

THE PEM COLLECTION OF WATER DISPLAYS

Edition 1

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**A COLLECTION OF PICTURES SHOWING
WATER FEATURES, WATER DISPLAYS & FOUNTAINS
UTILIZING PEM EQUIPMENT**

THE PEM COLLECTION



PEM 125M2 JUMPING JETS (programmed) in Lingby Stor Center, Copenhagen Denmark



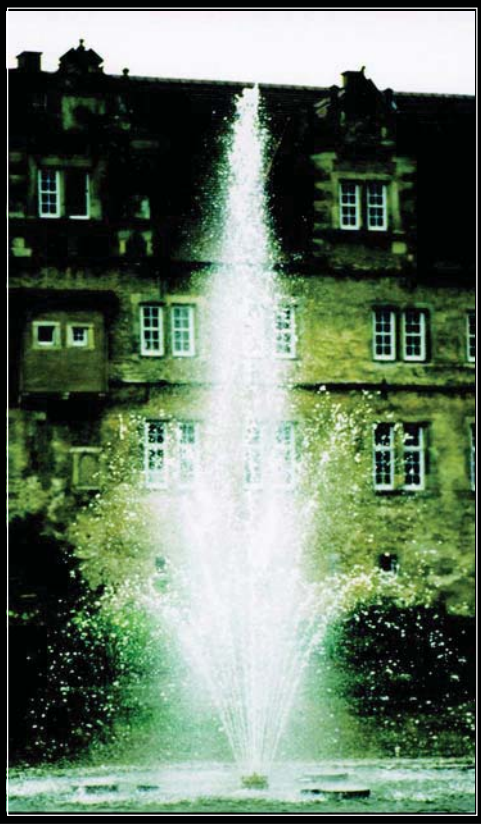
PEM 125M2 JUMPING JETS (programmed) in Reduta Shopping Center, Warsaw, Poland

CREATION by: Fontanny - Poland , Josef Gajek, konsultant@fontanny.net

Pictures courtesy of Kent Jensby Sorensen, Treungen, Norway

Printed in Canada

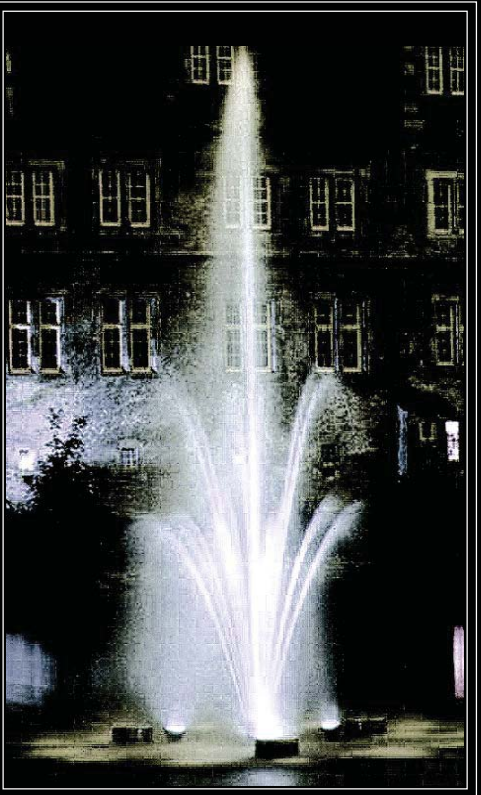
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3 - 2 PEM 294A



3 - 1 PEM 54's

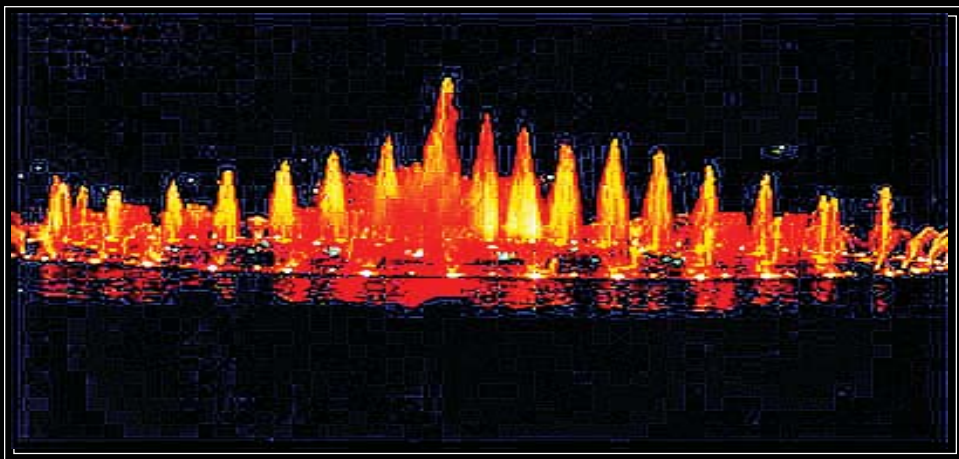


3 - 3 PEM 294A



3 - 4 PEM 31-13, PEM 52 in Shopping Centre

THE PEM COLLECTION



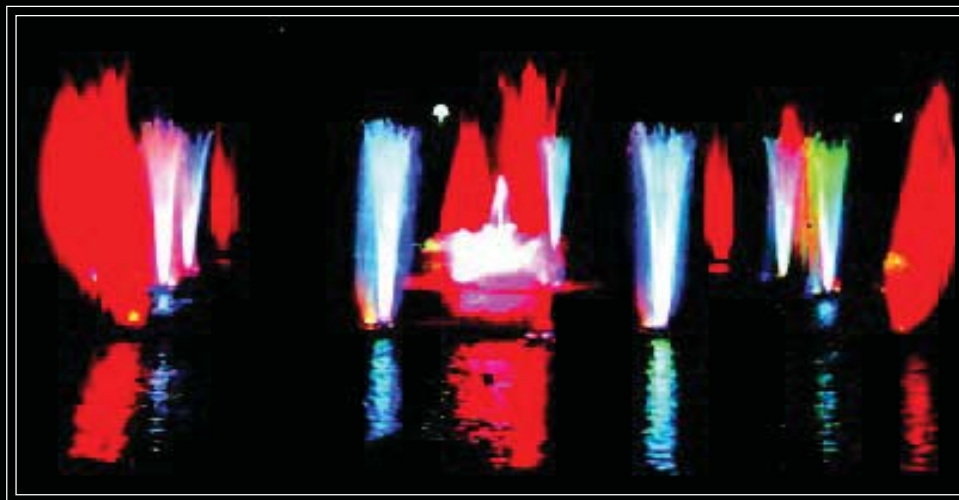
4 - 1

' VESIURUT' Musical Fountain (36m Diameter) City of Lahti, Finland



4 - 2

' VESIURUT' Musical Fountain (36m Diameter) City of Lahti, Finland



4 - 3

' VESIURUT' Musical Fountain (36m Diameter) City of Lahti, Finland

'VESIURUT'
Musical Fountain
City of Lahti, Finland

PEM Equipment:

Spray Jets:

1 x PEM 295B
8 x PEM 1571
12 x PEM 29A
80 x PEM 812
370 x PEM 825
12 x PEM 745B
14 x PEM 747B
92 x PEM 31-25/541

Illumination:

69 x PEME1100,
500W/Dichroic.
179 x PEME500,300W
24 x PEME1100,1000W

Pictures courtesy of Hekes Oy, Espoo, Finland

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5 - 1



' MERIKOSKEN SUIHKUT' Lake Fountain , City of Oulu, Finland

'MERIKOSKEN SUIHKUT'
Lake Fountain
City of Oulu, Finland

PEM Equipment:

Spray Jets
12 x PEM 54
10 x PEM 747B
92 x PEM 746B

Lights
90 x PEM E500,300W

5 - 2



' MERIKOSKEN SUIHKUT' Lake Fountain , City of Oulu, Finland

5 - 3



' MERIKOSKEN SUIHKUT' Lake Fountain , City of Oulu, Finland

THE PEM COLLECTION



6 - 1 PEM 1010-1, (Custom made Side Jets)



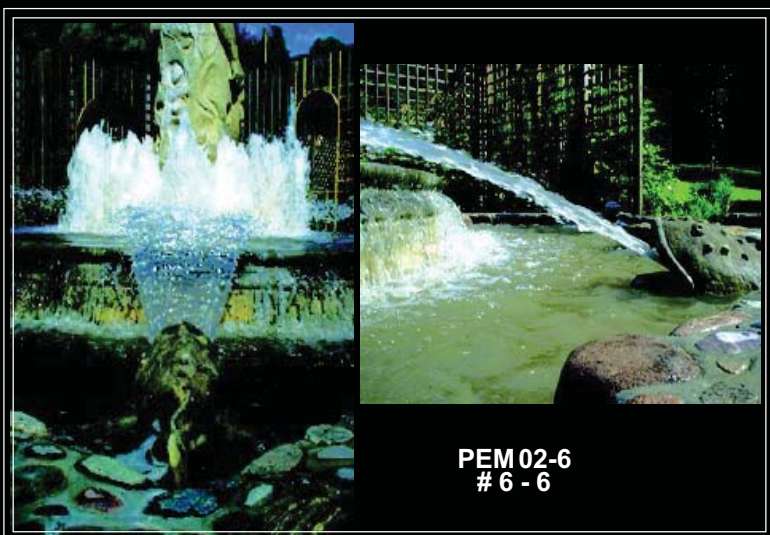
6 - 2 PEM847's



6 - 3 PEM03-4's



6 - 4 PEM 850 & PEM 846C



6 - 5 PEM 02-6 & PEM 64's

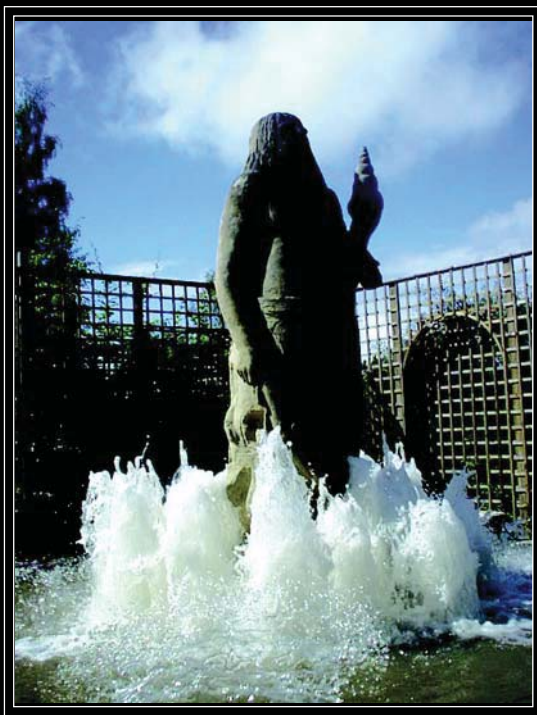


6 - 7 PEM0114

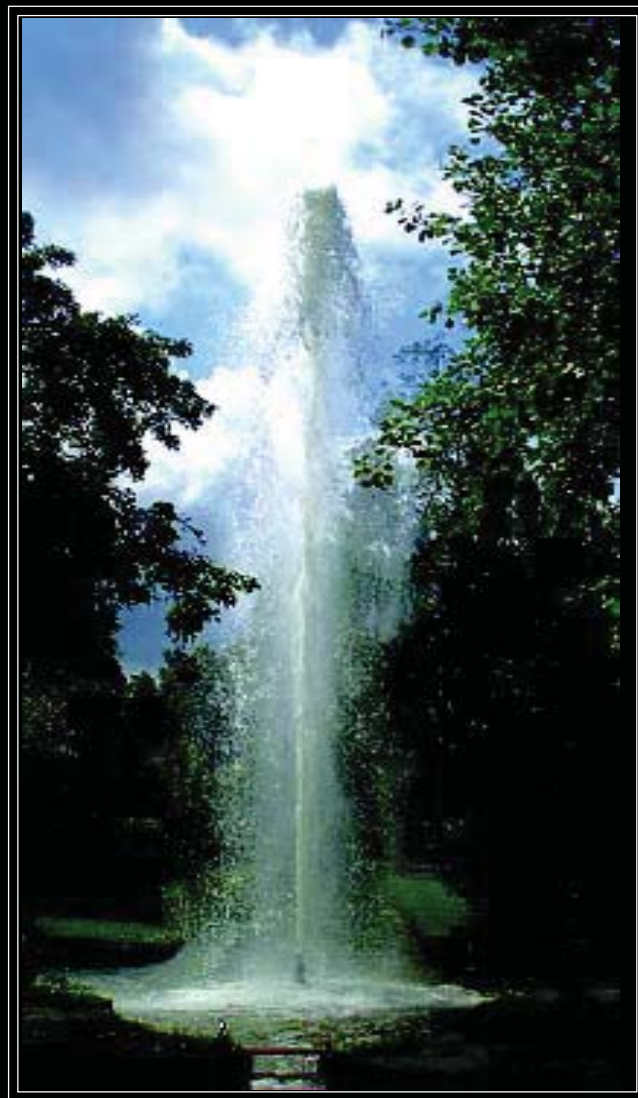
PEM02-6
6 - 6

THE PEM COLLECTION

Pictures courtesy of Fontene Teknikk, Oslo, Norway



7 - 1 PEM 64's



7 - 2 PEM 876 (16m)



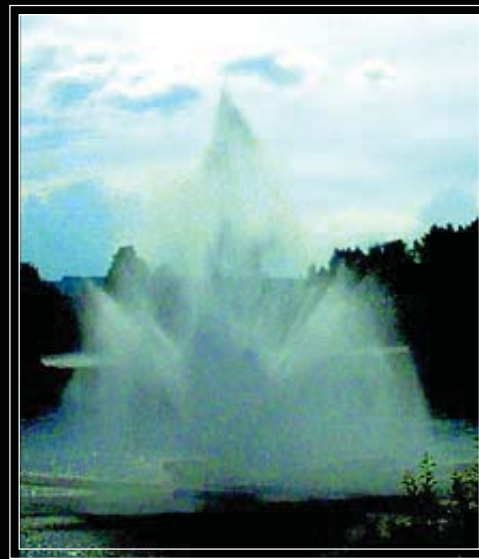
7 - 3 PEM 64's, PEM 65's & PEM 53A



7 - 4 PEM 294



7 - 5 PEM 295 & PEM E500



7 - 6 PEM 295

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THE PEM COLLECTION 2002 - 1



8 - 1

1998
Water & Lasershow
Theme Park
Bali, Indonesia

PEM 850, PEM 55, PEM 1472 Jets & PEM E1000 Dichro Lights



8 - 2

1998
Water & Lasershow
Theme Park
Bali, Indonesia

PEM 1854 w.Film Projection & PEM E1000 Dichro Lights



8 - 3

1998
Water & Lasershow
Theme Park
Bali, Indonesia

PEM 800, PEM 1472, PEM 295A Jets & PEM E1000 Dichro Lights

For information about this project please contact: Mr. D.Richardi, Fountain Supply Co.
dan@fountainsupply.com

#9 - 1
PEM 125M2 (2)
Jumping Jets
at a local fair.



#9 - 2
PEM 125M2 (2)
Jumping Jets
at a local fair.



#9 - 3
PEM 125M2 (2)
Jumping Jets
at a local fair.



#9 - 4
PEM 125M2 (2)
Jumping Jets
at a local fair.

THE PEM COLLECTION



#10 - 1 PEM W114 with PEM 826
in themepark spray pad



#10 - 2 PEM W114 with PEM 826
in themepark spray pad



#10 - 3 PEM W114 with PEM 826
in themepark spray pad



#10 - 4 PEM W114 with PEM 826
in themepark spray pad



#10 - 5 PEM W114 with PEM 826
in themepark spray pad

Video Frames courtesy of Wetterauer Pumpnebau, Germany

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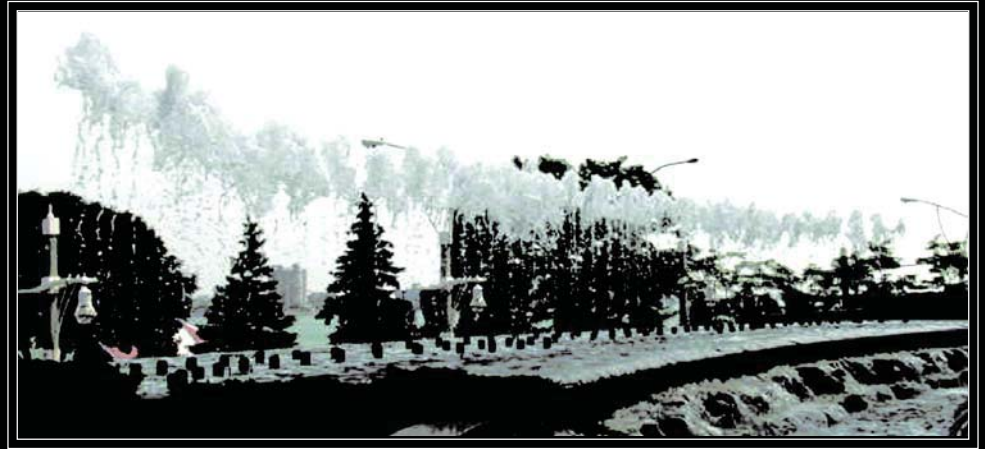
THE PEM COLLECTION



11 - 2 PEM W 116 Water Switches with Type PEM 953 Jets



11 - 1 PEM W 116 Water Switches with Type PEM 953 Jets



11 - 3 PEM W 116 Water Switches with Type PEM 953 Jets



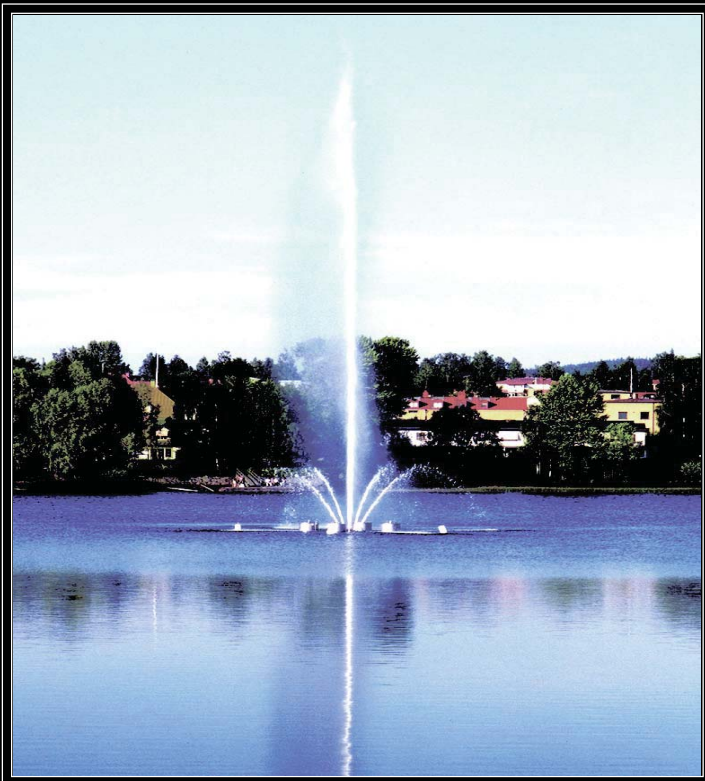
11 - 4 PEM W 116 Water Switches with Type PEM 953 Jets



11 - 5 PEM W 116 Water Switches with Type PEM 953 Jets

PEM W116-1 Water Switches by:
PEM Fountain.Co., Richmond Hill, ON, Canada ,Fax: 905-884-8941, www.pemfountain.ca

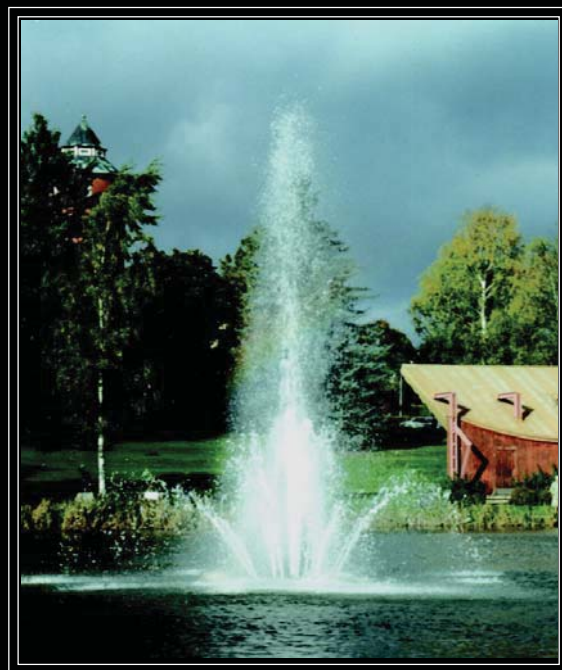
THE PEM COLLECTION



12 - 1
1 x PEM 749 (to 35m)
4 x PEM 747



12 - 3
1 x PEM 749 (to 20m)
4 x PEM 746
PEM E 500 Lights



12 - 2
1 x PEM 748 (to 15m)
4 x PEM 746
4 x PEM 745

Pictures courtesy of Anders Soergel, Anleka, Sweden

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THE PEM COLLECTION

13 - 1
1 x PEM 54-08
5 x PEM 53-08



13 - 2 20 x PEM x 1611



13 - 3 PEM 16 - 7



13 - 4
5 x PEM x 1615 & 4x PEM 02-6



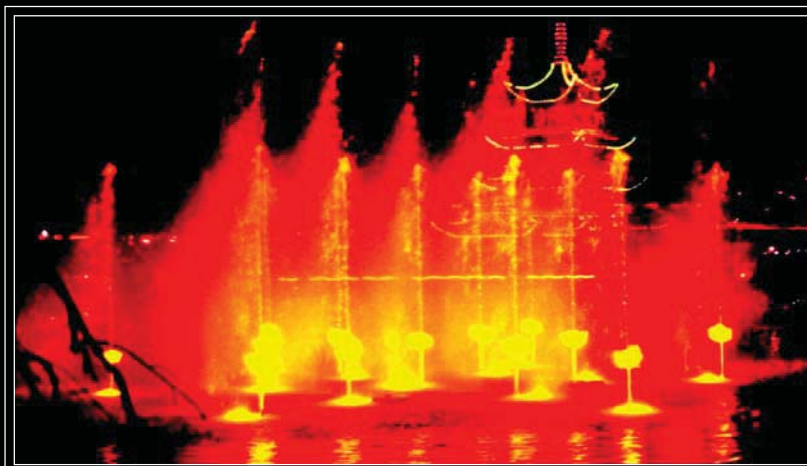
THE PEM COLLECTION



14 - 1 PEM 1854 Jet with 16 x PEM E600 Magenta Dichro Lights



14 - 3 PEM 1854 Jet in Sight & Sound Festival



14 - 4 13 x PEM 846 (Customized), 39 x PEM E 500
Copenhagen, Denmark



14 - 2 PEM 1854 Jet
with Film Projection



14 - 5 # 14 - 4 13 x PEM 846 (Customized)
& 39 x PEM E 500
Copenhagen, Denmark

Pictures courtesy of Anders Soergel, Anleka, Sweden

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15-1 24 x PEM 747B in 'Margitsziget' Musical Fountain, Budapest, Hungary



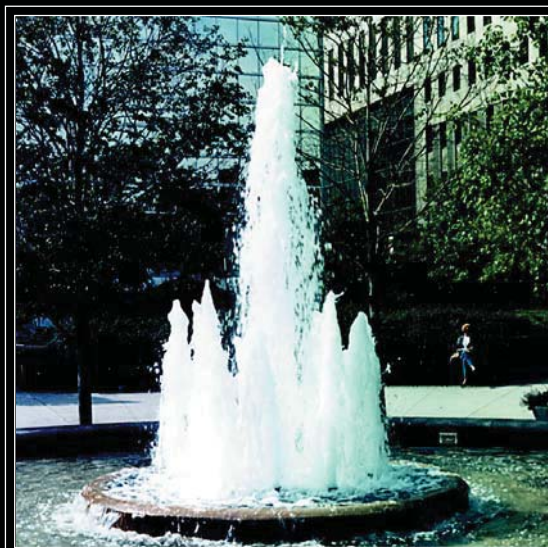
15 - 2 24 x PEM 747B in 'Margitsziget' Musical Fountain, Budapest, Hungary

CREATIONS by: Peter Karlocai, Technoconsult, Budapest, Hungary, Fax: 36-1-225-3434, www.technoconsult.hu

THE PEM COLLECTION



16 - 1 PEM 29's



16 - 2 PEM 54 & PEM 53's



16 - 3 PEM 776



16 - 4 PEM 107B



16 - 5 PEM 108 - 375's

Pictures by : Peter Michal, PEM Fountain Co.

PEM FOUNTAIN CO., Richmond Hill, ON, Canada, Fax: 905-884-8941 E-Mail: sales@pemfountain.ca

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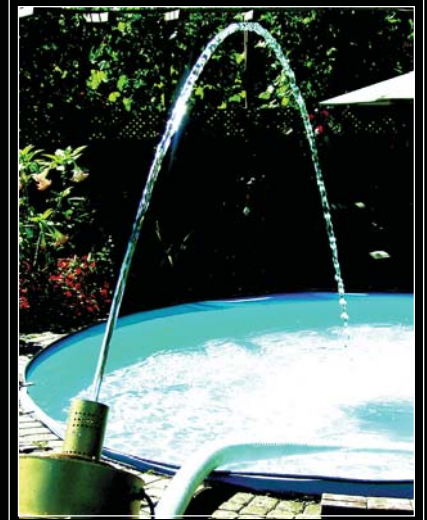
PEM 125 M2 & 144 M2 JUMPING JETS



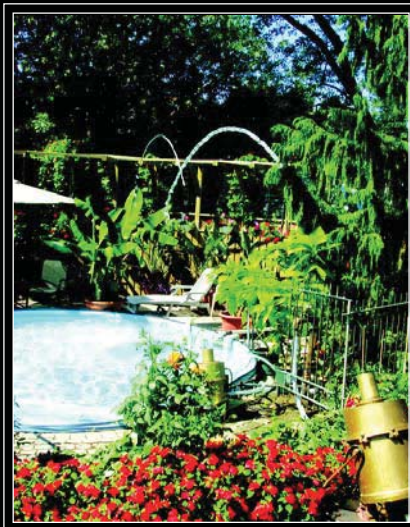
#17 - 1, PEM 125M2 & 144M2



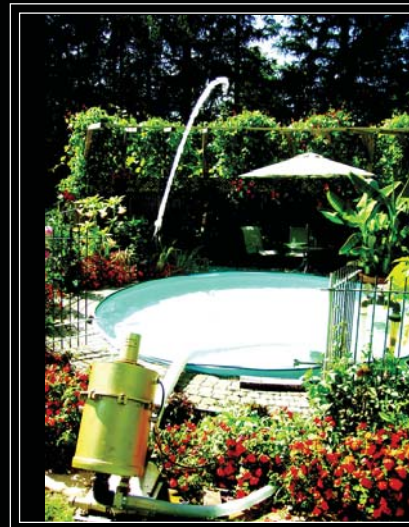
#17 - 2, PEM 144M2



#17- 3, PEM 144M2 'Full Arch'



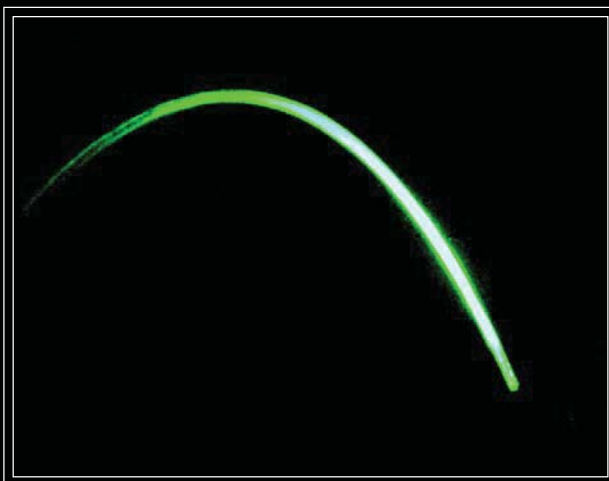
#17 - 4, PEM 125M2 & 144M2



#17 - 5, PEM 144M2



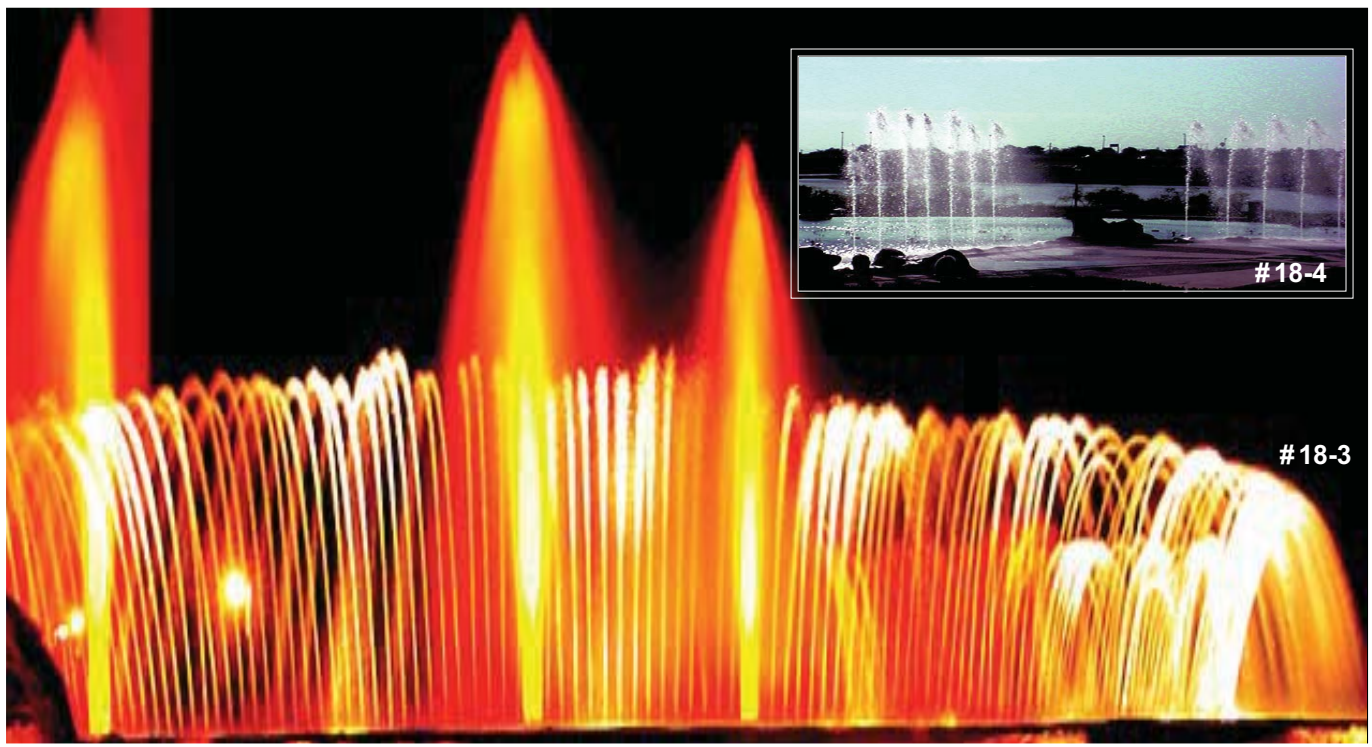
#17 - 6, PEM 125M2 & 144M2



#17 - 7, PEM 144 M2 Stream with Fibre Optic Color



#17 - 8, PEM 125M2 & 144M2

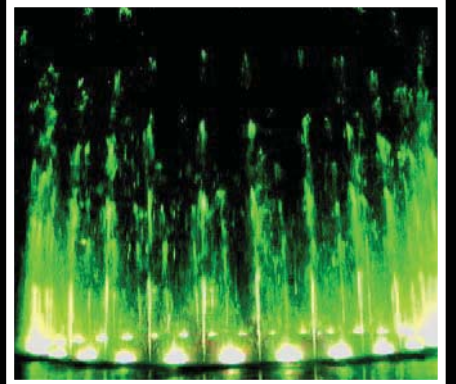
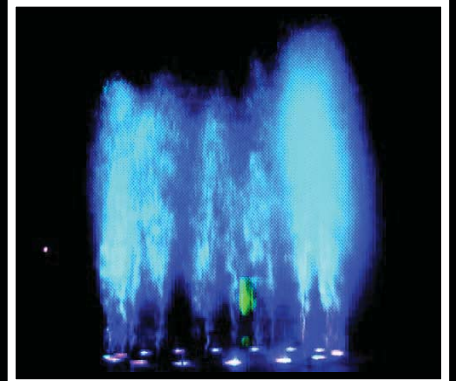
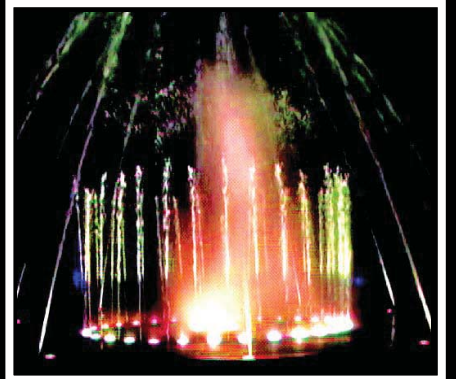
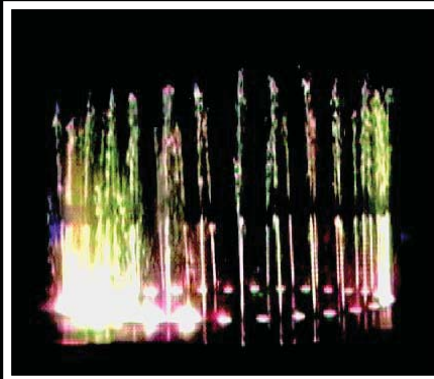
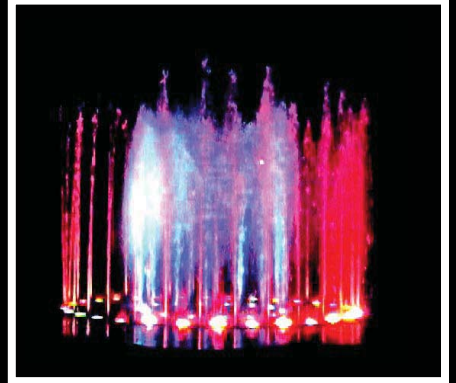


