**	HBL1223RKL**	HBL1224RKL**
Replacement Barrel Key.		HBL1209RKL*			

30A, 120-277V AC

Description	Key Guide Color	Single Pole	Double Pole	Three Way	Four Way
Nylon toggle.	Brown	HBL3031	HBL3032	HBL3033	—
	Ivory	HBL3031I	HBL3032I	HBL3033I	—
	White	—	HBL3032W	—	—

Note. Keys are supplied with each locking switch. For extra keys order HBL1209.

See page C-15 for accessories.

See page C-16 for wallplates.

See page C-17 for technical data.

See page C-18 for wiring diagrams.

* Not UL Listed, CSA Certified.

** Not Fed. Spec.

HP Conversion Chart

	120V	208V	240V	277V AC
15A	.5HP	1.5HP	2HP	2HP
20A	1HP	2HP	2HP	2HP
30A	2HP	2HP	2HP	2HP

Ground Fault Products

Heavy Duty Commercial and Hospital Grade GFCI Receptacles with Auto Grounding

15 and 20 Ampere, 125 Volts AC

2 Pole, 3 Wire Grounding

Meets UL Standard 943
Class A GFCI

ALL ELECTRICAL COMPONENTS SHALL HAVE A NEMA 6P RATING OR BE MOUNTED IN A NEMA 6P ENCLOSURE AS SPECIFIED.

GF20GYLA



GF15ILA

10kA Short Circuit Current Rating**Comprehensive diagnostics**

- When test button is actuated, both the electronic components and mechanical trip mechanism are functionally tested

Ground fault EOL indicator

- Flashing **RED** indicates device has lost capability to provide protection

No power at face if reverse wired

- Open circuit condition eliminates false assumption of protection at face

Installation ease

- Internal back wiring
- Automatic grounding feature
- Captive mounting screws



GF15ILA



GF20WLA



GFR8200HOWLA

Circuit Guard® GFCI Receptacles

Description	Rating	Color	Catalog Number	
Flush, nylon face, back and side wired, multiple drive screws, automatic grounding clip.	15 and 20A 125V AC	Almond	GF15ALLA	GF20ALLA
		Black	GF15BKLA	GF20BKLA
		Brown	GF15LA	GF20LA
		Gray	GF15GYLA	GF20GYLA
		Ivory	GF15ILA	GF20ILA
		Light Almond	GF15LALA	GF20LALA
		Office White	GF15OWLA	GF20OWLA
		Red	GF15RLA	GF20RLA
		White	GF15WLA	GF20WLA

15A 125V
NEMA 5-15R
UL CSA
0.5 HP20A 125V
NEMA 5-20R
UL CSA
1 HP**Hospital Grade ●
Circuit Guard® GFCI Receptacles**

Description	Rating	Color	Catalog Number	
Flush, nylon face, back and side wired, multiple drive screws, automatic grounding clip.	15 and 20A 125V AC	Almond	GFR8200HALLA	GFR8300HALLA
		Black	GFR8200HBKLA	GFR8300HBKLA
		Brown	GFR8200HLA	GFR8300HLA
		Gray	GFR8200HGYLA	GFR8300HGYLA
		Ivory	GFR8200HILA	GFR8300HILA
		Light Almond	GFR8200HLAA	GFR8300HLAA
		Office White	GFR8200HOWLA	GFR8300HOWLA
		Red	GFR8200HRLA	GFR8300HRLA
		White	GFR8200HWLA	GFR8300HWLA

15A 125V
NEMA 5-15R
UL CSA
0.5 HP20A 125V
NEMA 5-20R
UL CSA
1 HP

Note: GFCI type receptacles should not be used in critical care patient areas or for electrical life support equipment applications because of the possibility of power interruption. All GFCI receptacles listed above are furnished with a matching color nylon wallplate. 20 amp feed-through capability.

Marine Products

Switches and Weatherproof Switch Plates

15 and 20 Ampere, 120-277V AC

**Commercial Series**

Description	Toggle Color	Catalog Number
15A single-pole toggle switch for controlling AC load from one point.	Almond	CS115AL
	Brown	CS115
	Gray	CS115GY
	Ivory	CS115I
	Light Almond	CS115LA
	Office White	CS115OW
15A three-way toggle switch for controlling AC load from two points.	Almond	CS315AL
	Brown	CS315
	Gray	CS315GY
	Ivory	CS315I
	Light Almond	CS315LA
	Office White	CS315OW
	White	CS315W

Note: All devices above will accept locking fork terminal to comply with ABYC standards.

Special Application Series

Description	Catalog Number
20A 120V toggle switch with neon lamp set in Ivory handle. Handle illuminates when switch is in "OFF" position.	HBL1221IL
20A 120V three-way toggle switch with illuminated ivory handle for controlling AC load from two points. Handle illuminates when "OFF".	HBL1223IL
20A 120V single-pole toggle switch with neon lamp set in clear red handle. Handle illuminates when switch is "ON". Serves as instant reminder that current is flowing to an appliance.	HBL1221PL
20A 120V three-way toggle switch for controlling AC load from two points. Red handle illuminates when "ON".	HBL1223PL
Single-pole PresSwitch® for controlling AC load from one point. Switch activated brown button.	HBL1281
Same as HBL1281 except ivory button.	HBL1281I
Three-way PresSwitch® for controlling AC load from two points. Switch activated brown button.	HBL1283†
Same as HBL1283 except ivory button.	HBL1283I†
Yellow neoprene weatherproof plate for use only with PresSwitches. PresSwitch button is activated when bubble is pressed. Not CSA.	HBL17CM50†
Clear silicone rubber weatherproof bubble plate for use with all AC toggle switches and PresSwitches. Also ideal for use with lighted handle toggle switches. Not CSA.	HBL1795

Note: † Not UL Listed.

Outlet Box

Description	Catalog Number
Plastic switch/receptacle box. Measures 3.281" x 2.188" x 2.50" (83.3 x 55.6 x 63.5) deep. For mounting in walls without studs. A support strap is provided which pulls box tightly against back side of wall. Not CSA.	HBL6079

ALL ELECTRICAL COMPONENTS SHALL HAVE A NEMA 6P RATING OR BE MOUNTED IN A NEMA 6P ENCLOSURE AS SPECIFIED.

Dimensions in inches (mm)



CS115I



HBL1221IL



HBL1221PL



HBL1281



HBL1283



HBL17CM50



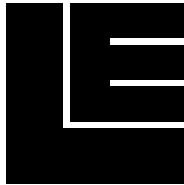
HBL1795



HBL6079

937-743-1220 (FAX) 937-743-1227

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LAKE ERIE ELECTRIC, INC.

Contractors & Engineers
Dayton Division
360 Industrial Drive
Franklin, OH 45005
937-743-1220 (Fax) 937-743-1227

Project Submittal for LEE Job

Submittal #	
Description	
Spec Section	
Submittal Date	

REVIEWED

Date _____

By _____

LAKE ERIE ELECTRIC, INC.

Review, approval, verification of materials and equipment required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

Miami University Athlete Performance Center

Prater Engineering Associates

A Approved	Proceed with the Work covered by this Submittal provided it complies with the Contract Documents. Comments and corrections do not authorize changes to the Contract Documents.
B Approved as Noted	
C Revise as Noted and Resubmit	Do not proceed with the Work covered by this Submittal. Limit conditions in resubmissions to items noted in this Submittal.
D Rejected	
E Reviewed for Information	This Submittal is for information only. Resubmit only if noted in this submittal.
F Reviewed for Information as Noted	

C ACTION REQUIRED

Review of this Submittal is for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The review is not for determining the accuracy or completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, which remains the Contractor's responsibility. Review shall not constitute approval of safety precautions, or of construction means, methods, and techniques, sequences or procedures. Approval of a specific item shall not indicate approval of an assembly of which the item is a component.

Reviewed By: **Doug Powell 04/06/2016**

Submittal File: **265100-0001-0_Interior Lighting.pdf**

Fixtures R4 and R14 need to be submitted. Fixtures S6 and W4 shall be resubmitted. All other fixture are approved as noted. See body of submittal for comments.



Local: (513) 242-8800 ❖ Toll Free: (800) 234-4614 ❖ Fax: (513) 242-6270

*Visit Us On The Web - www.richardselectric.com
General Inquiries - andyp@richardselectric.com*

LIGHTING SUBMITTALS

PROJECT:

MIAMI UNIVERSITY GUNLOCK FAMILY ATHLETIC PERFORMANCE CENTER

PREPARED FOR:

LAKE ERIE ELECTRIC

Prepared By: Andy Preston Wednesday, March 16, 2016



4620 Reading Road
Cincinnati, OH 45229
Phone: 513-245-7756
Fax: 513-242-6270
andyp@richardselectric.com

3/16/2016

LIGHTING SUBMITTALS

MIAMI UNIVERSITY GUNLOCK FAMILY ATHLETIC PERFORMANCE CENTER

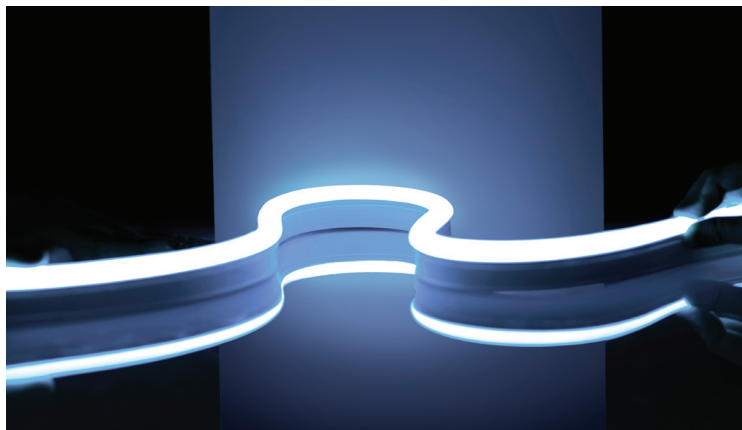
<u>TYPE</u>	<u>MFG</u>	<u>DESCRIPTION</u>
CV1	TPR	15' RUN FL-NEON-RGB W/STICK1-DMX CONTROLLER
CV2	GE	GEWWBPI2-41K PACK OF 32 MODULES
CV2	GE	9409 500' SPOOL 18 AWG SUPPLY WIRE
CV2	GE	191600041 PACK OF 500 CONNECTOR
CV2	GE	GEPS24-100U-L POWER SUPPLY
EX1	BEGHELLI	CRV-SA-LR-1-C-S-AL-RKBAL-SA
EX2	BEGHELLI	CRV-SA-LR-2-M-S-AL-RKBAL-SA
P1	BRUCK	137210MC/MP
P2	DAC	D5033-LED16-277V-FINISH (ANY STANDARD DAC COLOR)
R1	METALUX	22CZ-LD4-29-UNV-L840-CD1-U
R1E	METALUX	22CZ-LD4-29-UNV-EL14W-L840-CD1-U
R2	PRESCOLITE	LC6LED277DM 6LCLED640K8WT
R2E	PRESCOLITE	LC6LED277DMEM 6LCLED640K8WTEM
R4E	PINNACLE	E4A-40HO-4-SF-UNV-1D-W-1B-OC
R5	PINNACLE	E4A-40HO-26-NF-UNV-1D-W
R5EM	PINNACLE	E4A-40HO-26-NF-UNV-1D-W-(3)7EL INCLUDES EM BATTERY IN 3-4' SECTION
R6EM	PINNACLE	E4A-40HO-36-G1-UNV-1D-W-(2)7EL INCLUDES EM BATTERY IN 2-4' SECTION
R7	PINNACLE	E4A-40HO-12-G1-UNV-1D-W
R7E	PINNACLE	E4A-40HO-12-G1-UNV-1D-W-(3)7EL INCLUDES EM BATTERY IN ALL 3-4' SECTION
R7EM	PINNACLE	E4A-40HO-12-G1-UNV-1D-W-7EL INCLUDES EM BATTERY IN 1-4' SECTION
R8	PINNACLE	E4A-40HO-4-G1-UNV-1D-W
R10	PINNACLE	E4A-40HO-8-G1-UNV-1D-W
R11	LIGHTOLIER	S5R830K7-ELV
R12	BIRCHWOOD	VAN-LED-400-SLO-40-CR8-DR-REC-EFL1-MW-FC-277-D1
R13	BIRCHWOOD	VAN-LED-400-HLO-40-CR24-DR-REC-EFL1-MW-FC-277-D1
R13E	BIRCHWOOD	(1)VAN-LED-400-HLO-40-CR24-DR-REC-EFL1-MW-FC-277-D1- (3) BEM-INV-SYS-U-I

R15	PRESCOLITE	LC6LED8277 6LCLED940K8WT
R15E	PRESCOLITE	LC6LED8277 6LCLED940K8WT LG1T REMOTE MOUNT INVERTER INCLUDED
R16	RSA	PDR-CCAD-050M16-E-108-12-X-N-2 9' (108 INCHES), 1' SPACING LIGHTS, ADVISE COLOR
R17	PINNACLE	E4A-40HO-12-SF-UNV-1D-W
R18	PRESCOLITE	LC6LED277DM 6LCLED640K8WTWW
R19	PRUDENTIAL	BIO STD FLSH LED4 SO 74' TMW AWL D1W SC UNV X7BF DM10
R20	PRUDENTIAL	BIO STD FLSH LED4 SO 45' TMW AWL D1W SC UNV X7BF DM10
S1	LITHONIA	Z 2 32 MVOLT GEB10PS WGZ48
S1E	LITHONIA	Z 2 32 VOLTS GEB10PS EL55 WGZ48
S2	LITHONIA	ZL2N L48 3000LM MDD MVOLT 40K 80CRI WH
S3	NULITE	RP6-6D-09L40-UNV-DIM-1C-STF-WH-SR-48-32'
S3E	NULITE	RP6-6D-09L40-UNV-DIM-1B3(EM700)-STF-WH-SR-48-32'
S4	PINNACLE	EX6-A-N-40-32-AC48ST-UNV-1D-W
S6	PRUDENTIAL	BIO STD FLSH LED4 SO R26 TMW AWL D1W SC UNV X1 DM10
W1	COLE	L2158W-J-ALUM
W2	LITHONIA	DMW 2 32 MVOLT GEB10IS
W2E	LITHONIA	DMW 2 32 277 GEB10IS EL14DW
W3	ADVENT	AEW8070-L38.4W-277V-DML
W4	TRACELITE	TLED-XPF-220-50K
W5	LITHONIA	MRW LED 2 10A700/40K SR3 277 PE DDBXD
W5E	LITHONIA	MRW LED 2 10A700/40K SR3 277 ELCW DDBXD
W6	SSL	CVLWET-4-4K-1040-ADB90
W7	METALUX	BE-117-UNV-ER81-U
W8	BIRCHWOOD	HAI-LED-225-HLO-40-CR38'-SC-FW-277-EB-RAS-SC-12"
W9	BIRCHWOOD	HAI-LED-225-HLO-40-CR32'-SC-FW-277-EB-RAS-SC-12"
PL1	VALMONT	MIAMI CUSTOM POLE /
PL1	CREE	ARE-EDG-2M-DA-04-E-UL-BZ-525-40K-F

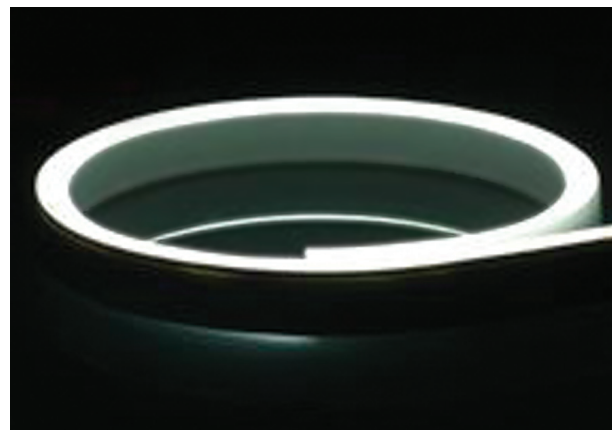


TPR WESTFLEX LED NEON

IP68



TPR Westflex LED Neon Rounded Top



TPR Westflex LED Neon Flat Top

Description:

The **TPR WESTFLEX LED NEON** is a flexible Neon replacement product for use in Architectural and Entertainment venues. It comes in several color temperatures of white, solid colors and RGB. It is IP68 rated for submersible applications, has an extremely tight bend radius, and is UV protected for direct sunlight. Great for outlining buildings and creating curved lines of light, this product is also easily cut to length in the field.

Specifications:

Construction:	PVC Ivory White	Lamp Life:	50,000 hrs (70% lumen maintenance)
Power:	3.7W/ft (RGB) 1.8W/ft (Solid Colors)	Min Bend Radius:	4.75"
Operating Voltage:	24VDC	Min Cut Length:	4"
Operating Temp:	-4F to 104F (-20C to 40C)	Max Run Lengths:	32' Single Feed
Dimensions:	0.46"W x 0.82"H		64' Double Feed

Certifications:

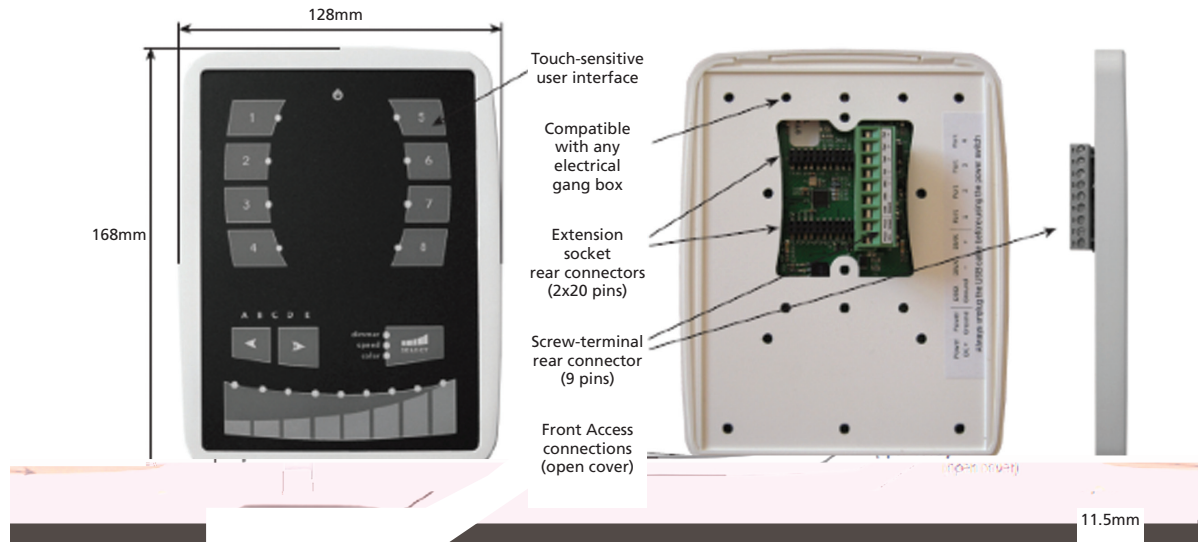


Ordering Logic:

MODEL	COLOR	PROFILE	LENGTH (to nearest 4')	ACCESSORIES
FL-NEON	-	-	-	-
	RGB 6500K 5000K 3300K R, G, B, Y, P (Pink) Consult Factory for Other Color Temperatures	R (Rounded) F (Flat)		MT (Mounting Track) MC (Mounting Clips)
				PROVIDE POWER SUPPLY.



TPR STICK1 DMX CONTROLLER



Description:

The **TPR STICK1 DMX Controller** is a fully programmable wall pad for architectural use. It uses the free Easy Stand Alone or ESA Pro software, has a far larger memory than the STICK2, and has 5-zone control for multiple rooms. It also has a Clock and Calendar feature for hands free queuing of shows. This controller fits into a single gang box for a smooth architectural look.