Three Rivers Musical Fountain, Culiacan, Mexico
PEM Spray Equipment utilized: PEM 823's , PEM 31-13A's & PEM 846A's

CREATION by : Atlantic Fountains, 225 E. Main St., Clinton, CT 06413, USA

Tel: 860-669-1188, Fax: 860-669-4488, www.atlanticfountains.com, see website for Email & Project Videos

THE PEM COLLECTION



Palm Beach Zoo Musical Fountain & Spray Apron , Palm Beach , Florida, USA

CREATION by: Freeport Fountains Inc., Sanford, Florida, USA 32771,

THE PEM COLLECTION



PEM 60 Series Foam Jets
and
PEM Submersible Lights

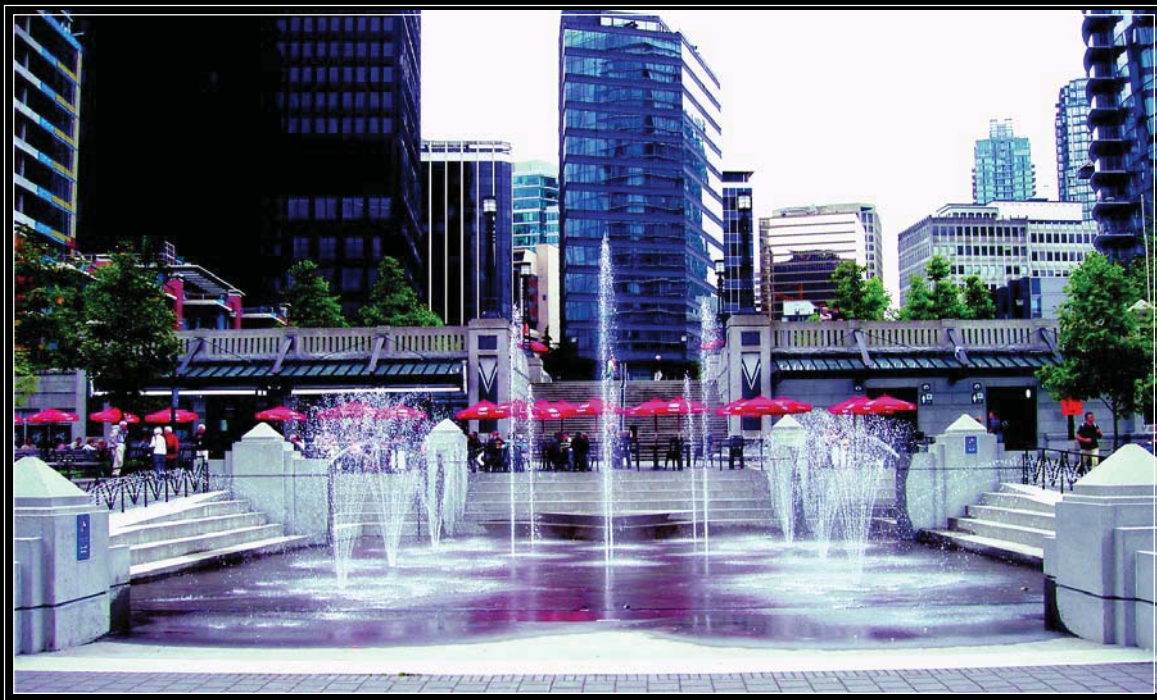
Photographed June 2005 by Peter Milcha

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Spray Pad with
PEM 29 & PEM 32
Sprayheads



Creations in Vancouver, British Columbia by :

Vincent Helton & Associates. Ltd, Delta, British Columbia, Canada , www.vincenthelton.com

THE PEM COLLECTION OF WATER DISPLAYS

Edition 2

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**A COLLECTION OF PICTURES SHOWING
WATER FEATURES, WATER DISPLAYS & FOUNTAINS
UTILIZING PEM EQUIPMENT**



PEM 55
& PEM 847's
at
Corso Statuto
Mondovi
Italia

Pictures courtesy of : Del Taglia Irrigazione



PEM 746
& PEM 846's
in
Piazza de 'Ferraris'
Genova
Italia

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PEM 295A
at
Giardino della Fortezza
viale Strozzi
Firenze
Italia

Pictures courtesy of Anders Soergel, Anleka, Sweden



23 - 1 PEM 1140 at Copenhagen Airport, Denmark



23 - 2 PEM 107A in Waterloo, Belgium

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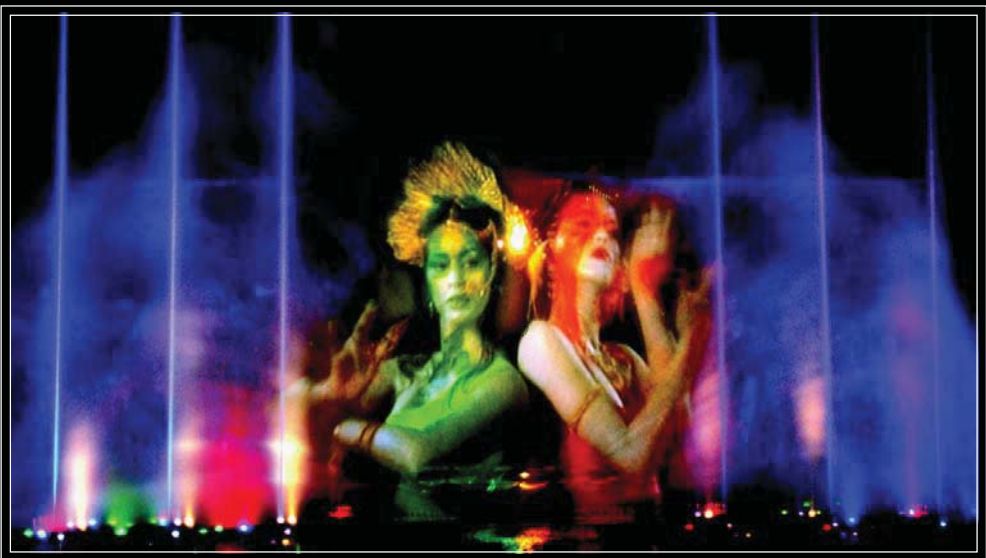
THE PEM COLLECTION



PEM 1854 Screen Jets
Darling Harbour
Sydney
Australia



PEM 1854 Screen Jet
Maritime Museum
Flagstaff Hill
Victoria
Australia



PEM 1854 Screen Jet
Sentosa Island
Singapore

Pictures courtesy of Laservision, Dural NSW, Australia

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CREATIONS by : LASERVISION , Dural NSW 2158 , Australia

Tel: (61) 2 9658 1000 - Fax: (61) 2 9658 1035 , www.laservision.com.au

PEM 1854 Screen Jets
Darling Harbour
Sydney
Australia



PEM 1854 Screen Jet
Sentosa Island
Singapore

**PEM 1854
Screen Jet**
Lotte Themepark
Korea



THE PEM COLLECTION



PEM 740 - 407



PEM 815 - 5
PEM 813 - 2



PEM 849C



PEM 108-376's

Pictures courtesy of Fontene Teknikk, Oslo, Norway

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Pictures courtesy of Georgia Fountain Company, Inc.

27 - 1
251 x PEM 836-1
458 x PEM E500 LV
Olympic Fountain
Atlanta, Georgia, USA
1996



27 - 2
PEM 108-375
PEM 844C
PEM E500
Spence Plaza
University of Texas
Tyler, Texas, USA



27 - 3
PEM 953's
PEM E40
Catfish Fountain
Vicksburg, Mississippi
USA



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THE PEM COLLECTION



28 - 1
Fountain of Rings
Olympic Park
Atlanta, Georgia, USA
April 2007
SPRAY APRON
with
MUSICAL
SEQUENCED SPRAYS
&
COLOR ILLUMINATION



28 - 2
126 x PEM 812-2
STREAM JETS
on PEM W 115-1
Water Switches
&
125 x PEM 952
AERATED JETS
on PEM W 115-1
Water Switches
&
251 x PEM C133-8
4 COLOUR
SUBMERSIBLE LIGHTS



28 - 3
MUSICAL
SEQUENCED
4 COLOR
ILLUMINATION
AT NIGHT

#29 - 1



Musical Fountain
with
PEMW114-812-1
24 VDC
PEM 812-1 / 01054
&
PEM C 133-3

#29 - 2



#29 - 3



#29-4

THE PEM COLLECTION

PEM 40 Type Curtain Fountains



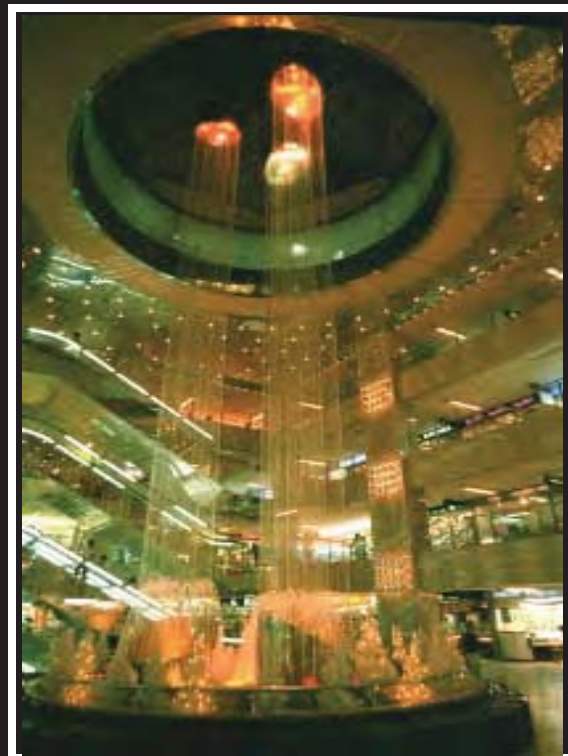
30-1



30-3



30-2



30-4

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30-1 : In Shopping Mall in Toronto 1966 /1990, by: richard@rjvanseters.com

30-2 : In 10 Storey Shopping Center, Santiago, Chile, by : fuentes@hidroservicio.cl

30-3 : In Singapore Airport, by : Venus Enterprises Pte Ltd, daniel@venus.com.sg

30-4 : In Singapore Shopping Centre, by : Venus Enterprises Pte Ltd, daniel@venus.com.sg

THE PEM COLLECTION

PEM M701 Spray Apron Modules



#31 - 2



#31 - 1



#31 - 4



#31 - 3

In Singapore Shopping Centre, by : Venus Enterprises Pte Ltd, daniel@venus.com.sg

THE PEM COLLECTION

PEM CASCADE JETS



32-1
PEM 1617
CASCADE
JETS



32-2
PEM 1617
CASCADE
JETS



32-3
PEM 55
CASCADE
JETS

at:
Nasher Sculpture
Garden
Dallas, Texas
USA

Pictures 32-1 & 32-2 courtesy of Messner Benelux, Hengelo, The Netherlands

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32-1 & 32-2 : by Messner Benelux, Hengelo, The Netherlands : info@messner.nl

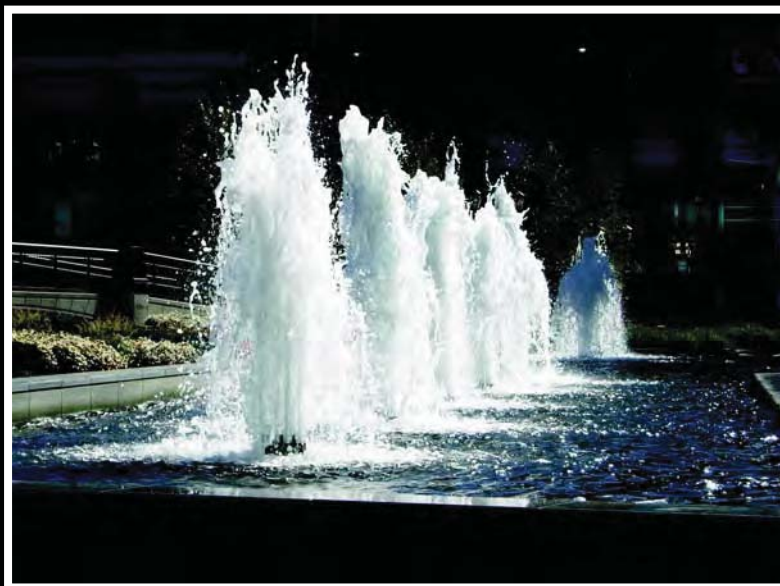
32-3 : Nasher Sculpture Garden, Dallas, Texas, USA, by : Dan Euser, Richmond Hill, Canada : dan@devinc.biz

THE PEM COLLECTION

PEM Aerated Jets

#31 - 1

PEM 107A
Foam Column Sprayhead
to 3.5m Sprayheight
Falls View Casino,
Niagara Falls, Canada

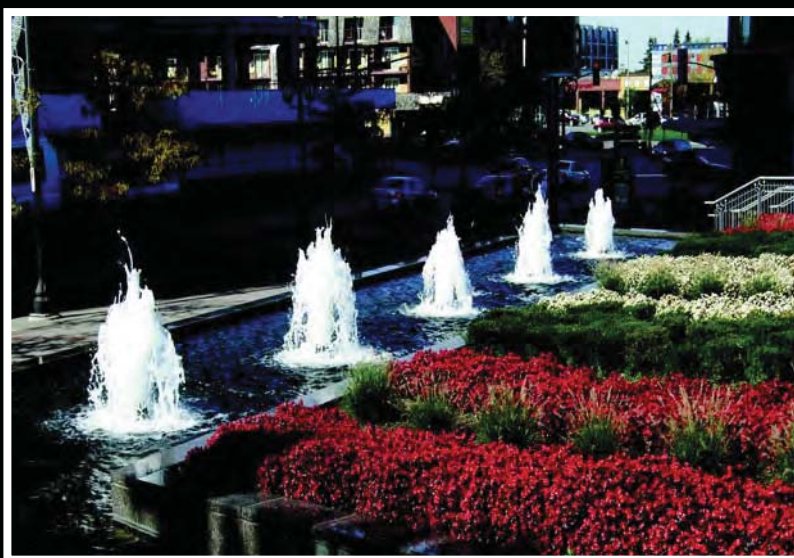


#31 - 2

PEM 750 - 1,
4" Aerating Jets
Varying Sprayheights
Falls View Casino,
Niagara Falls, Canada

#31 - 4

PEM 107A
Foam Column Sprayhead
to 1.5m Sprayheight
Falls View Casino,
Niagara Falls, Canada



THE PEM COLLECTION

Vertical Jets



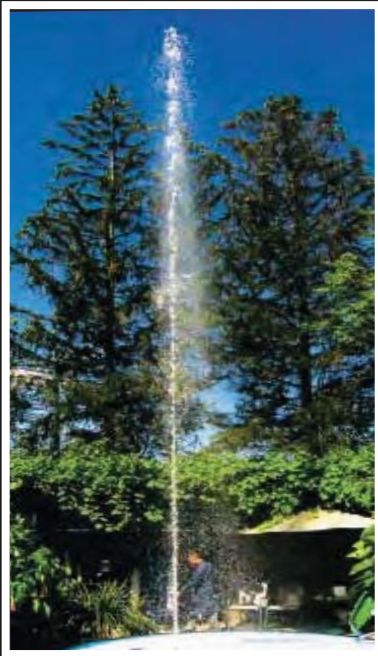
34-1



34-2



34-3



34-4



34-5

34-1 : PEM 876

LED Illuminated in Medellin, Colombia

by: J. Leder, Georgia Fountain Co.

jleder@georgiafountain.com

Picture courtesy of Georgia Fountain Co.

34-2 : PEM 750-1

Floating Fountain in Singapore

by : Venus Enterprises Pte Ltd,

daniel@venus.com.sg

Picture courtesy of Venus Enterprises Pte Ltd

34-3: PEM 878

Park Fountain in California

by: D.Richardi, Fountain Supply Co.

dan@fountainsupply.com

Picture courtesy of Fountain Supply Co.

34-4: PEM 37 Quadruple Jet

Spray Testing at PEM Fountain Co.

34-5: PEM 37 on PEM W 116 Water Switch

Fast Repeat Spray Testing

at PEM Fountain Co.

sales@pemfountain.ca

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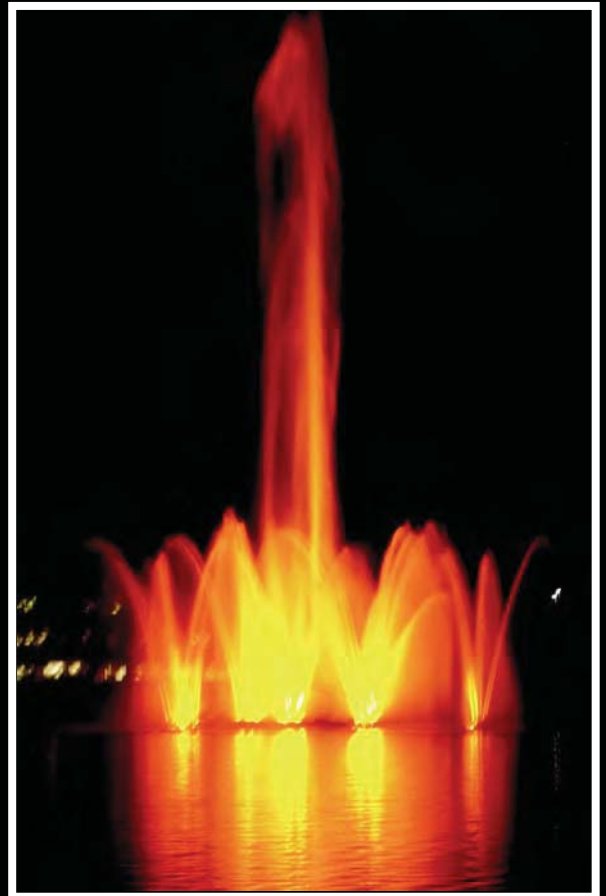
THE PEM COLLECTION

PEM 876 & 849 JETS



PEM 876 C-S, 89.6m / 294.0 Feet

Jet Performance tested & verified October 24, 2005
by an eminent International Landscape Architecture Firm
verifying performance data in PEM Catalogue



PEM 876C (A) at a lower height & PEM 849's
With PEM E 500-500W Underwater Lights



PEM 849 Jets to 65 feet

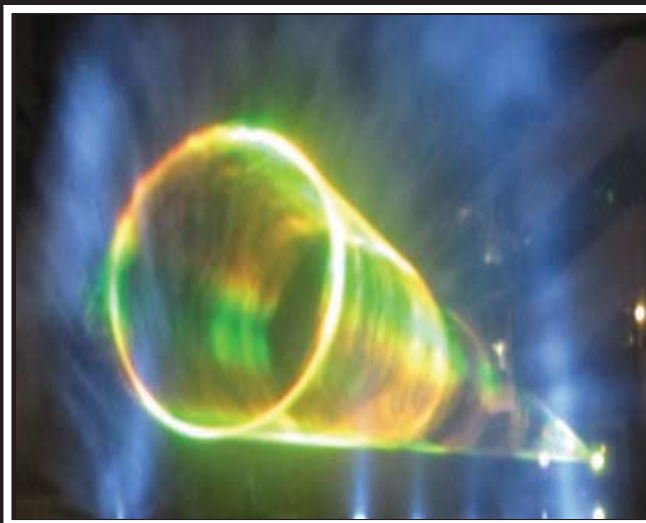
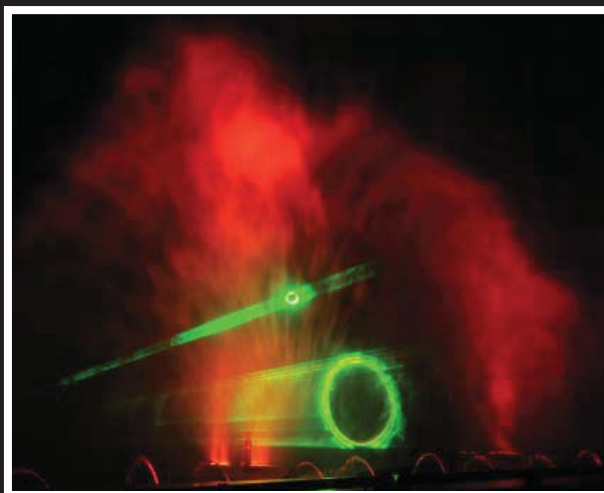
By: International Fountain Development,
Inc. Cincinnati, Ohio, Installed 1990

‘ Heartland of America Fountain ‘,
Omaha, Nebraska, USA

For more information please contact: PEM Fountain Co.

THE PEM COLLECTION

Projections onto a PEM 1854 Screen Jet

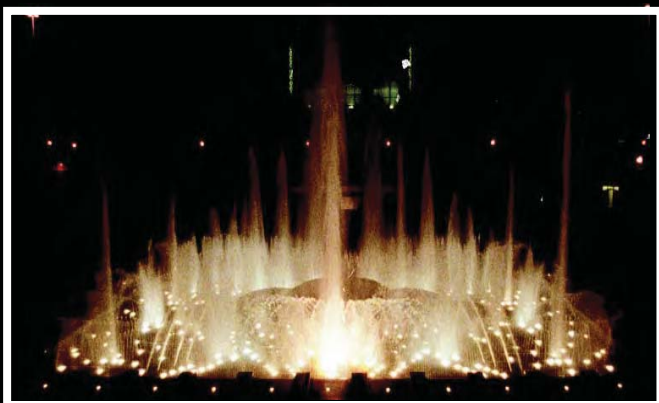


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Projections onto PEM 1854 Screen Jet in Medellin, Colombia
by: J. Leder, Georgia Fountain Co. : jleder@georgiafountain.com
Pictures courtesy of Georgia Fountain Co.

THE PEM COLLECTION

Krizikova Fontana, Praha, Czech Republic



Krizikova Fontana was rebuilt in 1990 with canadian made PEM Fountain Equipment. PEM supplied over 1300 Underwater lights and more than 2300 Spray Nozzles and Jets

The engineering was done by Mr. Otomar Sevcik, SEPRO Engineering in Prerov , Cz.

PEM equipment was supplied by : Stumpf Springbrunnenbau, Hallein, Austria

Supervising Consultation was by : Peter Micha, PEM Fountain Co. in Canada

Programming for this full colour musical water display was done by :

Mgr. Ivo Novotny and the Czech State Opera in Praha represented by

Mr. Tomas Janicek of ORPHEUS AGENCIES : tomasjanicek@krizikovafontana.cz

(Color Videos of selected Operas stage in the fountain can be purchased from the above.)

(In October 2008 the building behind the fountain was partially destroyed by fire)

THE PEM COLLECTION

PEM Cascade & Foam Jets



38-1 PEM 55 Cascade Jets in Dubai



38-3 PEM 54 & 53 Cascade Jets in Dubai



38-5 PEM 53 Cascade Jets in Dubai



38-2 PEM 64 Foam Jets in Sharjah

By : Sanadi Fountains, Sharjah
(sanafoun@emirates.net.ae)



38-4 PEM 54 & 53 Cascade Jets in Dubai



38-6 PEM 53 Cascade Jets in Dubai

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For more information on 'Dubai' Fountains, please contact:
United Technology, Dubai (poolsuae@poolsuae.com)

THE PEM COLLECTION

PEM 33 Low Noise Spray Jets



#31 - 1

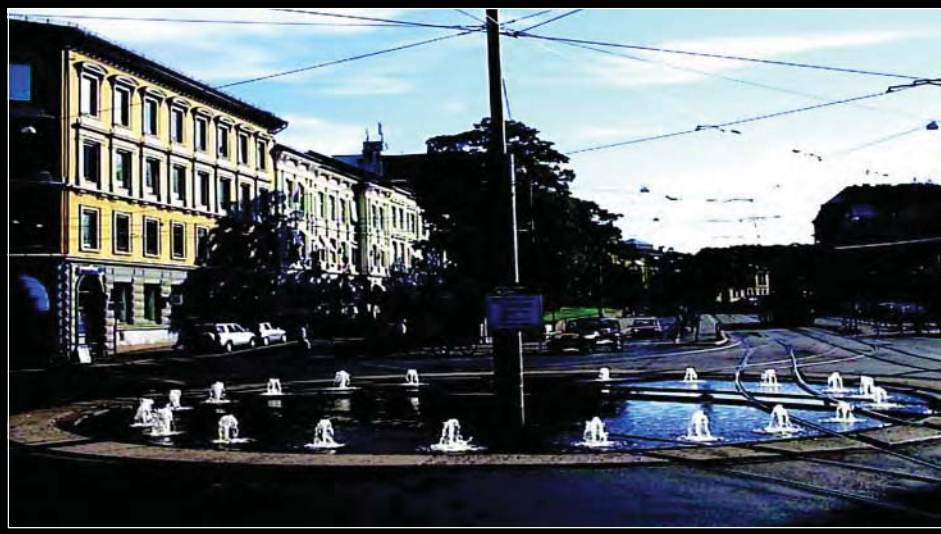


#31 - 2

PEM 33's Low Noise Spray Jets in Basel, Switzerland at 'Baselworld 2009 IBS'
by: Aquatransform, Mr. Daniel Haefele, Burgau, Flawil, Switzerland : info@aquatransform.ch

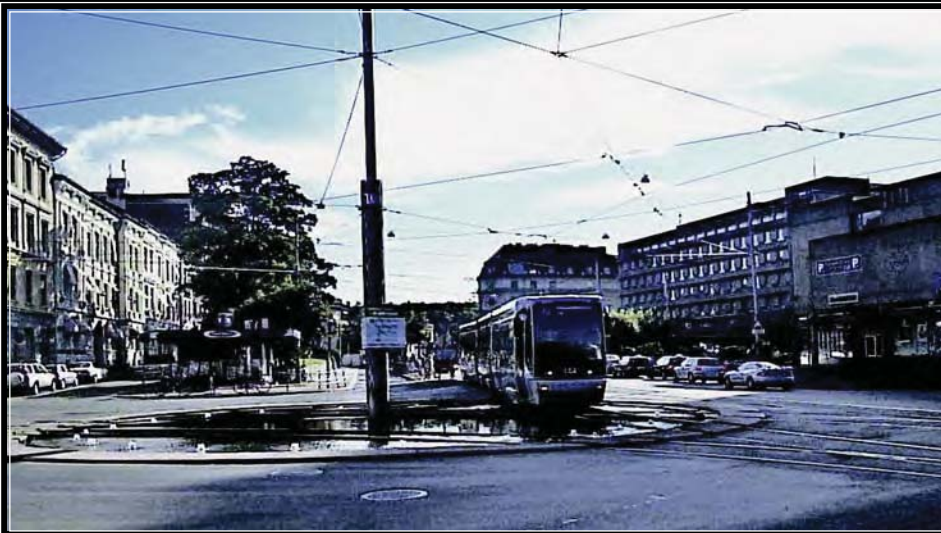
THE PEM COLLECTION 2 - PAGES 21 - 40

#21 - 1



22 x PEM 1721
Light Emitting
Bubble Spray Effect
adorning by day and
illuminating by night
a public square in
Oslo, Norway
This water display is
transversed by
street car tracks.
The Bubble
Spray Effects with
30mm spray orifices
are sequenced
to 0.5 - 1.0 m in height .

#21 - 2



22 x PEM 1721
Light Emitting
Bubble Spray Effect
In a public square in
Oslo, Norway
The sequenced Spray
Effects are
0.5 - 1.0 min height,
reducing automatically
to 0.08m
(by a PLS & Frequency
Converter system) when
street cars tranverse the
fountain, returning the
water display to normal
operating height after the
street cars have passed.

#21 - 3



22 x PEM 1721
Light Emitting
Bubble
Spray Effects
adorn by day and
illuminate at night
a public square in
Oslo, Norway
This water display is
transversed by
street car tracks.
The sequenced
Bubble Spray Effects
are normally
0.5 - 1.0 m in height,
each illuminated
from within with a
PEM E40LV, 12V, 50W
submersible light fixture.

Pictures # 21-1 & #21-2 by T. Holth, Picture # 21-3 by Sven Granhaug. All Pictures courtesy of Fontene Teknikk, Oslo, Norway

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A CREATION by : Fontene Teknikk AS, Oslo, Norway , Fax: 47-22-720732, www.fontene-teknikk.no

THE PEM COLLECTION OF WATER DISPLAYS

Edition 3

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Page 47	PEM E1450C LED - RGB - DMX
Page 48	PEM E17M/E2100,Anaheim, California
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Page 50	PEM # 1427 , # 274 ,# 952 Spray Jets
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Page 52	PEM 876C-S to 85m / Al Ain

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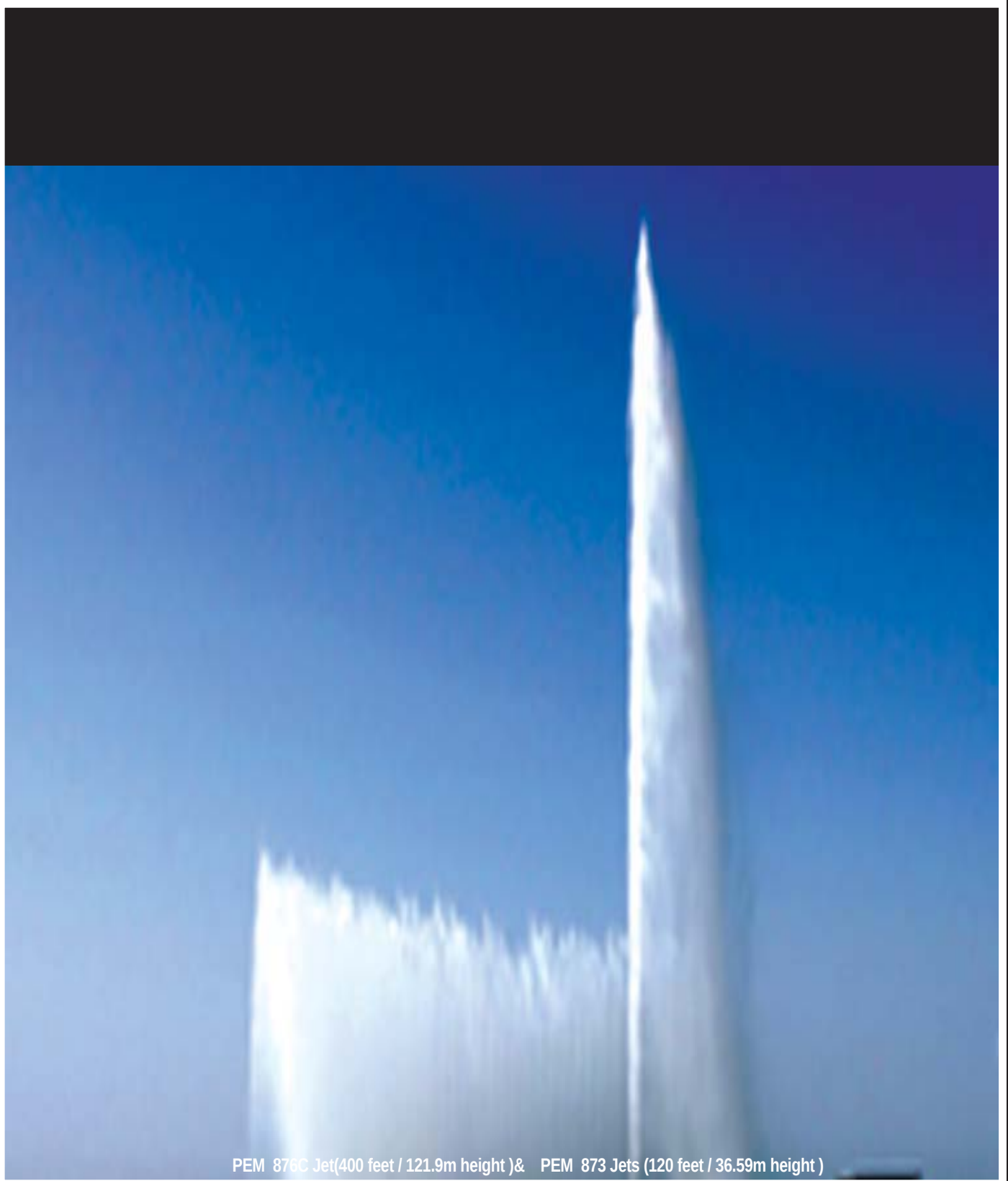
A COLLECTION OF PICTURES SHOWING
WATER FEATURES, WATER DISPLAYS & FOUNTAINS
UTILIZING PEM EQUIPMENT

THE PEM COLLECTION



PEM 876C Jet(400 feet / 121.9m height)illuminated by PEM E 1100 , 1000 W Underwater Lights .
PEM 873 Jets (120 feet / 36.59m height)illuminated by PEM E 500 , 500 W Underwater Lights .