Specifications:

Voltage: 12VDC (Comes with 120/12V power supply)
Power: 2 Watts
Dimensions: 168mm x 128mm x 11.5mm
IP Rating: IP44 Indoors

Mounting: Single Gang with Faceplate
Operating Temp: -10 to 140F
Signal: DMX 512
Listing: UL, CE, ROHS

Certifications:



Ordering Logic:

MODEL

TPR-STICK1-DMX



CV2

GE
Lighting

Tetra[®]

LED Lighting System

Reference Chart 2014



imagination at work



Tetra® LED Systems

Tetra® miniMAX MS



MiniMax MS (Micro System) was created for channel letters as shallow as 1.5 inch deep and as narrow as ½-inch wide.

Applications — huge performance in small channel letters

Available Colors — white & warm white

Packaging — 100 ft./box

Tetra® miniMAX



Tetra miniMAX delivers brilliant light in channel letters as shallow as 1.5 inch.

The patent-pending OptiLens™ promotes a wide viewing angle and superior uniformity in the smallest of channel letters.

Applications — small channel letters

Available Colors — red, green, blue, white, warm white & orange

Packaging — 100 ft./box

Tetra® MAX



Tetra MAX is designed for the easiest possible installation and operation. This LED system is available in a wide selection of colors and provides bright uniform light in medium sized channel letters.

Applications — medium channel letters

Available Colors — red, red-orange, amber, green, blue, white & warm white

Packaging — 100 ft./box

Tetra® PowerMAX



Tetra PowerMAX provides powerful white light in the largest channel letter applications. OptiLens™ allows this lighting system to produce wide uniform surface area coverage across the sign face.

Applications — large channel letters

Available Colors — white & warm white

Packaging — 100 ft./box

Tetra® Contour



Tetra Contour is our two-part neon replacement system that can be easily heated and formed into custom shapes and designs.

Applications — neon replacement and accent lighting

Available Colors — Light Engine: red, red-orange, amber, green, blue, white & warm white
Light Guide: red, orange, yellow, lime green, green, blue & white

Packaging — Tetra Contour light engines: 96 ft./box

Tetra Contour light guides: 96 ft./box

Tetra® Contour LS



Tetra Contour LS is our linear neon replacement system that comes pre-assembled and ready-to-install; perfect for long run border lighting applications.

Applications — border lighting and accent lighting

Available Colors — red, green, blue & white & warm white

Packaging — 96 ft./box

Tetra® miniStrip & Tetra® miniStrip DS



New Tetra miniStrip and miniStrip DS were designed specifically for shallow cabinet signs. Tetra miniStrip is ideal for single-sided signs with a 3 to 6 inch can depth, while Tetra miniStrip DS is perfect for double-sided signs with a 6 to 12 inch can depth.

Applications — shallow cabinet signs

Available Colors — white & warm white

Packaging — Tetra miniStrip: 48 modules per box/Tetra miniStrip DS: 32 modules per box

Tetra® PowerStrip & Tetra® PowerStrip DS



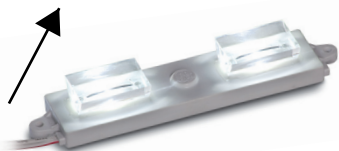
New Tetra PowerStrip significantly reduces maintenance and energy costs by replacing fluorescent lighting in cabinet and pylon signs. This LED system features OptiLens™, a patent-pending optical lens that eliminates striping commonly associated with fluorescent lighting.

Applications — cabinet signs

Available Colors — white & warm white

Packaging — Tetra PowerStrip: 48 modules per box/Tetra PowerStrip DS: 32 modules per box

Tetra® EdgeStrip



Tetra EdgeStrip is engineered to install easily around the edge of signs with a 3 to 6 inch can depth. Perfect for single or double-sided signs, Tetra EdgeStrip delivers money-saving advantages over T8 fluorescent tubes while producing outstanding visual performance that protects end-user brand image.

Applications — shallow cabinet signs

Available Colors — white & warm white

Packaging — 32 modules per box

LineFit Light LED








LineFit is the incredibly quick and easy way to transform a fluorescent cabinet sign into an efficient LED solution.

Applications — is the fast, simple retrofit for cabinet signs

Available Colors — Sign White, Daylight and Cool White

Packaging — 6/box

Tetra® Product Reference Guide

Product Line	SKU	LED Color	Wavelength/ Color Temperature	LEDs Per Module	Modules Per Foot	Viewing Angle	Lumens Per Module (Typical)	Lumens Per Foot (Typical)
Tetra miniStrip 3" (76mm) Min. Depth 	GEWHBSP3	WHITE	7100K	3	1	140	96	96
	GEWWBSP3-50K	WARM WHITE	5000K	3	1	140	96	96
	GEWWBSP3-41K	WARM WHITE	4100K	3	1	140	72	96
	GEWWBSP3	WARM WHITE	3200K	3	1	140	72	96
	GEBSH71-1	WHITE	7100K	3	1	140	120	110
	GEBSH50-1	WARM WHITE	5000K	3	1	140	120	110
	GEBSH41-1	WARM WHITE	4100K	3	1	140	90	90
	GEBSH32-1	WARM WHITE	3200K	3	1	140	90	90
Tetra miniStrip DS 6" (152mm) Min. Depth 	GEWHBDP6	WHITE	7100K	6	1	140	192	192
	GEWWBDP6-50K	WARM WHITE	5000K	6	1	140	192	192
	GEWWBDP6-41K	WARM WHITE	4100K	6	1	140	144	192
	GEWWBDP6	WARM WHITE	3200K	6	1	140	144	192
	GEBDH71-1	WHITE	7100K	6	1	140	240	220
	GEBDH50-1	WARM WHITE	5000K	6	1	140	240	220
	GEBDH41-1	WARM WHITE	4100K	6	1	140	180	180
	GEBDH32-1	WARM WHITE	3200K	6	1	140	180	180
Tetra PowerStrip 5" (127mm) Min. Depth 	GESS71-1	WHITE	7100K	5	1	140	280	280
	GESS50-1	WARM WHITE	5000K	5	1	140	280	280
	GESS41-1	WARM WHITE	4100K	5	1	140	210	210
	GESS32-1	WARM WHITE	3200K	5	1	140	210	210
	GESSH71-1	WHITE	7100K	8	1	140	360	360
	GESSH50-1	WARM WHITE	5000K	8	1	140	360	360
	GESSH41-1	WARM WHITE	4100K	8	1	140	260	260
	GESSH32-1	WARM WHITE	3200K	8	1	140	260	260
Tetra PowerStrip DS 5" (127mm) Min. Depth From Face 	GEDS71-1	WHITE	7100K	10	1	140	560	560
	GEDS50-1	WARM WHITE	5000K	10	1	140	560	560
	GEDS41-1	WARM WHITE	4100K	10	1	140	420	420
	GEDSDS32-1	WARM WHITE	3200K	10	1	140	420	420
	GEDSH71-1	WHITE	7100K	16	1	140	720	720
	GEDSH50-1	WARM WHITE	5000K	16	1	140	720	720
	GEDSH41-1	WARM WHITE	4100K	16	1	140	520	520
	GEDSH32-1	WARM WHITE	3200K	16	1	140	520	520
Tetra EdgeStrip 3" (76mm) Min. Depth 	GEWHBIP2	WHITE	7100K	2	1.5	23 x 100	200	200
	GEWWBIP2-50K	WARM WHITE	5000K	2	1.5	23 x 100	200	200
	GEWWBIP2-41K	WARM WHITE	4100K	2	1.5	23 x 100	150	150
	GEWWBIP2	WARM WHITE	3200K	2	1.5	23 x 100	150	150
	GEBIH71-1	WHITE	7100K	2	1.5	23 x 100	410	410
	GEBIH50-1	WARM WHITE	5000K	2	1.5	23 x 100	410	410
	GEBIH41-1	WARM WHITE	4100K	2	1.5	23 x 100	330	330
	GEBIH32-1	WARM WHITE	3200K	2	1.5	23 x 100	330	330

Warranty

GE offers a limited system warranty of up to five (5) years

System Certifications

UL/cUL Recognized #E219167, UL/cUL Classified #E229508, IP66 rated: separate enclosure required, damp location rated. Product is compliant with material restriction requirements of RoHS.



Tetra® LED Systems Power Supply

(GEPS24-100U-GL)

Power Supply Features

- Supports Tetra PowerStrip DS, Tetra miniStrip DS, Tetra EdgeStrip, Tetra Contour and Tetra Contour LS LED lighting systems
- UL: Class 2 wiring per NEC Article 725, dry and damp location rated
- IEC: SELV, CE: IP66 rated, separate enclosure required



BEFORE YOU BEGIN

Read these instructions completely and carefully.

⚠ WARNING/AVERTISSEMENT

RISK OF ELECTRIC SHOCK:

- Disconnect power at fuse box or circuit breaker before servicing or installing product.
- Properly ground Tetra® power supply.

RISK OF FIRE:

- Use only Tetra® supply wire to make connection from Tetra® power supply to Tetra® LED strip.
- Use only approved wire for input/output connection. Minimum size 18 AWG (0.82 mm²)
- Follow all local codes.

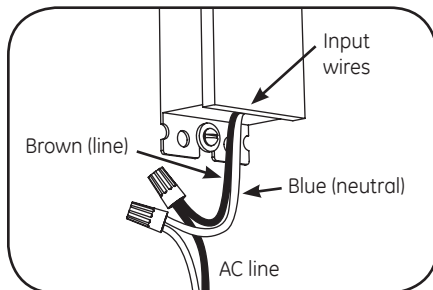
RISQUES DE DÉCHARGES ÉLECTRIQUES

- Coupez l'alimentation électrique à la boîte de fusibles ou au disjoncteur avant l'entretien ou l'installation du produit.
- Assurez-vous de correctement mettre à terre l'alimentation électrique Tetra®.

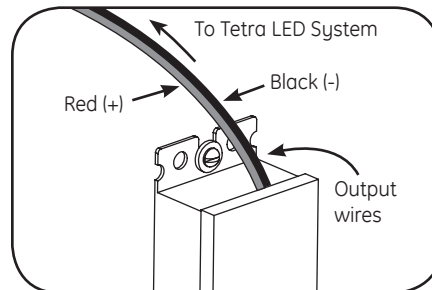
RISQUES D'INCENDIE

- N'utilisez que le fil d'approvisionnement Tetra® pour faire la connexion entre l'alimentation Tetra® et la bande DEL Tetra®.
- N'utilisez que des fils approuvés pour les entrées/sorties de connexion. Taille minimum 18 AWG (0.82 mm²).
- Respectez tous les codes locaux.

Power Supply Installation



- 1 Connect the AC line to the brown (line) and blue (neutral) input wires of the power supply using 18-14 AWG (0.82-2.08 mm²) or 18-10 AWG (0.82-5.26 mm²) twist-on wire connectors.



- 2 Connect the supply wire that is attached to the Tetra LED System to the red (+) and black (-) output wires of the power supply as outlined in the **"Electrical Connections"** section of your LED system's Installation Instructions.



imagination at work

NOTE: For CSA approval, a disconnect/toggle switch of appropriate rating needs to be placed within 29.5 ft. (9 m) of primary side of the power supply. The minimum rating of the switch must be either 120 or 220 Volts AC. The switch must also support twice the amount of input current.

NOTE: When installing power supply, connect to the appropriate sized building breaker or disconnect device for line and neutral connections, in accordance with local, state or country regulations.

NOTE: The grounding and bonding of the power supply and overall sign shall be done in accordance with National Electric Code (NEC) Article 600.

Power Supply Specifications

Performance Data	Min	Typical	Max
Input Voltage (VAC)	108	120-277	305
Input Frequency (Hz)	-	50/60	-
Input Current (A)	0.35	-	1.1
Output Voltage (VDC)	23	24	25
Output Current (ADC)	-	-	4.0
Output Power (W)	-	-	96
Environmental Operating Temperature Range	-40°C	+25°C	+55°C*
Environmental Humidity (non-condensing)	0%	-	95%
Environmental Storage Temperature Range	-40°C	-	+85°C
Dimensions	9.5 in. x 1.7 in. x 1.2 in. (241 mm x 43.2 mm x 30.5 mm)		

*Maximum case temperature is 85°C

GEPS24-100U-GL

Supports Tetra Products SKUs		Rated Watts	Maximum Load per Power Supply	Remote Mounting Distance			
				18 AWG/ 0.82 mm ²	16 AWG/ 1.31 mm ²	14 AWG/ 2.08 mm ²	12 AWG/ 3.31 mm ²
Tetra PowerStrip DS	GEWHDSPS6, GEWWDSPS6-50K, GEWWDSPS6-41K, GEWWDSPS6	6W/mod	16 modules/ 22.0 ft. (6.71m)	20 ft./6.1m	25 ft./7.6m	35 ft./10.6m	40 ft./12.1m
Tetra miniStrip DS	GEWHBDP6, GEWWBDP6-50K, GEWWBDP6-41K, GEWWBDP6	2.2W/mod	39 modules/ 39 ft. (11.89m)	20 ft./6.1m	25 ft./7.6m	35 ft./10.6m	40 ft./12.1m
Tetra EdgeStrip	GEWHBIP2, GEWWBIP2-50K, GEWWBIP2-41K, GEWWBIP2	2.4W/mod	37 modules/ 37 ft. (11.28m)	20 ft./6.1m	25 ft./7.6m	35 ft./10.6m	40 ft./12.1m
Tetra Contour LS	GEWHXNLA2-WH, GEGLXNLA2-BL, GEGLXNLA2-GL, GERDXNLA2-RD, GEWHXNAA2-WH, GEGLXNAA2-BL, GEGLXNAA2-GL, GERDXNAA2-RD	3.2W/ft.	29 ft. (8.84m)	30 ft./9.1m	50 ft./15.2m	80 ft./24.4m	120 ft./36.6m
Tetra Contour	GEWHXNLE1, GEWWXNLE1, GEGLXNLE1, GEGLXNLE1, GERDXNLE1, GERCXNLE1, GEYAXNLE1	3.2W/ft.	29 ft. (8.84m)	30 ft./9.1m	50 ft./15.2m	80 ft./24.4m	120 ft./36.6m

Conforms to the following standards:



GE Lighting Solutions • 1-888-MY-GE-LED • www.gelightingsolutions.com

1 - 8 8 8 - 6 9 - 4 3 - 5 3 3

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Tetra® EdgeStrip

LED Lighting System

(GEBI71-2, GEBI50-2, GEBI41-2, GEBI32-2)



BEFORE YOU BEGIN

Read these instructions completely and carefully.

⚠ WARNING/AVERTISSEMENT

RISK OF ELECTRIC SHOCK

- Turn power off before inspection, installation or removal.
- Properly ground Tetra® power supply enclosure.

RISK OF FIRE

- Use only UL approved wire for input/output connections. Minimum size 18 AWG (0.82mm²).
- Follow all NEC and local codes.

RISQUES DE DÉCHARGES ÉLECTRIQUES

- Coupez l'alimentation avant l'inspection, l'installation ou le déplacement.
- Assurez-vous de correctement mettre à terre l'alimentation électrique Tetra®.

RISQUES D'INCENDIE

- N'utilisez que des fils approuvés par UL pour les entrées/sorties de connexion. Taille minimum 18 AWG (0.82mm²).
- Respectez tous les codes NEC et codes locaux.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class [A] RFLD complies with the Canadian standard ICES-003. Ce DEFR de la classe [A] est conforme à la NMB-003 du Canada.

Save These Instructions

Use only in the manner intended by the manufacturer.
If you have any questions, contact the manufacturer.

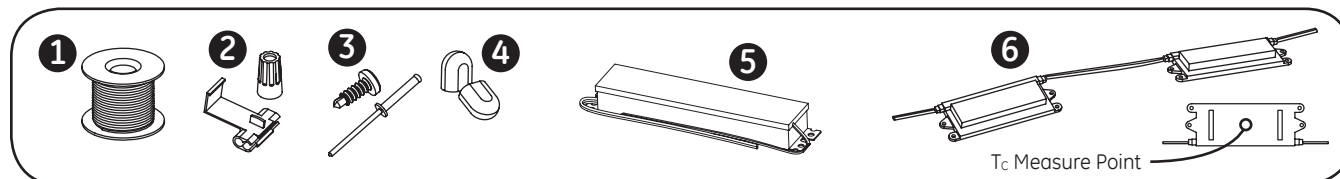
Prepare Electrical Wiring



Electrical Requirements

- Limited to use in dry and damp locations. The suitability of rain enclosures shall be determined if intended for wet location.
- The grounding and bonding of the LED Driver shall be done in accordance with National Electric Code (NEC) Article 600.
- Follow all National Electric Codes (NEC) and local codes.

Components and Tools Required



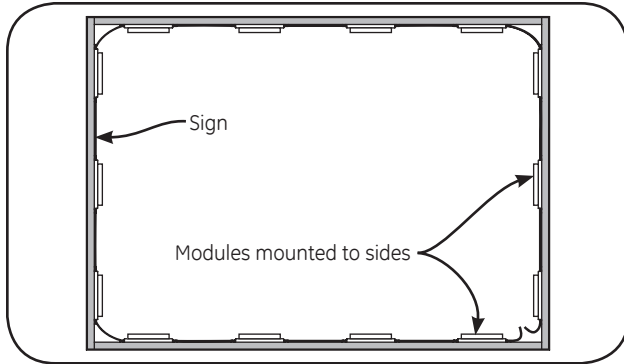
- 1 UL approved 18 AWG (0.82 mm²) supply wire
- 2 UL approved 22-14 AWG (0.33-2.08 mm²) wire connectors or 22-18 AWG (0.33-0.82 mm²) in-line/IDC connectors

- 3 #6 or #8 (M3 or M4) screws, 1/8 inch (3.2 mm) rivets or electrical grade silicone
- 4 End caps
- 5 Tetra® 24 Volt Power Supply
- 6 Tetra® EdgeStrip LED modules

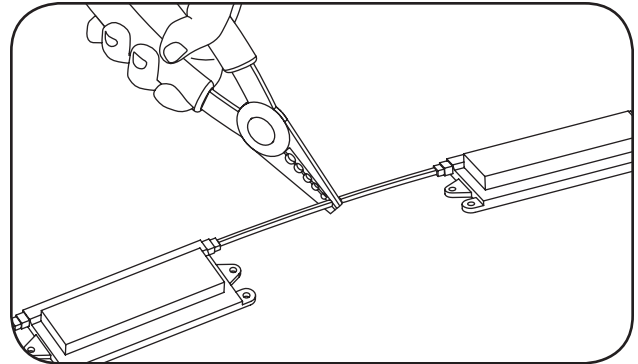


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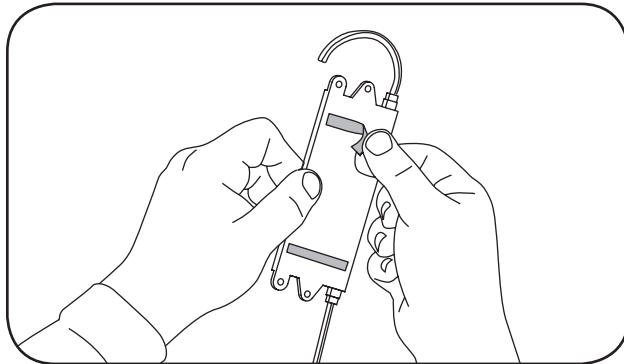
Layout LED Modules



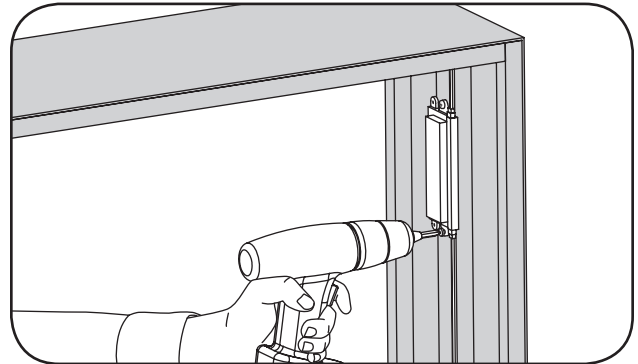
- 1 Determine location of where LED modules will be mounted based on sign dimensions (see chart). If mounting on bottom of sign, the use of a riser will be needed (minimum 1/8 in. distance between bottom surface and module).



- 2 Determine how many modules are required for your application and cut where necessary.
NOTE: Cuts can be made between any of the LED modules.



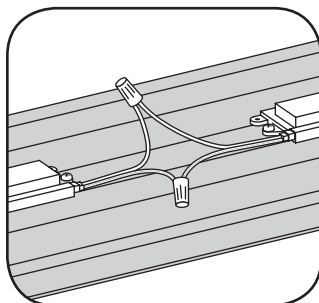
- 3 Peel off backing to expose adhesive tape and stick LED modules into place.



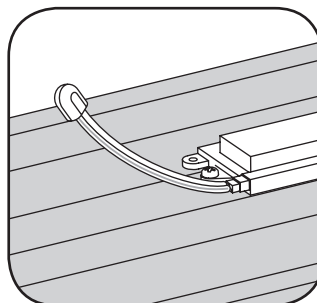
- 4 Use rivets, screws, or silicone to secure each module within the sign. Use #6 (M3) or #8 (M4) screws, 1/8-inch (3.2 mm) rivets, or silicone.

Electrical Connections

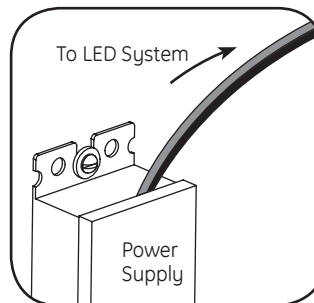
NOTE: Refer to the power supply installation instructions for loading and remote mounting information.



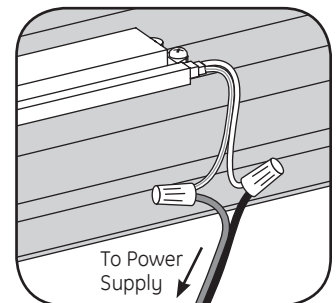
- 1 Connect modules using twist-on wire connectors or in-line (IDC) connectors. Join white wires together and red striped wires together.
NOTE: Additional supply wire may be necessary to bridge electrical connections.



- 2 Cap all exposed wires with appropriate end caps or apply electric grade (non-corrosive) silicone for additional weather protection.



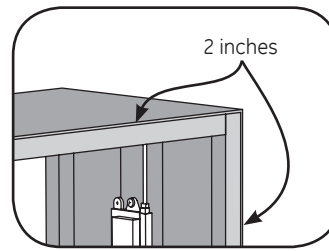
- 3 Run a wire from the Power Supply and connect to the first LED module on the strip.
Must be used with **Tetra® 24 Volt Power Supplies**.



- 4 Connect the red stripe wire (+) of the LED system to the red wire (+) of the power supply. Connect the white wire (-) of the LED system to the black or blue wire (-) of the power supply.
NOTE: All electrical connections should be made within the box sign.

Design Guidelines

All guidelines are based on a 3 in. (76mm) deep sign for Tetra® EdgeStrip. When installing the modules, it is typically recommended to install the modules across the longest distance to allow for the shortest light throw.



A 2 in. (51 mm) border is recommended along the perimeter of the sign.

Width	Height						
	1 ft. (0.30 m)	2 ft. (0.61 m)	3 ft. (0.91 m)	4 ft. (1.22 m)	5 ft. (1.52 m)	6 ft. (1.83 m)	7 ft. (2.13 m)
	1 ft. (0.30 m)	<u>EdgeStrip: 1 side</u> Modules/side: 1	<u>EdgeStrip: 1 side</u> Modules/side: 2	<u>EdgeStrip: 1 side</u> Modules/side: 3	<u>EdgeStrip: 1 side</u> Modules/side: 4	<u>EdgeStrip: 1 side</u> Modules/side: 5	<u>EdgeStrip: 1 side</u> Modules/side: 6
	2 ft. (0.61 m)	<u>EdgeStrip: 1 side</u> Modules/side: 2	<u>EdgeStrip: 1 side</u> Modules/side: 3	<u>EdgeStrip: 1 side</u> Modules/side: 5	<u>EdgeStrip: 1 side</u> Modules/side: 6	<u>EdgeStrip: 1 side</u> Modules/side: 8	<u>EdgeStrip: 1 side</u> Modules/side: 9
	3 ft. (0.91 m)	<u>EdgeStrip: 1 side</u> Modules/side: 3	<u>EdgeStrip: 1 side</u> Modules/side: 5	<u>EdgeStrip: 2 sides</u> Modules/side: 5	<u>EdgeStrip: 2 sides</u> Modules/side: 6	<u>EdgeStrip: 2 sides</u> Modules/side: 8	<u>EdgeStrip: 2 sides</u> Modules/side: 9
	4 ft. (1.22 m)	<u>EdgeStrip: 1 side</u> Modules/side: 4	<u>EdgeStrip: 1 side</u> Modules/side: 6	<u>EdgeStrip: 2 sides</u> Modules/side: 6	<u>EdgeStrip: 4 sides</u> Modules/side: 6	<u>EdgeStrip: 4 sides</u> Modules/side: 6-8	<u>EdgeStrip: 4 sides</u> Modules/side: 6-11
	5 ft. (1.52 m)	<u>EdgeStrip: 1 side</u> Modules/side: 5	<u>EdgeStrip: 1 side</u> Modules/side: 8	<u>EdgeStrip: 2 sides</u> Modules/side: 8	<u>EdgeStrip: 4 sides</u> Modules/side: 6-8	<u>EdgeStrip:</u> Not Recommended	<u>EdgeStrip:</u> Not Recommended
	6 ft. (1.83 m)	<u>EdgeStrip: 1 side</u> Modules/side: 6	<u>EdgeStrip: 1 side</u> Modules/side: 9	<u>EdgeStrip: 2 sides</u> Modules/side: 9	<u>EdgeStrip: 4 sides</u> Modules/side: 6-9	<u>EdgeStrip:</u> Not Recommended	<u>EdgeStrip:</u> Not Recommended
	7 ft. (2.13 m)	<u>EdgeStrip: 1 side</u> Modules/side: 7	<u>EdgeStrip: 1 side</u> Modules/side: 11	<u>EdgeStrip: 2 sides</u> Modules/side: 11	<u>EdgeStrip: 4 sides</u> Modules/side: 6-11	<u>EdgeStrip:</u> Not Recommended	<u>EdgeStrip:</u> Not Recommended

Retrofit Instructions

- (Existing Signs Only)** Prior to installation, survey the site for information regarding power and accessibility inside and outside the building. Ensure that the branch circuit supplying the existing transformer or ballast will be within the voltage ratings of the new LED power supply, and have a current rating not exceeding 20A, or that permitted by applicable local, state, or country electrical codes (whichever is less).
- (Existing Signs Only)** Remove the existing lighting equipment to be replaced, such as neon tubing or fluorescent tubes; and associated transformers and ballasts. Care should be taken not to break the existing neon or fluorescent tubes.
NOTE: Follow all federal and local regulations when disposing of neon tubing, fluorescent tubes, transformers and ballasts.
- (Existing Signs Only)** If removal of the existing lighting equipment eliminates the disconnect switch, as required by applicable local, state, or country electrical codes; a new disconnect switch must be installed.
- (Existing Signs Only)** Make sure the removal of lighting equipment does not compromise the integrity of the sign body (i.e. water intrusion). Fill in all holes 0.5 in. (13 mm) or smaller with the appropriate amount of rated caulk or sealant. For holes greater than 0.5 in. (13 mm), use an aluminum or zinc coated steel patch with rivets and sealant.
- Using the layout guidelines above, determine required number of LED modules required to illuminate the sign.
- A Tetra® 24VDC Class 2 Power Supply, as listed below, must be used with this retrofit kit. Using the Maximum Loading chart below, determine the number of Tetra® Class 2 Power Supplies required to power the number of LED modules required to illuminate the sign, so as not to overload the Tetra® Class 2 Power Supply chosen.
- Follow the instructions above to properly mount the LED modules.
- Connect the DC output of the power supply to the LED modules using the Electrical Connections instructions above.
- Connect the power unit to the supply in accordance with the applicable local, state, and country electrical codes, and the instructions found in the power supply installation guide.
- If required, the disconnect switch shall be installed by qualified personnel, in accordance with applicable local, state, and country electrical codes.

Troubleshooting

Symptom	Solution
Row of modules does not light	<ul style="list-style-type: none"> • Check wire connections to power supply to ensure red stripe-to-red and white-to-black or blue connections. • Check row-to-row polarity connections.
Sign does not light	<ul style="list-style-type: none"> • Check input and output voltage and check power supply input/output connections. • Check polarity connections.
Individual modules do not light	<ul style="list-style-type: none"> • Remove module and replace with another working module.
Modules are dim	<ul style="list-style-type: none"> • Ensure the overall length of the Tetra® LED system does not exceed the maximum load. • Ensure the length and gauge of the supply wire is equal to or below the recommended remote mounting distance.

Specifications

Maximum Loading per Tetra® 24 VDC Power Supply

SKU	Rating	25W Power Supply <i>Note: Load shall not exceed 1.04A</i>	80W Dimming Power Supply <i>Note: Load shall not exceed 3.3A</i>	100W Power Supply <i>Note: Load shall not exceed 4.0A</i>	180W Power Supply <i>Note: Load shall not exceed 3.8A per each (of 2) output channels</i>
GEBI71-2, GEBI50-2, GEBI41-2, GEBI32-2	24VDC, 2.52W per module	9 modules/9 ft. (2.74 m)	30 modules/30 ft. (9.15 m)	36 modules/36 ft. (10.97 m)	33 modules/33 ft. (10.06 m) per output channel 66 modules/66 ft. (20.12 m) per power supply

Maximum Remote Mounting Distance

	18 AWG/0.82 mm ² Supply Wire	16 AWG/1.31 mm ² Supply Wire	14 AWG/2.08 mm ² Supply Wire	12 AWG/3.31 mm ² Supply Wire
25W Power Supply	120 ft./36.6 m	–	–	–
80W Power Supply	20 ft./6.1 m	25 ft./7.6 m	35 ft./10.6 m	40 ft./12.1 m
100W Power Supply	20 ft./6.1 m	25 ft./7.6 m	35 ft./10.6 m	40 ft./12.1 m
180W Power Supply	20 ft./6.1 m	25 ft./7.6 m	35 ft./10.6 m	40 ft./12.1 m

This product is intended solely for the use of non-residential signage lighting and is not intended for use in any other applications.

Conforms to the following standards:

IP66 rated: separate enclosure required for outdoor use, UL damp location rated



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GE2027-9817
SIGN097-R041015

Job Name:MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER**Catalog Number:**

CRV-SA-LR-1-C-S-AL-RKBAL-SA

Notes:

Type:**EX1**

ILS16-13413

CURVA

INDOOR | DAMP



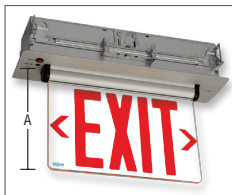
Job/Location: _____

Contractor: _____

Prepared By: _____

Job Type: _____

Date: _____



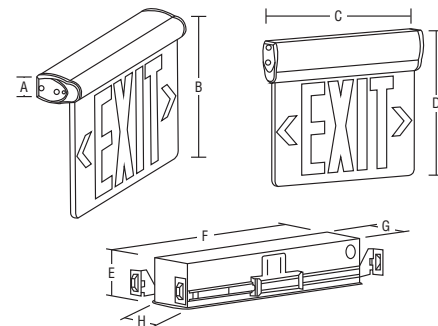
A: 7.75"/196.85mm

■ specifications: internal

AC ONLY: Standard configuration with high output, high efficiency red LED technology, 120/277V input. SELF POWERED: Standard configuration with high output, high efficiency red or green LED technology, 120/277V input. Nickel-cadmium battery provides a minimum 90 minutes emergency duration. 24 hour recharge after 90 minute discharge. Low voltage battery disconnect.

■ specifications: external

The CURVA features an integrated and unique pivot system that allows it to be installed on the wall, ceiling or sloped surface. Available with a backbox for recess mount. Interchangeable acrylic panels easily and securely snap into the housing, reducing the possible damage that can occur during normal installations.



Series	A	B	C	D
CRV	1.63"	8.5"	12.13"	9.75"
	41mm	216mm	308mm	248mm

■ ordering logic

Series	Model	LED Color	Face No.	Panel Color	Mounting	Housing	Options
CRV	HT (AC only)	LR (red)	1 (single)	C ^[1] (clear)	S (surface-mount)	AL (aluminum)	RKW-HT (recessed kit white, AC only)
	SA ^[3] (self-powered)	LG (green)	2 (double)	M ^[2] (mirror)		W (white)	RKBAL-HT (recessed kit brushed aluminum, AC only)
							RKW-SA (recessed kit white AC & EM)
							RKBAL-SA (recessed kit brushed aluminum, AC & EM)

[1]NOTE: Clear available single face only.

[2]NOTE: Mirror available double face only.

[3]NOTE: AT standard on all SA models.

EXAMPLE: CRV-SA-LR-1-C-AL-AT

DESCRIPTION: Self powered, red LED, single face, clear panel, aluminum housing, autotest

PROVIDE DIRECTIONAL
ARROWS AS INDICATED ON
THE LIGHTING PLANS.

Technical

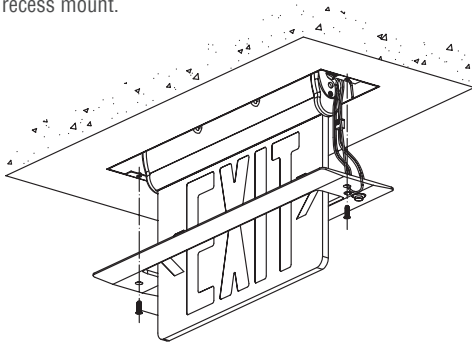
■ specifications: electrical

BATTERY: The CURVA is designed with a 3.6V 900mAH maintenance free sealed nickel cadmium battery that provides minimum emergency duration of 90 minutes. The recharge time of the battery is 24 hours.

CIRCUIT: The CURVA has a 120/277V solid state transformer. Low voltage disconnect and brownout protection are standard. Red or green LEDs totaling <2W.

■ specifications: mechanical

The recessed back box has a steel housing and trimplate with anodized aluminum finish. Adjustable bar hangers adapt housing for mounting on a suspended ceiling. The recessed back box with color matched trimplate effortlessly converts the standard surface mount curva to recess mount.



The recess kit allows for the standard surface mount CURVA to be easily recessed into a ceiling or a wall. The standard unit snaps into the recessed back box and is securely held in place while wiring is completed.

■ self-powered

The CURVA self-powered is designed to operate on battery power in the event of regular / mains power failure. Both the battery and charger are completely contained within the standard sign. There are no external components and no alteration made to the external dimensions of the standard sign. Status is easily determined via an LED that indicates AC-ON. A push button test switch allows maintenance personnel to quickly confirm the operational status of the exit at any time.

■ autotest

The CURVA SA version comes standard with the Beghelli Autotest diagnostic system. Featuring continuous monitoring of the units main components (battery, charger, transformer, lamps & LED's) and providing instant visual verification of the status.

AUTO-TEST BEGHELLI FEATURES:

- Monitor battery disconnection, charger failure, lamp failure, LED failure and transformer fault every 5 seconds without discharging the battery.
- Automatically indicates lamp, battery and charger status by dual-color LED lamp.
- Factory preset Autotest does not need to be field adjusted or reset for proper operation.

AUTO-TEST FUNCTIONS:

- Verifies battery disconnect, charger board failure, lamp failure, LED failure and transformer failure every 5 seconds.
- One (1) minute Autotest every month.
- Thirty (30) minute Autotest every six (6) months.
- Ninety (90) minute Autotest every twelve (12) months.

Autotest VISUAL ALERT

- | | |
|----------------------|--|
| (1) blink red LED = | Battery not connected |
| (2) blinks red LED = | Battery shorted and/or
Battery voltage drop |
| (3) blinks red LED = | Charger board fault |
| (4) blinks red LED = | Transformer fault |
| (5) blinks red LED = | Emergency lamp fault |
| (6) blinks red LED = | Remote lamp fault |
| (7) blinks red LED = | LED lamp fault |

Autotest MANUAL FUNCTIONS:

- Press test button 1x (within 2 sec.) = 1 minute test
 Press test button 2x (within 2 sec.) = 5 minute test
 Press test button 3x (within 2 sec.) = 30 minute test
 Press test button 4x (within 2 sec.) = 90 minute test

■ warranty

The CURVA comes with a 5-year factory warranty. Deliberate damage, misuse, improper installation effectively void the warranty. For complete warranty details see online.

Job Name:MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER**Catalog Number:**

CRV-SA-LR-2-M-S-AL-RKBAL-SA

Notes:

Type:**EX2**

ILS16-13413

CURVA

INDOOR | DAMP



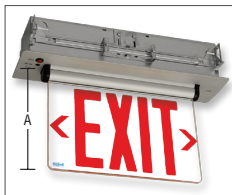
Job/Location: _____

Contractor: _____

Prepared By: _____

Job Type: _____

Date: _____



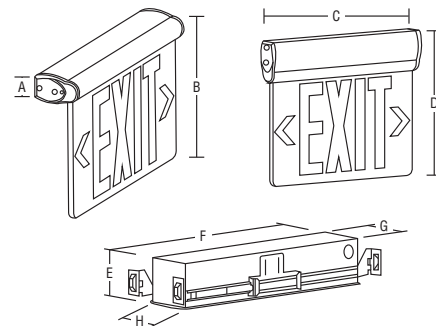
A: 7.75"/196.85mm

■ specifications: internal

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The CURVA features an integrated and unique pivot system that allows it to be installed on the wall, ceiling or sloped surface. Available with a backbox for recess mount. Interchangeable acrylic panels easily and securely snap into the housing, reducing the possible damage that can occur during normal installations.



Series	A	B	C	D
CRV	1.63"	8.5"	12.13"	9.75"
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							RKW-SA (recessed kit white AC & EM)
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[1]NOTE: Clear available single face only.

[2]NOTE: Mirror available double face only.

[3]NOTE: AT standard on all SA models.

EXAMPLE: CRV-SA-LR-1-C-AL-AT

DESCRIPTION: Self powered, red LED, single face, clear panel, aluminum housing, autotest

**PROVIDE DIRECTIONAL
ARROWS AS INDICATED ON
THE LIGHTING PLANS.**

Job Name:MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER**Catalog Number:**

CRV-SA-LR-2-M-S-AL-RKBAL-SA

Notes:**Type:****EX2**

ILS16-13413

Technical

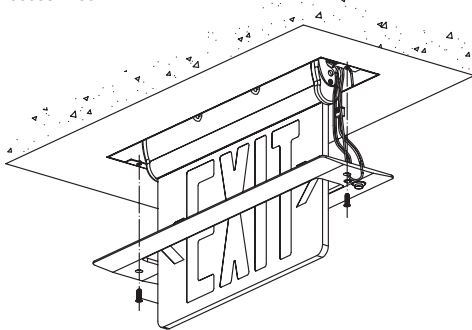
■ specifications: electrical

BATTERY: The CURVA is designed with a 3.6V 900mAH maintenance free sealed nickel cadmium battery that provides minimum emergency duration of 90 minutes. The recharge time of the battery is 24 hours.

CIRCUIT: The CURVA has a 120/277V solid state transformer. Low voltage disconnect and brownout protection are standard. Red or green LEDs totaling <2W.

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AUTO-TEST BEGHELLI FEATURES:

- Monitor battery disconnection, charger failure, lamp failure, LED failure and transformer fault every 5 seconds without discharging the battery.
- Automatically indicates lamp, battery and charger status by dual-color LED lamp.
- Factory preset Autotest does not need to be field adjusted or reset for proper operation.

AUTO-TEST FUNCTIONS:

- Verifies battery disconnect, charger board failure, lamp failure, LED failure and transformer failure every 5 seconds.
- One (1) minute Autotest every month.
- Thirty (30) minute Autotest every six (6) months.
- Ninety (90) minute Autotest every twelve (12) months.