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PEM 876C Jet(400 feet / 121.9m height)& PEM 873 Jets (120 feet / 36.59m height)

This project was created in 2010 in Avaza at the Caspian Sea in Turkmenistan by
Mr. Pavel Pashkowski, Fountains Factory, Dubai U.A.E. Email: info@fountainsfactory.com

THE PEM COLLECTION



PEM 876C to 121.9m / 400'



PEM 12"Flow Straightener Installion



PEM 876 C being installed



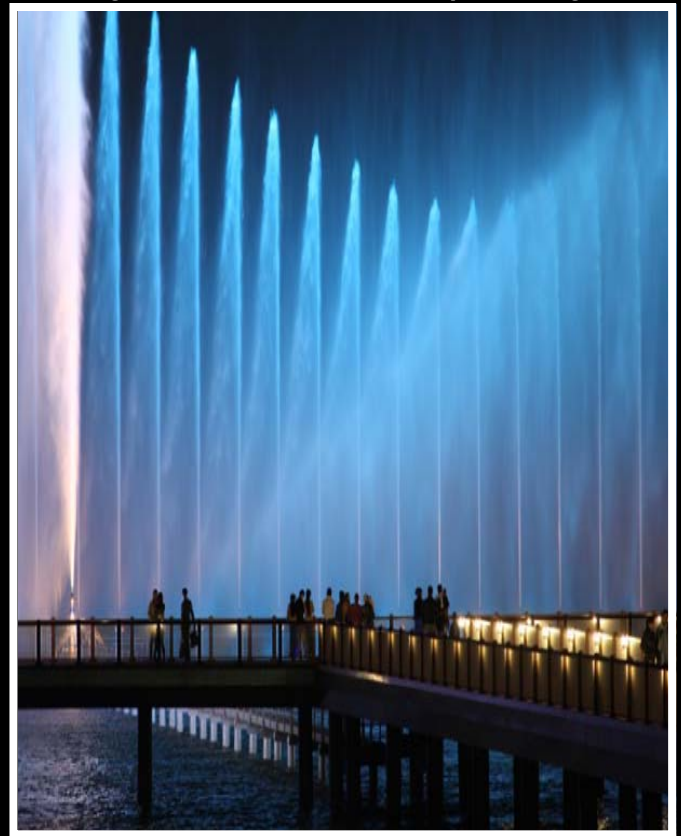
24 x PEM E1100, 1000 W Lights



Submersible Pumps with Lights



PEM 873's to 36.59m / 120'



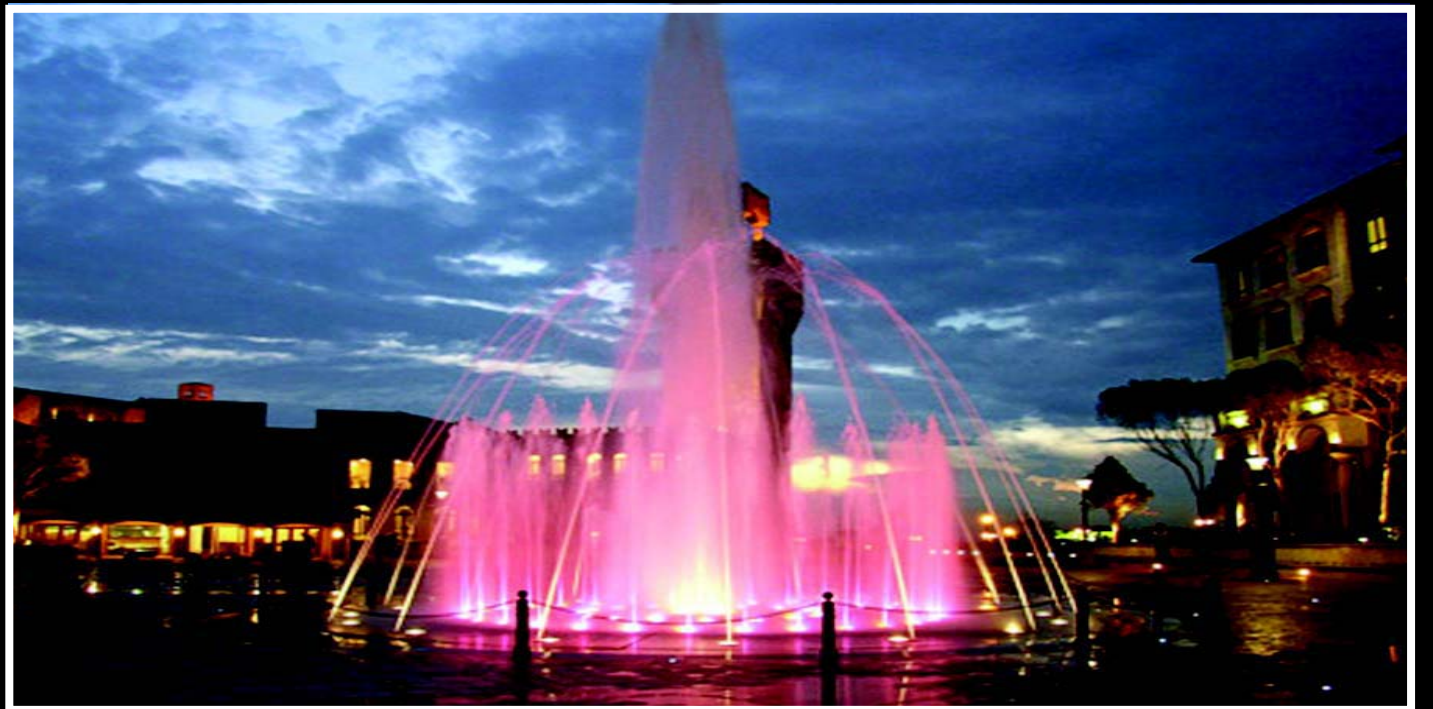
PEM 873's to 36.59m / 120'

This project was created in 2010 in Avaza at the Caspian Sea in Turkmenistan by
Mr. Pavel Pashkowskiy, Fountains Factory, Dubai U.A.E. - info@fountainsfactory.com



SHOW FOUNTAIN with PEM E1450C LED - RGB - DMX Illumination

**Project created by: ATLANTIC FOUNTAINS, INC, Mr. Erich Altvater, Clinton, CT, USA,
af@atlanticfountains.com**

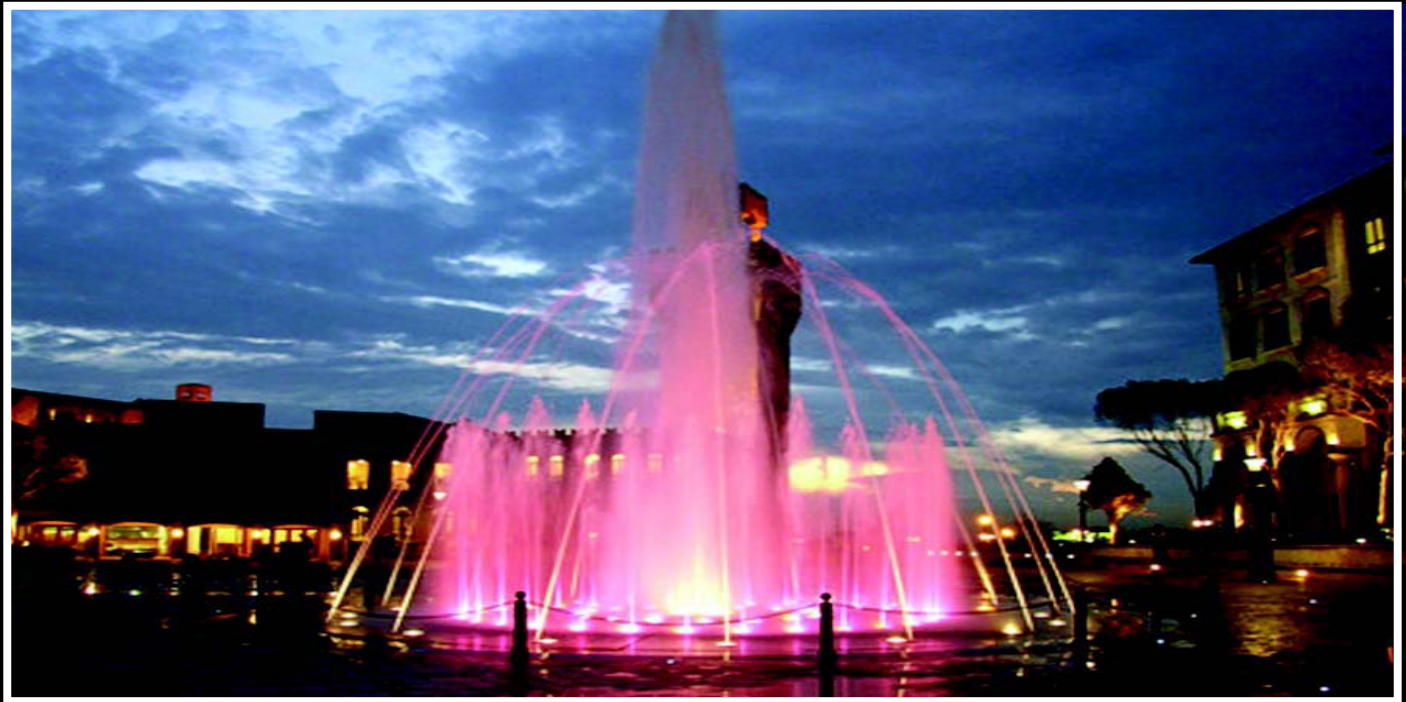


PEM M701-380-246 w.LED's 703,40W, RGB, DMX controlled

Created by : Mr. Ian Hopkins, Pools,Spa & Filtration Supplies (Pty)Ltd, S.A., ian@poolspa.za



SHOW FOUNTAIN with PEM E1450C LED - RGB - DMX Illumination
Project created by: ATLANTIC FOUNTAINS, INC, Mr. Erich Altvater, Clinton, CT, USA,
af@atlanticfountains.com



PEM M701-380-246 w.LED's 703,40W, RGB, DMX controlled
Created by : Mr. Ian Hopkins, Pools,Spa & Filtration Supplies (Pty)Ltd, S.A., ian@poolspa.za

THE PEM COLLECTION



ESCONDIDO / California / USA - FOUNTAIN with PEM E1450C LED - RGB - DMX Illumination
Project created by: ATLANTIC FOUNTAINS, INC, Mr. Erich Altvater, Clinton, CT, USA,
af@atlanticfountains.com

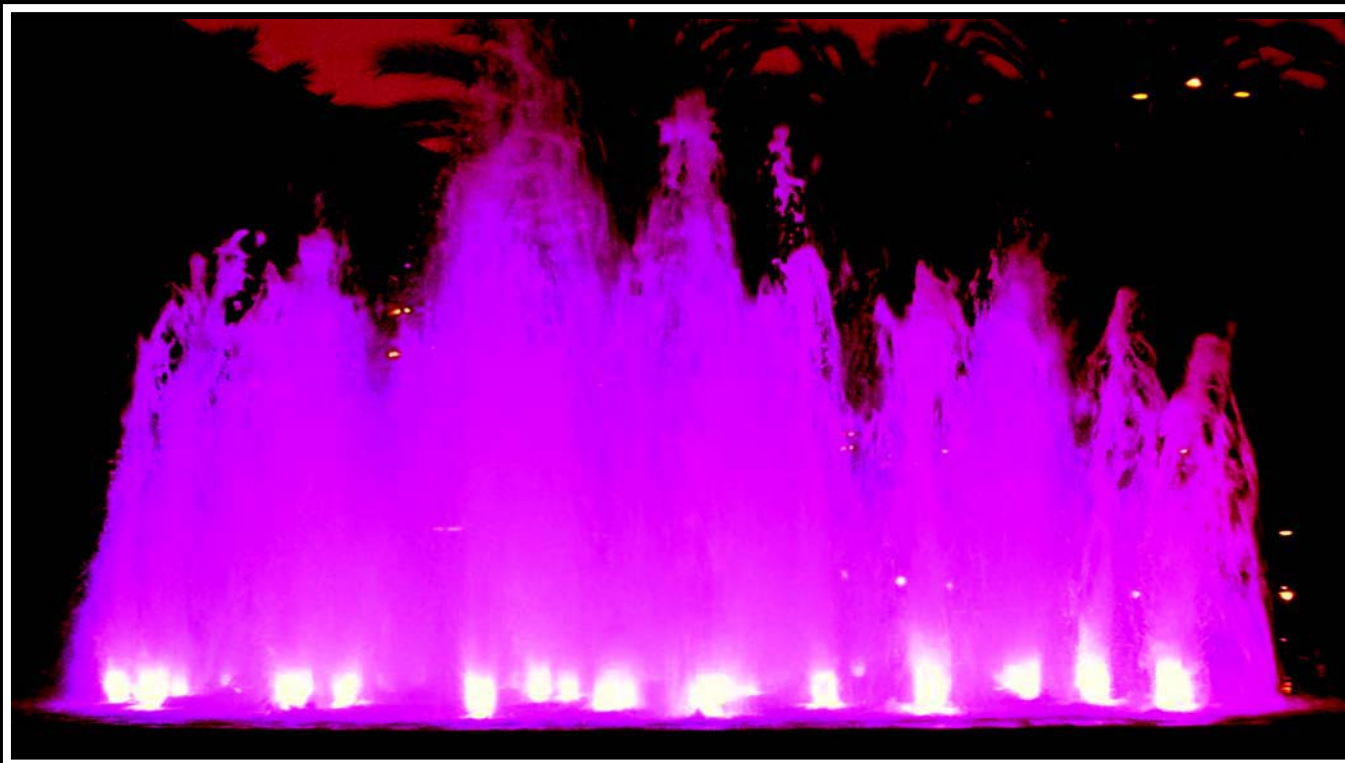
THE PEM COLLECTION



PEM M701-380-246 w.LED's 703,40W, RGB, DMX controlled
Created by : Mr. Ian Hopkins, Pools,Spa & Filtration Supplies (Pty)Ltd, S.A., ian@poolspa.za

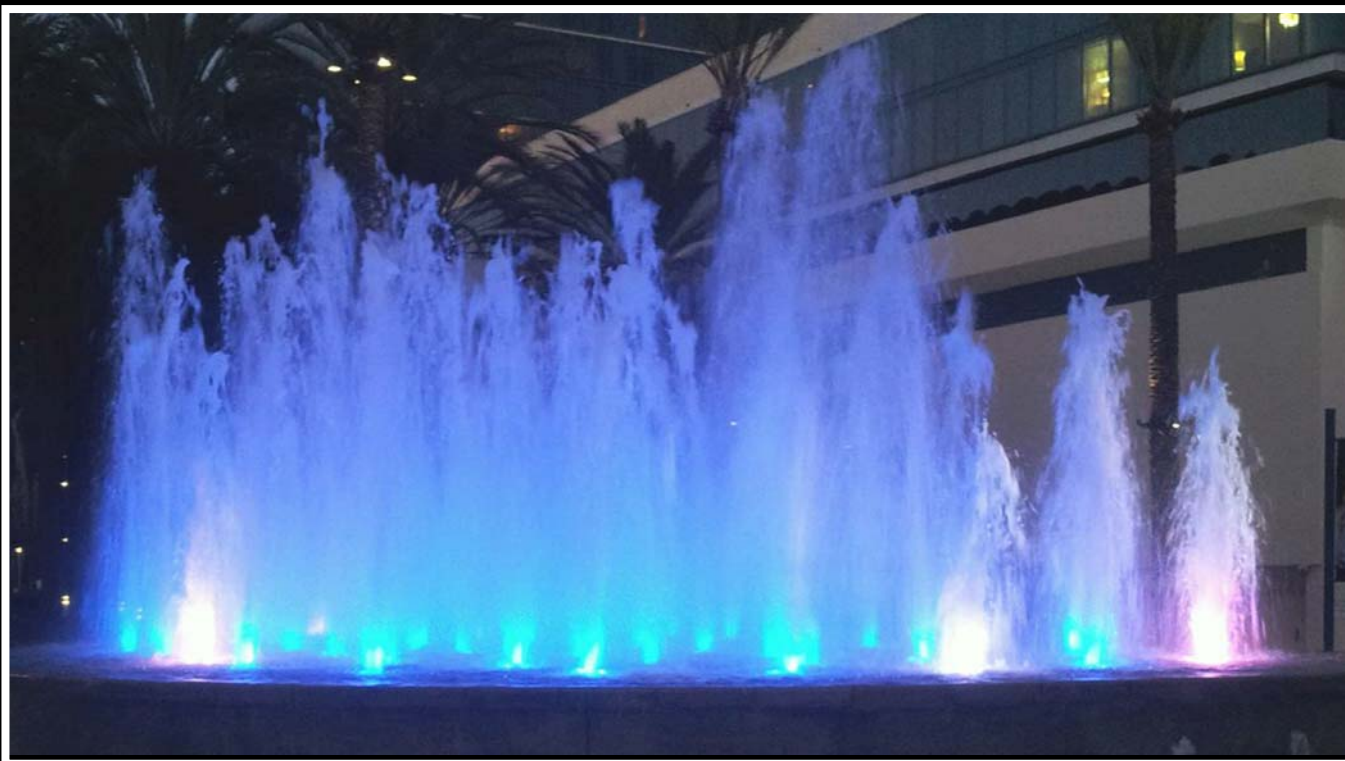
THE PEM COLLECTION

Copyright © Picture courtesy of California Waters, LLC



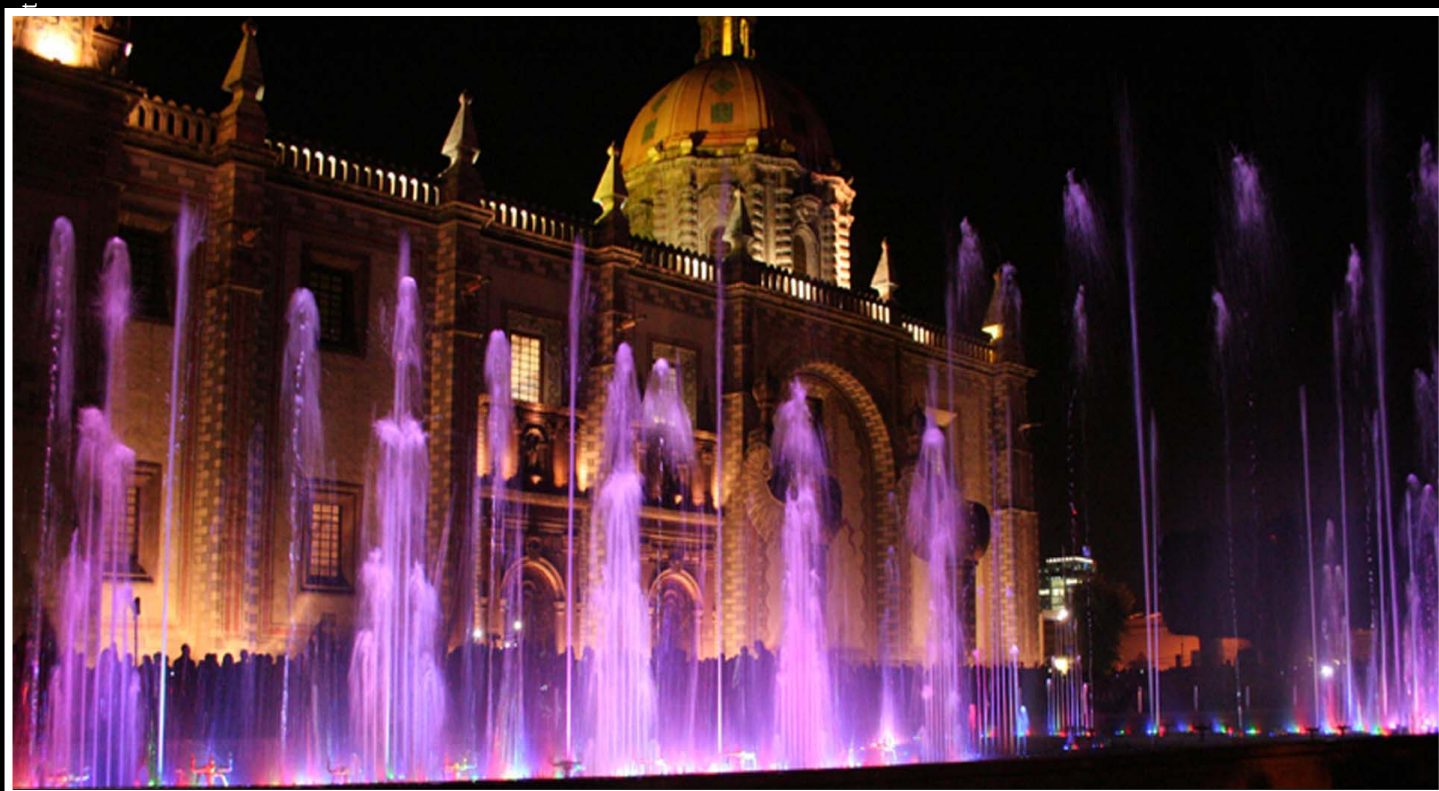
PEM E 2100 & E17M LED, RGB / DMX ILLUMINATION
Anaheim Convention Center, Grand Plaza Fountain, Anaheim, California
Supplied by: Fountain Supply Co., Santa Clarita, California - (dan@fountainsupply.com)

Copyright © Picture courtesy of California Waters, LLC



PEM E 2100 & E17M LED, RGB / DMX ILLUMINATION
Anaheim Convention Center, Grand Plaza Fountain, Anaheim, California
Supplied by: Fountain Supply Co., Santa Clarita, California - (dan@fountainsupply.com)

THE PEM COLLECTION



Fuente Plaza Mariano de las Casas, Queretaro, Mexico -
Fountain with PEM # 1427 Rotators, # 274 Spray Heads & # 952 Aerated Jetss

Project by: Mr. Rodolfo Magnus, Magnifountains,
Div. of Magnigadgets LLC. Austin, Texas, USA, www.magnifountains.com

PEM 124 LAMINAR JET



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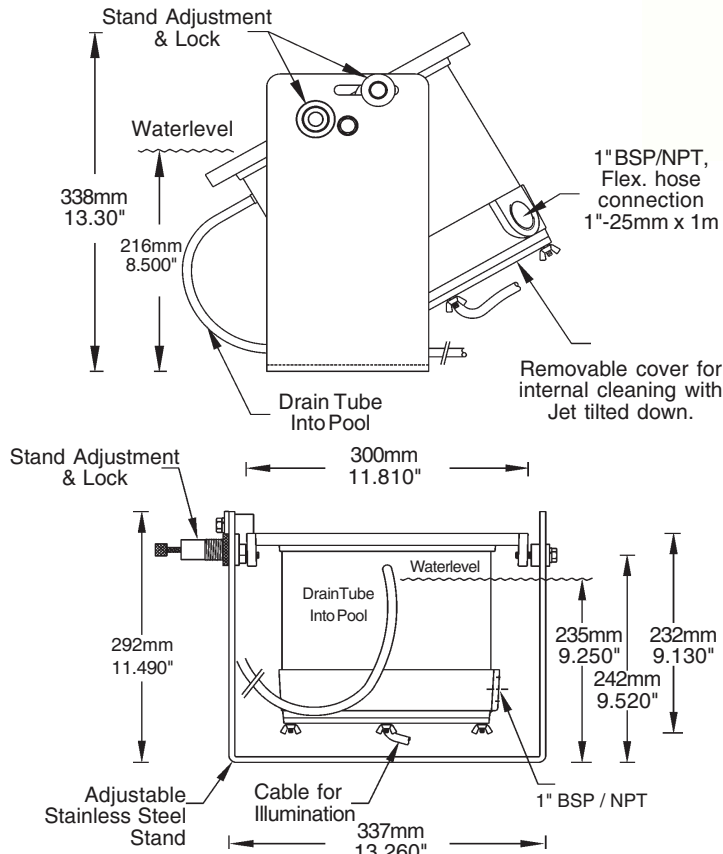


LAMINAR JET PEM 124 - 1 with Stand

506-4201



DIMENSIONS:



506-4201 / 124 -1 LAMINAR JET with Stand,
12VAC, 7.5A Illumination & 10mm laminar nozzle
& Drain Tube into pool.

DESCRIPTION:

PEM 124-1 Assembly:

For wet or dry installation into pool indoors or outdoors. Made of Brass, Bronze, & PVC. Stainless Steel fitted.

Stand: Made of Stainless Steel

Stream Illumination:

12VAC, 7.5A. with MR 16 (65W) NSP internal lightfixture, with heat tempered, Plano Lens.

Electrical Cable: H07RN or STW/SOW, 2.7m standard longer length of cable optional & extra

Vent Drain Tubing, 6 mm / 0.25" x 4.5m / 15 feet supplied with clamp to attach to drain spigot at jet body.

to drain into pool. Tubing elevation must NOT rise above height of connecting spigot at jet. Required to stabilize laminar stream.

Standard Nozzle : 10mm

Optional Nozzle: (optional & extra) (# 506-450401) 13mm

Suction Strainer:

PEM 7280 or 7290, Type 'C' See PEM catalog for selection.

Best operated with large volume cartridge type pool filters.

Service requirements:

Internal assembly of Flow Sieves is attached to rear mounted access cover that can be pulled out together with lightfixture from rear for cleansing. To access, simply tilt rear of jet up & lock into position

PERFORMANCES at a Spray angle of 55 degree off horizontal. With non-disintegrating stream over distance

Standard 10mm (0.394") Nozzle orifice & Stream diameter

Suggested Flow & Nozzle Pressure for horizontal distance of stream:

Distance:	2.5m	3.0m	3.5m	4.0m	4.5m
L/min:	17.5	18.9	21	23	25
Pressure:	1.7m	2.0m	2.4m	2.6m	2.8m

Distance:	10 Feet	15 Feet
USGPM:	5.0	6.5
Pressure:	6.4 Feet	9.2 Feet
Best Spray Distance:	Appr. 3.0m (10') to 4.0m (13')	

For trajectory calculations see Page 538 of PEM catalog/website

Optional 13mm (0.511") Nozzle orifice & Stream diameter

Suggested Flow & Nozzle Pressure for horizontal distance of stream:

Distance:	2.5m	3.0m	3.5m	4.0m
L/min:	24	27	29	32
Pressure:	1.2m	1.6m	1.9m	2.2m

Distance:	10 Feet	15 Feet
USGPM:	7.2	9.3
Pressure:	6.3 Feet	9.6 Feet
Best Spray Distance:	Appr. 3.0m (10') to 3.5m (12')	

* Subject to wind or air movement conditions

PEM 124-1 LAMINAR JET

SERVICING & RE-LAMPING



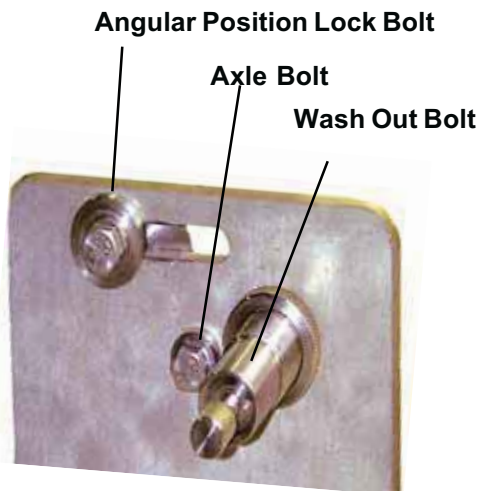
Vent Drain ,
6mm / 0.25"
4.5m / 15'
tubing w. clamp
back into pool

Normal Operating Position



3 Anchor Bolts

Cleansing Position



Angular Positioning Controls of Stand

VERTICAL POSITION ADJUSTMENT:

The stand is to be held in position by 3 anchor bolts(9mm). For horizontal adjustment, loosen all three bolts, turn jet with stand into position desired. Lock center bolt and 2 outside bolts.

ANGULAR POSITION ADJUSTMENT

Loosen Positioning Hex Bolt, turn off center disc as required to make contact. Tilt jet against tilt lock bolt, its normal suggested angular position. If this is satisfactory, lock Position Hex Bolt into this position.

VENT DRAIN TUBE

Connects to spigot in jet body and drains back into pool, tubing elevation must not exceed height of connecting spigot. As drain is under pressure the tube clamp must be used to secure tubing to jet.

IF A DIFFERENT ANGULAR ADJUSTMENT IS REQUIRED:

1. Pull out tilt lock bolt
2. Adjust stream trajectory.
3. Position off-center wheel against Jet body.
4. Lock Positioning Hex Bolt
5. Tighten axle bolts just enough to permit smooth tilting of jet.

Do not attempt vertical jet adjustment, a special drop catcher is required (check with factory).

CLEAN OUT & RE-LAMPING POSITION:

Clean Out Position to remove flow sieves and or replace lamp (12VAC-75W, MR 16), requires flexible 1" hose connection of sufficient length to permit movement of jet.

TO CLEAN SIEVES OR REPLACE LAMP

1. Pull out tilt lock bolt and tilt jet down with clean out cover exposed on top. Release lock bolt to lock jet into position.
2. Remove wing nuts, tighten lift out bolts until cover is loose, grip cordseal, lift out and loosen lamp lid to remove the flow sieves for cleaning.
3. Unscrew Lamp Lid. Lift out spacers. With piece of masking tape lift out lens and lamp. Replace lamp & spacers (follow pictorial description of PEM 124 & 125 M2 service guide), tighten the lamp lid securely
4. To close the jet: Screw back the lift out bolts, replace the flow sieves with the rim toward the cover plate, tighten the lamp lid securely and insert assembly into jet and tighten wing nuts.
5. Tilt Jet back into operating position.

RELAMPING WITH SELF COLOR CHANGING LED LAMPS WITH INFRARED CONTROLLER:

Install lamp as above, but do not turn on water.

Remove the nozzle.

Turn on power to light, select operating style on remote control, point same closely on light, activate.

Observe if color change is as desired, put nozzle back properly and turn on water.

PEM TYPE 'B'

ANGULAR SPRAY DESIGN SUGGESTIONS

PEM Type 'B' spray design calculations are to be used solely for PEM M2 Series Jumping Jets, except for PEM 133M2 and PEM 124 Series Laminar Jets If not certain about a particular design request assistance from factory.

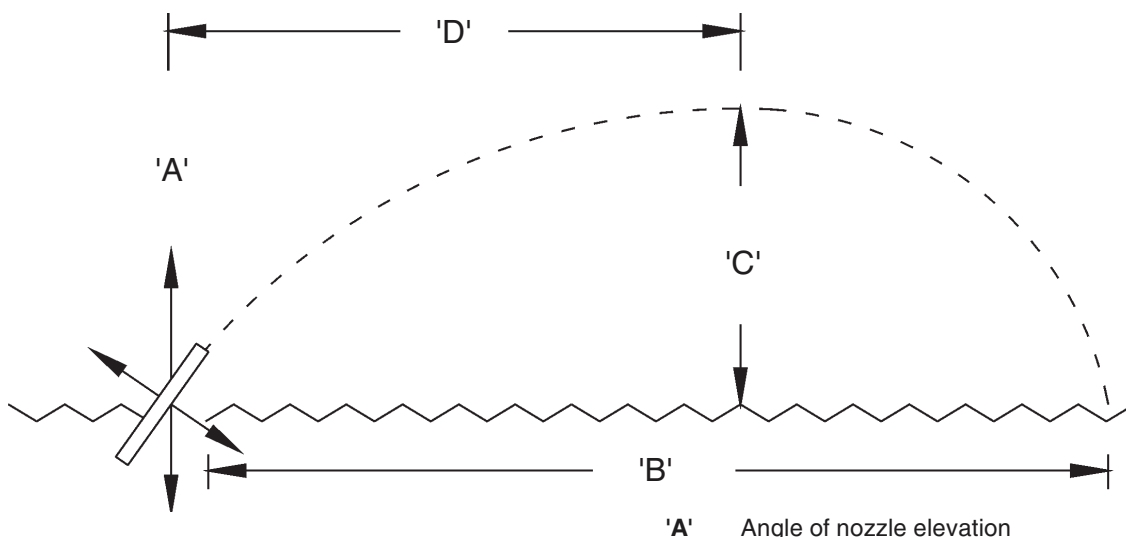
SUGGESTION: Before jumping over people, consult with and obtain release from liability insurer of project.
For spray design calculations for other nozzles or jets see regular : 'PEM ANGULAR SPRAY DESIGN CALCULATIONS'

DESIGN FACTORS

In General:

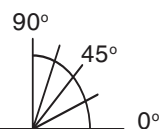
Multiplication Factors are used to find angular spray performances when sprayheight is known.

Dividing Factors are used to find the sprayheight when angular performances are known



'A'	'E'	'C'	'D'
5°	0.90	6%	36%
15°	1.33	11%	46%
25°	1.83	17%	49%
35°	1.94	22%	51%
45°	2.10	27%	52%
55°	1.80	36%	53%
65°	1.50	50%	56%
75°	0.90	99%	59%
85°	0.40	245%	64%

'A' Angle of nozzle elevation



'B' Horizontal distance of throw from nozzle.

'C' Height of trajectory in percentage of 'B'.

'D' Highest point of trajectory in horizontal distance from nozzle, measured in percentage of 'B'.

'E' Multiplying or dividing factor for spray design calculations

'V' Vertical sprayheight (1967-'X')

TO FIND:

HOW:

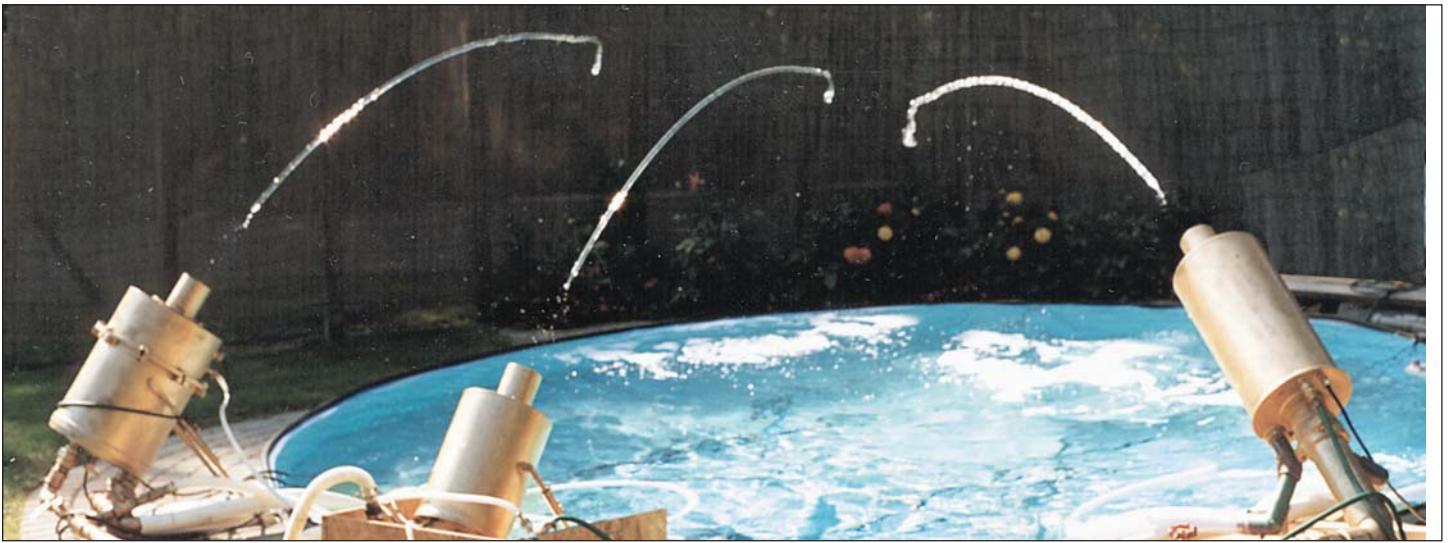
1.	Horizontal distance of throw for a desired angle of spray, when only the vertical sprayheight is known.	Establish vertical sprayheight (factor 'V') and multiply the same by factor 'E' to achieve horizontal spray distance. ('X') x ('E') : Horizontal Distance
2.	Performance requirement of a spray pattern with known angle of nozzle discharge or the equivalent vertical sprayheight performance requirements	Establish horizontal distance of throw from nozzle and divide by factor 'E' on same line as shown discharge angle of nozzle . This will give vertical sprayheight which is then used to find performance requirements. (A) - ('B') : ('E') : Vertical Sprayheight
3.	Trajectory of a spray of water	Establish horizontal distance of throw (factor 'B') then calculate factors 'D' and 'C' thereof and combine the results with 'B' to lay out the trajectory.
4.	The jet elevation angle (factor 'A') for the specification of particular trajectories or spray effects.	Establish horizontal distance of throw (factor 'B'), calculate highest point of trajectory (factor 'C') thereof and read on the factors table the angle of elevation (factor 'A') on the same line as the result of the calculated height of trajectory (factor 'C')
5.	The manometric <u>nozzle</u> pressure for a sprayheight	Multiply vertical sprayheight (factor 'V') x 1.22 + 10% .

Data given on this page are strictly infomative only, to be used in the layout of normal size water displays, for special applications provide full scale prototype testing as to be installed before providing artistic impressions of the project.

PEM 124-1 LAMINAR JET

SERIAL	PEM	LAMINAR STREAM JET 124-1	Wt.
505-42000*	Cat.	* Changed from 506-42000 - to 505 - 42000	Kg
		CUSTOM MADE TO ORDER	
		Illuminated Laminar Stream Jet, 10mm / 13mm Stream (Specify Size!)	
505-4201	124-0	10mm or 13mm Stream, 12VAC, MR16-65W	9.3
505-4202	124-1	10mm or 13mm Stream, St. St.Stand, 12VAC, MR16-65W	14
505-42001	124-001	NO Illumination, Deduct From Price	
505-4203	124A-0	10mm or 13mm Stream, for Fibre Optic Illumination, Spec. Cable Size	9.1
505-4204	124A-1	10mm or 13mm Stream,Stand, for Fibre Optic Illumination, Spec. Cable Size	13.3
505-4221	124-X13	Extra, Optional, 10mm Nozzle	0.3
505-4222	124-X13	Extra, Optional, 13mm Nozzle	0.3
		REPLACEMENT PARTS	
506-4769	124-69	124-1 Extra Set of Internal Flow Sieves	7
506-4833	124-33	124-1 & 125, 141, 142 & 143M2 Light Lenses w. Seal Ring	0.5
506-4851	124-51	124-1 Fibre Optic Termination Lens w. Seal Ring	0.1
506- 4870	124-70	124-1 Cover 'O' Ring Seal	0.2

PEM M2 JUMPING JETS



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PEM M2 JUMPING JETS



GENERAL DESCRIPTION

For controlled moments of time and intervals, the new low voltage (12 or 24 VDC) control mechanism within the jet assembly permits the passage of a stream of water for an adjustable length of time, usually a fraction of a second, thereby creating a piece of a solid stream or rod of water, its length and intervals of ejection is electronically controlled on a selected trajectory at desired intervals.

From a laminar, full length solid stream to rods of 1.0m in length or shorter, the water travels through the air on its trajectory. In multiple jet installation. All jets are to interact as desired, this is achieved through computer programming. For musical spray effects, the (inter)action of the individual jets are either pre-programmed or by sound frequency controls. As the water supply discharges continuously inside of the assembly housing, the same must be installed so that it can drain at all times. The lower lip of the in pool installed jet assembly housing must be a minimum of appr. 150mm (6.0") above a standing water level to permit fast and complete drainage of the discharge from within the assembly. For dry installed jets a minimum 2" (50mm) self draining pipe back into the pool must be provided. Angular application jets (to maximum of 60 degree) cannot be used for higher angle or vertical applications, as different drop catchers and nozzles are required. All in children's playground Jumping Jet installations to be in controlled access & continuous supervised locations only with source of jumping water inaccessible to small children.

TYPES OF PEM 'M2' JUMPING JETS

Compact Jumping Jet with **Standard 10mm (0.393")** or **Optional 13mm (0.511")** Stream with internal illumination that is carried within the stream to the impact area (while the stream is connected to the jet). This jet assembly was created for in pond in indoor or outdoor installations with clean water.

With **19.05mm (0.750")** compression nozzle for **25mm (1.0")** Stream, designed to create a solid & highly visible stream, for in pond or out of pond installation with drain leading back into pond. This jet does not have flow sieves and can digest up to 6mm, 0.250" solids.

With **19.05mm (0.750")** compression nozzle for **25mm (1.0")** Stream designed to create a solid & highly visible stream, for in pond installations. This jet does not have flow straighteners and requires the addition of such in the supply pipe. It can digest up to 6mm, 0.250" solids.

For use by professional fountain builders who had experience with PEM 132 & 133 Jumping Jet installations.

With **Standard 13mm (0.511")** Stream or **Optional 16mm full laminar stream** with internal illumination that is carried within the stream to the impact area (while the stream is connected to the jet). This jet assembly was created for in pond installations into clean water.

With **Standard 12.9mm (0.500")** or **Optional 15.9 mm(.625")** stream for **Vertical "Jump or Shooting Spray"**, for in pond installations, indoors or outdoors, it has internal illumination carried over the full height of the stream, while connected to the jet.

This jet is recommended for music controlled spray effects.

With **Standard 16.0mm (0.625")** or **Optional 18.0 mm(.736")** full laminar stream with internal illumination that is carried within the stream to the impact area (while the stream is connected to the jet). This jet assembly was created for in pond or out of pond with drains leading back into pond. Also for **quick & easy maintenance of public park installations, where more often cleaning without affecting the spray pattern is required.**

With **choice of 25.4mm (1.000")**, **22.2mm (0.875")** compact stream or **19.0 mm(0.750")** full laminar stream for internal fibre optic illumination (not included). This jet assembly was created for in pond or out of pond with a drain leading back into pond. Also for **quick & easy maintenance of public park installations, where more often cleaning without affecting the spray pattern is required.** With the larger size streams the spray effects are ideal for water parks as the compact streams do not have the intensity of the laminar stream, while being more visible..



PEM 125M2
3.5m-4.5m
12'-15'

PEM 132M2
4.0m -7.0m
13'-23'

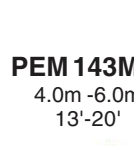


PEM 133M2
4.0m -7.0m
13'-23'

PEM 141M2
3.5m-5.0m
12'-17'



PEM 142M2
1.5m-4.5m
5'-15'



PEM 143M2
4.0m -6.0m
13'-20'



PEM 144M2
4.0m -6.0m
13'-20'

PEM SINGLE JET (TEST) CONTROL

(# 506 - 4811) PEM 'M2' Type Test Control for a single PEM M2 Type Jumping Jet Testing or Operation

All prewired in corrosion resistant, polycarbonate enclosure.

240V, 50 Hz 10A or 120V, 60 Hz, 12A (Specify supply Voltage).

Output to assembly is either 12 VDC, 2.1A. or 24 VDC, 1.1A (specify output voltage) and 12 VAC, 50/60 Hz, 7.5 A. for internal light

Control functions: ON/OFF, TRAJECTORY TEST, MANUAL or AUTOMATIC JUMPING with LENGTH of ROD and INTERVAL ADJUSTMENT

For Suggestion about Computer Programmable, Sequenced Multiple PEM M2 Jumping Jet Installations see Page 225

ELECTRICAL REQUIREMENT OF CONTROL MECHANISM FOR EACH JET: 12VDC, 2.1 A. or 24VDC, 1.1 A (Specify Voltage)

ELECTRICAL REQUIREMENT OF INTERNAL STREAM ILLUMINATION (PEM 141,142 & 143): 12VAC. 7.5A.

#506-4200 Series

PEM 125 M2

COMPACT JUMPING JET
WITH ILLUMINATED, LAMINAR FLOW
FOR IN POND INSTALLATION



PEM 125M2SERIES JUMPING JETS
506-4201 / 125 M2 Jet without Stand
506-4212 / 125 M2-14 Jet with Stand.
506-4236 / 125 M2-36-M Jet w. stand & Test control *, 120VAC, 60Hz,
506-4237 / 125 M2-37-M Jet w. stand & Test control * 240VAC, 50Hz,
* Includes: Power Supply, Transformer for cut off mechanism,
illumination and 3 x 3m /10 Feet electrical cables. .

DESCRIPTION:
PEM 125 M2 Assembly:
For into pond installation indoors or outdoors.
Made of Brass, Bronze & PVC. Stainless Steel fitted.
PEM 125 M2-14 Stand: Made of Stainless Steel
Electrical Control Mechanism: 12VDC, 2.1A. or 24 VDC, 1.1A. (Specify)
Stream Illumination: (While connected to jet orifice)
12VAC, 7.5A. with MR 16 (65W) NSP internal lightfixture,
with heat tempered, Plano Convex Lens.
Electrical Cable: H0R7N or STW/SOW
1. Jet Control Mechanism: 5.0m (16.4') x 2.5mm2 (16/3AWG)
2. Illumination: 5.0m (16.4') x 2.5mm2 (16/3AWG)
3. Test Control : 3 x 3.0m (10.0')- (1 x 1.5mm2, 2 x 2.5mm, (3 x 16/3 AWG)
Pipe Connection:
1 " BSP/NPT, Maximum size of internal solid control valve: 3/4"
Standard Nozzle : 10mm
Optional Nozzle: (optional & extra) (# 506-450401) 13mm (0.511").
Drop Catcher : Optional
For dropless spray performances, normally not required .
Suction Strainer:
PEM 7280 or 7290, Type 'C' See PEM catalog for selection.
Best operated with large volume cartridge type pool filters.

Service requirements:
Internal assembly of Flow Sieves is attached to rear mounted access cover, can be pulled out together with lightfixture from rear for cleansing. To access, simply tilt rear of jet up. Ease of service when required.

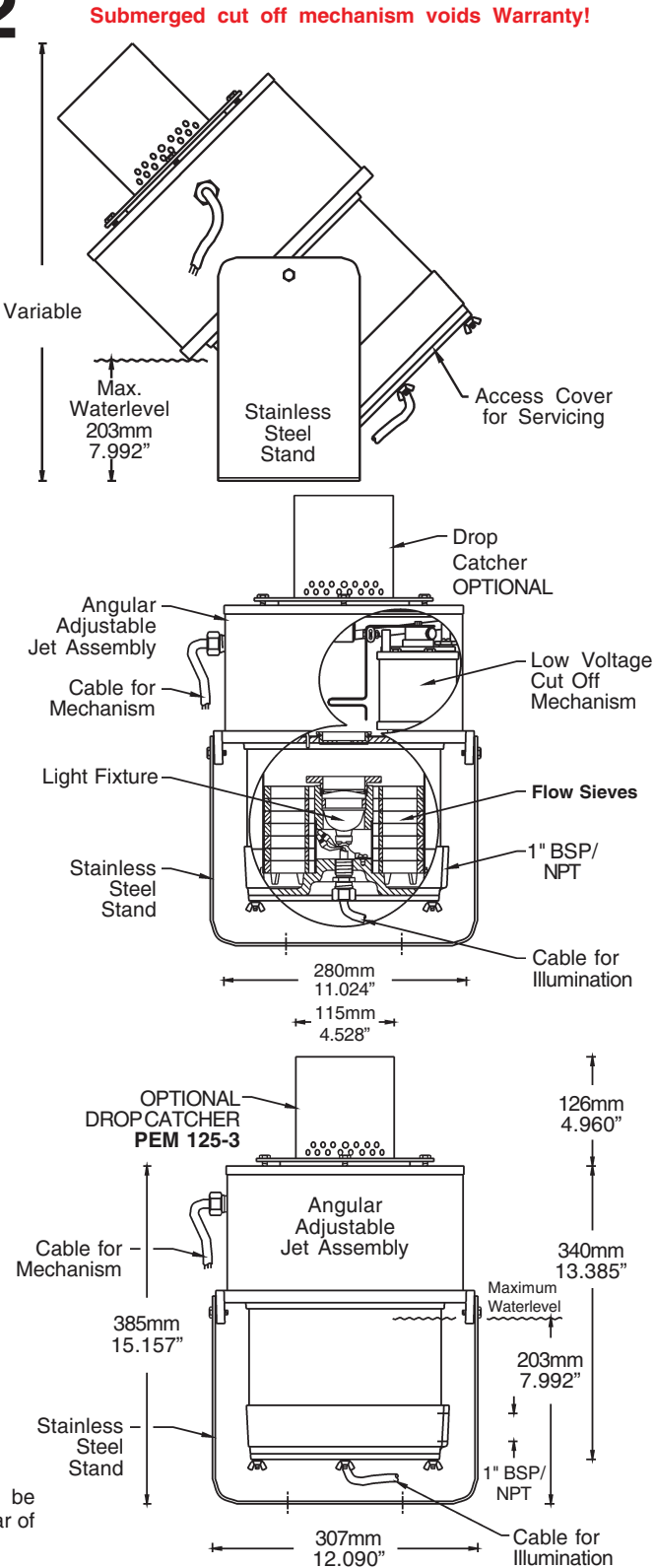
PERFORMANCES at a Jumping Angle of 55 degree off horizontal. Laminar flow, solid stream/water rods over distance.

Standard 10mm (0.394") Nozzle orifice & Stream diameter						
Best Jumping Distance: Appr. 3.5m (12') to 4.5m (15')						
For trajectory calculations see Section M2 - 10						
Suggested Flow & Nozzle Pressure for horizontal distance of jumps:						
Distance:	2.5m	3.0m	3.5m	4.0m	4.5m	5.0m
L/min:	17.5	18.9	21	23	25	27
Pressure:	1.7m	2.0m	2.4m	2.6m	2.8m	3.2m

Distance:	10 Feet		15 Feet	
USGPM:	5.0		6.5	
Pressure:	6.4 Feet		9.2 Feet	

Optional 13mm (0.511") Nozzle orifice & Stream diameter						
Best Jumping Distance: Appr. 3.5m (12') to 4.5m (15')						
For trajectory calculations see Section M2 - 10						
Suggested Flow & Nozzle Pressure for horizontal distance of jumps:						
Distance:	2.5m	3.0m	3.5m	4.0m	4.5m	
L/min:	24	27	29	32	35	
Pressure:	1.2m	1.6m	1.9m	2.2m	2.6m	2.9m

Distance:	10 Feet		15 Feet	
USGPM:	7.2		9.3	
Pressure:	6.3 Feet		9.6 Feet	



PEM 132M2 JUMPING JACK JET

PEM 132M2 DESCRIPTION:

The Jet Assembly creates highly visible and compact stream/water rods over distance. The stream cut off is by low Dc voltage electro-mechanical mechanism, little or no service required. Ease of service when needed. **Suitable for Installation into pond.**

PEM 132M2 Jet Assembly is made of Brass, Bronze and Copper, stainless steel fitted. Enclosure and drop catching assembly stand is fully field adjustable to allow for various trajectories at angular elevations. This assembly has internal flow straighteners but it must be fed with non turbulent, non twisting water. Control valve size to be max. 1 1/4".

#506-4360 Series

506-4368/132M2, Jet on, No Stand

506-4361/-61, Jet & Single Mounting Stand

506-4362/-62, Jet & Double Mounting Braces

506-4357/132M2 /-'M', Single Jet Test Control, 120 VAC or 240 VAC, Supply voltage must be specified. .

Electrical requirement of cut off mechanism: 12VDC, 2.1A or 24VDC, 1.1Amp.. **(Specify operating voltage)**

For Dimensions see section 5 of 12

PERFORMANCES:

Jumping Angle: 55 degree off horizontal. For trajectory see catalog page 544

Suggested Flow & Nozzle Pressure for horizontal distance of jumps:

Distance:	3.0m	3.5m	4.0m	4.5m	5.0m	5.5m	6.0m	6.5m	7.0m
L/min:	84	90	94	99	103	109	114	119	127
Pressure:	7.3m	8.0m	8.7m	9.3m	9.9m	10.5m	11.2m	11.9m	12.5m
Distance:	10 Ft.			15Ft.			20Ft.		
USGPM:	22.2			26.2			30.1		
Pressure:	23.9 Ft.			67.9 Ft.			81.8 Ft.		
Best Jumping Distance: Appr. 4.5m - 6.0m (15.0' - 20.0')									

Submerged cut off mechanism voids Warranty!

Electrical Cable: 5.0m 2 x 2.5mm² or 16.4' x 16/3 AWG

Pipe Connection: 1 1/2" BSP/NPT

Water Quality required:

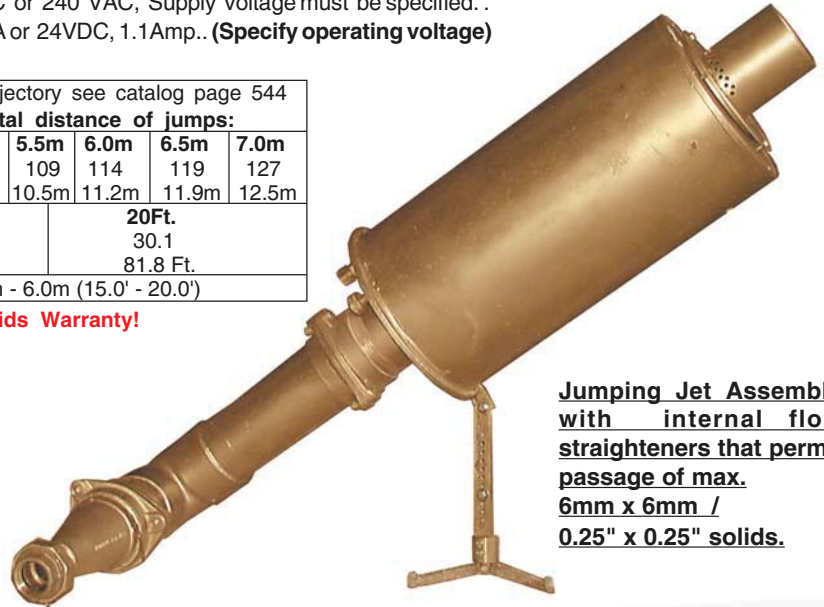
Pond Water with max. 6mm x 6mm, 0.250" x 0.250" solids

Compression orifice size: 19.05mm (0.750")

Stream Size : 25mm (1.0")

Suction Straining, see PEM 'A' Type

7280 or # 7290 Suction Strainers



Jumping Jet Assembly with internal flow straighteners that permit passage of max. 6mm x 6mm / 0.25" x 0.25" solids.

PEM 133M2 DESCRIPTION:

Highly visible solid stream/water rods over distance. Simple electro-mechanical mechanism, little or no service required. Ease of service when needed.

Electrical Cable: 5.0m, longer lengths optional and extra

Pipe Connection: 4" BSP/NPT .

Compression Nozzle size: 19.05 mm. (0.750")

Stream Size : 25mm

PEM 133M2 Jet Assembly is made of Brass, Bronze and Copper, stainless steel fitted

Electrical requirement of cut off mechanism: 12VDC, 2.1A or 24VDC, 1.1Amp.. (Specify operating voltage).

506-4414 / 133M2, Jet Assembly

As this assembly does NOT have internal flow straighteners, it must be fed with non- turbulent, non- twisting water. The 4" pipe supply pipe sizing is for the dampening of water turbulence and insertion of flow straighteners.

Solid internal control valve size to be max. 1 1/4".

Recommended for into pond installation only

For Requirements & Description: See PEM 132 M2.

For Dimensions see section 5 of 12

As this jet assembly does NOT have internal flow straighteners, its application is recommended for use by installers with previous experience in PEM Jumping Jet installations and testing.

PEM 133M2 requires perfect straightened inflow

Jumping Jet Assembly permits passage of max. 6mm x 6mm / 0.25" x 0.25" solids.

Suction Straining , see PEM 'A' Type # 7280 or # 7290 Suction Strainers in PEM catalog.

Submerged cut off mechanism voids Warranty!

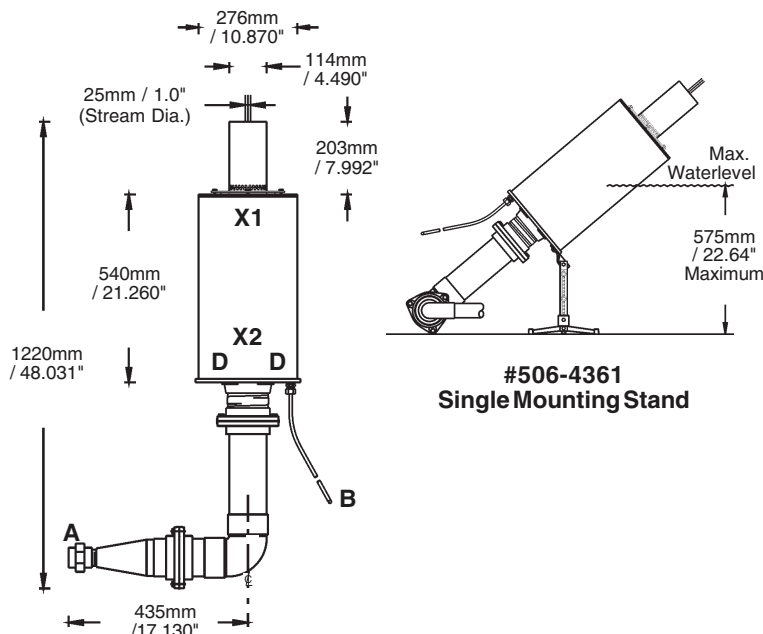
#506-4410 Series PEM 133M2 JUMPING JACK JET without Flow Straighteners



PEM 132M2

JUMPING JET

DIMENSIONS



PEM 132M2 JET ASSEMBLY

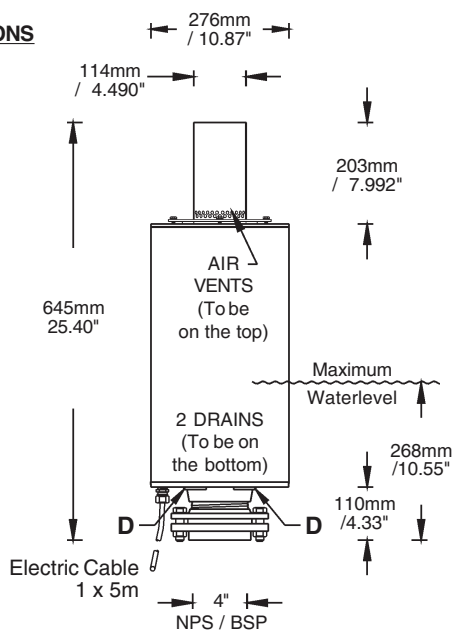
- A** 1 1/2" Pipe Union Coupling (Brass) for Main Jet
- B** Electric Cable, 5.0m H0R7, 2.5mm²/STWA/16/3
- X1** Jet Compression Orifice: 19.05mm \ 0.750"
- OX** Ejected Stream Diameter expands to 25.0mm \ 1.0"

Submerged cut off mechanism voids Warranty!

PEM 133M2

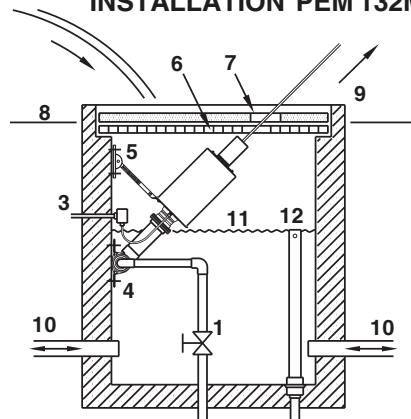
JUMPING JET

DIMENSIONS

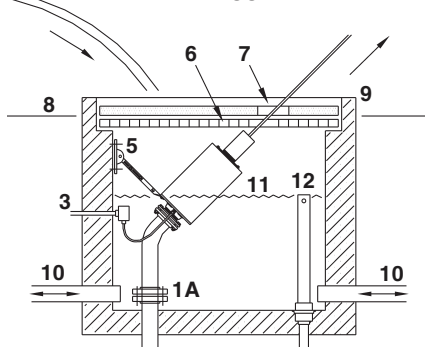


Submerged cut off mechanism voids Warranty!

SUGGESTED SPRAY CHAMBER INSTALLATION PEM 132M2



PEM 133M2



SPRAY CHAMBER INSTALLATION

This installation is for hidden single or multiple jets. The enclosure can be either concrete or fibreglass etc. The suggested minimum inside dimensions : App. Depth 1.5 - 1.8m \ 5.0-6.0 Ft x same Inside Diameter. Care must be taken that all enclosures are at exactly same level, inter-connected, and that the jet assembly is not submerged. Also that the chamber has sufficient access for installation and servicing. 'GLORY HOLE' Installation within pools uses similar chamber size, but with 10/20mm (0.392-0.787") submersion over top of rim & grate cover, when jets not working the water hides everything, with jets working the chamber is exposed, while waterlevel remains, but overflows into pit (Glory Hole). A suitable large size sump pump is required to return water into pool while maintaining the low waterlevel in spray chamber while jets are working.

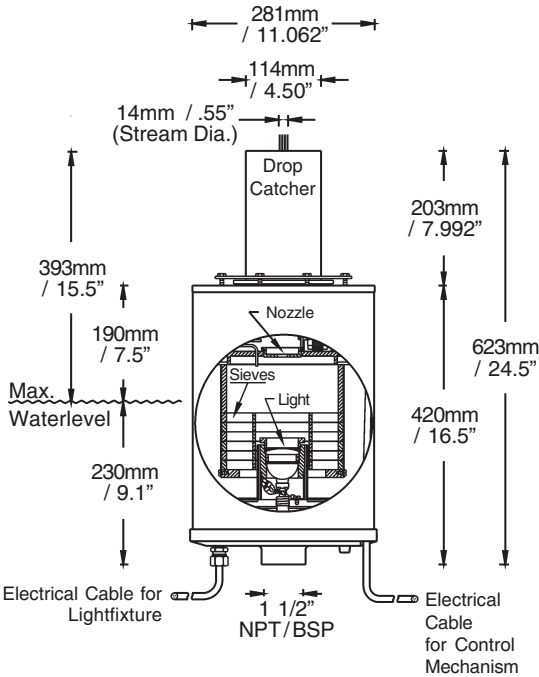
EXPLANATIONS:

1. Pump Supply to **PEM 132M2** minimum 1 1/2", valve to be max. 1 1/4" size and as far away from jet as possible. Entering chamber through **PEM 637312**, 1 1/2" fitting.
- 1A. Pump Supply to **PEM 133M2** 4" Flex. pipe for a minimum length of 3m / 10 feet , 1 1/4 control valve size Entering chamber through **PEM 637426**, 4" fitting.
3. Electrical Conduit, **PEM J61-1, 3/4"** with **PEM J 1/1** or **J1/2** (for two jets) **Junction Box** with **PEM J 14 Cordseal** - to connect assembly cable Clamp to bolt pipe to wall (by others).
4. **PEM 506-4361** Mounting Stand (adjustable)
5. Fibre or stainless steel grating with cut out opening .
6. '3M No Splash' Matting, appr. 50mm \ 2.0" thick (multi layered) with cut out opening for jet.
8. Ground Level or Pool Floor
9. Chamber rim above ground or floor level: 100mm \ 4.0"
10. 4" Balancing pipe(s) to/from other chambers. Entering chamber through **PEM 637426**, 4" Fitting.
11. Maximum waterlevel in chamber
12. **PEM 6092-05**, 2" Drain base with **PEM 6220-05** stand pipe, to serve as overflow and drain.