Autotest VISUAL ALERT

- | | |
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 Press test button 4x (within 2 sec.) = 90 minute test

■ warranty

The CURVA comes with a 5-year factory warranty. Deliberate damage, misuse, improper installation effectively void the warranty. For complete warranty details see online.

BRUCK.

Job Name: _____

Contact: _____



Fixture Type: _____

Part Number: _____

CHROMA I



The Bruck Chroma I 6.5W LED pendant is Uni-Light fixture with 40° beam spread. Industry best color quality and consistency is achieved through the use of single source LED module with cold remote phosphor technology for +50K hours of life. Integral driver allows fixture to work on all Bruck tracks with standard 12VAC transformers using the appropriate adaptor. Operates with magnetic transformer.



Ordering Code

Choose the desired light source, shade color, finish, from the options below.

example: 137 - 210 - mc

Light Source

LED 137 LED



Shade Colors

210 acrylic shade



Finish

mc matte chrome



Mounting Options

MP 4" Kiss Canopy



Technical Specs

LED system adaptor

137 -xxx

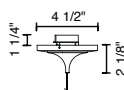


12V AC/DC input

Connects to UNI-LIGHT system
Suitable for dry locations only
Compatible with dimmable power supply
Compatible with selected Bruck electronic transformers and must meet the minimum VA (load)

Kiss 4" Mono-Point Canopy

137-xxx/MP



100-240VAC, 50/60Hz input

Mount to 3 1/2" - 4" round J-Box
Suitable for dry locations only
Short circuit protection
Thermal protection

Submitted by Innovative Lighting Solutions



Job Name:
MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER

Catalog Number:
D5033-LED16-277-X

Notes:

Type:

P2

ILS16-13413



d5033 CLARETA pendant

d5033



d'ac studio design



d5033-1F32-120-AN

d5033

Item #	Lamping	Voltage	Finish	Options	Sp. Orders
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Work space for submittals

How to specify

Example from illustration at left

d5033	-1F32	-120	-AN		
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Item Number**d5033**

60" CLARETA pendant / d'ac studio design

Construction

Spun aluminum shade. Polished chrome trim and clamps with set screws. White opal acrylic diffuser. 5" diam. black canopy. Adjustable height, aircraft cable supports fixture. 60" overall height. Black, 3 conductor cord. For standard ceiling junction box mounting. UL listed, cUL (ETL/ETLc for LED) certified for dry locations.

Lamping / Wattage

Fixtures supplied less lamps.
Lamps may be
ordered from d'ac.

1N150

Incandescent, one 150 W, medium base, A type

1F26

Fluorescent, one 26W triple tube 4 pin, GX24q-3 socket, electronic HPF ballast

1F32

Fluorescent, one 32W lamp 4 pin, GX24q-3 socket, electronic HPF ballast

1F42

Fluorescent, one 42W lamp 4 pin, GX24q-4 socket, electronic HPF ballast

LED12

LED, 12W LED with electronic driver. 1104 Lumen output.

LED16

LED, 16W LED with electronic driver. 1472 Lumen output.

Voltage

120

120V

277

277V

Finishes

See Page d9000 &
d9000 Supplement for
color renderings

X

AL Brushed Aluminum**WH** White Gloss**MG** Metallic Grey**MB** Matte Black**BZ** Metallic Bronze**GM** Metallic Green**RD** Metallic Red**YL** Bright Yellow**PA** Polished Aluminum**G1** Light Grey**AN** Metallic Anthracite**BC** Black Crinkle**T1** Light Tan**SF** Seafoam**RB** Bright Red**SCF** Special Finish—must supply paint chip*Baked Enamels:***G2** Medium Grey**BG** Black Gloss**CU** Metallic Copper**T2** Medium Tan**BL** Metallic Blue**MP** Magenta Pink**Options****WET** - UL (ETL/ETLc for LED) listed for wet and damp locations

STEM Rigid, 1/2" diam. stem (aircraft cable and cord replaced by 1/2" diam. rigid stem and modified canopy)

COIL - Coiled electrical cord.**Special Orders**

For modifications to dimensions, electrical requirements and other special orders, please contact your d'ac representative.

**FINISH TO BE SELECTED
BY THE ARCHITECT.**

**Job Name:**MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER**Catalog Number:**

22CZ-LD4-29-UNV-L840-CD1-U

Notes:**Type:****R1**

ILS16-13413

Metalux**DESCRIPTION**

Cruze LED is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest solid state lighting and driver technology for optimal performance and energy efficiency. The Cruze is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility.

The Cruze series features efficiency, quality and performance. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES**Construction**

Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners and unibody endplate for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Unibody endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided.

Controls

The Cruze LED is Powered by Fifth Light, with a standard 0-10V continuous dimming driver that works with any 0-10V control/dimmer. Combine with energy saving products like occupancy sensors, daylighting controls and lighting relay panels to maximize energy savings. In addition, the Cruze can include a factory-installed integrated sensor system for occupancy and daylight dimming control and manual control from an optional handheld remote. Or, specify the Digital Addressable Lighting Interface (DALI) drivers, dimmable down to 10%, for use with Fifth Light controls. See ordering information for details on all three options.

Electrical

Long-Life LED system coupled with electrical driver to deliver optimal performance. LED's available in 3000K, 3500K, 4000K or 5000K with a CRI ≥ 85 . Projected life is 60,000 hours at 83% lumen output. cULus listed. Electronic drivers are available for 120-277V applications.

Emergency Battery Pack Option

Optional 120v-277v integral emergency battery pack is available in 7-watts or 14-watts to meet critical life-safety lighting requirements. The 90-minute batteries provide constant power to the LED system, ensuring code-compliance. A test switch/indicator button can be tested safely from the ground using a laser pointer, while the patented EZ Key prevents accidental discharge of the battery during construction. See ordering information for details.

Finish

Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing finished with 90% reflective white enamel for superior performance.

Hinging/Latching

Positive cam action steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side. Door assembly hinges down for easy access from below.

Frame/Sheilding

Die formed, heavy gauge, flat steel door with reinforced mitered corners and painted after fabrication, baked matte white enamel finish. Positive light seals. Acrylic frosted lens.

Compliance

Modules are UL recognized components and indoor luminaires are cULus listed for 25°C ambient environments, RoHS compliant, and LED modules comply with IESNA LM-79 and LM-80 standards. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.

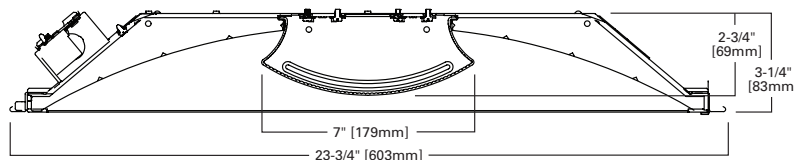
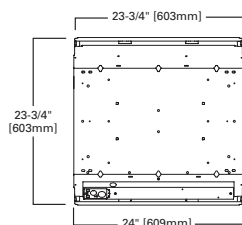
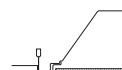
Warranty

Five year warranty.

**22CZ
LED****2' X 2' TROFFER LED
MODULE**

Specification Grade Troffer

powered by
fifthlight
technology

**MOUNTING DATA****LAMP CONFIGURATIONS****CEILING COMPATIBILITY****G**
Grid/Lay-in
Standard**G**
Concealed T**G**
Slot Grid

**Ceiling
Type**
Exposed Grid
Concealed T
Slot Grid
Flange

**Trim
Type**
Standard
Standard
Standard
*

CERTIFICATION DATA

cULus - 1598
Damp Location Listed
IC Rated
LM79/LM80 Compliant
ROHS Compliant
DesignLights Consortium® Qualified
NOM Compliant

*See Drywall Frame Kit Accessory in
Ordering Information Section

LINEAR DISCONNECT

Safe and convenient means of
disconnecting power



EATON
Powering Business Worldwide

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2015-07-24 15:24:11

**Job Name:**

MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER

Catalog Number:

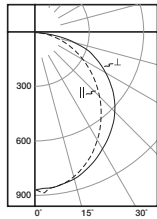
22CZ-LD4-29-UNV-L840-CD1-U

Notes:

Type:

R1

ILS16-13413

22CZ LED**PHOTOMETRICS****22CZ-LD4-24-UNV-L835-CD1-U**

Electronic Driver
Linear LED 3500K

Spacing criterion:
(H) 1.2 x mounting
height, (L) 1.3 x
mounting height

Lumens: 2417

Input Watts: 22.6W

Efficacy: 106.9 lm/W

Test Report:
22CZ-LD4-24-UNV-
L835-CD1-U.IES

Candlepower

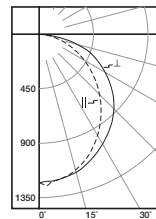
Angle	Along H	45°	Across L
0	861	861	861
5	857	868	855
10	842	844	843
15	815	821	828
20	776	788	801
25	731	747	770
30	676	700	733
35	618	648	697
40	557	595	657
45	494	539	612
50	429	482	561
55	365	426	503
60	301	369	443
65	240	310	381
70	181	251	319
75	124	190	228
80	73	118	137
85	31	45	43
90	0	0	0

Coefficients of Utilization

rc rw RCR	Effective floor cavity reflectance										20%										0 %					
	80%					70%					50%					30%						10%				
	70	50	30	10	0	70	50	30	10	0	50	30	10	0	50	30	10	0	50	30		10	0			
0	119	119	119	119	116	116	116	116	111	111	111	111	111	106	106	106	102	102	102	100	100	100	100			
1	108	104	99	95	106	101	97	94	97	94	91	93	90	88	89	87	85	83	83	83	83	83	83			
2	98	90	83	77	96	88	82	76	84	79	74	81	77	73	78	74	71	69	69	69	69	69	69			
3	90	79	70	64	87	77	69	63	74	68	62	71	66	61	69	64	60	58	58	58	58	58	58			
4	82	70	61	54	80	68	60	54	66	59	53	64	57	52	61	56	51	49	49	49	49	49	49			
5	75	62	53	46	73	61	53	46	59	51	46	57	50	45	55	49	45	42	42	42	42	42	42			
6	70	56	47	41	68	55	47	40	53	46	40	52	45	40	50	44	39	37	37	37	37	37	37			
7	65	51	42	36	63	50	42	36	48	41	35	47	40	35	46	40	35	33	33	33	33	33	33			
8	60	46	38	32	58	46	38	32	44	37	32	43	36	31	42	36	31	29	29	29	29	29	29			
9	56	43	34	29	55	42	34	29	41	34	29	40	33	28	39	33	28	26	26	26	26	26	26			
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	26	24	24	24	24	24	24			

Zonal Lumen Summary

Zone	Lumens	% Fixture
0-30	658	27.2
0-40	1065	44.1
0-60	1869	77.3
0-90	2417	100.0
0-180	2417	100.0

**22CZ-LD4-34-UNV-L835-CD1-U**

Electronic Driver
Linear LED 3500K

Spacing criterion:
(H) 1.2 x mounting
height, (L) 1.3 x
mounting height

Lumens: 3420

Input Watts: 34.5W

Efficacy: 99.1 lm/W

Test Report:
22CZ-LD4-34-UNV-
L835-CD1-U.IES

Candlepower


Angle	Along H	45°	Across L
0	1219	1219	1219
5	1214	1229	1211
10	1192	1194	1194
15	1153	1162	1173
20	1100	1116	1135
25	1032	1057	1090
30	957	990	1040
35	875	918	987
40	788	842	931
45	699	763	866
50	608	684	793
55	516	604	710
60	427	522	624
65	339	439	536
70	255	355	448
75	175	269	321
80	102	166	190
85	43	63	58
90	0	0	0

Coefficients of Utilization

rc	Effective floor cavity reflectance															20%															
	80%					70%					50%						30%					10%					0%				
	70	50	30	10	0	70	50	30	10	0	50	30	10	0	50		30	10	0	50	30	10	0								
RCR																															
0	119	119	119	119	119	116	116	116	116	111	111	111	111	111	106	106	106	106	102	102	102	100	100	100	100	100	100	100	100	100	
1	108	104	99	95	106	101	97	94	97	94	91	93	90	88	89	87	85	83	83	83	83	83	83	83	83	83	83	83	83	83	83
2	98	90	83	77	96	88	82	76	84	79	74	81	77	73	78	74	71	69	69	69	69	69	69	69	69	69	69	69	69	69	69
3	90	79	70	64	87	77	70	63	74	68	62	71	66	61	69	64	60	58	58	58	58	58	58	58	58	58	58	58	58	58	58
4	82	70	61	54	80	68	60	54	66	59	53	64	57	52	61	56	51	49	49	49	49	49	49	49	49	49	49	49	49	49	49
5	75	62	53	46	73	61	53	46	59	51	46	57	50	45	55	49	45	43	43	43	43	43	43	43	43	43	43	43	43	43	43
6	70	56	47	41	68	55	47	40	53	46	40	52	45	40	50	44	39	37	37	37	37	37	37	37	37	37	37	37	37	37	37
7	65	51	42	36	63	50	42	36	48	41	35	47	40	35	46	40	35	33	33	33	33	33	33	33	33	33	33	33	33	33	33
8	60	46	38	32	58	46	38	32	44	37	32	43	36	31	42	36	31	29	29	29	29	29	29	29	29	29	29	29	29	29	29
9	56	43	34	29	55	42	34	29	41	34	29	40	33	28	39	33	28	26	26	26	26	26	26	26	26	26	26	26	26	26	26
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	26	24	24	24	24	24	24	24	24	24	24	24	24	24	24

Zonal Lumen Summary

Zone	Lumens	% Fixture
0-30	931	27.2
0-40	1508	44.1
0-60	2645	77.3
0-90	3420	100.0
0-180	3420	100.0

Submitted by Innovative Lighting Solutions		Catalog Number: 22CZ-LD4-29-UNV-L840-CD1-U	Type: R1
	Job Name: MIAMI GUNLOCK FAMILY ATHLETE PERFORMANCE CENTER	Notes:	ILS16-13413

22CZ LED

ENERGY AND PERFORMANCE DATA BY CATALOG NUMBER

Stock or MTO*	Catalog Logic (Ribbed)	Delivered Lumens	Watts	Efficacy (lm/W)
MTO	22CZ-LD4-20-UNV-L830-CD1-U	1888	18.9	100
MTO	22CZ-LD4-20-UNV-L835-CD1-U	2056	18.9	108
MTO	22CZ-LD4-20-UNV-L840-CD1-U	2166	18.9	114
MTO	22CZ-LD4-20-UNV-L850-CD1-U	2261	18.9	119
MTO	22CZ-LD4-24-UNV-L830-CD1-U	2220	22.6	98
Stock	22CZ-LD4-24-UNV-L835-CD1-U	2417	22.6	107
Stock	22CZ-LD4-24-UNV-L840-CD1-U	2547	22.6	113
MTO	22CZ-LD4-24-UNV-L850-CD1-U	2658	22.6	118
MTO	22CZ-LD4-29-UNV-L830-CD1-U	2682	28.2	95
MTO	22CZ-LD4-29-UNV-L835-CD1-U	2920	28.2	103
MTO	22CZ-LD4-29-UNV-L840-CD1-U	3077	28.2	109
MTO	22CZ-LD4-29-UNV-L850-CD1-U	3211	28.2	114
MTO	22CZ-LD4-34-UNV-L830-CD1-U	3141	34.4	91
Stock	22CZ-LD4-34-UNV-L835-CD1-U	3420	34.4	99
Stock	22CZ-LD4-34-UNV-L840-CD1-U	3603	34.4	105
MTO	22CZ-LD4-34-UNV-L850-CD1-U	3761	34.4	109
MTO	22CZ-LD4-39-UNV-L830-CD1-U	3589	41.3	87
MTO	22CZ-LD4-39-UNV-L835-CD1-U	3908	41.3	95
MTO	22CZ-LD4-39-UNV-L840-CD1-U	4118	41.3	100
MTO	22CZ-LD4-39-UNV-L850-CD1-U	4298	41.3	104
MTO	22CZ-LD4-44-UNV-L830-CD1-U	4035	49.2	82
MTO	22CZ-LD4-44-UNV-L835-CD1-U	4394	49.2	89
MTO	22CZ-LD4-44-UNV-L840-CD1-U	4630	49.2	94
MTO	22CZ-LD4-44-UNV-L850-CD1-U	4832	49.2	98

*Made to order (MTO) requires a typical four week lead time.

Stock or MTO*	Catalog Logic (Smooth Lens)	Delivered Lumens	Watts	Efficacy (lm/W)
MTO	22CZ-LD4-20-S-UNV-L830-CD1-U	1912	18.9	101
MTO	22CZ-LD4-20-S-UNV-L835-CD1-U	2082	18.9	110
MTO	22CZ-LD4-20-S-UNV-L840-CD1-U	2194	18.9	116
MTO	22CZ-LD4-20-S-UNV-L850-CD1-U	2290	18.9	121
MTO	22CZ-LD4-24-S-UNV-L830-CD1-U	2248	22.6	99
MTO	22CZ-LD4-24-S-UNV-L835-CD1-U	2448	22.6	108
MTO	22CZ-LD4-24-S-UNV-L840-CD1-U	2579	22.6	114
MTO	22CZ-LD4-24-S-UNV-L850-CD1-U	2692	22.6	119
MTO	22CZ-LD4-29-S-UNV-L830-CD1-U	2715	28.2	96
MTO	22CZ-LD4-29-S-UNV-L835-CD1-U	2957	28.2	105
MTO	22CZ-LD4-29-S-UNV-L840-CD1-U	3116	28.2	110
MTO	22CZ-LD4-29-S-UNV-L850-CD1-U	3252	28.2	115
MTO	22CZ-LD4-34-S-UNV-L830-CD1-U	3180	34.4	92
MTO	22CZ-LD4-34-S-UNV-L835-CD1-U	3463	34.4	100
MTO	22CZ-LD4-34-S-UNV-L840-CD1-U	3649	34.4	106
MTO	22CZ-LD4-34-S-UNV-L850-CD1-U	3808	34.4	110
MTO	22CZ-LD4-39-S-UNV-L830-CD1-U	3634	41.3	88
MTO	22CZ-LD4-39-S-UNV-L835-CD1-U	3957	41.3	96
MTO	22CZ-LD4-39-S-UNV-L840-CD1-U	4170	41.3	101
MTO	22CZ-LD4-39-S-UNV-L850-CD1-U	4352	41.3	105
MTO	22CZ-LD4-44-S-UNV-L830-CD1-U	4086	49.2	83
MTO	22CZ-LD4-44-S-UNV-L835-CD1-U	4450	49.2	90
MTO	22CZ-LD4-44-S-UNV-L840-CD1-U	4688	49.2	95
MTO	22CZ-LD4-44-S-UNV-L850-CD1-U	4893	49.2	99

*Made to order (MTO) requires a typical four week lead time.