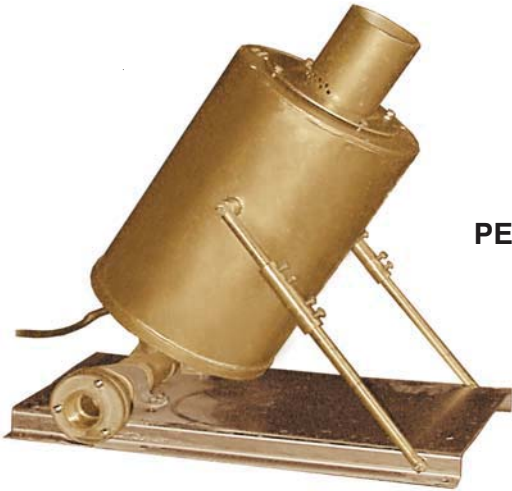
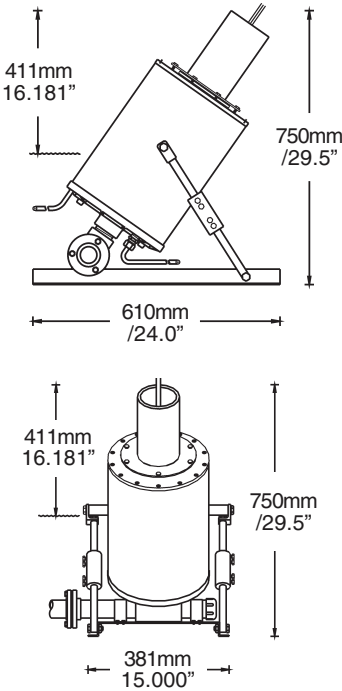
#506-4500 Series

PEM 141M2

ILLUMINATED, LAMINAR FLOWJUMPING JET
FOR IN POND INSTALLATION



PEM 141M2-11,
Jet assembly with stand



PEM 141M2 - 11

PEM 141 M2 series JUMPING JETS

506-4504 /141M2 Jet without Stand

506-4518 /141M2-11 Jet with Stand

506-4526/ 141M2-11-M Jet w. stand & Test control *, 120VAC, 60Hz, 12 VDC or 24VDC (specify) for cut off mechanism, 12VAC for illumination.

506-4527/ 141M2-11-M Jet w. stand & Test control *, 240VAC, 50Hz, 12 VDC or 24VDC (specify) for cut off mechanism, 12VAC for illumination.

* Includes:

Power Supply for mechanism, illumination and 3 x electrical cables.

DESCRIPTION:

PEM 141 M2 Assembly:

For into pond installation indoors or outdoors.

Made of Brass, Bronze, and PVC. Stainless Steel fitted.

PEM 141 M2-14 Stand: Made of Stainless Steel and Brass.

Electrical Control Mechanism:

12VDC, 2.1A. or 24 VDC, 1.1A. (Specify operating voltage)

Stream Illumination: (While connected to jet orifice) 12VAC, 7.5A. with MR 16 (75W) NSP internal light fixture, with heat tempered, Plano Lens.

Electrical Cable: H0R7N or STW/SOW

1. Jet Control Mechanism: 5.0m (16.4') x 2.5mm² (16/3AWG)
2. Illumination: 5.0m (16.4') x 4mm² (14/3 AWG)
3. Test Control : 3.0m (10.0') x 1.5mm² (16/3 AWG)

Pipe Connection:

1 1/2" BSP/NPT, Maximum size of internal solid control valve: 1"

Standard Nozzle : (# 506-450401) 13mm (0.511")

Optional Nozzle: (optional & extra) (# 506-450402) 16mm (0.653")

Suction Strainer:

PEM 7280 or 7290, Type 'C' See PEM catalog for selection.

Best operated with large volume cartridge type pool filters.

Service requirements: Internal assembly of Flow Sieve is attached to nozzle plate, can be pulled out from front with nozzle plate for cleansing. Simple mechanism. Ease of service when needed.

Submerged cut off mechanism voids Warranty!

PERFORMANCES at a Jumping Angle of 55 degree off horizontal. Laminar flow, solid stream/water rods over distance.

Standard 13mm (0.511") Nozzle orifice & Stream diameter

Suggested Flow & Nozzle Pressure for horizontal distance of jumps:

Distance:	2.0m	2.5m	3.0m	3.5m	4.0m	4.5m
L/min:	20	24	27	29	32	35
Pressure:	1.2m	1.6m	1.9m	2.2m	2.6m	2.9m
Distance:	10 Ft.		15Ft.			
USGPM:	7.2		9.3			
Pressure:	6.3 Ft.		9.6 Ft.			
Best Jumping Distance: Appr. 3.5m (12') to 4m (14')						
For trajectory calculations see section M2 - 10.						

Optional 16mm (0.653") Nozzle orifice & Stream diameter

Suggested Flow & Nozzle Pressure for horizontal distance of jumps:

Distance:	2.0m	2.5m	3.0m	3.5m	4.0m	4.5m	5.0m
L/min:	24	28	32	36	40	43	48
Pressure:	1.9m	2.3m	2.8m	3.2m	3.6m	4.2m	4.6m
Distance:	10 Ft .			15Ft.			
USGPM:	8.5			11.4			
Pressure:	9.2 Ft.			13.8 Ft			
Best Jumping Distance: Appr. 4.0m (13') to 5m (17')							
For trajectory calculations see section M2 - 10.							

PEM 142M2

ILLUMINATED, VERTICAL JUMPING JET FOR IN POND INSTALLATION

PEM 142M2-11 JUMPING JET



PEM 142M2 SERIES JUMPING JET

506-4605 / 142M2, Jet without Stand

506-4619 / 142M2-11, Jet with Stand

506-4637 / 142M2-11-M, Jet w. Stand & Test control *, 120VAC, 60Hz, 12VDC or 24VDC (specify) for mechanism, 12VAC for illumination

506-4638 / 142M2-11-M, Jet w. Stand; Test control *, 240VAC, 50Hz, 12VDC or 24VDC (specify) for mechanism, 12VAC for illumination

* Includes: Power Supply for mechanism, illumination & 3 x 3m / 10 Feet electrical cables.

DESCRIPTION:

PEM 142 M2 Assembly:

For in pond installation indoors or outdoors.

Made of Brass, Bronze, & PVC. Stainless Steel fitted.

PEM 142 M2-14 Stand: Made of Stainless Steel and Brass.

Electrical Control Mechanism:

12VDC, 2.1A. or 24 VDC, 1.1A. (Specify)

Stream Illumination: (While connected to jet orifice)

12VAC, 7.5A. with MR 16 (65W) NSP internal light fixture, with heat tempered, Plano Lens.

Electrical Cable: H0R7N-0 or STW/SOW

1. **Jet Control Mechanism:** 5.0m (16.4') x 2.5mm² (16/3AWG)

2. **Illumination:** 5.0m (16.4') x 4mm² (14/3 AWG)

3. **Test Control:** 3.0m (10.0') x 1.5mm² (16/3 AWG)

Pipe Connection:

1 1/2" BSP/NPT, Maximum size of internal solid control valve: 1"

Standard Nozzle: (# 506-450401) 13mm (0.511")

Optional Nozzle: (optional & extra) (# 506-450402) 16mm (0.653")

Suction Strainer:

PEM 7280 or 7290, Type 'C' See PEM catalog for selection.

Best operated with large volume cartridge type pool filters.

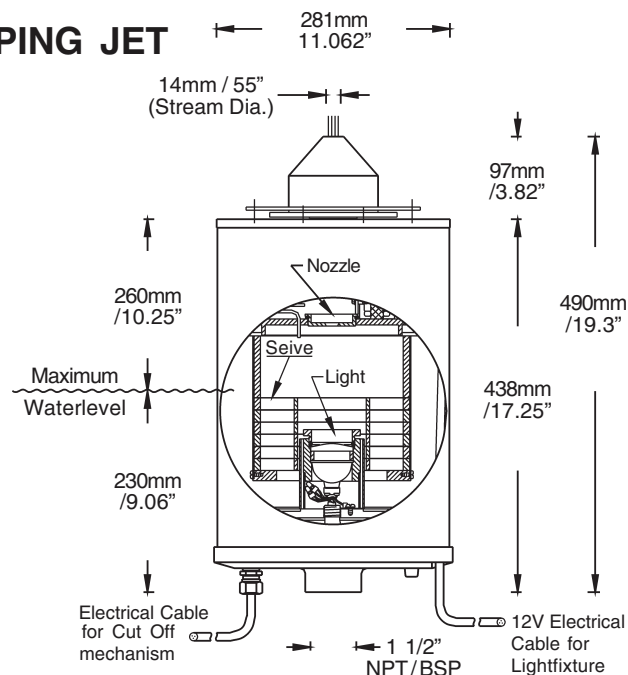
Service requirements:

Internal assembly of Flow Sieves is attached to nozzle plate, can be pulled out from front with nozzle plate for cleansing. Simple mechanism. Ease of service when needed.

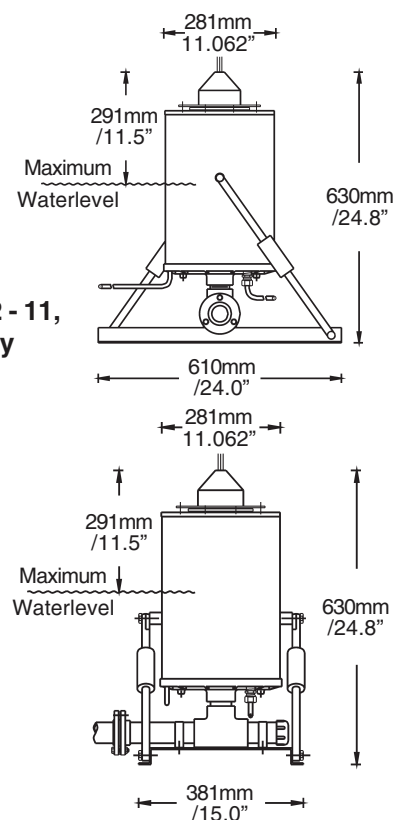
Submerged cut off mechanism voids Warranty!

PERFORMANCES:

Standard Nozzle: (# 506-4601), 12.9mm (0.50")								
Suggested Flow & Nozzle Pressure for vertical jumps:								
Height:	1.0m	1.5m	2.0m	2.5m	3.0m	3.5m	4.0m	4.5m
L/min:	34	44	53	59	66	72	77	82
Pressure:	1.3m	2.0m	2.6m	3.2m	3.9m	4.6m	5.2m	5.9m
Height:	5 Feet		10 Feet		15 Feet			
USGPM:	11.7		17.5		21.7			
Pressure:	12.2 Feet		23.7 Feet		19.5 Feet			
Recommended Jump Height : 2.5m - 3.5m (8'- 12')								



PEM 142M2 - 11,
Jet assembly
with stand

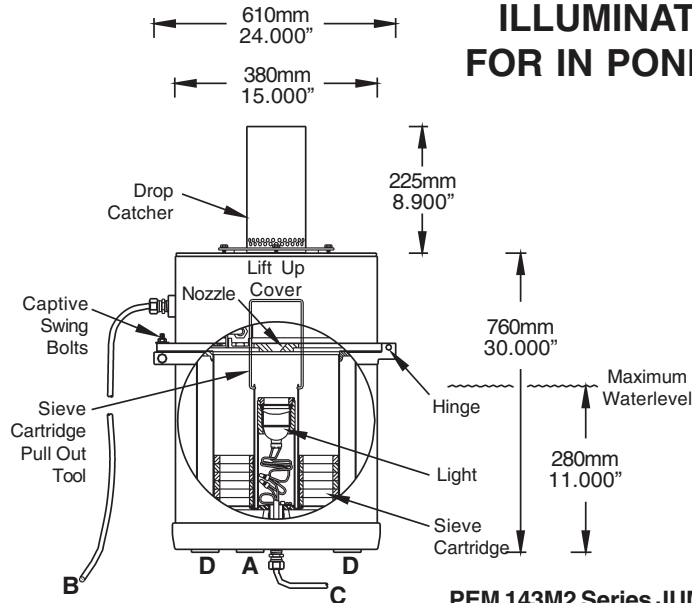


PERFORMANCES:

Optional Nozzle (optional & extra) : (# 506-4602), 15.9mm (0.625")								
Suggested Flow & Nozzle Pressure for vertical jumps:								
Height:	1.0m	1.5m	2.0m	2.5m	3.0m	3.5m	4.0m	4.5m
L/min:	340	50	70	80	90	100	110	125
Pressure:	1.3m	2.0m	2.6m	3.2m	3.9m	4.6m	5.2m	5.9m
Height:	5 Ft.		10 Ft.			15Ft.		
USGPM :	13.3		23.8			33.1		
Pressure:	12.2 Ft.		23.7 Ft			19.5 Ft.		
Recommended Jump Height : 3.0m - 4.5m (10'- 15')								

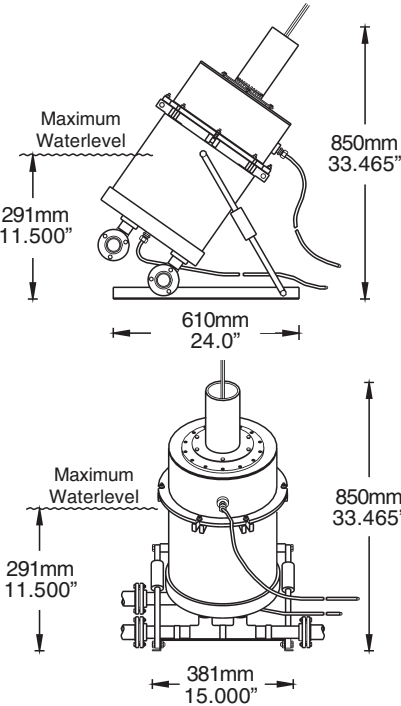
PEM 143M2

ILLUMINATED, LAMINAR FLOW JUMPING JET
FOR IN POND OR OUT OF POND INSTALLATION



A: 1 1/2" Supply from pump
B: Electrical Cable for Mechanism
C: Electrical Cable for Light fixture
D: (2) 1 1/2" Drain Connections

PEM 143M2 - 11
Jet assembly with Stand



PEM 143M2 Series JUMPING JETS

506-4705 / 143M2 Jet Without Stand

506-4719 / 143M2-11 Jet with Stand

506-4727 / 143M2-11-M Jet with Stand & Test Control *, 120VAC / 60Hz,
12 VDC or 24 VDC (specify) for Mechanism, 12VAC for Illumination

506-4728 / 143M2-11-M Jet with Stand & Test Control *, 240VAC / 50Hz,
12 VDC or 24 VDC (specify) for Mechanism, 12VAC for Illumination

* Includes: Power Supply for cutoff mechanism, illumination and 3x3m / 10 Feet electrical cables.

506-4736 / 143M2-36 Extra Internal Flow Sieve Assembly

DESCRIPTION:

PEM 143 M2 Assembly:

For in pond or out of pond installation indoors or outdoors.

Made of Brass, Bronze, & PVC. Stainless Steel fitted.

PEM 143 M2-14 Stand: Made of Stainless Steel and Brass.

Electrical Control Mechanism:

12VDC, 2.1A. or 24 VDC, 1.1A. (Specify)

Stream Illumination: (While connected to jet orifice)

12VAC, 7.5A. with MR 16 (75W) NSP internal light fixture, with heat tempered, Plano Lens.

Electrical Cable: H0R7N or STW/SOW

1. **Jet Control Mechanism:** 5.0m (16.4') x 2.5mm² (16/3AWG)

2. **Illumination:** 5.0m (16.4') x 4mm² (14/3 AWG)

3. **Test Control :** 3.0m (10.0') x 1.5mm² (16/3 AWG)

Supply Pipe Connection: 1 1/2" BSP/NPT, Maximum size of internal solid control valve: 1"

Drain Connections: 2 x 1 1/2" BSP / NPT (For out of Pool Installation)

Standard Nozzle : (# 506-450401) 15.88mm (0.625")

Optional Nozzle : (optional & extra) (# 506-450402) 19.05mm (0.750")

Suction Strainer:

PEM 7280 or 7290, Type 'C' See PEM catalog for selection.

Best operated with large volume cartridge type pool filters.

Service requirements:

Flow Sieves can be lifted out with top of assembly swung open and readily replaced with a second clean cartridge, all in a matter of minutes. Captive swing bolts allow for rapid opening and closing of unit without affecting trajectory adjustment.

PERFORMANCES at a Jumping Angle of 55 degree off horizontal Laminar flow, solid stream / water rods over distance.

Standard 15.88mm (0.625") Nozzle orifice & Stream diameter							
Suggested Flow & Nozzle Pressure for distance of jumps:							
Distance:	3.5m	4.0m	4.5m	5.0m	5.5m	6.0m	6.5m
L/min:	36	40	43	48	51	57	60
Pressure:	3.2m	3.6m	4.2m	4.6m	5.0m	5.4m	6.0m
Distance:	10 Ft		15Ft.		20Ft.		
USGPM :	8.5		11.4		15.1		
Pressure:	9.2 Ft		13.8 Ft.		17.8 Ft.		
Best Jumping Distance: Appr. 4.0m (13') to 5.0m (17')							
For trajectory calculations see section m2 - 10							

Optional 19.05mm (0.750") Nozzle orifice & Stream diameter							
Suggested Flow & Nozzle Pressure for distance of jumps:							
Distance:	4.0m	4.5m	5.0m	5.5m	6.0m	6.5m	7.0m
L/min:	65	70	75	80	85	90	95
Pressure:	3.0m	3.4m	3.9m	4.2m	4.5m	5.0m	5.3m
Distance:	15Ft.			20Ft			
USGPM :	18.5			22.5			
Pressure:	11.2 Ft.			14.8 Ft.			
Best Jumping Distance: Appr. 4.5m (15') to 5.5m (18')							
For trajectory calculations see section m2 - 10							

Submerged cut off mechanism voids Warranty!

#506-4750 Series



PEM 144M2 - 11

PEM 144M2 Series JUMPING JETS (Specify Nozzle Type & Size) With Internal Stream Illumination Fibre Optic Cable Termination

506-4751	144M2	No Stand, In Pool Installation
506-4752	144M2-11	With Stand, In Pool Installation
506-4754	144M2	No Stand, Out of Pool Installation
506-4755	144M2-11	With Stand, Out of Pool Installation

OPTIONAL:

506-4761	144M2-61	Type 'A' Nozzle, Extra & Additional to installed nozzle
506-4762	144M2-62	Type 'B' Nozzle, Extra & Additional to installed nozzle
506-4763	144M2-63	Type 'C' Nozzle, Extra & Additional to installed nozzle
506-4768	144M2-68	Drain Tube (See below)
506-4769	144M2-69	Extra Set of Internal Flow Sieve Assembly
506-4771	144M2-71	Single Jet Test Control for 120VAC / 60Hz*
506-4772	144M2-72	Single Jet Test Control for 240VAC / 50Hz*

*Includes: Power Supply, Transformer for cut off mechanism & 3 x 3 m / 10 Feet electrical cables.

DESCRIPTION:

PEM 144 M2 Assembly:

Made of Brass, Bronze, & PVC. Stainless Steel fitted.
With 100mm / 4" NPT/BSP Drain Connection (When installed out of pool)

PEM 144 M2-11 Stand: Made of Stainless Steel and Brass.

Electrical Control Mechanism:

12VDC, 2.1A. or 24 VDC, 1.1A.(Specify operating voltage)

Stream Illumination (While initial stream connected to jet orifice)

Internal Termination with 25mm Plano Lens & Cordseal for 25mm / 1" Fibre Optic Cable supplied by others. If cable O.D. is smaller, this O.D. must be specified with order!

Solid optical cable does not require a terminating lens, but a polished cut off.

Electrical Cable: H0R7-0 or STW/SOW

1. **Jet Control Mechanism:** 5.0m (16.4') x 2 x 2.5mm² (16/3AWG)

2. **Test Controls** : 3 x 3.0m (10.0'), 1.5mm² H0R7N (16/3 AWG)

Pipe Connection: 2" BSP / NPT (Use max. size 1 1/2" solid control valve)

NOZZLE (One Type & Size to be specified with order.(Additional Nozzles are optional & extra)

DRAIN TUBE for Out of Pool Testing 4"/100mm, 3.0m x 10.0 Feet

Drain Tube, corrugated (white) PVC Plastic with fitting to jet and stainless steel clamp.

Suction Strainer: PEM 7280 or PEM 7290, Type 'C' See PEM catalog for selection.

Service requirements:

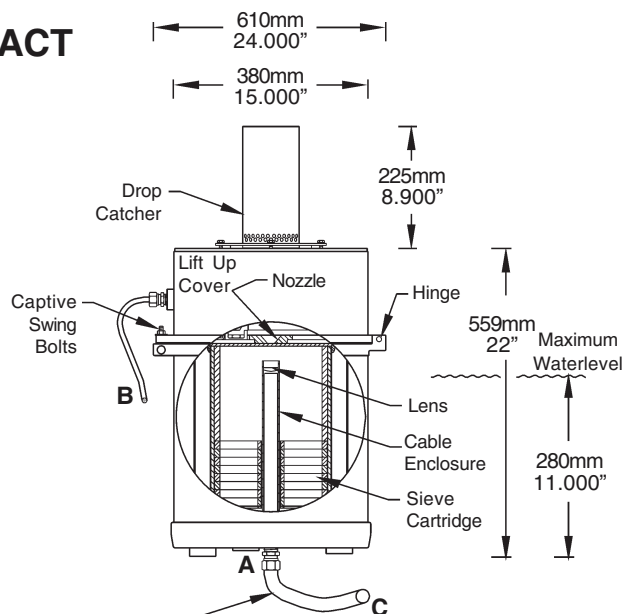
Flow Sieves can be lifted out with top of assembly swung open and readily replaced with a set of (Optional) clean flow sieves, all in a matter of minutes. Captive swing bolts allow for rapid opening and closing of unit without affecting trajectory adjustment.

For test applications the output of a 1.0 Hp, 230V, 50/60Hz submersible bronze fountain pump is recommended. For permanent installations these jets are best operated with large volume single or in series cartridge type swimming pool filters.

PEM 144M2

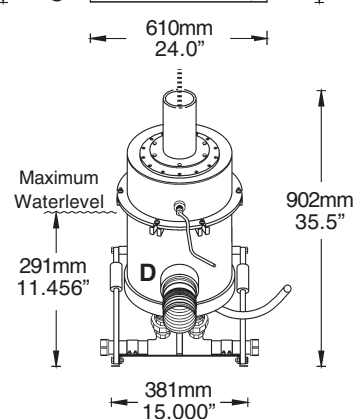
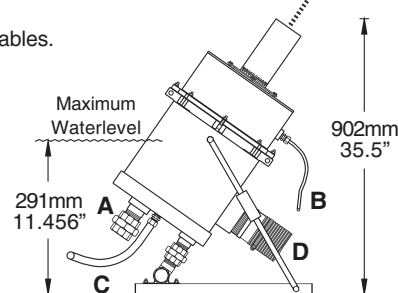
LAMINAR & COMPACT STREAM JUMPING JET FOR IN POND OR OUT OF POND INSTALLATION

JUMPING JET



- A: 2" Supply from pump
B: Electrical Cable for Mechanism
C: 1" / 25mm Fibre Optic Cable for Illumination
D: 4" / 100mm Drain Connection

PEM 144M2 - 11 Jet assembly with Stand



Submerged cut off mechanism voids Warranty!

PERFORMANCES of Jet with specified Nozzles at a Jumping Angle of 55 degree off horizontal (Streams & Rods are wind sensitive!)

PEM Type	144M2-61 A	144M2-62 B	144M2-63 C	
Nozzle :	18.0mm	22.2mm	25.4mm	
Rod Type:	Laminar	Compact	Compact	
Distance:	Stream	Stream	Stream	Nozzle Pressure(m)
m	L/min	L/min	L/min	
3.0	32	125	152	7.5
4.0	65	144	171	8.6
5.0	75	163	190	9.9
6.0	85	182	209	11.4

For trajectory calculations see section M2 - 10

PEM Type	144M2-61 A	144M2-62 B	144M2-63 C	
Nozzle :	0.750"	0.875"	1.000"	
Rod Type:	Laminar	Compact	Compact	Nozzle Pressure
Distance:	Stream	Stream	Stream	Feet Head
Feet:	US-GPM	US-GPM	US-GPM	
10	10	33	40	25'
12	16	37	44	27'
15	19	41	47	31'
20	23	48	55	38'

For trajectory calculations see section M2 - 10

PEM TYPE 'B'

ANGULAR SPRAY DESIGN SUGGESTIONS

PEM Type 'B' spray design calculations are to be used solely for PEM M2 Series Jumping Jets, except for PEM 133M2 and PEM 124 Series Laminar Jets If not certain about a particular design request assistance from factory.

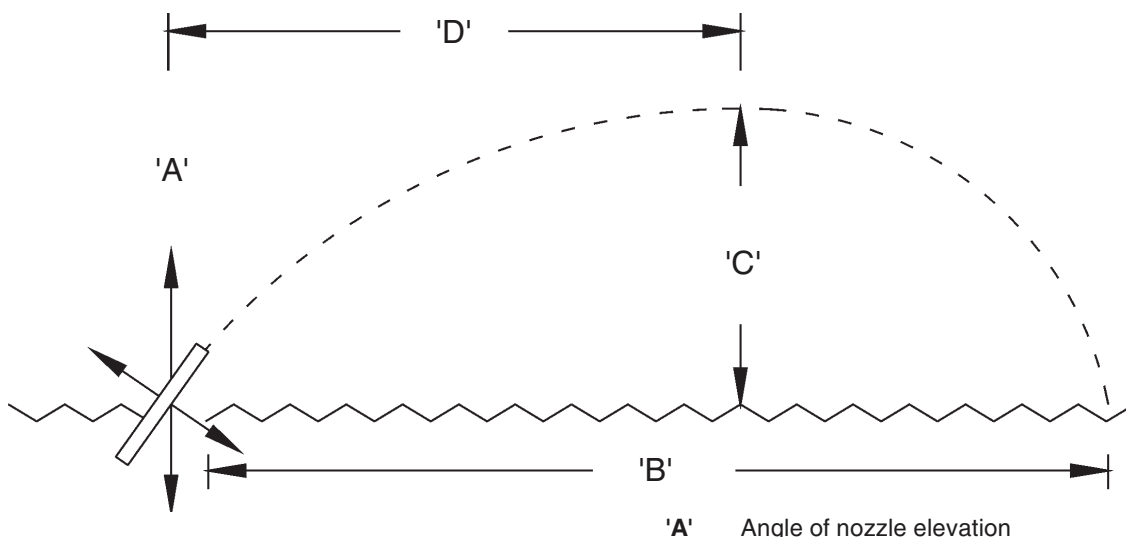
SUGGESTION: Before jumping over people, consult with and obtain release from liability insurer of project.
For spray design calculations for other nozzles or jets see regular : 'PEM ANGULAR SPRAY DESIGN CALCULATIONS'

DESIGN FACTORS

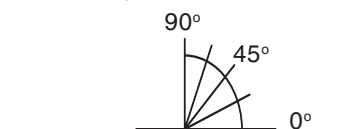
In General:

Multiplication Factors are used to find angular spray performances when sprayheight is known.

Dividing Factors are used to find the sprayheight when angular performances are known



'A'	'E'	'C'	'D'
5°	0.90	6%	36%
15°	1.33	11%	46%
25°	1.83	17%	49%
35°	1.94	22%	51%
45°	2.10	27%	52%
55°	1.80	36%	53%
65°	1.50	50%	56%
75°	0.90	99%	59%
85°	0.40	245%	64%



- 'B' Horizontal distance of throw from nozzle.
- 'C' Height of trajectory in percentage of 'B'.
- 'D' Highest point of trajectory in horizontal distance from nozzle, measured in percentage of 'B'.
- 'E' Multiplying or dividing factor for spray design calculations
- 'V' Vertical sprayheight (1967-'X')

TO FIND:

HOW:

1.	Horizontal distance of throw for a desired angle of spray, when only the vertical sprayheight is known.	Establish vertical sprayheight (factor 'V') and multiply the same by factor 'E' to achieve horizontal spray distance. (X) x ('E') : Horizontal Distance
2.	Performance requirement of a spray pattern with known angle of nozzle discharge or the equivalent vertical sprayheight performance requirements	Establish horizontal distance of throw from nozzle and divide by factor 'E' on same line as shown discharge angle of nozzle . This will give vertical sprayheight which is then used to find performance requirements. (A) - ('B') : ('E') : Vertical Sprayheight
3.	Trajectory of a spray of water	Establish horizontal distance of throw (factor 'B') then calculate factors 'D' and 'C' thereof and combine the results with 'B' to lay out the trajectory.
4.	The jet elevation angle (factor 'A')for the specification of particular trajectories or spray effects.	Establish horizontal distance of throw (factor 'B'),calculate highest point of trajectory (factor 'C') thereof and read on the factors table the angle of elevation (factor 'A') on the same line as the result of the calculated height of trajectory (factor 'C')
5.	The manometric <u>nozzle</u> pressure for a sprayheight	Multiply vertical sprayheight (factor 'V') x 1.22 + 10% .

Data given on this page are strictly infomative only, to be used in the layout of normal size water displays, for special applications provide full scale prototype testing as to be installed before providing artistic impressions of the project.

ORDER INFORMATION

SERIAL	PEM	JUMPING JETS	Wt.
506-0000	Cat.	125 M2 Illuminated Jumping Jet, 10 or 13mm Stream (Specify Size)	Kg
506-4201	125M2	Illuminated Jumping Jet, 1", 24VDC, 12VAC,MR16- 65W	41
506-4212	125M2-14	Illum. Jumping Jet w. Stand, 1", 24VDC, 12VAC,MR16-65W	60
506-4220	125M2A	Jumping Jet,1", 24VDC, For Fibre Optic Illumination, Spec. Cable Size	41
506-4222	125M2A-14	Jumping Jet w. Stand, 1", 24VDC, For Fibre Optic Illumination, Spec. Cable Size	60
506-421	125M2-05	Drop Catcher Assembly, Optional for # 125M2	2
506-423	125M2-X13	Extra, Optional, 10mm or 13mm Nozzle (Specify Size)	0.3
506-4236	125M2-36-M	Jumping Jet, Stand & Single Test Control, 120V,60Hz **	65
506-4237	125M2-37-M	Jumping Jet, Stand & Single Test Control, 230V,50Hz **	65
506-42001	125M2-001	NO Illumination, For Deduction From Single Price please enquire	
		** = Same Price for Fibre Optic Illumination (Not Included) Provision, Spec. Cable Size	
		132M2, 19.05mm Stream	
506-4257	132M2-M	Jumping Jack Jet, Test Unit (Jet & Control)	85
506-4368	132M2	Jumping Jack Jet, 1 1/2", 24 VDC	80
506-4361	-61	Single Foot Mounting Stand	4.1
506-4362	-62	Double Mounting Braces	1.3
		133M2, 19.05mm Stream	
506-4414	133M2	Jumping Jack Jet, 4", 24VDC	60
		Please read and understand the installation requirements for 133M2 !	
		141M2, 13mm or 16mm Stream (Specify Size)	
506-4504	141M2	Illuminated Jumping Jet, 1 1/2", 24VDC, 12VAC,MR16-65W	55
506-4518	141M2-11	Illuminated Jumping Jet w. Stand, 1 1/2", 24VDC, 12VAC,MR16-65W	75
505-4520	141M2A	Jumping Jet, 1 1/2" VDC for Fibre Optic Illumination, Spec.Cable Size	55
505-4522	141M2A-11	Jumping Jet w. Stand, 1 1/2" VDC for Fibre Optic Illumination, Spec Cable Size	75
506-4526	141M2-11-M	Jumping Jet, Stand & Single Control 120V,60Hz **	80
506-4527	141M2-11-M	Jumping Jet, Stand & Single Control 230V,50Hz **	80
506-45044	141M2-X16	Optional 13mm or 16mm Nozzle (Specify Size)	0.3
506-45001	141M2-001	NO Illumination, For Deduction From Single Price please enquire	
		** = Same Price for Fibre Optic Illumination (Not Included) Provision, Spec. Cable Size	
		142M2, VERTICAL JUMPING JET, 12.9mm or 15.9mm Stream - (Specify Size)	
506-4605	142M2	Illum. Jumping Jet, 1 1/2",24 VDC, 12VAC	50.0
506-4619	142M2-11	Illum. Jumping Jet w. Stand, 1 1/2", VDC, VAC	70.0
506-4606	142M2A	Jumping Jet, 1 1/2", VDC, for Fibre Optic Illumination, spec Cable Size	50.0
506-4820	142M2A-11	Illum. Jumping Jet w. Stand, 1 1/2", VDC for Fibre Optic Illumination, spec Cable Size	70.0
506-4622	142M2-11-M	Jumping Jet, Stand & Single Control 120V,60Hz **	80.0
506-4638	142M2-11-M	Jumping Jet, Stand & Single Control 230V,50Hz **	80.0
506-4602	142M2-X16	Extra 12.9 or 15.9 6mm Nozzle (Specify Size)	0.3
506-46001	142M2-001	NO Illumination, For Deduction From Single Price please enquire	
		** = Same Price for Fibre Optic Illumination (Not Included) Provision, Spec. Cable Size	
		143M2, 19.05mm or 15.88 mm Stream - (Specify Size)	
506-4705	143M2	Illuminated Jumping Jet, 1 1/2", 24VDC, 12VAC	90
506-4719	143M2-11	Jumping Jet With Stand	125
506-4720	143M2A	Jumping Jet, 1 1/2" VDC for Fibre Optic Illumination, spec. Cable Size	90
506-4722	143M2A-11	Jumping Jet w. Stand, 1 1/2" VDC for Fibre Optic Illumination, spec Cable Size	125
506-4727	143M2-11-M	Jumping Jet, Stand & Single Control 120V, 60Hz **	130
506-4728	143M2-11-M	Jumping Jet, Stand & Single Control 230V, 50Hz **	130
506-4736	143M2-36	Extra Set of Flow Sieves	5
506-4702	143M2-X18	Extra 19.05mm or 15.88mm Nozzle (Specify Size)	0.3
506-47001	142M2-001	NO Illumination, For Deduction From Single Price please enquire	
		** = Same Price for Fibre Optic Illumination (Not Included) Provision, Spec. Cable Size	
		144M2, 18.0mm, 22.2mm or 25.4mm Stream (Specify Size)	
506-4742	144M2A	Jumping Jet, 2" VDC for Fibre Optic Illumination in Pool, spec.Cable Size	95
506-4743	144M2A-11	Jumping Jet w. Stand, 2" VDC for Fibre Optic Illumination in Pool, spec. Cable Size	130
506-4746	144M2B	Jumping Jet, 2" VDC for Fibre Optic Illumination, Out of Pool, spec Cable Size	95
506-4747	144M2B-11	Jumping Jet w. Stand, 2" VDC for Fibre Optic Illumination Out of Pool, spec.Cable Size	130
506-4751	144M2-1	Jumping Jet, 2", 24VDC, 12VAC (A, B or C) In Pool Installation	95
506-4752	144M2-1-11	Jumping Jet, 2" With Stand (A, B or C) In Pool Installation	130
506-4754	144M2-2	Jumping Jet, 2", 24VDC, 12VAC (A, B or C) Out of Pool, Dry, Installation	95
506-4755	144M2-2-11	Jumping Jet, 2" With Stand (A, B or C) Out of Pool, Dry, Installation	130
506-4761	144M2-61	Extra , 18.0mm, 22.2mm or 25.4mm Nozzle (Specify Size)	0.5
506-47001	144M2-001	NO Illumination, For Deduction From Single Price please enquire	
		TEST CONTROLS FOR ALL M2 JETS	
506-4768	144M2-68	For 144M2 only -Drain Tube for Testing, 100mm/4" x 3m/10 Feet, Crated.	0.3
506-4771	144M2-71	Single Jet Test Control, 120V - 60 Hz	2.5
506-4771	144M2-72	Single Jet Test Control, 240V - 50 Hz	2.5
REPLACEMENT PARTS (AFTER WARRANTY)- Immersed Cut Off Assemblies - NO WARRANTY!!			
506-4769	144M2-69	Extra Set of Internal Flow Sieves, spec, Cat. #	7
506-4801	M2-01	125, 132, 133, 141, 142, 143 & 144M2 Cut Off Assembly	8.5
506-4833	M2-33	124-1 & 125, 141, 142 & 143M2 Light Lenses w. Seal Ring	0.5
506-4851	144 M2-51	144M2 Fibre Optic Termination Lens w. Seal Ring	0.1
506-4862	132 M2-62	132 & 133M2 Flow Straightening Cartridge (2 Required)	2.5
506- 4870	143 M2-70	143M2 Swing Cover 'O' Ring Seal	0.2

PEM WATER SWITCHES 2018

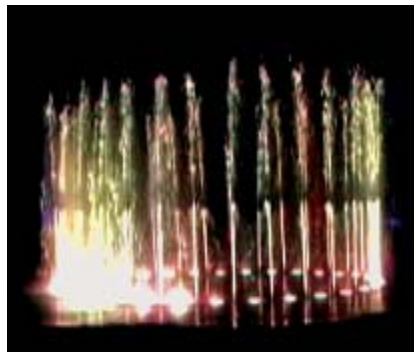
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**PEM Fountain Company. , 104 Newkirk Rd, Richmond Hill L4C 3G3 , Ontario,
Canada Email: sales@pemfountain.ca**

PEM W 115 Water Switches



Palm Beach Zoo Musical Fountain & Spray Apron , Palm Beach , Florida, USA
PEM W 115-5 Water Switches, PEM 846 Jets, PEM C 133-4 Multi Colored Submersible Lights

CREATION by: Freeport Fountains Inc., Sanford, Florida, USA 32771,
Fax: 407 - 330 - 3257, Tel: 407 - 330 - 1150, Email: info@freeportinc.com

PEM WATER SWITCHES

PEM
EDITION 2018
Superseding
EDITION 2012-1

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PEM WATER SWITCHES, BASIC INFORMATION:

PEM Water Switches or Flow Diverters are intended to switch the flow of a water supply within a fraction of a second from one outlet to another. Within these devices, water pressure from the supply pipe is converted into flow velocity, then reconverted into a lower outlet pressure. The function can be described as following:

The water inflow from the supply pipe is directed at the junction of 2 branches of a Y-Tee. As the inflowing water entrains ambient atmospheric pressure, replenishing atmospheric pressure from the snorkel is drawn evenly through 2 transverse ports at the base of the Y. By opening or closing one of these two ports, a so called 'COANDA EFFECT' takes place, which bends the stream of the incoming water toward the Y leg at the side that has its port closed. By controlling the atmospheric pressure taken in by these ports from the snorkel with a low voltage solenoid valve, the COANDA EFFECT can be directed from one branch of the Y outlet to the other, in effect switching the flow of water from the one outlet to the other.

The very nature of the device does not permit valving or excessive back pressure of the outlets. The flow usually is controlled before entering the device or by the use of a by-pass valve on the outflow side of the diverter. Direct connection of a spray jet to the vertical outlet is recommended only for nozzles insensitive to turbulent inflow.

Nozzles requiring a non turbulent inflow require a pipe nipple of appr. 6 times pipe size in length with a flowstraightener at the inflow of the nozzle, or a vertical ball type check valve under the jet or at the water switch outflow.

If the snorkel terminates below waterlevel, the unit does not work. Normally a larger spray jet or several smaller spray jets can be operated at one time with the vertical outflow port, with the horizontal outflow port serving as exhaust, however this port (of same full flow pipe size) can also be equipped with a spray jet to provide an alternating spray effect, however it has a lesser output pressure. For remote installation of the water switches, the snorkel air pressure intake (extended with suitable tubing must be at a level above the water-level of the pool/pond in which the jets are used to prevent back drainage when system is not operating.

In the selection of spray jets, waterlevel independent and low back pressure jets or nozzles can be used with suitable pipe fittings, such as water switch performance tested PEM jets. Waterlevel dependent aerated jets and cascade jets should not be used. Never use standard nozzle performances as of normal pipe supply application for use with water switches, consult manufacturers performance data of water switch inflow requirements for a variety of nozzles and jet. It must be realized, that these water switches or flow diverters require full inflow and pressure at all times, even if the spray effect is not working while the supply is being exhausted.

What to watch for:

Electric controlled water switches have no internal moving parts other than in the attached solenoid 3 way valve, which has no flow through other than to control actual air pressure to the two activating ports in the water switch. The heavy duty, water duty, all stainless steel electric solenoid 3 way valve used with the water switch requires a constant operating voltage of not more than plus/minus (+/-) 5% of rated voltage to operate for the maximum life expectancy of appr. several million operating cycles.

Too much voltage = the coil will bust, too little voltage = the valve is oscillating (machine gunning) causing internal parts to destruct. The solenoid valve coils are terminated into a submersible plug in connection for the electrical supply cable. A PEM low voltage testing device permits accurate reading of operating voltage at valve. Manual controlled water switches with built in air pressure valve are connected with 2 tubes to the water switch, transferring the air pressure intake from one port to the other within the water switch while depressed.

The water switches require to be operated in clean water, algae free, with suction straining to suit the jet, nozzle or flow straightener on the outflow side. Maximum suggested suction strainer orifices for water switch without jets or nozzles are: **1" Inlet Size = 0.125"/3mm, 1 1/2" Inlet Size = 0.187"/5mm, 2" & 3" Inlet Size= 0.250"/6mm.**

Long string algae and hair can get caught within the water switch junction, to remove: Remove water switch and clean, usually caused by missing or too small suction strainers with too great suction flow velocity!

For multiple installations the water switches to be connected to the water supply with bayonet plug-in quick disconnects and electrical cable plug-in disconnects to permit servicing of individual units without interfering with the system. Properly installed with proper supplies, under normal working conditions, the water switches do not require maintenance other than critical observation - just in case. If the snorkel(s) ever get immersed for whatever reason, dirt can get into the solenoid valve, requiring it to be cleaned. In area with water flies, the snorkel requires a #1.15 insect screen To clean the solenoid valve, shut off electrical power to the entire pool, remove solenoid valve from water switch (4 small bolts & nuts), open large hex nut at bottom of valve body - be careful it is spring loaded. Do not lose the internal spring. Remove plunger, clean valve with compressed air, re-assemble all parts and re-install on same side of water switch body. Operating voltage below specified, might cause rapid self energizing (machine gunning) of solenoid valve piston, will deform same and stop valve from operating. Use PEM 003 Voltage tester to assure specified operating voltage, which valve is energized. Supply voltage at supply transformer or power supply might not be same as operating voltage at water switch. When replacing water switches by other manufacturers using 2 solenoid valves at waterswitch, install a Ratchet Relay at power supply, to allow the PEM Water Switches with 3 way solenoid valves to work on second impulse. For winterizing in cold climates: Disconnect the Water Switches (with quick disconnects) and store frost free.

PEM W114

WATER SWITCHES 1" x 3/4" x 3/4"

. Pictures courtesy of Fontene Teknik, Oslo, Norway



PEM 812-1 with PEM W114-1-100 Water Switches and PEM C 133-4 Submersible Lightfixtures

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PEM W114 WATER SWITCHES

1" X 3/4" X 3/4"



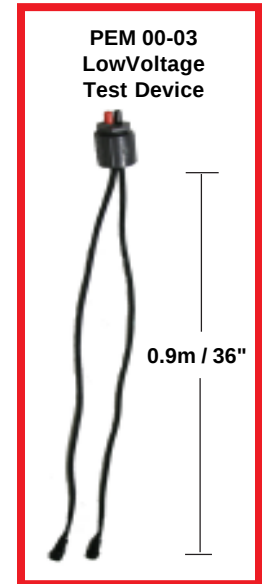
PEM W114-1
with PEM 812-1 Stream Jet



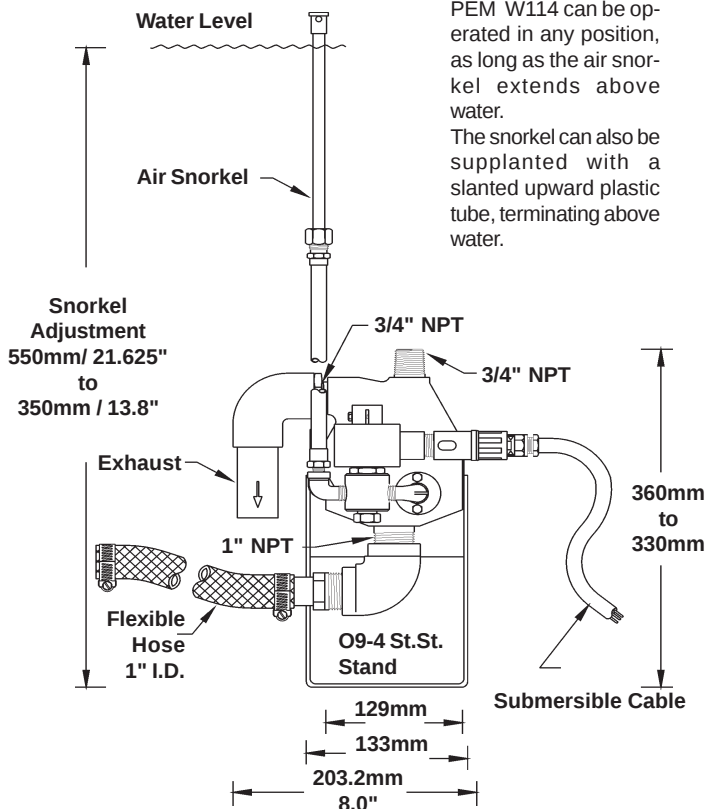
PEM W114-1
with PEM 812-1 Stream Jet
& 09-4, Stand Assembly



PEM W114-1 with PEM 952 Aerated Jet,
& 09-4, Stand Assembly



DIMENSIONS



PEM W114-1 has a molded plastic (ABS, Acrylonitrile Butadien Styrene, UV protected) body with male (outside threaded) 1" NPT Inlet and 2 x 3/4" NPT Outlet Pipe connections for NPT or BSP pipe fittings.

A stainless steel body low voltage, 3 way solenoid water service, breather control valve is fitted to the Water Switch body. This solenoid valve has a submersible coil with plug in connection to the supply cable of standard cable length of 2.7m / 9.0 Feet. The solenoid valve is fully accessible for servicing. Custom made larger & longer size electrical cable with direct connection to solenoid valve coil without disconnect are available at extra cost.

As the solenoid valves are voltage sensitive, the PEM # 00-03 Low Voltage Test Device with color coded binder posts can be inserted between supply cable and solenoid valve to test actual operating voltage with suitable multi meter voltage tester .

ADD ON TO PEM W114 WATER SWITCHES:

Different PEM Spray Jets w. Flow Straighteners
Secondary Spray Jets and fittings for by pass valving.
Stainless Steel stand, fully adjustable & bolt down
Plastic re-inforced flexible tubing (hose) 1" -25mm
with fittings to connect to water supply.

PEM W114

JETS ON WATER SWITCH PERFORMANCES

PEM Water Switch Performances

The performance requirements of jets and nozzles when mounted onto the PEM Water Switch differ greatly from standard performances due to pressure losses within the diverter and because of differences in installations.

This also applies to jet performances when compared to jets on other size PEM Water Switches.

Use the actual performances (established by actual testing) below and do not use performance tables as given elsewhere.

PEM Water Switches permits the use of a secondary spray jet on the exhaust port to work while the primary jet is off, both jets can oscillate with each other.

PEM Water Switches require a pipe size bypass valve between jet and Water Switch for spray jet adjustment or for small orifice jets and nozzles with low flows to prevent back pressure into the unit, that could cause malfunction or shut off.

Always pre-test the actual performances of diverter & jet combinations under required conditions.

For combinations (paired) Spray Effects, always test PEM W 114 .

The solenoid valves of the different size PEM Water Switches are identical allowing for mix and match combinations on same system.

The jet and riser pipe above the Water Switch must be directly supported to avoid any stress on the Water Switch and its pipe connections.

Often the cause of water switch breakage is by maintenance staff holding on to jet to support themselves and then slip, breaking off a water switch pipe connection.

For PEM WATER SWITCHES IN ACTION, visit the PEM Website: www.pemfountain.ca / PEM Collection of Fountain Pictures

The creators of these water spectaculars have videos with sound available, otherwise contact by Email: Pres@pemfountain.ca

PEM W114 SOME FLOW & PRESSURE REQUIREMENTS

With PEM 812-1 3/4" Stream Jet

Spray Height	Flow L/min	Inlet Pressure
1.0m	39	7.0
1.5m	49	12.0m
2.0m	57	14.0m
3.0m	65	18.0m
4.0m	72	23.0m
5.0m	80	28.0m



With PEM 952 1 1/4" Aerated Jet

Spray Height	Flow L/min	Inlet Pressure
1.0m	65	20.0m
1.5m	72	27.0m
2.0m	80	31.0m



PEM W114 can be operated in any position, as long as the air snorkel extends above water. The snorkel can also be supplanted with a slanted upward tube, terminating above water.

With PEM 626 1 1/2" Filigran Jet

Spray Height	Flow L/min	Inlet Pressure
0.5m	53	13.0m
1.0m	65	21.0m
1.5m	80	31.0m



With PEM 953 1 1/2" Aerated Jet

Spray Height	Flow L/min	Inlet Pressure
0.5m	57	18.0m
1.0m	76	28.0m
1.5m	88	32.0m



1 USGPM = 3.785 L/min
1 m Head = 3.28 m Head

Recommended secondary (exhaust) spray jets : PEM 02-1, 31-25 or single / multiple clearstream jets , the secondary jet must work with performance requirements of the primary jets, controlled by pipe size bypass valve.

Where the flow in the primary jet is insufficient to cause the flow diverter to shut off completely, a pipe size by-pass valve must be inserted into the jet riser, increasing the flow through the Water Switch.

Horizontal installations with longer pipe from water switch to nozzle require a horizontal check valve at outflow of water switch, same applies for immersed jets

MUSICAL FOUNTAIN DESIGN SUGGESTIONS

1 USGPM = 3.785 L/min
1 m Head = 3.24 m Head

Typical Design Consideration for a Musical Fountain of 3.0m / 10 Feet Height with 16 x PEM W114-1-6-7 Water Switch Assemblies with PEM 812-2 Stream Jets

PEM 812-2, 14mm / 0.551" Stream Jets

PEM W 114-1-6-7 Water Switches

Sprayheight: 3.0m / 10'

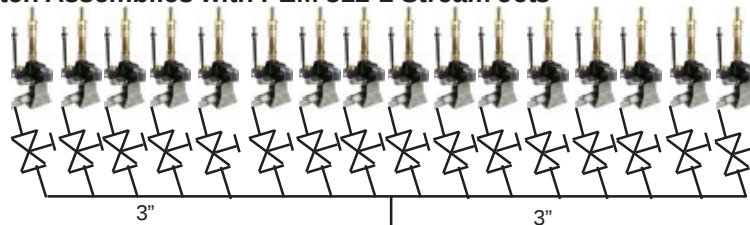
Each: 65 L/min / 17.2 USGPM

Total Flow:

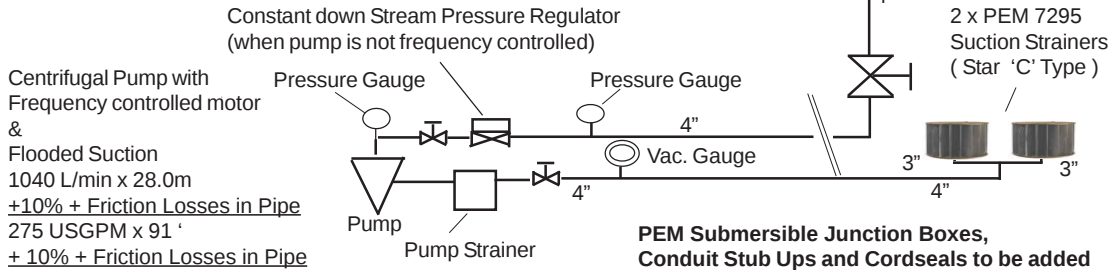
1040 L/min / 275 USGPM + 10%

Pressure at Water Switch:

28.0 m / 91' + 10%

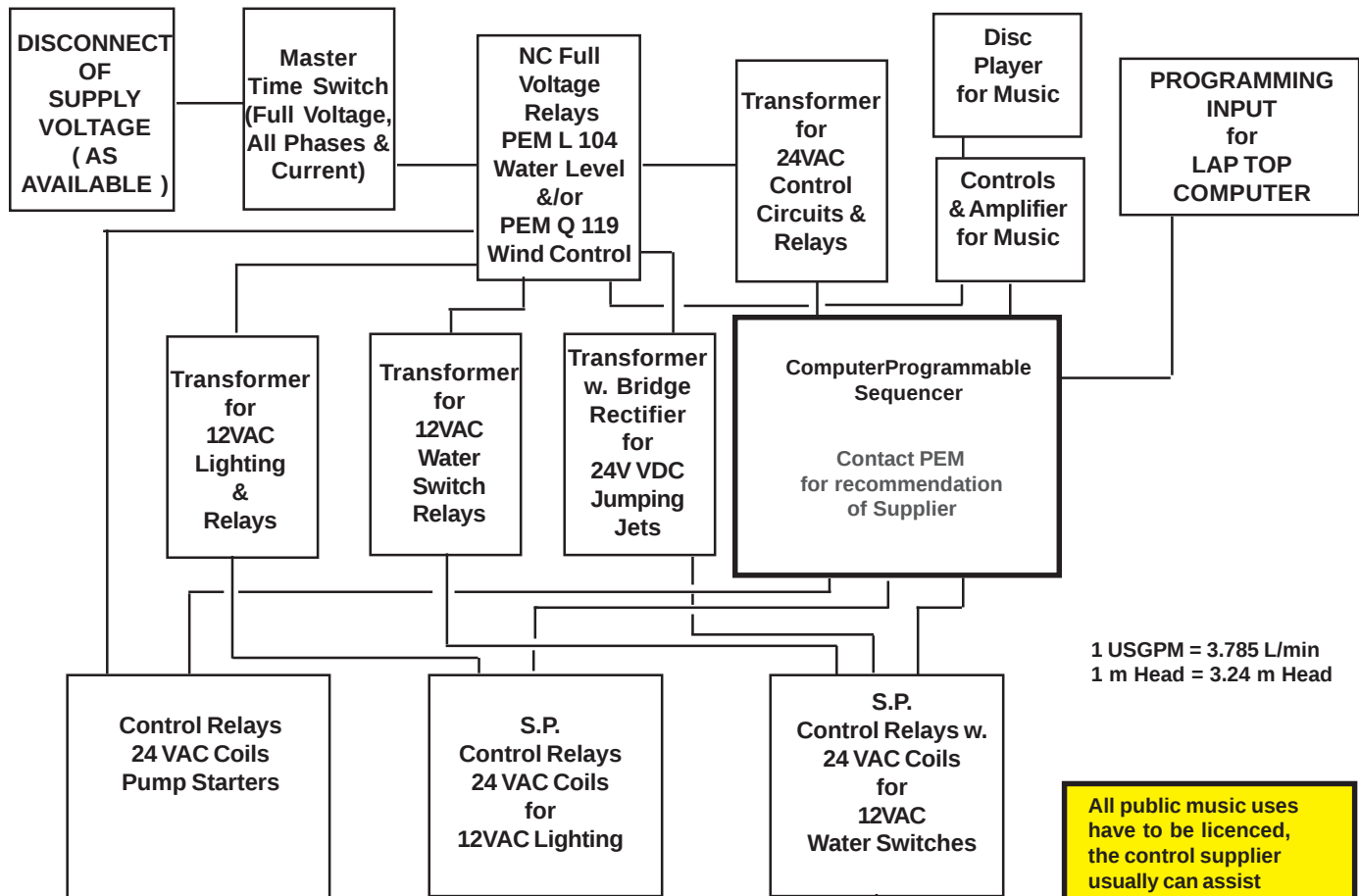


Suggested ILLUMINATION
16 x PEM C 133-8
(4 Color Changing)
with 12VAC, Mr16
5 W Power Color
LED Lamps or
50 W Color
Halogen Lamps



For other PEM Water Switch configurations adjust above information for requirements.

SUGGESTED CONTROL SCHEMATIC FOR COMPUTER PROGRAMMABLE MUSICAL WATER DISPLAYS CONSIDERING DIFFERENT OPTIONS



1 USGPM = 3.785 L/min
1 m Head = 3.24 m Head

All public music uses
have to be licenced,
the control supplier
usually can assist

Conduit(s) to Junction Box(s)
then Cable to Lights
See PEM Light Fixture Supplements
for Cable Voltage Drop Information

Conduit(s) to Junction Box(s),
then cable to Water Switches

WATER SWITCH ASSEMBLY & PARTS

PEM W114-1

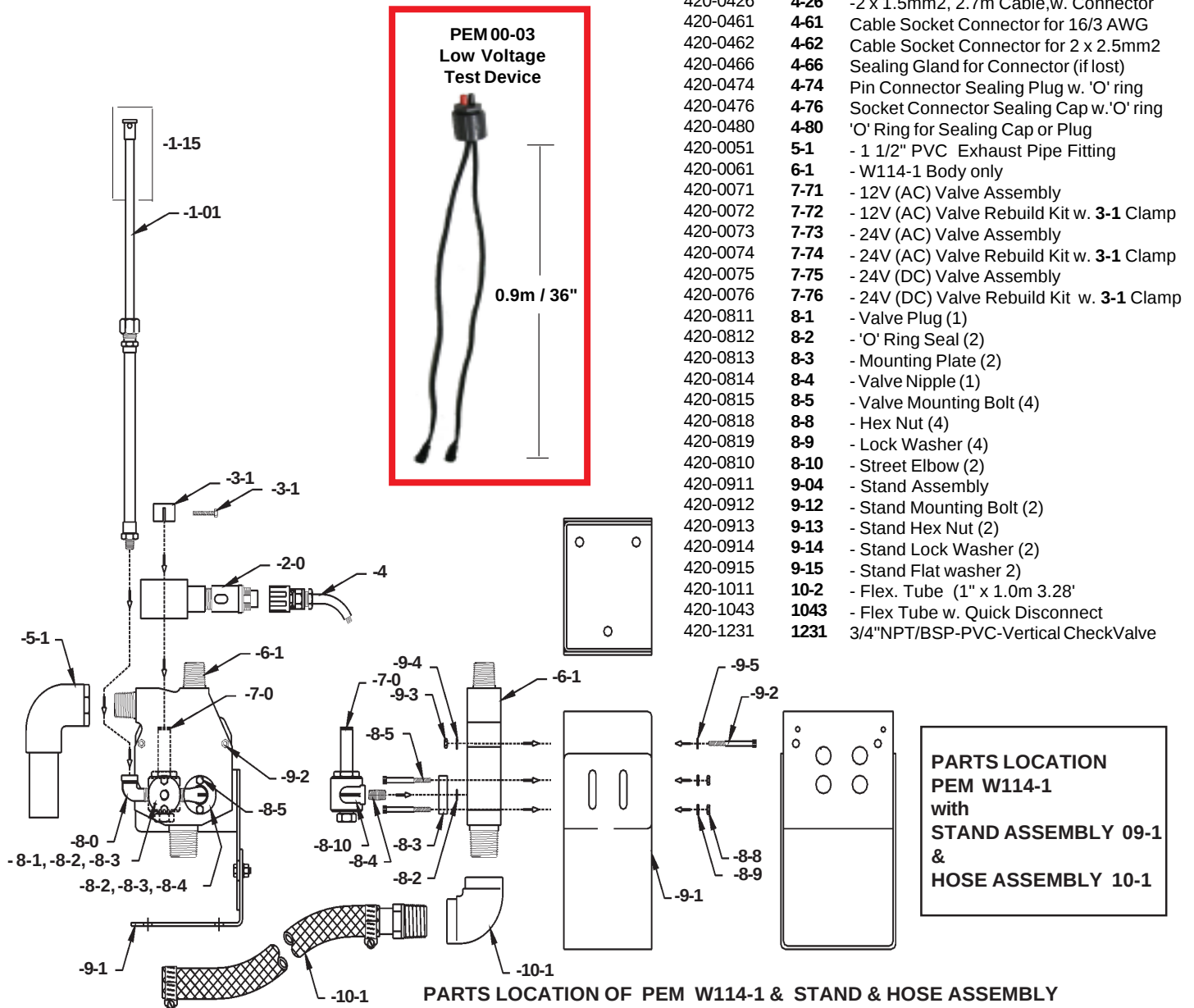
PEM Water Switches are supplied with stainless steel, fully submersible, water duty, solenoid valves.

Approval of Solenoid Valves:

UL, CSA, CE & RoHs compliant.

PEM Water Switches are supplied with submersible disconnects rated for IP 68, tested at 1.054Kg/sq cm (15 lbs/sq in) , 10m depth for 2 weeks.

Approvals: UL, CSA, CE and RoHs compliant.



Beginning November 2006, PEM Water Switches are supplied as standard with plug in submersible disconnects at the solenoid valve to assist in installation and maintenance by not having to open sealed junction boxes. Connecting cable: 2 x 1.5mm2 or 16/3 AWG (to be specified) is supplied in 2.7m / 9.0 Feet length for termination into submersible PEM Junction Box with suitable PEM Cordseal.

DO NOT DISCONNECT UNDER WATER! Always shut off electrical power first, drain pond or lift units out of the water, disconnect cable from unit only when dry! To maintain IP68 Rating, always affix sealing plug to pin connector of solenoid coil and sealing cap to cable connector, both supplied with standard units.

Replacing Solenoid Valve Coils on PEM Water Switches dating prior to 2007 : Replace: Coil, Cable with Pin connector and Coil Clamp.

To replace coil & custom sized fixed cable, larger & longer than standard size cable, please enquire.

As solenoid valves coils are voltage sensitive, utilizing the PEM # 003 Low Voltage Test Device, the actual operating voltage can be read with a suitable Multi Voltage Test Meter while the solenoid valve is energized. This testing to be done while pond is dry before filling, a test protocol to be made and saved for future reference.

PEM W115

WATER SWITCH 1 1/2" x 1 1/2" x 1 1/2"



Pictures courtesy of Freeport Fountain Inc.