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (60,000 hours)	Theoretical L70 (Hours)
25°C	> 83%	> 117,000

Submitted by Innovative Lighting Solutions	Job Name: MIAMI GUNLOCK FAMILY ATHLETE PERFORMANCE CENTER	Catalog Number: 22CZ-LD4-29-UNV-L840-CD1-U Notes:	Type: R1 ILS16-13413
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ORDERING INFORMATION

SAMPLE NUMBER: 22CZ-LD4-34-UNV-L835-CD1-U

Rating Blank=Standard ATW-SW4=Chicago Rated Series ⁽¹⁾ 22CZ=2x2 Cruze Series Door Frame Standard=Flat White Steel Door (Leave Blank)	Lamp Type LD4=LED 4.0 Stock Lumen Output 24=2400 lumen 34=3400 lumen MTO Lumen Output ⁽⁷⁾ 20=2000 lumen 29=2900 lumen 39=3900 lumen 44=4400 lumen Shielding Blank=Ribbed Frosted Acrylic Lens (standard) S=Smooth Frosted Acrylic Lens SQP=Smooth Lens with Square Pattern Insert RDP=Smooth Lens with Round Pattern Insert	Voltage ⁽²⁾ 347V=347 Volt UNV=Universal Voltage 120-277 Options Emergency EL7W=7-watt, 120V-277V emergency battery pack installed ⁽⁸⁾ EL14W=14-watt 120V-277V emergency battery pack installed ⁽⁸⁾ CCT L830=3000K L835=3500K L840=4000K L850=5000K Flex ⁽⁶⁾ Multiple Configurations Available	Driver Type CD=0-10V Dimming Driver SD=Step-Dim Driver ⁽⁹⁾ 5LTD=Fifth Light DALI Driver (10% - 100% Dimming) ^{(4), (9)}	Number of Drivers 1=1 Driver
Integrated Solutions S=Integrated Sensor Control Type DV=Dual Band ⁽¹⁰⁾ V=Analog (0-10V) Output for Local Control ⁽⁸⁾	Occupancy Technology P=Passive Infrared	Sensing Technology D=Dimming Daylight Harvesting (Closed Loop)	Coverage Pattern 1= ~144 Square Feet Packaging U=Unit Pack PALC=Job Pack, in carton	

ACCESSORIES

EQ-CLIP-U=T-BAR Safety Earthquake Clips ⁽¹⁾
 DF-22-W=2' x 2' Drywall Frame Kit
 SK-22-WS=2' x 2' Shallow Surface Mount Kit
 SK-22-WT=2' x 2' Tall Surface Mount Kit
 DF10P-C=Decorator Dimmer, 0-10V
 SF10P-=Decorator Slide Dimmer, 0-10V
 HHPRG-MS=Programming Remote for Integrated Sensor

NOTES: ⁽¹⁾An EQ Grid Clip is recommended for all 9/16" ceiling systems. Four required per fixture. ⁽²⁾Products also available in non-US voltages and frequencies for international markets. ⁽³⁾With integral test switch/indicator/laser test. For approximate delivered lumens multiply the lumens per watt of the desired fixture by the wattage of the emergency battery pack (100 lm/W x 7=700 lumens). IES-format photometry for luminaire under emergency operation available. ⁽⁴⁾Must be used in conjunction with a DALI control system. For a complete listing of Fifth Light Technology products and other solutions from Cooper Controls, visit www.coopercontrols.com. ⁽⁵⁾Integral sensor works only with "CD" driver and is factory prewired to the driver for stand-alone control. ⁽⁶⁾Flex does not include dimming leads. Control leads provided by others. ⁽⁷⁾Made-to-order (MTO) requires a typical four week leadtime. ⁽⁸⁾Step dim driver option is not available with 2000, 2400 and 2900 lumen packages. ⁽⁹⁾Fifth Light (5LTD) driver option is not available with 2000, 2400 and 2900 lumen packages. ⁽¹⁰⁾Provides blank band on opposite side from sensor band to provide symmetric appearance. ⁽¹¹⁾DesignLights Consortium® Qualified (all lumen packages). Refer to www.designlights.org Qualified Products List under Family Models for details.

Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

QUICK SHIP SKUS

SAMPLE NUMBER: 22CZ34S40

22CZ		S	
Series 22CZ	Lumens 24=2400 34=3400	Shielding S=Smooth Frosted Acrylic Lens	CCT 35=3500K 40=4000K

NOTES: Options are not available with these SKUs. Refer to standard SKU ordering information to add options. Voltage is 120-277V. Driver type is 0-10V dimming. Lead-time is 10 days. Must be ordered in pallet quantities only (48 per pallet).

SHIPPING DATA

Catalog No.	Wt.
22CZ-LD4-27	12.5 lbs.
22CZ-LD4-36	12.5 lbs.

**Job Name:**MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER**Catalog Number:**

22CZ-LD4-29-UNV-L840-CD1-U

Notes:**Type:****R1**

ILS16-13413

22CZ LED**INTEGRATED SENSOR****Description**

This innovative luminaire-integrated sensor control system is optimized for code-compliant occupancy detection and daylight harvesting – all from within the foot print of Metalux's award-winning recessed ambient luminaires.

No New Wires

An in-place fixture retrofit is all that's needed to meet most energy codes in commercial spaces. The sensor system is factory wired to the luminaire, switching on or off based on occupancy, and dimming the light when enough daylight is available.

Sophisticated lighting control without commissioning

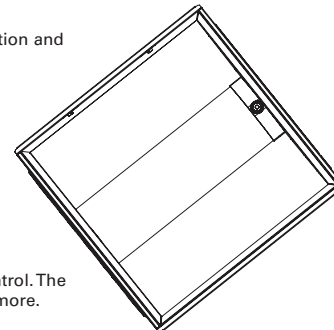
The luminaire-integrated sensor system offers out-of-the-box operation using thoughtful default settings.

Flexibility and Individual Control

When the application demands more, the sensor system has the option to make changes using a remote control. The remote allows changes from the default settings for occupancy, target light level, preset lighting levels, and more.

Cost-effective, Stand-alone Operation

With a single product to mount and a single electrical connection to make, the Metalux luminaire with an integrated sensor system saves money on the total installed cost when occupancy or daylight harvesting controls are needed. The integrated sensor system works stand-alone, without the need for additional switches and dimmers. When manual-on, manual dimming or other code-required control schemes are needed, please see the comprehensive offering of Greengate and Fifth Light solutions from Cooper Controls at www.coopercontrol.com.

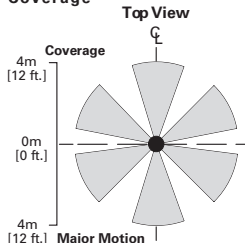
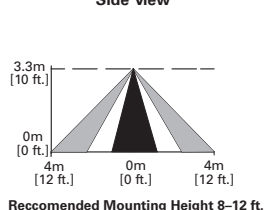
**Metalux Integrated Sensor Sequence of Operation**

The occupancy sensing portion of the sensor uses Passive Infrared (PIR) technology with Auto-on/Auto-off operation. The small lens in the center of the sensor directs the view of a passive infrared occupancy detector to sense occupants moving through the room. To trigger the light on, an occupant must cross at least two passive infrared beams. When motion in the coverage area ceases, the sensor logic concludes the room is unoccupied, and begins a count-down timer. By default, the timer is factory-set to 20 minutes, and can be adjusted to 5, 10, 15 and 20 minutes using the optional remote control, model number HHPRG-MS. Any motion detected during the count-down timer will cause the light to remain on and resets the timer. When motion is detected, a red LED will blink. In addition to the default on/off functionality, the sensor has an Energy Saver feature, where the light can be set to dim to a preset level after the sensor detects no occupancy for half of the count-down timer, when the timer is complete the lighting will change to the unoccupied setting. The Energy Saver feature works when the count-down timer is set to at least 15 minutes, and the preset level and feature are configured using the optional remote control. See the Sensor Programming Guide that comes with the HHPRG-MS remote for details on this feature. The sensitivity of the occupancy detection can be adjusted, using the HHPRG-MS remote. By default, the sensor operates at the full detection range shown on the coverage pattern diagram. Using the "LO" button on the HHPRG-MS remote, reduces the sensor detection range by 50%. Full coverage can be restored at any time by pressing the "HI" button on the remote. The red LED indicator will blink repeatedly to confirm any programming change.

The dimming daylight harvesting portion of the sensor uses a small photo sensor located next to the occupancy sensing lens. The sensor continuously measures the available light in the room, even when the fixture is turned off. This allows sensor to operate in one of three daylighting modes, where the artificial light from the paired Metalux luminaire can adjust the light based on the amount of ambient light from surrounding natural and artificial light sources. Since the sensor measures light from its luminaire along with other light sources, this sensor follows a closed-loop dimming daylight harvesting style. The first mode, Daytime, is active when the sensor detects light of at least 100 lux in the room. In Daytime mode, when the light is turned on after detecting occupancy, the sensor will begin balancing the luminaire light level relative to the total available light it measures. The default light balancing target in daytime mode is 500 lux. This level can be adjusted higher or lower using the optional HHPRG-MS remote, and pressing "SET" and then the "DO" (Daytime Occupied) button to store the new light level. Similarly, the Daytime Unoccupied, "DU" has a default of level of 0 lux, or off, but can be adjusted higher to prevent the lights from turning off completely when unoccupied. More details on this function are found in the Sensor Programming Guide for the HHPRG-MS remote.

The next two modes, Twilight and Nighttime, function in a similar way, allowing the artificial light to adjust to different levels based on the surroundings. While primarily for use in outdoor luminaires, these modes are available for use in areas with a wide range of natural light, including atriums, day lit stairwells, and rooms with large or continuous windows. The Twilight mode is active when the sensor detects 50-100 lux in the off position, and has a 300 lux default light balancing target. The Nighttime mode is active when the sensor detects less than 50 lux, and has a 250 lux default light balancing target. Like the Daytime mode, there are separate settings for Twilight Occupied ("TO"), Twilight Unoccupied ("TU"), Nighttime Occupied ("NO") and Nighttime Unoccupied ("NU") which can be adjusted and set using the optional HHPRG-MS remote.

In addition to programming the sensor, the optional HHPRG-MS remote can be used for personal control to adjust the lighting temporarily override the functions of the sensor temporarily. The remote has raise/lower buttons to adjust the light level for special tasks, as well as a power button to turn the lights on or off. Unless the SET button and another function is selected, any changes made using these buttons will revert to the programmed settings after the sensor has detected no occupancy for its programmed time out, and turned off the lighting. The next time the sensor detects occupancy, it will revert to its programmed settings for count-down timer and light balancing.

Coverage**Side View****Recommended Mounting Height 8-12 ft.****Optional Remote Control****HHPRG-MS Remote**

**Job Name:**MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER**Catalog Number:**22CZ-LD4-29-UNV-EL14W-L840-
CD1-U

Notes:

Type:**R1E**

ILS16-13413

Metalux**DESCRIPTION**

Cruze LED is a premium grade specification lensed troffer series. This innovative, high quality luminaire is dedicated to the latest solid state lighting and driver technology for optimal performance and energy efficiency. The Cruze is compatible with all of today's popular ceiling systems and is available with a number of options and accessories for application versatility.

The Cruze series features efficiency, quality and performance. The series is an excellent choice for commercial office spaces, schools, hospitals or retail merchandising areas.

SPECIFICATION FEATURES**Construction**

Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners and unibody endplate for added strength. Side flanges are hemmed. Innovative design provides superior lens brightness uniformity and visual comfort. Unibody endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided.

Controls

The Cruze LED is Powered by Fifth Light, with a standard 0-10V continuous dimming driver that works with any 0-10V control/dimmer. Combine with energy saving products like occupancy sensors, daylighting controls and lighting relay panels to maximize energy savings. In addition, the Cruze can include a factory-installed integrated sensor system for occupancy and daylight dimming control and manual control from an optional handheld remote. Or, specify the Digital Addressable Lighting Interface (DALI) drivers, dimmable down to 10%, for use with Fifth Light controls. See ordering information for details on all three options.

Electrical

Long-Life LED system coupled with electrical driver to deliver optimal performance. LED's available in 3000K, 3500K, 4000K or 5000K with a CRI ≥ 85 . Projected life is 60,000 hours at 83% lumen output. cULus listed. Electronic drivers are available for 120-277V applications.

Emergency Battery Pack Option

Optional 120v-277v integral emergency battery pack is available in 7-watts or 14-watts to meet critical life-safety lighting requirements. The 90-minute batteries provide constant power to the LED system, ensuring code-compliance. A test switch/indicator button can be tested safely from the ground using a laser pointer, while the patented EZ Key prevents accidental discharge of the battery during construction. See ordering information for details.

Finish

Multistage, iron phosphate pretreatment ensures maximum bonding and rust inhibition. Housing finished with 90% reflective white enamel for superior performance.

Hinging/Latching

Positive cam action steel latches with baked white enamel finish. Safety-lock T-hinges allow hinging and latching either side. Door assembly hinges down for easy access from below.

Frame/Sheilding

Die formed, heavy gauge, flat steel door with reinforced mitered corners and painted after fabrication, baked matte white enamel finish. Positive light seals. Acrylic frosted lens.

Compliance

Modules are UL recognized components and indoor luminaires are cULus listed for 25°C ambient environments, RoHS compliant, and LED modules comply with IESNA LM-79 and LM-80 standards. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.

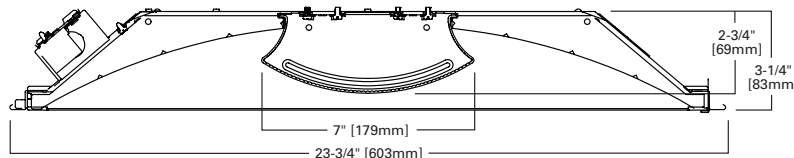
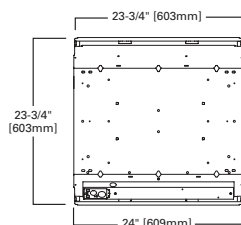
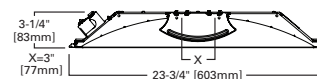
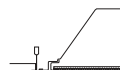
Warranty

Five year warranty.

**22CZ
LED****2' X 2' TROFFER LED
MODULE**

Specification Grade Troffer

powered by
fifthlight
technology

**MOUNTING DATA****LAMP CONFIGURATIONS****CEILING COMPATIBILITY****G**
Grid/Lay-in
Standard**G**
Concealed T**G**
Slot Grid**Ceiling
Type**Exposed Grid
Concealed T
Slot Grid
Flange**Trim
Type**Standard
Standard
Standard
***CERTIFICATION DATA**

cULus - 1598
Damp Location Listed
IC Rated
LM79/LM80 Compliant
ROHS Compliant
DesignLights Consortium® Qualified
NOM Compliant

*See Drywall Frame Kit Accessory in
Ordering Information Section

LINEAR DISCONNECT

Safe and convenient means of
disconnecting power



EATON
Powering Business Worldwide

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**Job Name:**

MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER

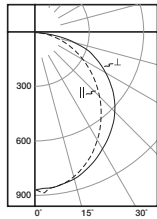
Catalog Number:

22CZ-LD4-29-UNV-EL14W-L840-
CD1-U

Notes:

Type:**R1E**

ILS16-13413

22CZ LED**PHOTOMETRICS****22CZ-LD4-24-UNV-L835-CD1-U**

Electronic Driver
Linear LED 3500K

Spacing criterion:
(H) 1.2 x mounting
height, (L) 1.3 x
mounting height

Lumens: 2417

Input Watts: 22.6W

Efficacy: 106.9 lm/W

Test Report:

22CZ-LD4-24-UNV-
L835-CD1-U.IES

Candlepower

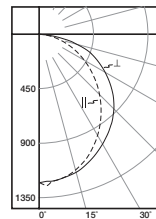
Angle	Along H	45°	Across L
0	861	861	861
5	857	868	855
10	842	844	843
15	815	821	828
20	776	788	801
25	731	747	770
30	676	700	733
35	618	648	697
40	557	595	657
45	494	539	612
50	429	482	561
55	365	426	503
60	301	369	443
65	240	310	381
70	181	251	319
75	124	190	228
80	73	118	137
85	31	45	43
90	0	0	0

Coefficients of Utilization

rc rw RCR	Effective floor cavity reflectance															20%										0 %
	80%					70%					50%					30%					10%					
	70	50	30	10	0	70	50	30	10	0	50	30	10	0	50	30	10	0	50	30	10	0				
0	119	119	119	119	116	116	116	116	111	111	111	111	111	106	106	106	102	102	102	100	100	100	100			
1	108	104	99	95	106	101	97	94	97	94	91	93	90	88	89	87	85	83	83	83	83	83	83			
2	98	90	83	77	96	88	82	76	84	79	74	81	77	73	78	74	71	69	69	69	69	69	69			
3	90	79	70	64	87	77	69	63	74	68	62	71	66	61	69	64	60	58	58	58	58	58	58			
4	82	70	61	54	80	68	60	54	66	59	53	64	57	52	61	56	51	49	49	49	49	49	49			
5	75	62	53	46	73	61	53	46	59	51	46	57	50	45	55	49	45	42	42	42	42	42	42			
6	70	56	47	41	68	55	47	40	53	46	40	52	45	40	50	44	39	37	37	37	37	37	37			
7	65	51	42	36	63	50	42	36	48	41	35	47	40	35	46	40	35	33	33	33	33	33	33			
8	60	46	38	32	58	46	38	32	44	37	32	43	36	31	42	36	31	29	29	29	29	29	29			
9	56	43	34	29	55	42	34	29	41	34	29	40	33	28	39	33	28	26	26	26	26	26	26			
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	26	24	24	24	24	24	24			

Zonal Lumen Summary

Zone	Lumens	% Fixture
0-30	658	27.2
0-40	1065	44.1
0-60	1869	77.3
0-90	2417	100.0
0-180	2417	100.0

**22CZ-LD4-34-UNV-L835-CD1-U**

Electronic Driver
Linear LED 3500K

Spacing criterion:
(H) 1.2 x mounting
height, (L) 1.3 x
mounting height

Lumens: 3420

Input Watts: 34.5W

Efficacy: 99.1 lm/W

Test Report:

22CZ-LD4-34-UNV-
L835-CD1-U.IES

Candlepower


Angle	Along H	45°	Across L
0	1219	1219	1219
5	1214	1229	1211
10	1192	1194	1194
15	1153	1162	1173
20	1100	1116	1135
25	1032	1057	1090
30	957	990	1040
35	875	918	987
40	788	842	931
45	699	763	866
50	608	684	793
55	516	604	710
60	427	522	624
65	339	439	536
70	255	355	448
75	175	269	321
80	102	166	190
85	43	63	58
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance																	20%															
rc	80%					70%					50%					30%					10%					0%						
	70	50	30	10	0	70	50	30	10	0	70	50	30	10	0	70	50	30	10	0	70	50	30	10	0	70	50	30	10	0		
RCR																																
0	119	119	119	119	119	116	116	116	116	116	111	111	111	111	111	106	106	106	106	106	102	102	102	102	100	100	100	100	100	100	100	
1	108	104	99	95	106	101	97	94	97	94	91	93	90	88	89	87	85	83	83	83	83	83	83	83	83	83	83	83	83	83	83	
2	98	90	83	77	96	88	82	76	84	79	74	81	77	73	78	74	71	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
3	90	79	70	64	87	77	70	63	74	68	62	71	66	61	69	64	60	58	58	58	58	58	58	58	58	58	58	58	58	58	58	
4	82	70	61	54	80	68	60	54	66	59	53	64	57	52	61	56	51	49	49	49	49	49	49	49	49	49	49	49	49	49	49	
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6	70	56	47	41	68	55	47	40	53	46	40	52	45	40	50	44	39	37	37	37	37	37	37	37	37	37	37	37	37	37	37	
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9	56	43	34	29	55	42	34	29	41	34	29	40	33	28	39	33	28	26	26	26	26	26	26	26	26	26	26	26	26	26	26	
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	26	24	24	24	24	24	24	24	24	24	24	24	24	24	24	

Zonal Lumen Summary

Zone	Lumens	% Fixture
0-30	931	27.2
0-40	1508	44.1
0-60	2645	77.3
0-90	3420	100.0
0-180	3420	100.0

Submitted by Innovative Lighting Solutions		Catalog Number: 22CZ-LD4-29-UNV-EL14W-L840-CD1-U Notes:	Type: R1E ILS16-13413
	Job Name: MIAMI GUNLOCK FAMILY ATHLETE PERFORMANCE CENTER		

22CZ LED

ENERGY AND PERFORMANCE DATA BY CATALOG NUMBER

Stock or MTO*	Catalog Logic (Ribbed)	Delivered Lumens	Watts	Efficacy (lm/W)
MTO	22CZ-LD4-20-UNV-L830-CD1-U	1888	18.9	100
MTO	22CZ-LD4-20-UNV-L835-CD1-U	2056	18.9	108
MTO	22CZ-LD4-20-UNV-L840-CD1-U	2166	18.9	114
MTO	22CZ-LD4-20-UNV-L850-CD1-U	2261	18.9	119
MTO	22CZ-LD4-24-UNV-L830-CD1-U	2220	22.6	98
Stock	22CZ-LD4-24-UNV-L835-CD1-U	2417	22.6	107
Stock	22CZ-LD4-24-UNV-L840-CD1-U	2547	22.6	113
MTO	22CZ-LD4-24-UNV-L850-CD1-U	2658	22.6	118
MTO	22CZ-LD4-29-UNV-L830-CD1-U	2682	28.2	95
MTO	22CZ-LD4-29-UNV-L835-CD1-U	2920	28.2	103
MTO	22CZ-LD4-29-UNV-L840-CD1-U	3077	28.2	109
MTO	22CZ-LD4-29-UNV-L850-CD1-U	3211	28.2	114
MTO	22CZ-LD4-34-UNV-L830-CD1-U	3141	34.4	91
Stock	22CZ-LD4-34-UNV-L835-CD1-U	3420	34.4	99
Stock	22CZ-LD4-34-UNV-L840-CD1-U	3603	34.4	105
MTO	22CZ-LD4-34-UNV-L850-CD1-U	3761	34.4	109
MTO	22CZ-LD4-39-UNV-L830-CD1-U	3589	41.3	87
MTO	22CZ-LD4-39-UNV-L835-CD1-U	3908	41.3	95
MTO	22CZ-LD4-39-UNV-L840-CD1-U	4118	41.3	100
MTO	22CZ-LD4-39-UNV-L850-CD1-U	4298	41.3	104
MTO	22CZ-LD4-44-UNV-L830-CD1-U	4035	49.2	82
MTO	22CZ-LD4-44-UNV-L835-CD1-U	4394	49.2	89
MTO	22CZ-LD4-44-UNV-L840-CD1-U	4630	49.2	94
MTO	22CZ-LD4-44-UNV-L850-CD1-U	4832	49.2	98

*Made to order (MTO) requires a typical four week lead time.

Stock or MTO*	Catalog Logic (Smooth Lens)	Delivered Lumens	Watts	Efficacy (lm/W)
MTO	22CZ-LD4-20-S-UNV-L830-CD1-U	1912	18.9	101
MTO	22CZ-LD4-20-S-UNV-L835-CD1-U	2082	18.9	110
MTO	22CZ-LD4-20-S-UNV-L840-CD1-U	2194	18.9	116
MTO	22CZ-LD4-20-S-UNV-L850-CD1-U	2290	18.9	121
MTO	22CZ-LD4-24-S-UNV-L830-CD1-U	2248	22.6	99
MTO	22CZ-LD4-24-S-UNV-L835-CD1-U	2448	22.6	108
MTO	22CZ-LD4-24-S-UNV-L840-CD1-U	2579	22.6	114
MTO	22CZ-LD4-24-S-UNV-L850-CD1-U	2692	22.6	119
MTO	22CZ-LD4-29-S-UNV-L830-CD1-U	2715	28.2	96
MTO	22CZ-LD4-29-S-UNV-L835-CD1-U	2957	28.2	105
MTO	22CZ-LD4-29-S-UNV-L840-CD1-U	3116	28.2	110
MTO	22CZ-LD4-29-S-UNV-L850-CD1-U	3252	28.2	115
MTO	22CZ-LD4-34-S-UNV-L830-CD1-U	3180	34.4	92
MTO	22CZ-LD4-34-S-UNV-L835-CD1-U	3463	34.4	100
MTO	22CZ-LD4-34-S-UNV-L840-CD1-U	3649	34.4	106
MTO	22CZ-LD4-34-S-UNV-L850-CD1-U	3808	34.4	110
MTO	22CZ-LD4-39-S-UNV-L830-CD1-U	3634	41.3	88
MTO	22CZ-LD4-39-S-UNV-L835-CD1-U	3957	41.3	96
MTO	22CZ-LD4-39-S-UNV-L840-CD1-U	4170	41.3	101
MTO	22CZ-LD4-39-S-UNV-L850-CD1-U	4352	41.3	105
MTO	22CZ-LD4-44-S-UNV-L830-CD1-U	4086	49.2	83
MTO	22CZ-LD4-44-S-UNV-L835-CD1-U	4450	49.2	90
MTO	22CZ-LD4-44-S-UNV-L840-CD1-U	4688	49.2	95
MTO	22CZ-LD4-44-S-UNV-L850-CD1-U	4893	49.2	99

*Made to order (MTO) requires a typical four week lead time.

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (60,000 hours)	Theoretical L70 (Hours)
25°C	> 83%	> 117,000

**Job Name:**MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER**Catalog Number:**22CZ-LD4-29-UNV-EL14W-L840-
CD1-U

Notes:

Type:**R1E**

ILS16-13413

22CZ LED**ORDERING INFORMATION**

SAMPLE NUMBER: 22CZ-LD4-34-UNV-L835-CD1-U

Rating Blank= Standard ATW-SW4= Chicago Rated	Lamp Type LD4=LED 4.0	Voltage⁽²⁾ 347V=347 Volt UNV=Universal Voltage 120-277	Driver Type CD=0-10V Dimming Driver SD=Step-Dim Driver⁽⁸⁾ 5LTD=Fifth Light DALI Driver (10% - 100% Dimming) ^{(4), (9)}	Number of Drivers 1=1 Driver
Series⁽¹¹⁾ 22CZ=2x2 Cruze Series	Stock Lumen Output 24=2400 lumen 34=3400 lumen	Options Emergency EL7W=7-watt, 120V-277V emergency battery pack installed ⁽⁸⁾ EL14W=14-watt 120V-277V emergency battery pack installed ⁽⁸⁾		
Door Frame Standard=Flat White Steel Door (Leave Blank)	MTO Lumen Output⁽⁷⁾ 20=2000 lumen 29=2900 lumen 39=3900 lumen 44=4400 lumen	CCT L830=3000K L835=3500K L840=4000K L850=5000K		
	Shielding Blank=Ribbed Frosted Acrylic Lens (standard) S=Smooth Frosted Acrylic Lens SQP=Smooth Lens with Square Pattern Insert RDP=Smooth Lens with Round Pattern Insert	Flex⁽⁶⁾ Multiple Configurations Available		
Integrated Solutions S=Integrated Sensor	Occupancy Technology P=Passive Infrared	Sensing Technology D=Dimming Daylight Harvesting (Closed Loop)	Coverage Pattern 1= ~144 Square Feet	Packaging U=Unit Pack PALC=Job Pack, in carton
Control Type DV=Dual Band⁽¹⁰⁾ V=Analog (0-10V) Output for Local Control⁽⁸⁾				

ACCESSORIES

EQ-CLIP-U=T-BAR Safety Earthquake Clips⁽¹⁾
 DF-22-W=2' x 2' Drywall Frame Kit
 SK-22-WS=2' x 2' Shallow Surface Mount Kit
 SK-22-WT=2' x 2' Tall Surface Mount Kit
 DF10P-C=Decorator Dimmer, 0-10V
 SF10P-C=Decorator Slide Dimmer, 0-10V
 HHPRG-MS=Programming Remote for Integrated Sensor

NOTES: ⁽¹⁾An EQ Grid Clip is recommended for all 9/16" ceiling systems. Four required per fixture. ⁽²⁾Products also available in non-US voltages and frequencies for international markets. ⁽³⁾With integral test switch/indicator/laser test. For approximate delivered lumens multiply the lumens per watt of the desired fixture by the wattage of the emergency battery pack (100 lm/W x 7=700 lumens). IES-format photometry for luminaire under emergency operation available. ⁽⁴⁾Must be used in conjunction with a DALI control system. For a complete listing of Fifth Light Technology products and other solutions from Cooper Controls, visit www.coopercontrol.com. ⁽⁵⁾Integral sensor works only with "CD" driver and is factory prewired to the driver for stand-alone control. ⁽⁶⁾Flex does not include dimming leads. Control leads provided by others. ⁽⁷⁾Made-to-order (MTO) requires a typical four week leadtime. ⁽⁸⁾Step dim driver option is not available with 2000, 2400 and 2900 lumen packages. ⁽⁹⁾Fifth Light (5LTD) driver option is not available with 2000, 2400 and 2900 lumen packages. ⁽¹⁰⁾Provides blank band on opposite side from sensor band to provide symmetric appearance. ⁽¹¹⁾DesignLights Consortium® Qualified (all lumen packages). Refer to www.designlights.org Qualified Products List under Family Models for details.

Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

QUICK SHIP SKUS

SAMPLE NUMBER: 22CZ34S40

22CZ		S	
Series 22CZ	Lumens 24=2400 34=3400	Shielding S=Smooth Frosted Acrylic Lens	CCT 35=3500K 40=4000K

NOTES: Options are not available with these SKUs. Refer to standard SKU ordering information to add options. Voltage is 120-277V. Driver type is 0-10V dimming. Lead-time is 10 days. Must be ordered in pallet quantities only (48 per pallet).

SHIPPING DATA

Catalog No.	Wt.
22CZ-LD4-27	12.5 lbs.
22CZ-LD4-36	12.5 lbs.

**Job Name:**MIAMI GUNLOCK FAMILY ATHLETE
PERFORMANCE CENTER**Catalog Number:**22CZ-LD4-29-UNV-EL14W-L840-
CD1-U**Notes:****Type:****R1E**

ILS16-13413

22CZ LED**INTEGRATED SENSOR****Description**

This innovative luminaire-integrated sensor control system is optimized for code-compliant occupancy detection and daylight harvesting – all from within the foot print of Metalux's award-winning recessed ambient luminaires.

No New Wires

An in-place fixture retrofit is all that's needed to meet most energy codes in commercial spaces. The sensor system is factory wired to the luminaire, switching on or off based on occupancy, and dimming the light when enough daylight is available.

Sophisticated lighting control without commissioning

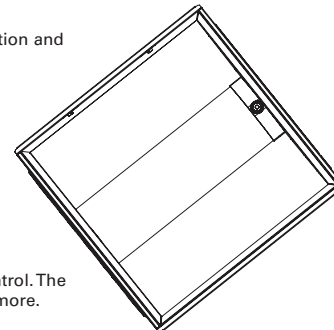
The luminaire-integrated sensor system offers out-of-the-box operation using thoughtful default settings.

Flexibility and Individual Control

When the application demands more, the sensor system has the option to make changes using a remote control. The remote allows changes from the default settings for occupancy, target light level, preset lighting levels, and more.

Cost-effective, Stand-alone Operation

With a single product to mount and a single electrical connection to make, the Metalux luminaire with an integrated sensor system saves money on the total installed cost when occupancy or daylight harvesting controls are needed. The integrated sensor system works stand-alone, without the need for additional switches and dimmers. When manual-on, manual dimming or other code-required control schemes are needed, please see the comprehensive offering of Greengate and Fifth Light solutions from Cooper Controls at www.coopercontrol.com.

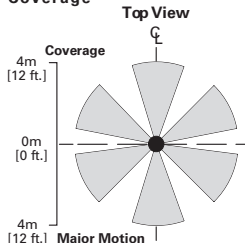
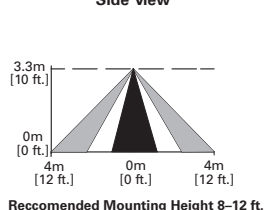
**Metalux Integrated Sensor Sequence of Operation**

The occupancy sensing portion of the sensor uses Passive Infrared (PIR) technology with Auto-on/Auto-off operation. The small lens in the center of the sensor directs the view of a passive infrared occupancy detector to sense occupants moving through the room. To trigger the light on, an occupant must cross at least two passive infrared beams. When motion in the coverage area ceases, the sensor logic concludes the room is unoccupied, and begins a count-down timer. By default, the timer is factory-set to 20 minutes, and can be adjusted to 5, 10, 15 and 20 minutes using the optional remote control, model number HHPRG-MS. Any motion detected during the count-down timer will cause the light to remain on and resets the timer. When motion is detected, a red LED will blink. In addition to the default on/off functionality, the sensor has an Energy Saver feature, where the light can be set to dim to a preset level after the sensor detects no occupancy for half of the count-down timer, when the timer is complete the lighting will change to the unoccupied setting. The Energy Saver feature works when the count-down timer is set to at least 15 minutes, and the preset level and feature are configured using the optional remote control. See the Sensor Programming Guide that comes with the HHPRG-MS remote for details on this feature. The sensitivity of the occupancy detection can be adjusted, using the HHPRG-MS remote. By default, the sensor operates at the full detection range shown on the coverage pattern diagram. Using the "LO" button on the HHPRG-MS remote, reduces the sensor detection range by 50%. Full coverage can be restored at any time by pressing the "HI" button on the remote. The red LED indicator will blink repeatedly to confirm any programming change.

The dimming daylight harvesting portion of the sensor uses a small photo sensor located next to the occupancy sensing lens. The sensor continuously measures the available light in the room, even when the fixture is turned off. This allows sensor to operate in one of three daylighting modes, where the artificial light from the paired Metalux luminaire can adjust the light based on the amount of ambient light from surrounding natural and artificial light sources. Since the sensor measures light from its luminaire along with other light sources, this sensor follows a closed-loop dimming daylight harvesting style. The first mode, Daytime, is active when the sensor detects light of at least 100 lux in the room. In Daytime mode, when the light is turned on after detecting occupancy, the sensor will begin balancing the luminaire light level relative to the total available light it measures. The default light balancing target in daytime mode is 500 lux. This level can be adjusted higher or lower using the optional HHPRG-MS remote, and pressing "SET" and then the "DO" (Daytime Occupied) button to store the new light level. Similarly, the Daytime Unoccupied, "DU" has a default of level of 0 lux, or off, but can be adjusted higher to prevent the lights from turning off completely when unoccupied. More details on this function are found in the Sensor Programming Guide for the HHPRG-MS remote.

The next two modes, Twilight and Nighttime, function in a similar way, allowing the artificial light to adjust to different levels based on the surroundings. While primarily for use in outdoor luminaires, these modes are available for use in areas with a wide range of natural light, including atriums, day lit stairwells, and rooms with large or continuous windows. The Twilight mode is active when the sensor detects 50-100 lux in the off position, and has a 300 lux default light balancing target. The Nighttime mode is active when the sensor detects less than 50 lux, and has a 250 lux default light balancing target. Like the Daytime mode, there are separate settings for Twilight Occupied ("TO"), Twilight Unoccupied ("TU"), Nighttime Occupied ("NO") and Nighttime Unoccupied ("NU") which can be adjusted and set using the optional HHPRG-MS remote.

In addition to programming the sensor, the optional HHPRG-MS remote can be used for personal control to adjust the lighting temporarily override the functions of the sensor temporarily. The remote has raise/lower buttons to adjust the light level for special tasks, as well as a power button to turn the lights on or off. Unless the SET button and another function is selected, any changes made using these buttons will revert to the programmed settings after the sensor has detected no occupancy for its programmed time out, and turned off the lighting. The next time the sensor detects occupancy, it will revert to its programmed settings for count-down timer and light balancing.

Coverage**Side View****Optional Remote Control****HHPRG-MS Remote**

**Job Name:**Miami U - Gunlock Family Athletic
Performance Center - LEE16-25610-8**Catalog Number:**

LC6LED277DM 6LCLED640K8WT

Notes:**Type:****R2**

LEE16-25610

**6" LED Downlight****LC6LED**120 or 277V
0-10V Dimming Option**APPLICATIONS:**

LiteFrame Commercial (LC6LED) is a 6" commercial grade LED downlight with available outputs between 1000-1800 lumens. This is suitable to replace most CFL downlighting applications, while realizing substantial energy and maintenance savings. Rated for a minimum of 50,000 hours life (70% lumen maintenance) with ambient plenum temperatures up to 35°C (LED5), 28°C (LED6), 25°C (LED7). Free Air Flow around fixture is required for optimal life performance. This product is not recommended for use with 3rd party "FIREHAT" or insulation barriers.

HOUSING:

One-piece 22 gauge non-corrosive steel platform. Pre-wired J-box with snap-on cover for easy access. Snap-in connection from driver compartment allows easy installation of light engine/trim assembly and can be upgraded to accommodate technology improvements. Approved for 8 (4 in/4 out) No. 12 AWG conductors rated for 90°C through wiring.

REFLECTOR:

High purity aluminum, Alzak, iridescence suppressed, semi-diffuse reflector. Self-trim standard. Painted white self-trim (WT) available as option.

LED LIGHT ENGINE:

The LC6LED uses either 36, 48, 60 mid power Nichia LEDs, specifically mixed to provide a minimum of 80 CRI with 3 SDCM color consistency. The use of multiple mid power LEDs allows for optimal thermal management by effectively spreading the heat over a larger area and eliminating hot spots on the LEDs. A diffuse, yet highly transmissive lens obscures the view of the LEDs and creates a smooth, even look from below. The light engine is available in multiple Kelvin temperatures and the system is designed to provide optimal life and lumen maintenance (50,000 hours at 70% lumen maintenance). The reflector/light engine assembly is mechanically retained to the housing.

LED DRIVER:

The LC6LED utilizes a 25 watt constant current Thomas Research Products LED driver. This same driver is capable of running all three different lumen outputs, resulting in a reduction of housing skus and simplified specification. The driver is UL8750 and Class II compliant.

DIMMING:

A 0-10V dimming option is available (DM), providing flicker-free dimming down to 10%. See list of compatible dimmers on page (4). For the sizing of the control circuit, the dimming circuit may require up to 2mA of sink current.

INSTALLATION:

Light commercial bar hangers included. Universal adjustable mounting brackets also accept 1/2" EMT conduit or 1 1/2" or 3/4" lathing channel (by others) or Prescolite 24" bar hangers (B24 or B6). Wall wash orientation may be field adjusted in 90° increments to housing.

CERTIFICATIONS:

CSA certified to US and Canadian safety standards. Suitable for wet locations (EM & WW damp location). ENERGY STAR qualified on standard downlight.

WARRANTY:

5 year warranty. See www.prescolite.com for details.

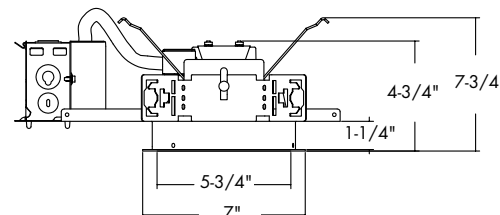
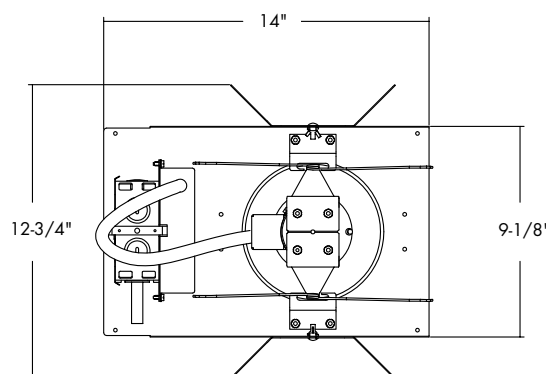
DATE: TYPE:

FIRM NAME:

PROJECT:

LiteFrame

Ceiling Cutout: 6 1/4"
Maximum Ceiling Thickness 1 1/4"
For conversion to millimeters,
multiply inches by 25.4
Not to Scale

**6LCLED 5 & 6**

*See page 4 for 6LCLED 7 line art

*See page 4 for 6LCLEDEM line art

Order housing, reflector, and accessories separately

CATALOG NUMBER:

EXAMPLE: LC6LED120DM - 6LCLED535K8WT

HOUSING	VOLTAGE	HOUSING OPTIONS	TRIM APERTURE	OUTPUT	LED COLOR TEMP	CRI	REFLECTOR FINISH	REFLECTOR OPTIONS	ACCESSORIES
<input type="checkbox"/> LC6LED 6" LED Housing	<input type="checkbox"/> 120 120V <input type="checkbox"/> 277 277V <input type="checkbox"/> 347 347V	<input type="checkbox"/> Blank No Dimming <input type="checkbox"/> DM 0-10V dimming to 10% <input type="checkbox"/> DM1 ¹ 0-10V dimming to 1% <input type="checkbox"/> EM ^{2,5} Bodine BSL310C- DF Battery Pack with integral test switch and indicator light <input type="checkbox"/> EMR Bodine BSL310C Battery Pack with remote test switch and indicator light <input type="checkbox"/> CP ^{4,7} Chicago Plenum-	<input type="checkbox"/> 6LCLED 6" Open Reflector/ Light Engine Assembly	<input type="checkbox"/> 5 Nominal 1000 Delivered Lumens <input type="checkbox"/> 6 Nominal 1400 Lumens Delivered <input type="checkbox"/> 7 Nominal 1800 Lumens Delivered	<input type="checkbox"/> 27K 2700 Kelvin <input type="checkbox"/> 30K 3000 Kelvin <input type="checkbox"/> 35K 3500 Kelvin <input type="checkbox"/> 40K 4000 Kelvin	<input type="checkbox"/> 8 80+ CRI	<input type="checkbox"/> Blank Clear Alzak, Semi- Diffuse REFLECTOR COLOR <input type="checkbox"/> WH ¹ White Paint	<input type="checkbox"/> WT White Trim EM ^{2,5} Pre-punched reflector to accept integral test switch <input type="checkbox"/> WF Wide Flange <input type="checkbox"/> WW ^{5,6} Wall Wash <input type="checkbox"/> CP ^{4,7} Chicago Plenum	<input type="checkbox"/> B24 Set of two(2) 24" bar hangers for T-bar ceilings <input type="checkbox"/> B6 Set of two (2) bar hangers for ceiling joist up to 24" centers <input type="checkbox"/> LG15 ^{2,4} Dual-Lite 100VA Surface Wall Mount LiteGear Emergency Lighting Inverter <input type="checkbox"/> LG1R ^{2,4} Dual-Lite 100VA Recessed Wall Mount LiteGear Emergency Lighting Inverter <input type="checkbox"/> LG1T ^{2,4} Dual-Lite 100VA Recessed Ceiling T-Grid LiteGear Emergency Lighting Inverter <input type="checkbox"/> LG2S ^{2,4} Dual-Lite 250 VA Surface Wall Mount LiteGear Emergency Lighting Inverter <input type="checkbox"/> SCA6D Sloped ceiling adapter (see note on page 6)

¹ Requires WT option² See LC6LED and LiteGear Compatibility on page 3³ EM must be selected on both the housing and the trim, not compatible with WW trim⁴ Not compatible with EM or EMR⁵ Damp location only⁶ Not compatible with EM (EMR is compatible)⁷ CP must be selected on both the housing and the trim, not compatible with WW trim⁸ Not compatible with CP

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In a continuing effort to offer the best product possible we reserve the right to change, without notice, specifications or materials that in our opinion will not alter the function of the product.