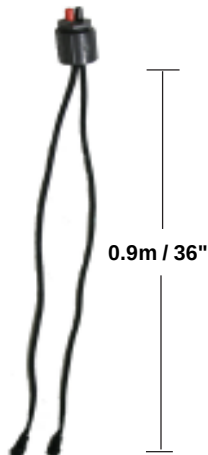


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W 115 ABS WATER SWITCH MUSICAL FOUNTAIN DESIGN SUGGESTIONS	11
W 115 ABS WATER SWITCH PARTS	12

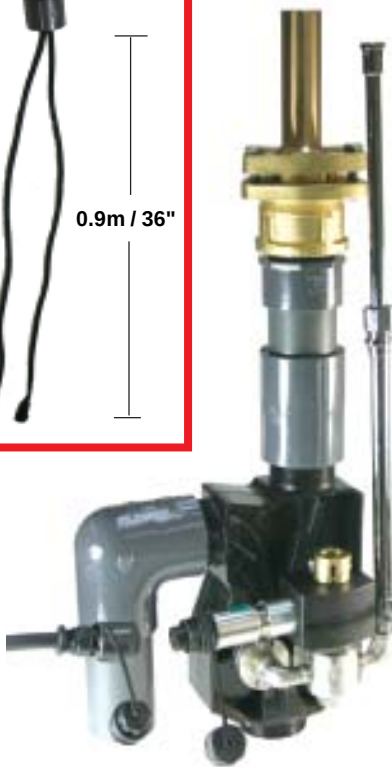
PEM W115 WATER SWITCH

1 1/2" x 1 1/2" x 1 1/2"

PEM 00-03
Low Voltage
Test Device



PEM W115-1&
846 Stream Jet



Submersible Plug In Disconnect
of electrical cable.
Disconnected

PEM W115-1&
815 Stream Jet

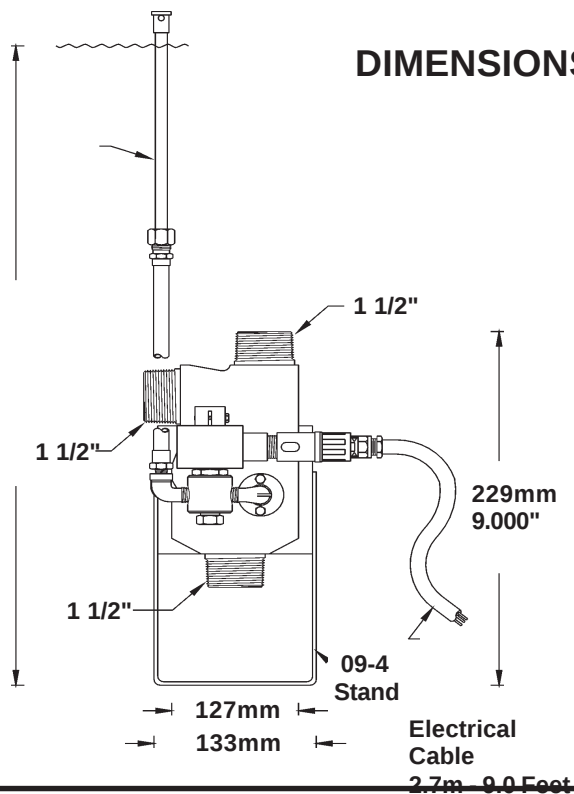


Submersible Plug In Disconnect
of electrical cable.
Connected

PEM W115-1&
953 Aerated Jet



DIMENSIONS



PEM W115 has a molded plastic (ABS, Acrylonitrile Butadien Styrene, UV protected) body with male (outside threaded) 1 1/2" NPT Inlet and 2 x 1 1/2" NPT Outlet Pipe connections for NPT or BSP pipe fittings.

A stainless steel body low voltage, 3 way solenoid water service, breather control valve is fitted to the Water Switch body. This solenoid valve has a submersible coil with plug in connection to the supply cable of standard cable length of 2.7m / 9.0 Feet. The solenoid valve is fully accessible for servicing. Custom made larger & longer size electrical cable with direct connection to solenoid valve coil without disconnect are available at extra cost.

As the solenoid valves are voltage sensitive, the PEM # 00-03 Low Voltage Test Device with color coded binder posts can be inserted between supply cable and solenoid valve to test actual operating voltage with suitable multi meter voltage tester .

ADD ON TO PEM W115 WATER SWITCHES:

Different PEM Spray Jets w. Flow Straighteners
Secondary Spray Jets and fittings for by pass valving.
Stainless Steel stand, fully adjustable & bolt down
Plastic re-inforced flexible tubing (hose) 1" -25mm
with fittings to connect to water supply.

See : PEM ORDER INFORMATION , PAGE 222
PEM WATER SWITCH & JET
ASSEMBLIES
PAGES 223 AND 224

PEM W115 WATER SWITCH

JETS ON WATER SWITCH PERFORMANCES

PEM Water Switch PERFORMANCES

The performance requirements of jets and nozzles when mounted onto the PEM Water Switch differ greatly from standard performances due to pressure losses within the diverter and because of differences in installations. This also applies to jet performances when compared jets on other PEM Water Switches. Use the actual performances (established by actual testing) below and do not use performance tables as given elsewhere.

PEM Water Switches permit the use of a secondary spray jet on the exhaust port to work while the primary jet is off, both jets can oscillate with each other.

PEM Water Switches require a pipe size bypass valve between jet and Water Switch for spray jet adjustment or for small orifice jets and nozzles with low flows to prevent back pressure into the unit, that could cause malfunction or shut off.

Always pre-test the actual performances of diverter & jet combinations under required conditions.

For combinations (paired) Spray Effects, always test PEM W 115 Additional Performances Requirements.

The solenoid valves of the different size PEM Water Switches are identical allowing for mix and match combinations within same system

The jet and riser pipe above the Water Switch must be directly supported to avoid any stress on the Water Switch and its pipe connections. Often the cause of water switch breakage is by maintenance staff holding on to jet to support themselves and then slip, breaking off a water switch pipe connection.

For PEM WATER SWITCHES IN ACTION, visit PEM Website:

www.pemfountain.ca / PEM Collection of Fountain Pictures

The creators of these water spectaculars have videos with sound available, otherwise contact: Pres@pemfountain.ca

PEM W115 Performances with PEM 815-1, 846B, Stream Jet

Spray Height	Flow L/min	Inlet Pressure
1.0m	75	7.6m
1.5m	87	9.4m
2.0m	100	11.0m
3.0m	120	14.4m
4.0m	127	18.0m

PEM W115 Performances with PEM 15-6C, Aerated Jet on 300mm x 1 1/2" Pipe

Spray Height	Flow L/min	Inlet Pressure
1.0m	160	46.0m
1.5m	180	57.0m
2.0m	210	67.0m
2.5m	230	77.0m

PEM W115 Performances with PEM 02-6 on 300mm, 1 1/2" Pipe

Spray Height	Flow L/min	Inlet Pressure
1.0m	120	30.0m
1.5m	150	45.0m
2.0m	175	60.0m
2.5m	220	76.0m

PEM W115 Performances with PEM 626

Spray Height	Flow L/min	Inlet Pressure
1.0m	65	12.0m
2.0m	82	17.0m
3.0m	100	23.0m
4.0m	120	30.0m

PEM W115 Performances with PEM 954

Spray Height	Flow L/min	Inlet Pressure
1.0m	100	23.0m
1.5m	120	32.0m
2.0m	143	40.0m
3.0m	165	54.0m

PEM W115 Performances with PEM 953

Spray Height	Flow L/min	Inlet Pressure
1.0m	69	9.0m
1.5m	80	15.0m
2.0m	100	22.0m
3.0m	120	28.0m

INLET PRESSURE = Water Pressure at Inlet to Water Switch!

DO NOT USE Regular performance tables of jets !

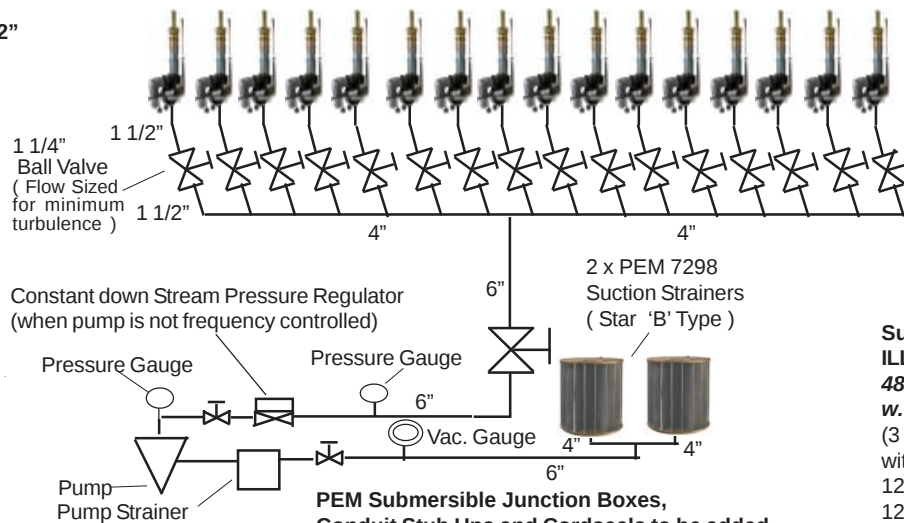
Always test actual Water Switch and Jet Combination performances before committing yourself !

MUSICAL FOUNTAIN DESIGN SUGGESTIONS

Typical Plumbing of a Musical Fountain of 4.5m / 15 Feet Height
with 16 x PEM W115-1 Water Switch Assemblies with PEM 815- 1 Stream Jets

PEM 815-1, 16mm / 0.630", 1 1/2"
PEM W 115 Water Switch
Sprayheight: 4.5m / 15'
Each: 123 L/min / 32.5 USGPM
Total Flow:
1968 L/min / 520 USGPM + 10%
Pressure at Water Switch:
19.5 m / 63' + 10%
(10% = Safety)

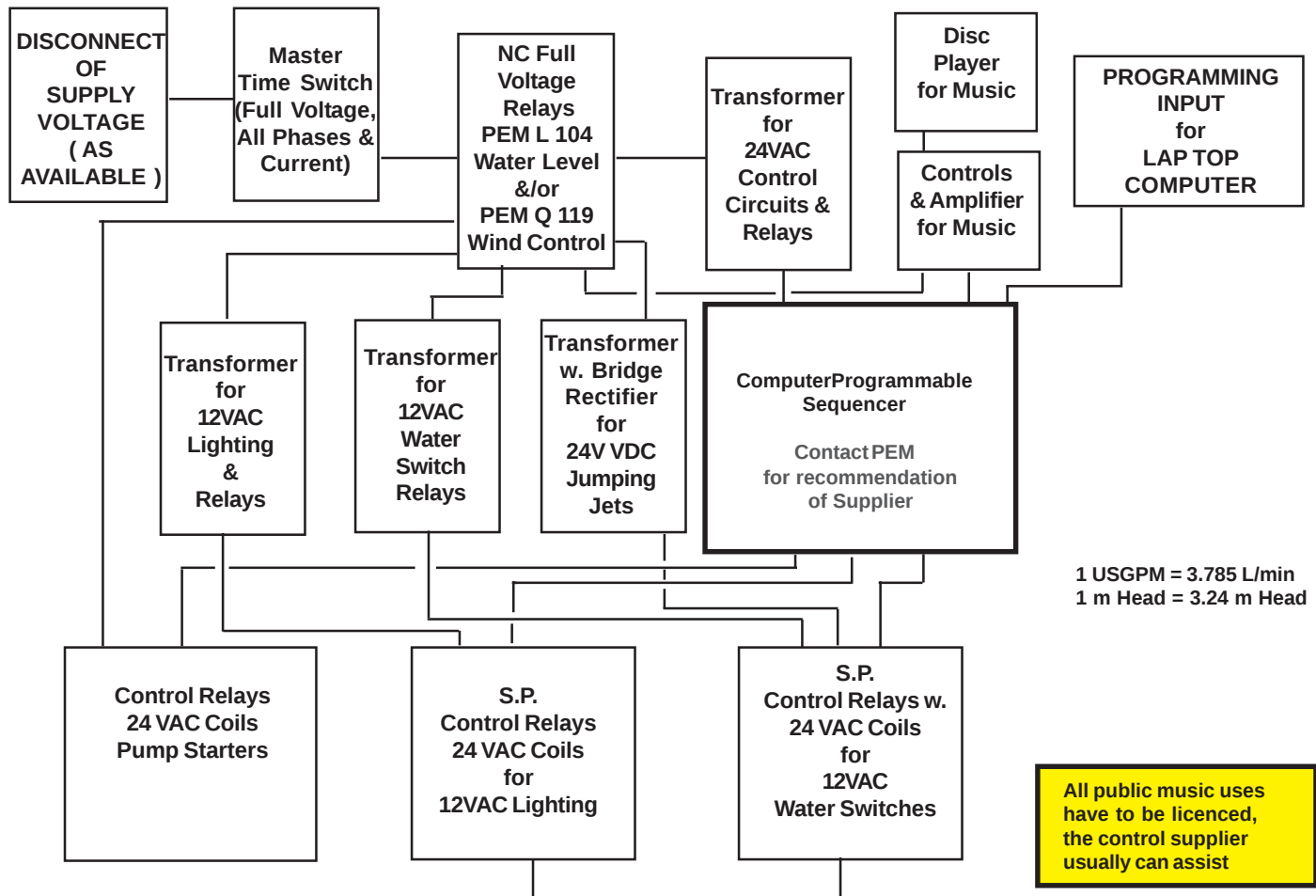
Centrifugal Pump
with frequency
controlled motor
&
Flooded Suction
2000 L/min x 20.0m
+10% + Friction Losses in Pipe
530 USGPM x 65' Head
+ 10% + Friction Losses in Pipe



**Suggested
ILLUMINATION**
48 pcs PEM E 150-Can.
w. Dichro Color Lens
(3 Color Changing)
with PAR 38,
120V-250W NSP Lamps
12V - R40, 120W NSP "
230V - R40, NSP Lamps

For other PEM Water Switch configurations adjust above information for requirements.

SUGGESTED CONTROL SCHEMATIC FOR COMPUTER PROGRAMMABLE MUSICAL WATER DISPLAYS CONSIDERING DIFFERENT OPTIONS



1 USGPM = 3.785 L/min
1 m Head = 3.24 m Head

All public music uses
have to be licenced,
the control supplier
usually can assist

Conduit(s) to Junction Box(s)
then Cable to Lights
See PEM Light Fixture Supplements
for Cable Voltage Drop Information

Conduit(s) to Junction Box(s),
then cable to Water Switches

PEM W115 WATER SWITCH ASSEMBLY & PARTS

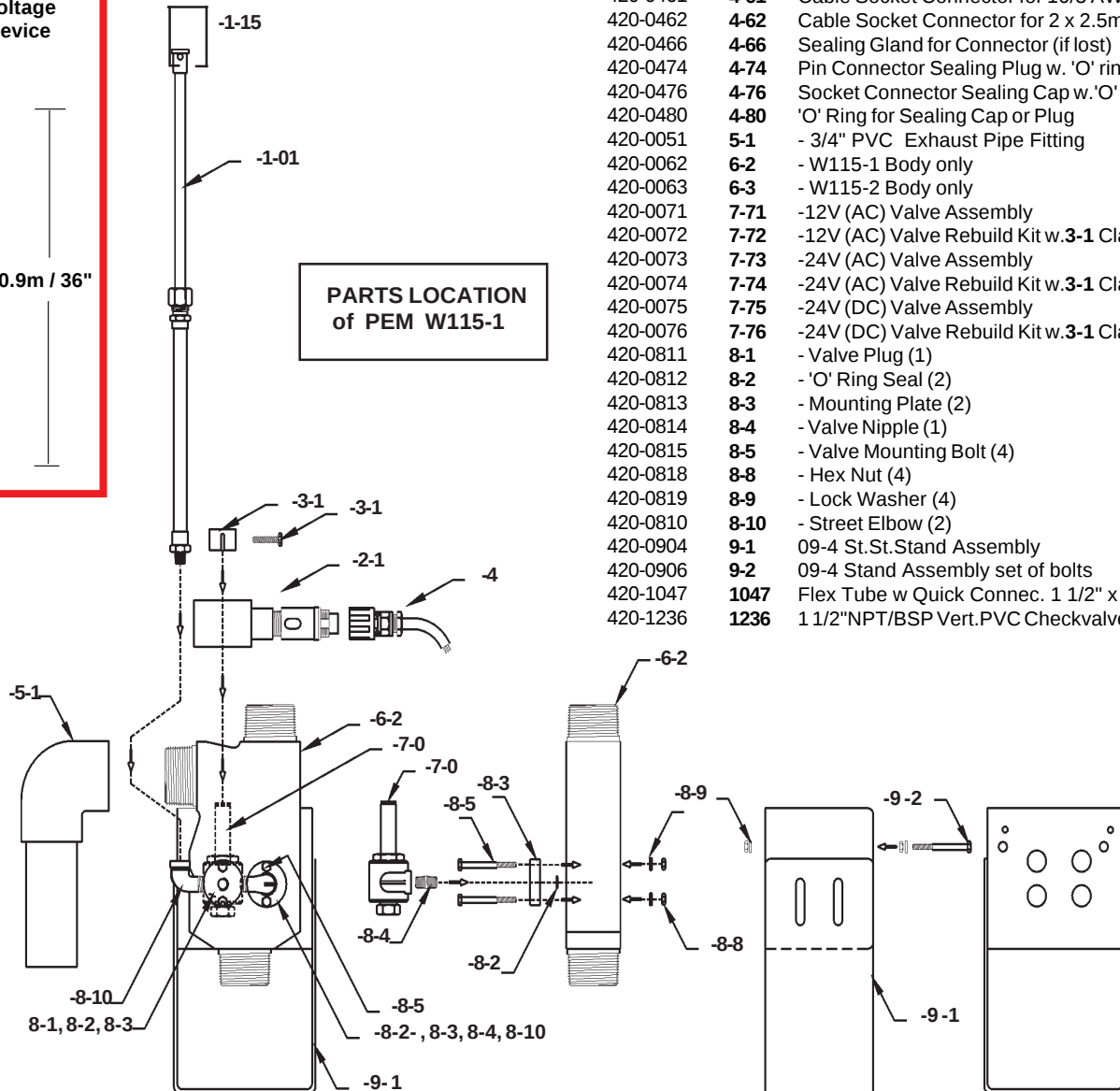
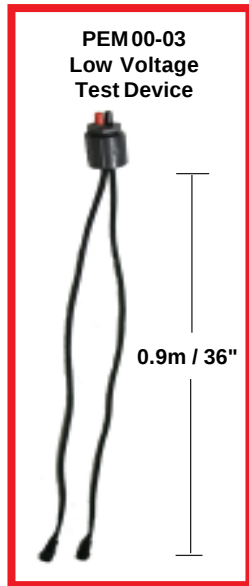
PEM Water Switches are supplied with stainless steel, fully submersible, water duty, solenoid valves.

Approval of Solenoid Valves:

UL, CSA, CE & RoHs compliant.

PEM Water Switches are supplied with submersible disconnects rated for IP 68, tested at 1.054Kg/sq cm (15 lbs/sq in) , 10m depth for 2 weeks.

Approvals: UL, CSA, CE and RoHs compliant.



PEM #	CAT.#	DESCRIPTION
420-0003	00-03	-Low Voltage Test Device with Connectors
	W115-	
420-0011	1-01	-Snorkel Assembly
420-0015	1-15	-Stainless Steel Insect Screen for Snorkel
420-0022	2-02	-12VAC Coil w. Pin Connector
420-0024	2-04	-24VAC Coil w. Pin Connector
420-0026	2-06	-24VDC Coil w. Pin Connector
420-0031	3-1	- Coil Holding Clamp w. bolt & washers
420-0423	4-23	-16/3AWG, 9' Cable, w. Connector
420-0426	4-26	-2 x 1.5mm ² , 2.7m Cable,w. Connector
420-0461	4-61	Cable Socket Connector for 16/3 AWG
420-0462	4-62	Cable Socket Connector for 2 x 2.5mm ²
420-0466	4-66	Sealing Gland for Connector (if lost)
420-0474	4-74	Pin Connector Sealing Plug w. 'O' ring
420-0476	4-76	Socket Connector Sealing Cap w. 'O' ring
420-0480	4-80	'O' Ring for Sealing Cap or Plug
420-0051	5-1	- 3/4" PVC Exhaust Pipe Fitting
420-0062	6-2	- W115-1 Body only
420-0063	6-3	- W115-2 Body only
420-0071	7-71	-12V (AC) Valve Assembly
420-0072	7-72	-12V (AC) Valve Rebuild Kit w.3-1 Clamp
420-0073	7-73	-24V (AC) Valve Assembly
420-0074	7-74	-24V (AC) Valve Rebuild Kit w.3-1 Clamp
420-0075	7-75	-24V (DC) Valve Assembly
420-0076	7-76	-24V (DC) Valve Rebuild Kit w.3-1 Clamp
420-0811	8-1	- Valve Plug (1)
420-0812	8-2	- 'O' Ring Seal (2)
420-0813	8-3	- Mounting Plate (2)
420-0814	8-4	- Valve Nipple (1)
420-0815	8-5	- Valve Mounting Bolt (4)
420-0818	8-8	- Hex Nut (4)
420-0819	8-9	- Lock Washer (4)
420-0810	8-10	- Street Elbow (2)
420-0904	9-1	09-4 St.St. Stand Assembly
420-0906	9-2	09-4 Stand Assembly set of bolts
420-1047	1047	Flex Tube w Quick Connec. 1 1/2" x 1m
420-1236	1236	1 1/2"NPT/BSP Vert.PVC Checkvalve

Effective 2007, PEM Water Switches are supplied as standard with plug in submersible disconnects at the solenoid valve to assist in installation and maintenance by not having to open sealed junction boxes. Connecting cable: 2 x 1.5mm² or 16/3 AWG (to be specified) is supplied in 2.7m / 9.0 Feet length for termination into submersible PEM Junction Boxes with suitable PEM Cordseal. As solenoid valve coils are voltage sensitive, utilizing the **PEM # 00-03 Low Voltage Test Device**, the actual operating voltage can be read with a suitable Multi Voltage Test Meter while the solenoid valve is energized. This initial testing to be done while pond is dry before filling, a test protocol be made and saved for future reference.

TO TEST VOLTAGE IN FILLED PONDS : DO NOT DISCONNECT UNDER WATER ! Always shut off electrical power first, drain pond or lift solenoid valve coil out of the water, affix 00-03 to supply cable and to solenoid valve coil, replace same on solenoid valve, then turn on electric power and check operating voltage. To maintain IP68 Rating when not inter-connected; always affix safely sealing cap to cable connector when removing from filled pond to prevent entry of water into connection.

Replacing Solenoid Valve Coils on PEM Water Switches dating prior to 2007 : Replace: complete Coil, Cable w.Pin connector and Coil Clamp.

To replace coils with custom sized fixed cable, larger & longer than above standard size cable, please enquire before removing.

PEM W116 WATER SWITCHES

2" x 1 1/2" x 1 1/2"



Picture courtesy of Georgia Fountain Co.

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PEM W116 WATER SWITCHES

2" x 1 1/2" x 1 1/2"

PEM W116-1
with
846C Stream Jet
&
PEM 116-200



Submersible Plug In Disconnect
of electrical cable.

PEM W116-1
with
847C Stream Jet

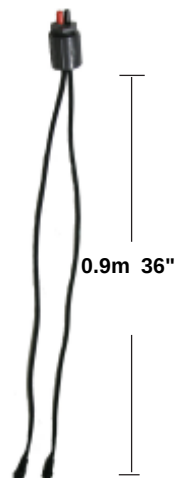


Submersible Plug In Connect
of electrical cable.

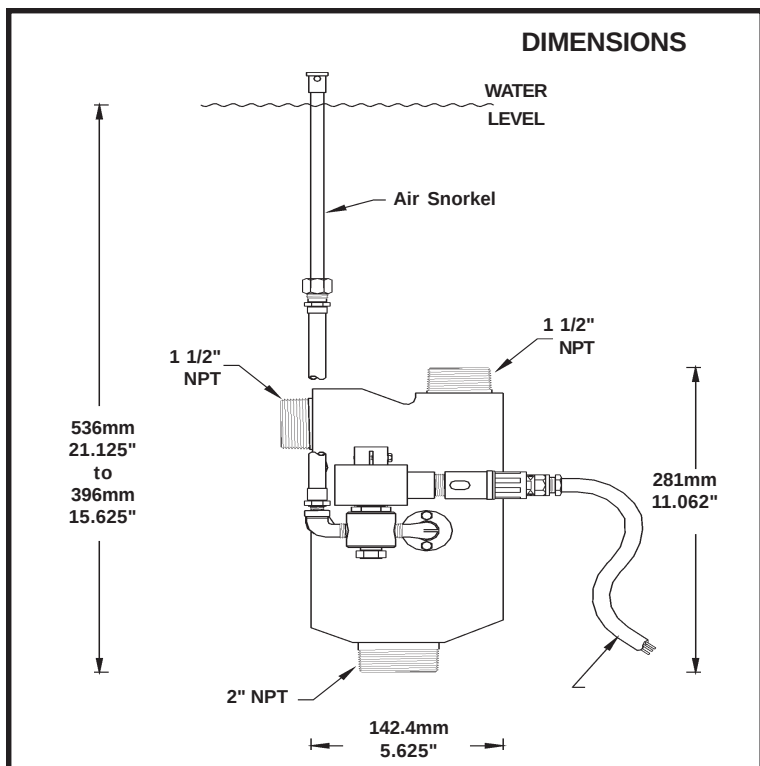
PEM W116-1 &
with
954 Aerated Jet



PEM00-03
Low Voltage
Test Device



PEM W116-1 has a molded plastic



(ABS, Acrylonitrile Butadien Styrene, UV protected) body with male (outside threaded) 1 1/2" NPT Inlet and

2 x 1 1/2" NPT Outlet Pipe connections for NPT or BSP pipe fittings.

A stainless steel body, low voltage 3 way solenoid water service, breather control valve is fitted to the Water Switch body. This solenoid valve has a submersible coil with plug in connection to the supply cable of standard cable length of 2.7m / 9.0 Feet.

The solenoid valve is fully accessible for servicing. Custom made larger & longer size electrical cable with direct connection to solenoid valve coil without disconnect are available at extra cost.

As the solenoid valves are voltage sensitive, the PEM # 00-03 Low Voltage Test Device with color coded binder posts can be inserted between supply cable and solenoid valve to test actual operating voltage with suitable multi meter voltage tester.

ADD ON TO PEM W116 WATER SWITCHES:

Different PEM Spray Jets w. Flow Straighteners
Secondary Spray Jets and fittings for by pass valving.
Stainless Steel stand, fully adjustable & bolt down
Plastic re-inforced flexible tubing (hose) 2" - 50mm with fittings to connect to water supply.

See : PEM ORDER INFORMATION , PAGE 222
PEM WATER SWITCH & JET
ASSEMBLIES
PAGES 223 AND 224

JETS ON WATER SWITCH PERFORMANCES

The performance requirements of jets and nozzles when mounted onto the PEM Water Switch differ greatly from standard performances due to pressure losses within the diverter and because of differences in installations !

This also applies to jet performances when compared to jets on other PEM Water Switches.

Use the actual performances (established by actual testing) below and do not use performance tables as given elsewhere.

PEM Water Switches permit the use of a secondary spray jet on the exhaust port to work while the primary jet is off, both jets can oscillate with each other.

PEM Water Switches require a pipe size bypass valve between jet and Water Switch for spray jet adjustment or for small orifice jets and nozzles with low flows to prevent back pressure into the unit, that could cause malfunction or shut off.

Always pre-test the actual performances of diverter & jet combinations under required conditions.

For combinations (paired) Spray Effects, always test PEM W 116 Additional Performances Requirements.

The solenoid valves of the different size PEM Water Switches are identical, allowing for mix and match combinations on same system.

The jet and riser pipe above the Water Switch must be directly supported to avoid any stress on the Water Switch and its pipe connections. Often the cause of water switch breakage is by maintenance staff holding on to jet to support themselves and then slip, breaking off a water switch pipe connection.

For PEM WATER SWITCHES IN ACTION, visit PEM Website: www.pemfountain.ca / PEM Collection of Fountain Pictures

The creators of these water spectacles have videos with sound available, otherwise contact by Email : Pres@pemfountain.ca



With PEM 847C,
2" Stream Jet

Spray Height	Flow L/min	Inlet Pressure
1.0m	178	13m
2.0m	220	15m
3.0m	254	20m
4.0m	265	22m
5.0m	284	25m

With PEM 02-6,
1 1/2" Fan Jet

Spray Height	Flow L/min	Inlet Pressure
1.0m	207	10.0m
1.5m	218	14.0m
2.0m	228	17.0m
3.0m	273	22.0m
4.0m	380	27.0m

With PEM 626,
1 1/2" Filigran Jet

Spray Height	Flow L/min	Inlet Pressure
2.0m	190	12.0m
3.0m	220	15.0m
4.0m	250	20.0m
4.5m	270	22.0m

PEM 846C, 815-4 Stream Jet
with 12"/ 30cm x 1 1/2" Pipe with
Flowstraightener and
Coupling on PEM 116-200 Stand

Spray Pressure	Flow L/min	Inlet Pressure
Height	Height	L/min
4.0m	127	
18.0m		
5.0m	148	21.5m
6.0m	190	32.0m
7.0m	200	36.0m
8.0m	216	39.0m
9.0m	227	39.0m
10.0m	249	44.0m
12.0m	282	51.0m



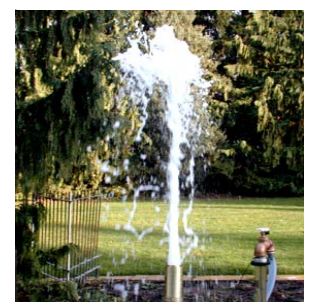
With PEM 953,
1 1/2" Aerated Jet

Spray Height	Flow L/min	Inlet Pressure
2.0m	205	17.0m
3.0m	254	24.0m
4.0m	265	26.5m
5.0m	284	29.5m



With PEM 954,
2" Aerated Jet

Spray Height	Flow L/min	Inlet Pressure
1.5m	190	15.0m
2.0m	220	17.0m
3.0m	273	22.0m
4.0m	380	27.0m



With PEM 955,
3" Aerated Jet

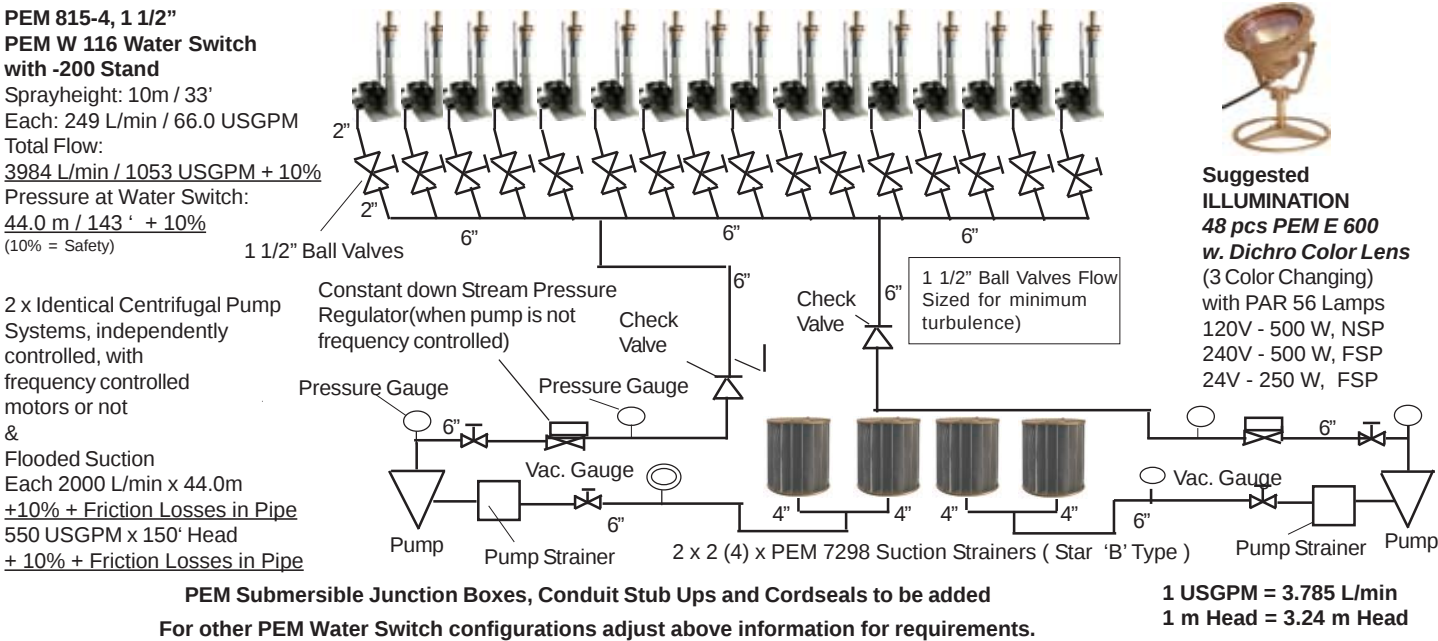
Spray Height	Flow L/min	Inlet Pressure
1.5m	235	17.0m
2.0m	243	18.0m
3.0m	273	22.0m
4.0m	380	27.0m

Recommended secondary (exhaust) spray jets: PEM 02-6, 07-1, 07-2, or single / multiple clear stream jets, the second jet must work with the performance requirements of primary jets, spray height adjusted with by-pass valve in pipe from Water Switch to Jet. Secondary spray jets have a slightly lesser spray effect than primary jets due to greater internal friction losses in Water Switch. Where the outflow in the Water Switch is insufficient to cause it to shut off completely, a by-pass valve must be inserted into the jet riser pipe to the jet, increasing the flow. For lesser spray heights use PEM W115 or W114. PEM W116 can be operated in any position, as long as the air snorkel extends above water. The snorkel can also be supplanted with a slanted upward tube, terminating above water. Where the outflow in the Water Switch is insufficient to cause it to shut off completely, a by-pass valve must be inserted into the jet riser to the jet, increasing the flow.