Web: www.prescolite.com • Tech Support: (888) 777-4832

LFR-LED-013

**Job Name:**Miami U - Gunlock Family Athletic
Performance Center - LEE16-25610-8**Catalog Number:**

LC6LED277DM 6LCLED640K8WT

Type:**R2**

Notes:

LEE16-25610

PHOTOMETRIC DATA

LiteFrame - 6" LC6LED Downlight

DRIVER DATA	6LCLED5xxx	6LCLED6xxx	6LCLED7xxx
Input Voltage	120, 277V	120, 277V	120, 277V
Input Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Input Current	0.142 (120v) 0.061 (277v)	0.179 (120v) 0.078 (277v)	0.217 (120v) 0.094 (277v)
Input Power	17.0W	21.5W	26.0W
Constant Current Output	700mA	700mA	700mA
Power Factor	≥0.90	≥0.90	≥0.90
THD	<25%	<20%	<20%
EMI Filtering	FCC 47CFR Part 15, Class A	FCC 47CFR Part 15, Class A	FCC 47CFR Part 15, Class A
Operating Temperature	-30°C to +35°C	-30°C to +28°C	-30°C to +25°C
Dimming	0-10V	0-10V	0-10V

Over-voltage, over-current, short-circuit protected

When operating in EM mode, the fixture will deliver approximately 30% of the published full lumen output.

Lumen Multiplier Table

Photometrics for the LC6LED are published below at a nominal 3500 Kelvin temperature. This table may be used to approximate the lumen values at different Kelvin temperatures. Power consumption would stay the same.

5000 Kelvin	1.14
4000 Kelvin	1.03
3500 Kelvin	1.00
3000 Kelvin	1.00
2700 Kelvin	0.91

LC6LED120 6LCLED535K8

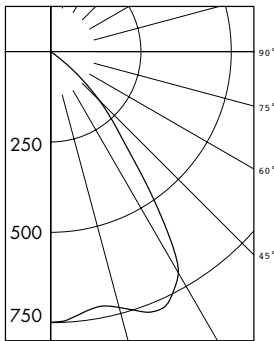
LED Light Engine: 3500K, 80+ CRI

System Wattage: 17.0W

Fixture Delivered Lumens: 1107

Fixture Efficacy: 65.1

Spacing Criteria: 1.1



Test No. 9439

Tested at 25°C Ambient in accordance to IESNA LM-79-2008

CANDELA DISTRIBUTION

DEG	CANDELA
0	749
5	737
15	733
25	768
35	494
45	190
55	10
65	3
75	1
85	0
90	0

ZONAL LUMEN SUMMARY

ZONE	LUMENS
0-60	1104
0-90	1107
90-180	0
0-180	1107

**LUMINANCE DATA IN CANDELA/
SQ. METER**

Angle in Vertical	Average - 0°
45°	16033
55°	1040
65°	424
75°	231
85°	0

COEFFICIENTS OF UTILIZATION Zonal Cavity Method

Room Cavity Ratio	% Effective Ceiling Cavity Reflectance																			
	80%				70%				50%				30%				10%			
	20% Effective Floor Cavity Reflectance																			
	% Wall Reflectance																			
	70	50	30	10	70	50	30	10	70	50	30	10	70	50	30	10	70	50	30	10
1	113	110	107	105	110	108	105	103	104	102	100	100	98	97	96	95	94	93	92	91
2	107	101	97	93	104	99	95	92	96	93	90	88	90	88	86	84	81	79	77	75
3	100	93	88	83	98	92	87	83	89	85	81	87	83	80	84	81	79	77	75	73
4	94	86	80	75	93	85	79	75	83	78	74	81	76	73	79	75	72	70	68	66
5	89	80	73	68	87	79	72	68	77	71	67	75	70	67	73	69	66	64	62	60
6	84	74	67	62	82	73	67	62	71	66	62	70	65	61	68	64	61	59	57	55
7	79	68	62	57	77	68	61	57	66	61	56	65	60	56	64	59	56	54	52	50
8	74	64	57	52	73	63	57	52	62	56	52	61	56	52	60	55	52	50	48	46
9	70	59	53	48	69	59	53	48	58	52	48	57	52	48	56	51	48	46	44	42
10	66	55	49	45	65	55	49	45	54	48	44	53	48	44	52	47	43	40	38	36

LC6LED120 6LCLED535K8

Test No. 9439

LC6LED120 6LCLED635K8

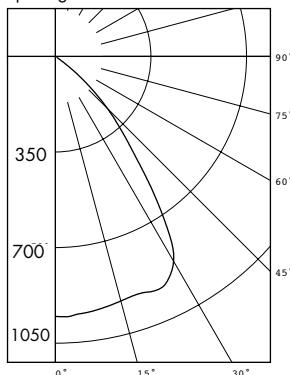
LED Light Engine: 3500K, 80+ CRI

System Wattage: 21.5W

Fixture Delivered Lumens: 1424

Fixture Efficacy: 66.2

Spacing Criteria: 1.1



Test No. 9440

Tested at 25°C Ambient in accordance to IESNA LM-79-2008

CANDELA DISTRIBUTION

DEG	CANDELA
0	952
5	947
15	927
25	931
35	653
45	270
55	16
65	3
75	1
85	0
90	0

ZONAL LUMEN SUMMARY

ZONE	LUMENS
0-60	1420
0-90	1424
90-180	0
0-180	1424

**LUMINANCE DATA IN CANDELA/
SQ. METER**

Angle in Vertical	Average - 0°
45°	22784
55°	1664
65°	424
75°	231
85°	0

COEFFICIENTS OF UTILIZATION Zonal Cavity Method

Room Cavity Ratio	% Effective Ceiling Cavity Reflectance																	
	80%		70%		50%		30%		10%									
	20% Effective Floor Cavity Reflectance																	
	% Wall Reflectance																	
	70	50	30	10	70	50	30	10	70	50	30	10	50	30	10	50	30	10
1	113	110	107	105	110	108	105	103	104	102	100	100	98	97	96	95	94	
2	106	101	97	93	104	99	95	92	96	93	90	93	90	88	90	88	86	
3	100	93	87	83	98	92	86	82	89	85	81	86	83	80	84	81	78	
4	94	86	79	75	92	84	79	74	82	77	73	80	76	72	78	75	72	
5	88	79	72	68	87	78	72	67	76	71	67	74	70	66	73	69	65	
6	83	73	66	62	82	72	66	61	71	65	61	69	64	60	68	63	60	
7	78	68	61	56	77	67	61	56	66	60	56	64	59	55	63	59	55	
8	74	63	56	52	72	62	56	52	61	55	51	60	55	51	59	54	51	
9	70	59	52	48	68	58	52	47	57	51	47	56	51	47	55	50	47	
10	65	55	48	44	64	54	48	44	53	48	44	52	47	44	52	47	43	

LC6LED120 6LCLED635K8

Test No. 9440

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**HUBBELL**
Lighting, Inc.

**Job Name:**Miami U - Gunlock Family Athletic
Performance Center - LEE16-25610-8**Catalog Number:**

LC6LED277DM 6LCLED640K8WT

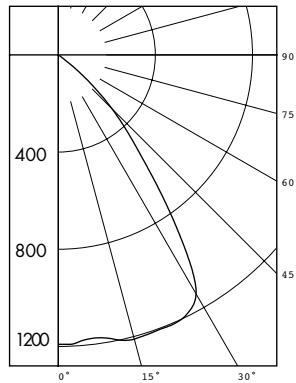
Notes:

Type:**R2**

LEE16-25610

PHOTOMETRIC DATA

LiteFrame - 6" LC6LED Downlight

LC6LED120 6LCLED735K8LED Light Engine: 3500K, 80+ CRI
System Wattage: 26.0W
Fixture Delivered Lumens: 1797
Fixture Efficacy: 69.1
Spacing Criteria: 1.1**CANDELA DISTRIBUTION**

DEG	CANDELA
0	1191
5	1179
15	1211
25	1201
35	823
45	313
55	20
65	4
75	1
85	0
90	0

Test No. 9441

Tested at 25°C Ambient in accordance to IESNA LM-79-2008

ZONAL LUMEN SUMMARY

ZONE	LUMENS
0-60	1791
0-90	1797
90-180	0
0-180	1797

LUMINANCE DATA IN CANDELA/SQ. METER

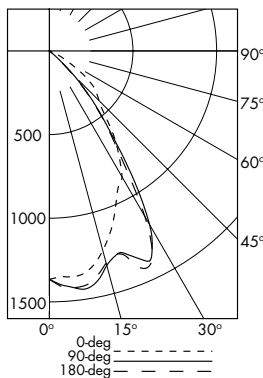
Angle in Vertical	Average - 0°
45°	26412
55°	2081
65°	565
75°	231
85°	0

COEFFICIENTS OF UTILIZATION Zonal Cavity Method

Room Cavity Ratio	% Effective Ceiling Cavity Reflectance													
	80%		70%		50%		30%		10%					
	20% Effective Floor Cavity Reflectance													
	% Wall Reflectance													
	70	50	30	10	70	50	30	10	50	30	10	50	30	10
1	113	110	107	105	110	108	105	103	104	102	100	98	97	95
2	107	101	97	93	104	99	95	92	96	93	90	89	87	85
3	100	93	88	83	98	92	87	83	89	85	81	80	78	76
4	94	86	80	75	93	85	79	75	83	78	74	73	71	69
5	89	79	73	68	87	78	72	68	77	71	67	70	67	65
6	84	74	67	62	82	73	66	62	71	66	61	65	61	58
7	79	68	62	57	77	68	61	57	66	60	56	60	56	53
8	74	63	57	52	73	63	57	52	62	56	51	55	50	47
9	69	57	51	46	67	57	51	46	56	50	45	49	44	41
10	65	49	43	38	63	53	47	42	51	45	40	44	39	36

LC6LED120 6LCLED735K8

Test No. 9441

LC6LED1206LCLED735K8 WWLED Light Engine: 3500K, 80+ CRI
System Wattage: 26.1W
Fixture Delivered Lumens: 1830
Fixture Efficacy: 70.1**CANDELA DISTRIBUTION**

DEG	0.0	90.0	180.0
0	1365	1365	1365
5	1356	1415	1420
15	1235	1327	1312
25	955	1388	1417
35	709	763	697
45	420	215	185
55	250	8	7
65	62	3	3
75	8	2	2
85	0	0	0
90	0	0	0

Test No. 15.00244

Tested at 25°C Ambient in accordance to IESNA LM-79-2008

LUMINANCE DATA IN CANDELA/SQ. METER

Angle in Vertical	0 DEG	90 DEG	180 DEG
45°	32550	16662	14337
55°	23885	764	669
65°	8039	389	389
75°	1694	423	423
85°	0	0	0

MULTIPLE UNITS									
1'	2'	3'	4'	5'	6'	7'	8'	9'	10'

**3' DISTANCE FIXTURE MOUNTED OUT FROM WALLS
FOOTCANDLE DISTRIBUTION ON WALL SURFACE**

DISTANCE FROM CEILING IN FEET	1	2	3	4	5	6	7	8	9
1	5	4	2	1	1	8	8	8	3
2	10	8	4	2	1	16	16	16	14
3	14	11	7	4	2	23	23	23	18
4	15	13	9	5	3	28	28	28	18
5	13	12	9	6	3	28	28	28	18
6	10	10	9	6	4	27	27	27	15
7	8	8	7	6	4	25	25	25	14
8	6	6	6	5	4	22	22	22	13
9	5	5	5	5	4	19	19	19	11

LC6LED120-6LCLED735K8 WW

Test No. 15.00244

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Lighting, Inc.

**Job Name:**Miami U - Gunlock Family Athletic
Performance Center - LEE16-25610-8**Catalog Number:**

LC6LED277DM 6LCLED640K8WT

Notes:**Type:****R2**

LEE16-25610

PHOTOMETRIC DATA

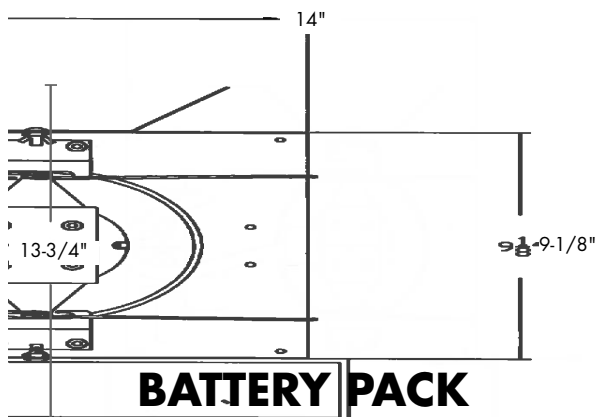
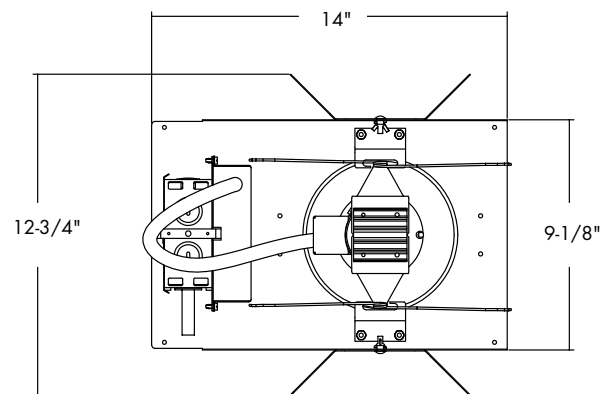
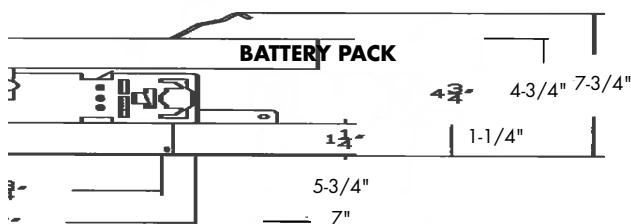
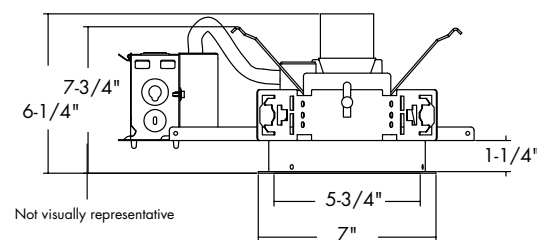
LiteFrame - 6" LC6LED Downlight

Dimming Compatibility Table

Dimming Ballast	Manufacturer	Web Link
DM/DM1	Lutron DTV	http://bit.ly/11jSvZg
DM/DM1	Leviton AWRMG-7xx, AWSMG-7xx, AWSMT-7xx	http://bit.ly/1BJn2R9

Central Inverters

For fixture full light output in back-up mode, Prescolite and Dual-lite have jointly tested the LiteFrame Commercial LED with the 100 (LG1) and 250 (LG2) VA LiteGear inverters. For more information on LiteGear go to http://www.dual-lite.com/resources/litegear_luminaire_loading_chart/

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**HUBBELL**
Lighting, Inc.

**Job Name:**Miami U - Gunlock Family Athletic
Performance Center - LEE16-25610-8**Catalog Number:**LC6LED277DMEM
6LCLED640K8WTEM

Notes:

Type:**R2E**

LEE16-25610

**6" LED Downlight****LC6LED**

120 or 277V

0-10V Dimming Option

APPLICATIONS:

LiteFrame Commercial (LC6LED) is a 6" commercial grade LED downlight with available outputs between 1000-1800 lumens. This is suitable to replace most CFL downlighting applications, while realizing substantial energy and maintenance savings. Rated for a minimum of 50,000 hours life (70% lumen maintenance) with ambient plenum temperatures up to 35°C (LED5), 28°C (LED6), 25°C (LED7). Free Air Flow around fixture is required for optimal life performance. This product is not recommended for use with 3rd party "FIREHAT" or insulation barriers.

HOUSING:

One-piece 22 gauge non-corrosive steel platform. Pre-wired J-box with snap-on cover for easy access. Snap-in connection from driver compartment allows easy installation of light engine/trim assembly and can be upgraded to accommodate technology improvements. Approved for 8 (4 in/4 out) No. 12 AWG conductors rated for 90°C through wiring.

REFLECTOR:

High purity aluminum, Alzak, iridescence suppressed, semi-diffuse reflector. Self-trim standard. Painted white self-trim (WT) available as option.

LED LIGHT ENGINE:

The LC6LED uses either 36, 48, 60 mid power Nichia LEDs, specifically mixed to provide a minimum of 80 CRI with 3 SDCM color consistency. The use of multiple mid power LEDs allows for optimal thermal management by effectively spreading the heat over a larger area and eliminating hot spots on the LEDs. A diffuse, yet highly transmissive lens obscures the view of the LEDs and creates a smooth, even look from below. The light engine is available in multiple Kelvin temperatures and the system is designed to provide optimal life and lumen maintenance (50,000 hours at 70% lumen maintenance). The reflector/light engine assembly is mechanically retained to the housing.

LED DRIVER:

The LC6LED utilizes a 25 watt constant current Thomas Research Products LED driver. This same driver is capable of running all three different lumen outputs, resulting in a reduction of housing skus and simplified specification. The driver is UL8750 and Class II compliant.

DIMMING:

A 0-10V dimming option is available (DM), providing flicker-free dimming down to 10%. See list of compatible dimmers on page (4). For the sizing of the control circuit, the dimming circuit may require up to 2mA of sink current.

INSTALLATION:

Light commercial bar hangers included. Universal adjustable mounting brackets also accept 1/2" EMT conduit or 1 1/2" or 3/4" lathing channel (by others) or Prescolite 24" bar hangers (B24 or B6). Wall wash orientation may be field adjusted in 90° increments to housing.

CERTIFICATIONS:

CSA certified to US and Canadian safety standards. Suitable for wet locations (EM & WW damp location). ENERGY STAR qualified on standard downlight.

WARRANTY:

5 year warranty. See www.prescolite.com for details.

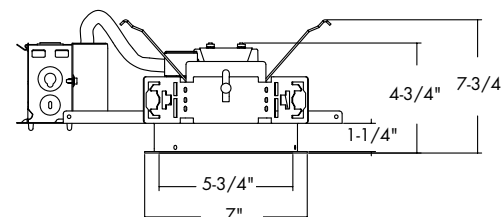
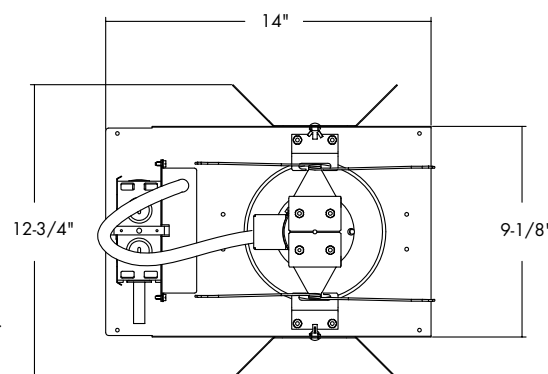
DATE: TYPE:

FIRM NAME:

PROJECT:

LiteFrame

Ceiling Cutout: 6 1/4"
Maximum Ceiling Thickness 1 1/4"
For conversion to millimeters,
multiply inches by 25.4
Not to Scale

**6LCLED 5 & 6**

*See page 4 for 6LCLED 7 line art

*See page 4 for 6LCLEDEM line art

Order housing, reflector, and accessories separately

CATALOG NUMBER:

EXAMPLE: LC6LED120DM - 6LCLED535K8WT

HOUSING	VOLTAGE	HOUSING OPTIONS	TRIM APERTURE	OUTPUT	LED COLOR TEMP	CRI	REFLECTOR FINISH	REFLECTOR OPTIONS	ACCESSORIES
<input type="checkbox"/> LC6LED 6" LED Housing	<input type="checkbox"/> 120 120V <input type="checkbox"/> 277 277V <input type="checkbox"/> 347 347V	<input type="checkbox"/> Blank No Dimming <input type="checkbox"/> DM 0-10V dimming to 10% <input type="checkbox"/> DM1 0-10V dimming to 1% <input type="checkbox"/> EM3.5 Bodine BSL310C- DF Battery Pack with integral test switch and indicator light <input type="checkbox"/> EMR Bodine BSL310C Battery Pack with remote test switch and indicator light <input type="checkbox"/> CP4.7 Chicago Plenum	<input type="checkbox"/> 6LCLED 6" Open Reflector/ Light Engine Assembly	<input type="checkbox"/> 5 Nominal 1000 Delivered Lumens <input type="checkbox"/> 6 Nominal 1400 Lumens Delivered <input type="checkbox"/> 7 Nominal 1800 Lumens Delivered	<input type="checkbox"/> 27K 2700 Kelvin <input type="checkbox"/> 30K 3000 Kelvin <input type="checkbox"/> 35K 3500 Kelvin <input type="checkbox"/> 40K 4000 Kelvin	<input type="checkbox"/> 8 80+ CRI	<input type="checkbox"/> Blank Clear Alzak, Semi- Diffuse REFLECTOR COLOR <input type="checkbox"/> WH White Paint	<input type="checkbox"/> WT White Trim <input type="checkbox"/> EM3.5 Pre-punched reflector to accept integral test switch <input type="checkbox"/> WF Wide Flange <input type="checkbox"/> WW5.6 Wall Wash <input type="checkbox"/> CP4.7 Chicago Plenum	<input type="checkbox"/> B24 Set of two(2) 24" bar hangers for T-bar ceilings <input type="checkbox"/> B6 Set of two (2) bar hangers for ceiling joist up to 24" centers <input type="checkbox"/> LG152.4 Dual-Lite 100VA Surface Wall Mount LiteGear Emergency Lighting Inverter <input type="checkbox"/> LG1R2.4 Dual-Lite 100VA Recessed Wall Mount LiteGear Emergency Lighting Inverter <input type="checkbox"/> LG1T2.4 Dual-Lite 100VA Recessed Ceiling T-Grid LiteGear Emergency Lighting Inverter <input type="checkbox"/> LG252.4 Dual-Lite 250 VA Surface Wall Mount LiteGear Emergency Lighting Inverter <input type="checkbox"/> SCA6D Sloped ceiling adapter (see note on page 6)

¹ Requires WT option² See LC6LED and LiteGear Compatibility on page 3³ EM must be selected on both the housing and the trim, not compatible with WW trim⁴ Not compatible with EM or EMR⁵ Damp location only⁶ Not compatible with EM (EMR is compatible)⁷ CP must be selected on both the housing and the trim, not compatible with WW trim⁸ Not compatible with CP

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In a continuing effort to offer the best product possible we reserve the right to change, without notice, specifications or materials that in our opinion will not alter the function of the product.

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LFR-LED-013

**Job Name:**Miami U - Gunlock Family Athletic
Performance Center - LEE16-25610-8**Catalog Number:**LC6LED277DMEM
6LCLED640K8WTEM

Notes:

Type:**R2E**

LEE16-25610

PHOTOMETRIC DATA

LiteFrame - 6" LC6LED Downlight

DRIVER DATA	6LCLED5xxx	6LCLED6xxx	6LCLED7xxx
Input Voltage	120, 277V	120, 277V	120, 277V
Input Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Input Current	0.142 (120v) 0.061 (277v)	0.179 (120v) 0.078 (277v)	0.217 (120v) 0.094 (277v)
Input Power	17.0W	21.5W	26.0W
Constant Current Output	700mA	700mA	700mA
Power Factor	≥0.90	≥0.90	≥0.90
THD	<25%	<20%	<20%
EMI Filtering	FCC 47CFR Part 15, Class A	FCC 47CFR Part 15, Class A	FCC 47CFR Part 15, Class A
Operating Temperature	-30°C to +35°C	-30°C to +28°C	-30°C to +25°C
Dimming	0-10V	0-10V	0-10V

Over-voltage, over-current, short-circuit protected

When operating in EM mode, the fixture will deliver approximately 30% of the published full lumen output.

Lumen Multiplier Table

Photometrics for the LC6LED are published below at a nominal 3500 Kelvin temperature. This table may be used to approximate the lumen values at different Kelvin temperatures. Power consumption would stay the same.

5000 Kelvin	1.14
4000 Kelvin	1.03
3500 Kelvin	1.00
3000 Kelvin	1.00
2700 Kelvin	0.91

LC6LED120 6LCLED535K8

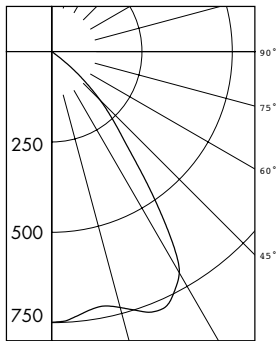
LED Light Engine: 3500K, 80+ CRI

System Wattage: 17.0W

Fixture Delivered Lumens: 1107

Fixture Efficacy: 65.1

Spacing Criteria: 1.1



Test No. 9439

Tested at 25°C Ambient in accordance to IESNA LM-79-2008

CANDELA DISTRIBUTION

DEG	CANDELA
0	749
5	737
15	733
25	768
35	494
45	190
55	10
65	3
75	1
85	0
90	0

ZONAL LUMEN SUMMARY

ZONE	LUMENS
0-60	1104
0-90	1107
90-180	0
0-180	1107

**LUMINANCE DATA IN CANDELA/
SQ. METER**

Angle in Vertical	Average - 0°
45°	16033
55°	1040
65°	424
75°	231
85°	0

COEFFICIENTS OF UTILIZATION Zonal Cavity Method

Room Cavity Ratio	% Effective Ceiling Cavity Reflectance																			
	80%				70%				50%				30%				10%			
	20% Effective Floor Cavity Reflectance																			
	% Wall Reflectance																			
	70	50	30	10	70	50	30	10	70	50	30	10	70	50	30	10	70	50	30	10
1	113	110	107	105	110	108	105	103	104	102	100	100	98	97	96	95	94	93	92	91
2	107	101	97	93	104	99	95	92	96	93	90	88	90	88	86	84	81	79	77	75
3	100	93	88	83	98	92	87	83	89	85	81	87	83	80	84	81	79	77	75	73
4	94	86	80	75	93	85	79	75	83	78	74	81	76	73	79	75	72	70	68	66
5	89	80	73	68	87	79	72	68	77	71	67	75	70	67	73	69	66	64	62	60
6	84	74	67	62	82	73	67	62	71	66	62	70	65	61	68	64	61	59	57	55
7	79	68	62	57	77	68	61	57	66	61	56	65	60	56	64	59	56	54	52	50
8	74	64	57	52	73	63	57	52	62	56	52	61	56	52	60	55	52	50	48	46
9	70	59	53	48	69	59	53	48	58	52	48	57	52	48	56	51	48	46	44	42
10	66	55	49	45	65	55	49	45	54	48	44	53	48	44	52	47	43	40	38	36

LC6LED120 6LCLED535K8

Test No. 9439

LC6LED120 6LCLED635K8

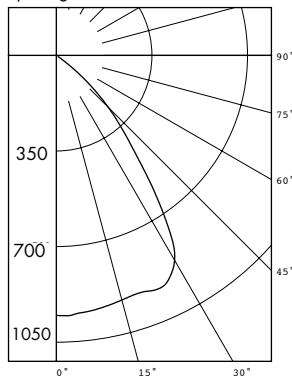
LED Light Engine: 3500K, 80+ CRI

System Wattage: 21.5W

Fixture Delivered Lumens: 1424

Fixture Efficacy: 66.2

Spacing Criteria: 1.1



Test No. 9440

Tested at 25°C Ambient in accordance to IESNA LM-79-2008

CANDELA DISTRIBUTION

DEG	CANDELA
0	952
5	947
15	927
25	931
35	653
45	270
55	16
65	3
75	1
85	0
90	0

ZONAL LUMEN SUMMARY

ZONE	LUMENS
0-60	1420
0-90	1424
90-180	0
0-180	1424

**LUMINANCE DATA IN CANDELA/
SQ. METER**

Angle in Vertical	Average - 0°
45°	22784
55°	1664
65°	424
75°	231
85°	0

COEFFICIENTS OF UTILIZATION Zonal Cavity Method

Room Cavity Ratio	% Effective Ceiling Cavity Reflectance																	
	80%		70%				50%				30%				10%			
	20% Effective Floor Cavity Reflectance																	
	% Wall Reflectance																	
	70	50	30	10	70	50	30	10	70	50	30	10	70	50	30	10		
1	113	110	107	105	110	108	105	103	104	102	100	100	98	97	96	95	94	
2	106	101	97	93	104	99	95	92	96	93	90	93	90	88	90	88	86	
3	100	93	87	83	98	92	86	82	89	85	81	86	83	80	84	81	78	
4	94	86	79	75	92	84	79	74	82	77	73	80	76	72	78	75	72	
5	88	79	72	68	87	78	72	67	76	71	67	74	70	66	73	69	65	
6	83	73	66	62	82	72	66	61	71	65	61	69	64	60	68	63	60	
7	78	68	61	56	77	67	61	56	66	60	56	64	59	55	63	59	55	
8	74	63	56	52	72	62	56	52	61	55	51	60	55	51	59	54	51	
9	70	59	52	48	68	58	52	47	57	51	47	56	51	47	55	50	47	
10	65	55	48	44	64	54	48	44	53	48	44	52	47	44	52	47	43	

LC6LED120 6LCLED635K8

Test No. 9440

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**Job Name:**Miami U - Gunlock Family Athletic
Performance Center - LEE16-25610-8**Catalog Number:**LC6LED277DMEM
6LCLED640K8WTEM

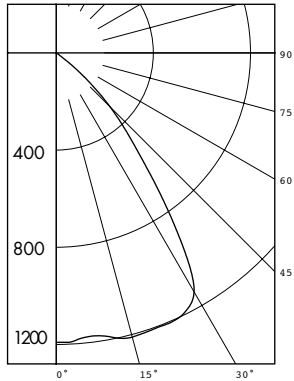
Notes:

Type:**R2E**

LEE16-25610

PHOTOMETRIC DATA

LiteFrame - 6" LC6LED Downlight

LC6LED120 6LCLED735K8LED Light Engine: 3500K, 80+ CRI
System Wattage: 26.0W
Fixture Delivered Lumens: 1797
Fixture Efficacy: 69.1
Spacing Criteria: 1.1**CANDELA DISTRIBUTION**

DEG	CANDELA
0	1191
5	1179
15	1211
25	1201
35	823
45	313
55	20
65	4
75	1
85	0
90	0

Test No. 9441

Tested at 25°C Ambient in accordance to IESNA LM-79-2008

ZONAL LUMEN SUMMARY

ZONE	LUMENS
0-60	1791
0-90	1797
90-180	0
0-180	1797

LUMINANCE DATA IN CANDELA/SQ. METER

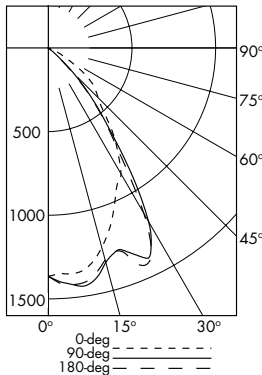
Angle in Vertical	Average - 0°
45°	26412
55°	2081
65°	565
75°	231
85°	0

COEFFICIENTS OF UTILIZATION Zonal Cavity Method

Room Cavity Ratio	% Effective Ceiling Cavity Reflectance													
	80%		70%		50%		30%		10%					
	20% Effective Floor Cavity Reflectance													
	% Wall Reflectance													
	70	50	30	10	70	50	30	10	50	30	10	50	30	10
1	113	110	107	105	110	108	105	103	104	102	100	98	97	95
2	107	101	97	93	104	99	95	92	96	93	90	89	87	84
3	100	93	88	83	98	92	87	83	89	85	81	80	78	74
4	94	86	80	75	93	85	79	75	83	78	74	71	70	67
5	89	79	73	68	87	78	72	68	77	71	67	70	73	69
6	84	74	67	62	82	73	66	62	71	66	61	70	65	61
7	79	68	62	57	77	68	61	57	66	60	56	65	61	56
8	74	63	57	52	73	63	57	52	62	56	51	55	50	55
9	69	59	53	48	68	58	52	48	57	51	46	49	51	46
10	65	49	45	41	65	49	44	41	54	48	43	45	48	44

LC6LED120 6LCLED735K8

Test No. 9441

LC6LED1206LCLED735K8 WWLED Light Engine: 3500K, 80+ CRI
System Wattage: 26.1W
Fixture Delivered Lumens: 1830
Fixture Efficacy: 70.1**CANDELA DISTRIBUTION**

DEG	0.0	90.0	180.0
0	1365	1365	1365
5	1356	1415	1420
15	1235	1327	1312
25	955	1388	1417
35	709	763	697
45	420	215	185
55	250	8	7
65	62	3	3
75	8	2	2
85	0	0	0
90	0	0	0

Test No. 15.00244

Tested at 25°C Ambient in accordance to IESNA LM-79-2008

LUMINANCE DATA IN CANDELA/SQ. METER

Angle in Vertical	0 DEG	90 DEG	180 DEG
45°	32550	16662	14337
55°	23885	764	669
65°	8039	389	389
75°	1694	423	423
85°	0	0	0

MULTIPLE UNITS									
1'	2'	3'	4'	5'	6'	7'	8'	9'	10'

**3' DISTANCE FIXTURE MOUNTED OUT FROM WALLS
FOOTCANDLE DISTRIBUTION ON WALL SURFACE**

DISTANCE FROM CEILING IN FEET	1	2	3	4	5	6	7	8	9
1	5	4	2	1	1	8	8	8	3
2	10	8	4	2	1	16	16	16	14
3	14	11	7	4	2	23	23	23	18
4	15	13	9	5	3	28	28	28	18
5	13	12	9	6	3	28	28	28	18
6	10	10	9	6	4	27	27	27	15
7	8	8	7	6	4	25	25	25	14
8	6	6	6	5	4	22	22	22	13
9	5	5	5	5	4	19	19	19	11

LC6LED120-6LCLED735K8 WW

Test No. 15.00244

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**Job Name:**Miami U - Gunlock Family Athletic
Performance Center - LEE16-25610-8**Catalog Number:**LC6LED277DMEM
6LCLED640K8WTEM

Notes:

Type:**R2E**

LEE16-25610

PHOTOMETRIC DATA

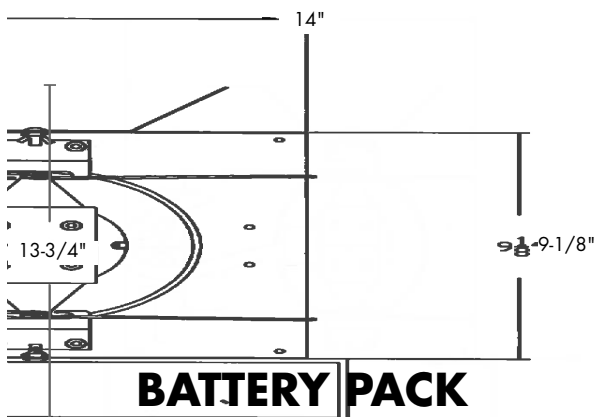
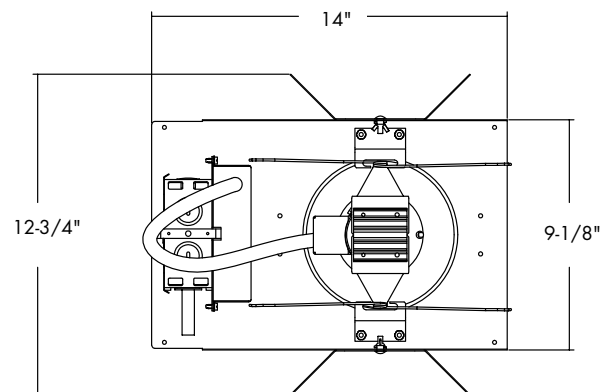
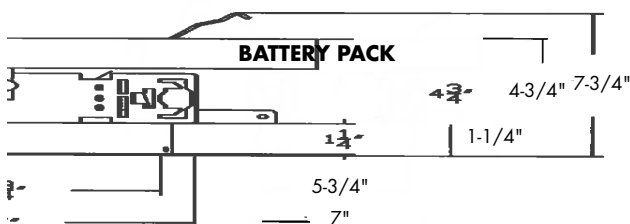
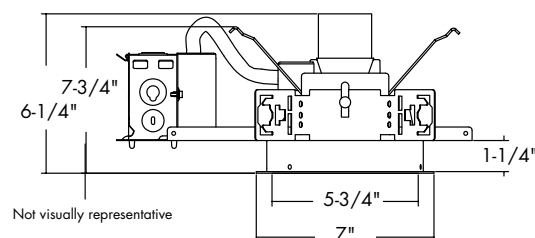
LiteFrame - 6" LC6LED Downlight

Dimming Compatibility Table

Dimming Ballast	Manufacturer	Web Link
DM/DM1	Lutron DTVT	http://bit.ly/11jSvZg
DM/DM1	Leviton AWRMG-7xx, AWSMG-7xx, AWSMT-7xx	http://bit.ly/1BJn2R9

Central Inverters

For fixture full light output in back-up mode, Prescolite and Dual-lite have jointly tested the LiteFrame Commercial LED with the 100 (LG1) and 250 (LG2) VA LiteGear inverters. For more information on LiteGear go to http://www.dual-lite.com/resources/litegear_luminaire_loading_chart/

**LC6LED EM****LC6LED 7**

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Lighting, Inc.

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in

Case No(s). 17-1217-EL-EEC

Summary: Application Application to Commit Energy
Efficiency/Peak Demand
Reduction Programs
(Mercantile Customers Only)- Gunlock Athletic Center Building Upgrade, Part 2 electronically
filed by Carys Cochern on behalf of Cochern, Carys