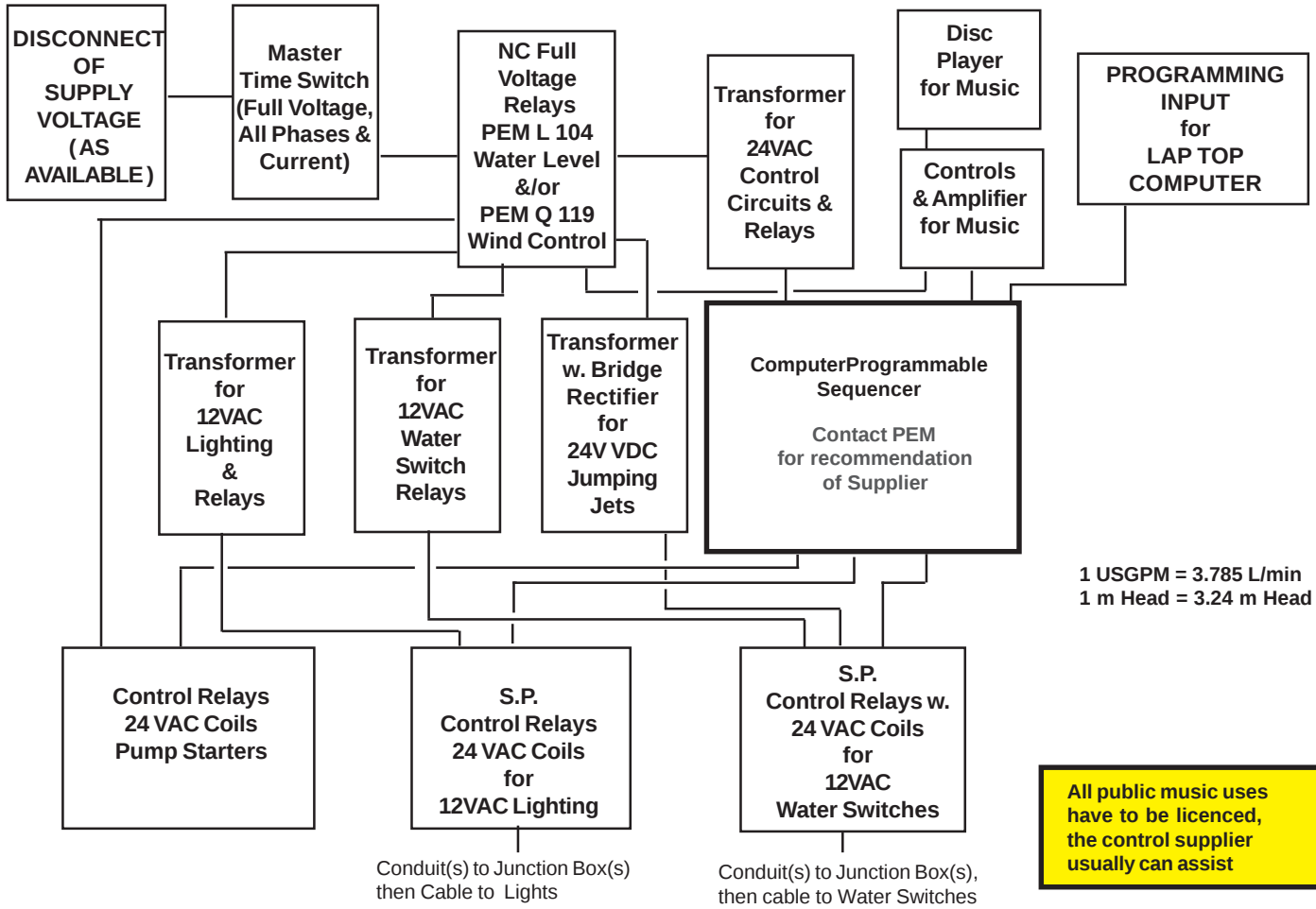
1 USGPM = 3.785 L/min
1 m Head = 3.28 m Head

MUSICAL FOUNTAIN DESIGN SUGGESTION

Typical Plumbing of a Musical Fountain of 10m / 33 Feet Height with 16 x PEM W116-1/ 200 Water Switch Assemblies with PEM 815- 4 Stream Jets



SUGGESTED CONTROL SCHEMATIC FOR COMPUTER PROGRAMMABLE MUSICAL WATER DISPLAYS CONSIDERING DIFFERENT OPTIONS



WATER SWITCH ASSEMBLY & PARTS

PEM W116-1

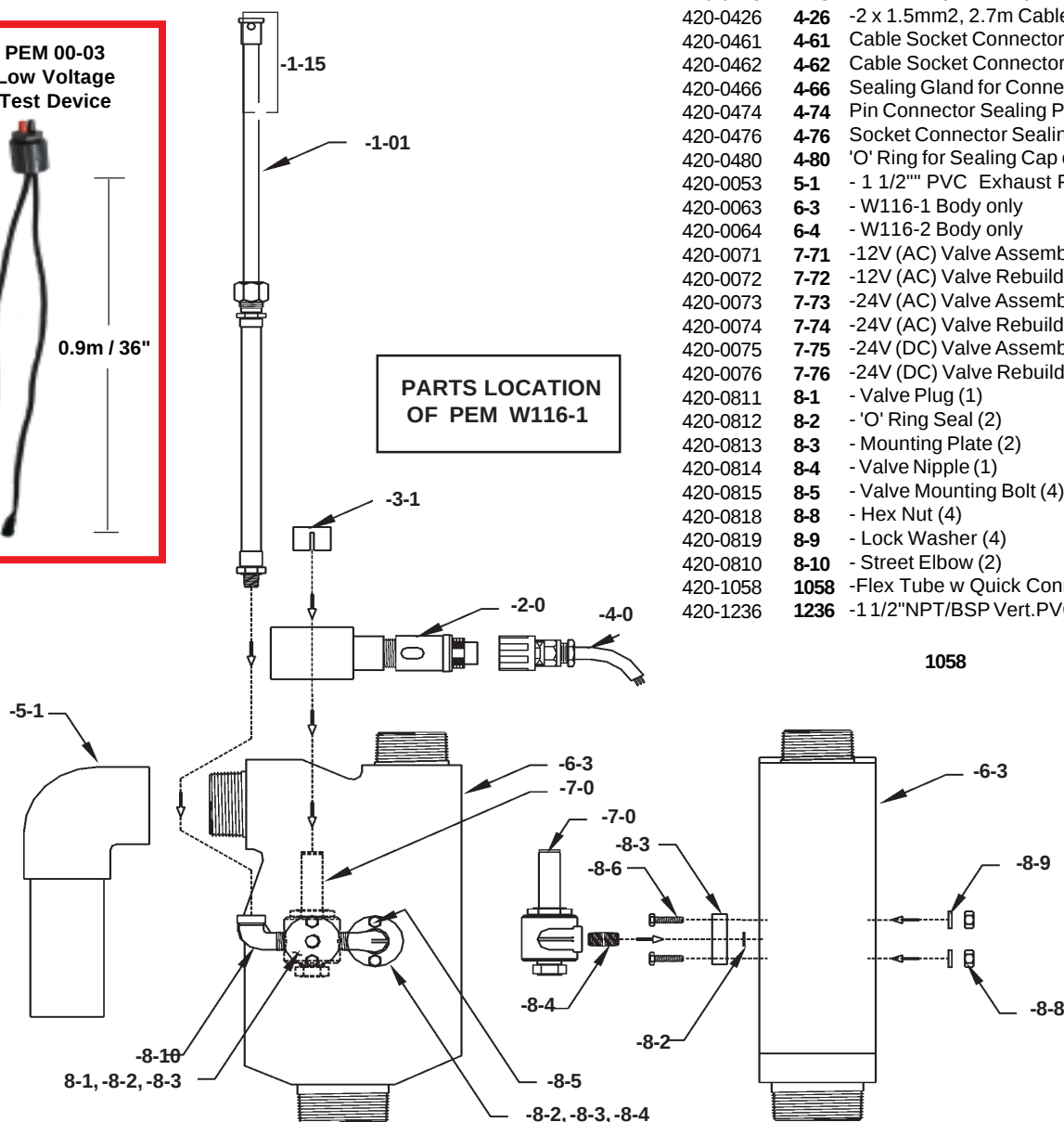
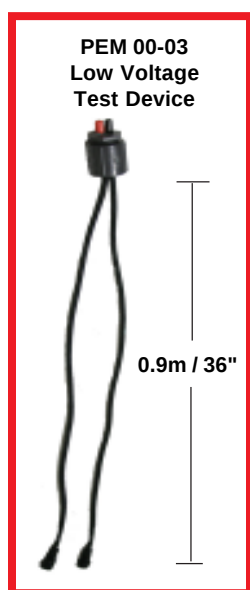
PEM Water Switches are supplied with stainless steel, fully submersible, water duty, solenoid valves.

Approval of Solenoid Valves:

UL, CSA, CE & RoHs compliant.

PEM Water Switches are supplied with submersible disconnects rated for IP 68, tested at 1.054Kg/sq cm (15 lbs/sq in) , 10m depth for 2 weeks.

Approvals: UL, CSA, CE and RoHs compliant.



PEM #	CAT.#	DESCRIPTION
420-0003	0-03	-Low Voltage Test Device with Connectors
	W116-	
420-0011	1-01	-Snorkel Assembly
420-0015	1-15	-Stainless Steel Insect Screen for Snorkel
420-0022	2-02	-12VAC Coil w. Pin Connector
420-0024	2-04	-24VAC Coil w. Pin Connector
420-0026	2-06	-24VDC Coil w. Pin Connector
420-0031	3-1	- Coil Holding Clamp w. bolt & washers
420-0423	4-23	-16/3AWG, 9' Cable, w. Connector
420-0426	4-26	- 2 x 1.5mm ² , 2.7m Cable,w. Connector
420-0461	4-61	Cable Socket Connector for 16/3 AWG
420-0462	4-62	Cable Socket Connector for 2 x 2.5mm ²
420-0466	4-66	Sealing Gland for Connector (if lost)
420-0474	4-74	Pin Connector Sealing Plug w. 'O' ring
420-0476	4-76	Socket Connector Sealing Cap w.'O' ring
420-0480	4-80	'O' Ring for Sealing Cap or Plug
420-0053	5-1	- 1 1/2" PVC Exhaust Pipe Fitting
420-0063	6-3	- W116-1 Body only
420-0064	6-4	- W116-2 Body only
420-0071	7-71	-12V (AC) Valve Assembly
420-0072	7-72	-12V (AC) Valve Rebuild Kit w. 3-1 Clamp
420-0073	7-73	-24V (AC) Valve Assembly
420-0074	7-74	-24V (AC) Valve Rebuild Kit w. 3-1 Clamp
420-0075	7-75	-24V (DC) Valve Assembly
420-0076	7-76	-24V (DC) Valve Rebuild Kit w. 3-1 Clamp
420-0811	8-1	- Valve Plug (1)
420-0812	8-2	- 'O' Ring Seal (2)
420-0813	8-3	- Mounting Plate (2)
420-0814	8-4	- Valve Nipple (1)
420-0815	8-5	- Valve Mounting Bolt (4)
420-0818	8-8	- Hex Nut (4)
420-0819	8-9	- Lock Washer (4)
420-0810	8-10	- Street Elbow (2)
420-1058	1058	-Flex Tube w Quick Connec. 1 1/2" x 1m
420-1236	1236	-1 1/2"NPT/BSP Vert.PVC Checkvalve

Effective 2007, PEM Water Switches are supplied as standard with plug in submersible disconnects at the solenoid valve to assist in installation and maintenance by not having to open sealed junction boxes. Connecting cable: 2 x 1.5mm² or 16/3 AWG (to be specified) is supplied in 2.7m / 9.0 Feet length for termination into submersible PEM Junction Boxes with suitable PEM Cordseal. As solenoid valve coils are voltage sensitive, utilizing the **PEM # 00-03 Low Voltage Test Device**, the actual operating voltage can be read with a suitable Multi Voltage Test Meter while the solenoid valve is energized. This initial testing to be done while pond is dry before filling, a test protocol be made and saved for future reference.

TO TEST VOLTAGE IN FILLED PONDS : DO NOT DISCONNECT UNDER WATER! Always shut off electrical power first, drain pond or lift solenoid valve coil out of the water, affix 00-03 to supply cable and to solenoid valve coil, replace same on solenoid valve, then turn on electric power and check operating voltage. To maintain IP68 Rating when not inter-connected; always affix sealing cap to cable connector when removing from filled pond to prevent entry of water into connection.

Replacing Solenoid Valve Coils on PEM Water Switches dating prior to 2007 : Replace: complete Coil, Cable w.Pin connector and Coil Clamp.

To replace coils with custom sized fixed cable, larger & longer than above standard size cable, please enquire before removing.

PEM ABS TYPE WATER SWITCHES

APPLICATION

For use in multiple spray effect water displays controlled by computer programmable low voltage sequencers without interference with other spray effects or back pressure. This device permits the installation of reasonably priced sequenced water displays or musical fountains. The water supply could be from a common single or multiple pump manifold.

DESCRIPTION

PEM Water Switches are intended to switch the flow of a water supply within 1/10th or less of a second from one outlet to another. Within this device, water pressure from the supply pipe is converted into flow velocity, then reconverted into a lower outlet pressure. The function can be described as follows: The water inflow from the supply pipe is directed at the junction of 2 branches of a Y-Tee. As the inflowing water entrains ambient air, replenishing air from the snorkel is drawn evenly through 2 transverse ports at the base of the Y. By opening or closing of these ports, a so called 'COANDA EFFECT' takes place, which bends the stream of the incoming water toward the Y leg that has its port closed. By controlling the air taken in by these ports from the snorkel with a low voltage solenoid valve, the COANDA EFFECT can be directed from one branch of the Y outlet to the other, in effect switching the flow of water from the one outlet to the other.

The very nature of the device does not permit valving or excessive back pressure of the outlets, the flow usually is controlled before entering the device or by the use of a by-pass valve on the outflow side of the water switch. Direct connection of a spray jet to the vertical outlet is recommended, nozzles not requiring laminar inflow are preferred. If the snorkel terminates below waterlevel, the unit does not work. Normally a larger spray jet or several smaller spray jets can be operated, with the horizontal port serving as exhaust, however this port can also be equipped with a spray jet to provide an alternating spray effect with a slightly lower outlet pressure.

In the selection of spray jets, waterlevel independent and low backpressure jets or nozzle can be used with suitable pipe fittings. Waterlevel dependent aerated jets and cascade jets should not be used.

It must be realized, that Water Switches requires full inflow at all times, even if the spray effect is not working.

CONSTRUCTION

PEM Water Switches have a molded plastic (**ABS** Acrylonitrile **B**utadien **S**tylene) body with male (outside threaded) 1 1/2" NPT Inlet and 2 x 1 1/2" Outlets, NPT tapered pipe connections for connecting suitable for NPT & BSP threaded pipe fittings. A stainless steel body, low voltage water service 3 way, solenoid breather control valve is attached to the Water Switch body, the solenoid valve has a submersible coil.

ELECTRICAL REQUIREMENTS

Operating Voltages:

Valve Manufacturer states:

Maximum operating voltage

variance of rated voltage:

+ 10% / - 15%

Verify at each Water Switch with
PEM 003 Voltage Test Device

Coil Voltages (Specify)

12 VAC, 50/60 Hz

24 VAC, 50/60 Hz

24 DC

Valve Manufacturer states
these inductive current
demands:

12 VAC

5.8 AMP. Inrush

3.4 AMP. Holding

24 VAC

2.9 AMP. Inrush

1.7 AMP. Holding

24 DC

0.48 AMP

Effective 2007, PEM Water Switches are supplied as standard with plug in submersible disconnects at the solenoid valve to assist in installation and maintenance by not having to open sealed junction boxes. Connecting cable: 2 x 1.5mm² or 16/3 AWG (to be specified) is supplied in 2.7m / 9.0 Feet length for termination into submersible PEM Junction Boxe with suitable PEM Cordseal. As solenoid valve coils are voltage sensitive, utilizing the **PEM # 00-03 Low Voltage Test Device**, the actual operating voltage can be read with a suitable Multi Voltage Test Meter while the solenoid valve is energized. This initial testing to be done while pond is dry before filling, a test protocol be made and saved for future reference.

TO TEST VOLTAGE IN FILLED PONDS : DO NOT DISCONNECT UNDER WATER ! Always shut off electrical power first, drain pond or lift solenoid valve coil out of the water, affix 00-03 to supply cable and to solenoid valve coil, replace same on solenoid valve, then turn on electric power and check operating voltage.

The jet and riser pipe above the Water Switch must be directly supported to avoid any stress on the Water Switch and its pipe connections. Often the cause of water switch breakage is by maintenance staff holding on to jet to support themselves and then slip, breaking off a water switch pipe connection. Most Installation positions of the water switch except for upside down are possible but the snorkel air intake must always be above waterlevel. For remote installations the snorkel must be replaced with a suitable plastic or metal tubing that terminates near or at the pond but always above the waterlevel. To keep flying insects out of snorkel; retrofit with **PEM # 420-0015 , 1-15 Insect Screen**.

**For pipe thread sealant use only
Teflon Tape. The use
of other pipe thread
sealants voids warranty!**

For winterizing in cold climates:

Disconnect the Water Switches (with quick disconnects) and store frost free.

PEM 110-2 PUSH BUTTON ACTUATOR FOR MANUAL PEM WATER SWITCHES

#490 - 44002

PEM W110-2 Hand Push Button NON electrical Actuators for manually controlled PEM Water Switches are designed to operate Spray Effects while depressing the operating Plunger.

This non electrical hand push button Actuator is a companion to the PEM 110-5 Manual Step On Control Actuator.

Together with manual operated & supervised city water supplies, these Actuators and Water Switches combination allow for complete non electrical and most sanitary spray pads operation under controlled access conditions.

These Actuators are NOT recommended for unsupervised public spray pads.

PVC Valve Body with Neoprene Seals with stainless steel plunger valve operating either primary or secondary spray effect as long as plunger is depressed

51.75mm - 2.037" Diam Brass Plunger enclosure with Clamp Ring and 2 x # 10/32 x 1.5" Bolts to mount through a 2.5" - 63.5mm bored hole through a vertical wall plate.

TUBE #1

0.250" - 6.35mm inside diameter Tube

To operate primary spray effect through port # 1 on (+) side of Water Switch

TUBE #2

0.250" - 6.35mm inside diameter Tube

To operate water switch exhaust while primary spray effect is not used, connects to port # 2 on (+) side of Water Switch body

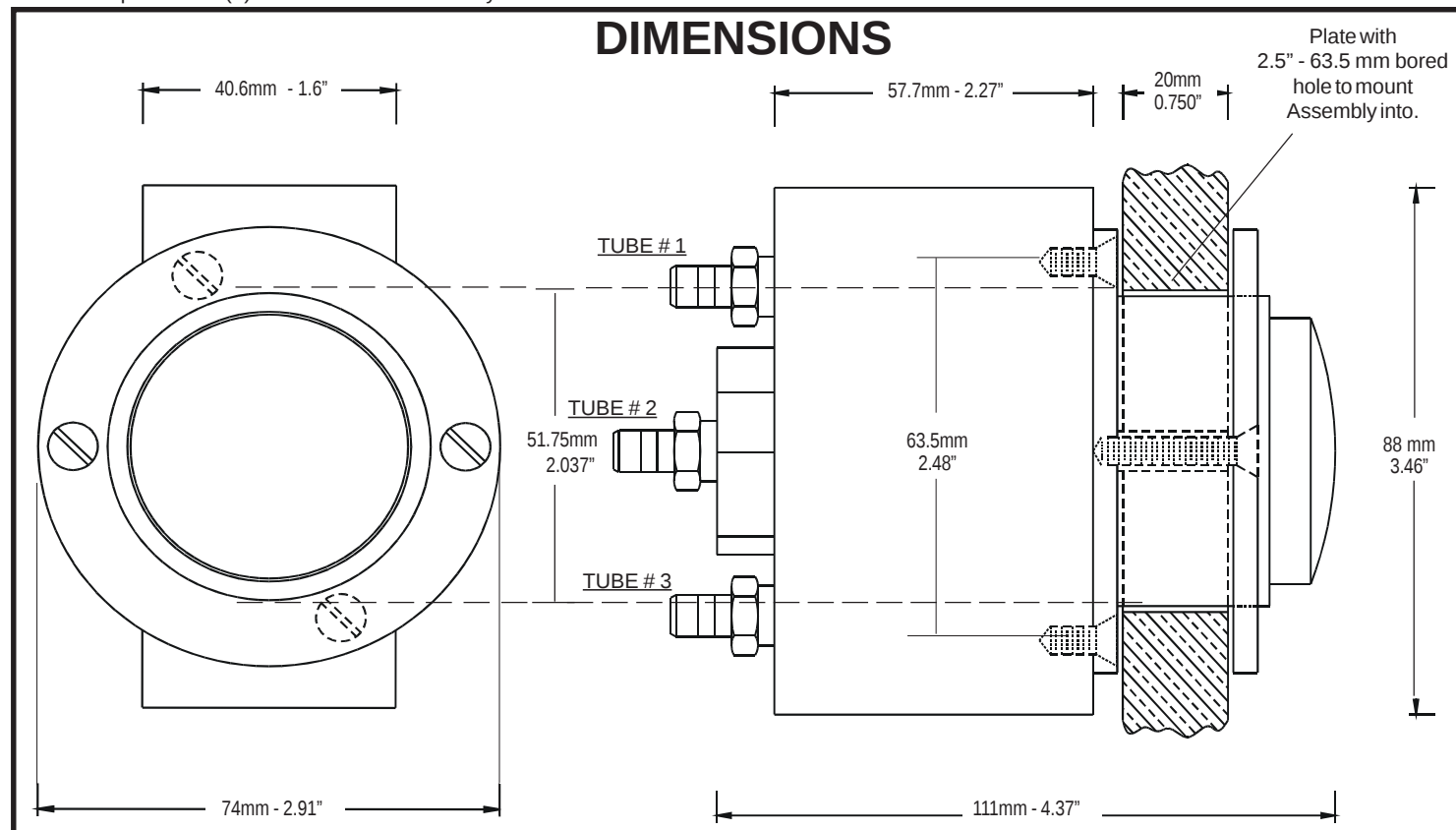
TUBE #3

0.250" - 6.35mm inside diameter Tube

Terminating into snorkel air intake w. insect screen & open to atmospheric pressure

1.750" - 44.45mm Stainless Steel Plunger with 0.19" - 5.0mm travel requires 2.8 lbs - 1.27 Kg Pressure to depress / activate & hold

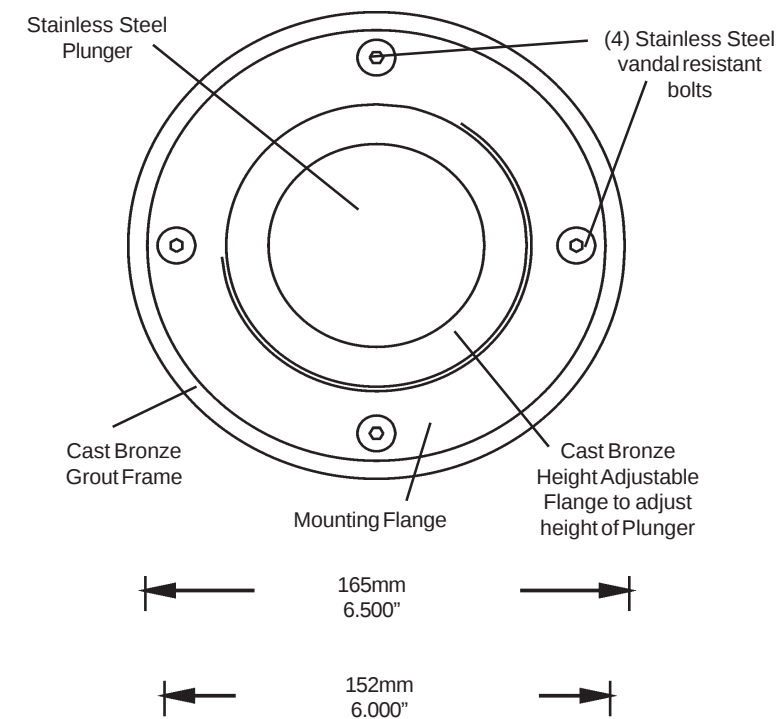
DIMENSIONS



PEM 110-5

MANUAL STEP ON CONTROL FOR PEM WATER SWITCHES

#490 - 44005



PEM 110-5 Step On Switch to activate PEM manual Water Switches

This switch assembly is installed flush into concrete or other surfaces and is connected with 2 x 8mm plastic tubes to one or more PEM manual Water Switches (up to 5).

A third 8mm plastic (breather) tube is provided to connect to atmosphere (open air) if the switch assembly is enclosed airtight. All tubes must be installed in such a manner that they not kink or get damaged. Kinked or damaged tube(s) can inactivate this control. Flexible tubing (3 x 3.0m / 10 feet) is supplied with each assembly. If longer tubing is required, this will be extra & additional and length must be specified.

The switch assembly is protected from entry of dirt and sand with a flexible foam seal, housed within the spring coils.

The switch assembly is designed to be mounted into a 100mm I.D. & 110mm OD (4") DIN (DN) drain Pipe. Not supplied with assembly to permit length of pipe housing to suit but requires enough open space beneath switch to store coiled plastic tubing to permit switch to be installed and/or lifted out for servicing.

When used with PEM M900 Spray Apron Assemblies, these units must also be equipped with enough coiled tubing beneath to lift out the assemblies.

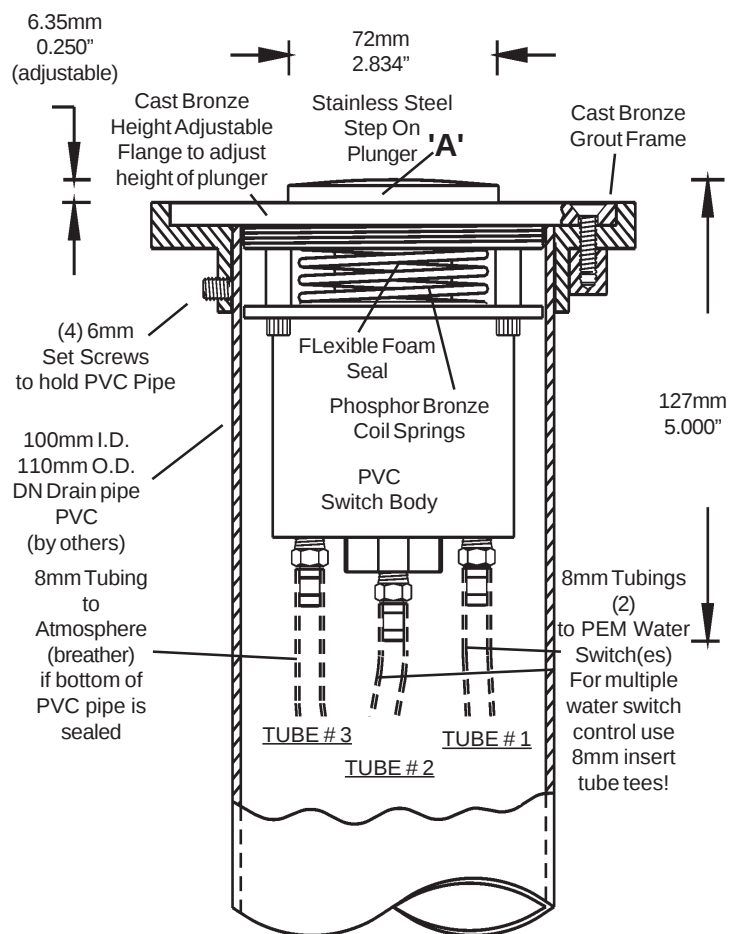
PEM 110-5 Switch Assembly is made of PVC with cast bronze stainless safety steel plunger, cast bronze surface flange fitted into a cast bronze grout frame with stainless steel vandal resistant fasteners. The Stainless Steel Plunger,with rounded safety edges is height adjustable after installation, above the mounting flange to suit all safety requirements. This is a non electrical device.

PEM 110-5-7 Sand Cap Assembly



'A'
Stainless Steel Step On Plunger
requires :
4.8 Lbs / 2.18 Kg
Pressure to depress / activate
& hold

PEM 110-5-7 Sand Cap Assembly (Optional and Extra) available for extreme sandy areas of installation. Sand Cap has a 1.5mm silicone Rubber Membrane Cover over the switch. The Rubber Membrane Cover is expendable and must be replaced as required. **The Sand Cap Assembly is supplied with 3 pcs PEM 110 - 5 - 7 - 9 Membranes.**



For order information: See page 222

PEM

WATER SWITCH & JET ASSEMBLIES

FOR:
CUSTOM FITTED MULTI JET
ASSEMBLIES-
PLEASE ENQUIRE WITH
SPECIFICATION



**TYPICAL, SECTIONAL
CUSTOM MULTI JET
ASSEMBLY**
3 x PEM W114
with 812-1 Jets
and 2 x PEM E 40 Lights
on Stainless Steel base



**TYPICAL, SECTIONAL
CUSTOM MULTI JET
ASSEMBLY**
3 x PEM W114
with 812-1 Jets
and 2 x PEM E 40 Lights,
on Stainless Steel base
showing supply pipe



**W114CS
-1003-01**



**W114CS
-1003-02**



**W114CS
-1005-02**



**W114CS-1003-02
+ W114-023-1**



**W115CS
-2011-1**



**W115CS-2011-2
+ W114-027-1**



**W115CS
-2015-1**



**W115CS
-2018-1**



W116CS-3011-2



W116CS-3013-1



W116CS-3015-1

ORDER INFORMATION

PEM ABS WATER SWITCH ASSEMBLIES

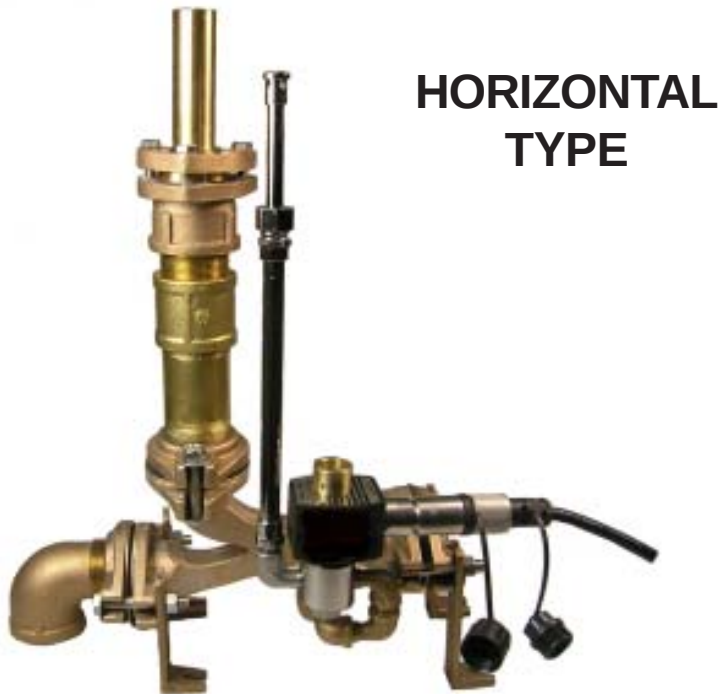
SERIAL #	PEM #	12 VAC = STANDARD OPERATING VOLTAGE 24VAC, 24VDC, 120VAC, 230VAC AVAILABLE AT EXTRA COST, PLEASE ENQUIRE Specify operating voltage with every enquiry / order	Kg
PEM W 114, " x 3/4 " WATER SWITCH ASSEMBLIES			
492-1011	W114CS-1003-01	W114 Water Switch with 812-1 Stream Jet	2.4
492-1013	W114CS-1003-02	W114 Water Switch, 812-1 Stream Jet, with 09-4 stand & 1" Elbow	4.6
492-1021	W114CS-1005-01	W114 Water Switch with 952 Aerated Jet	3.3
492-1022	W114CS-1005-02	W114 & 952 Aerated Jet, with 09-4 stand & 1" NPTBSP Elbow	4.9
492-1031	W114CS-1007-01	W114 Water Switch with M 933 Multi Stream Jet	5.1
492-1032	W114CS-1007-02	W114 & M 933 Multi Stream Jet, with 09-4 stand & 1" NPTBSP Elbow	4.9
420-1043	W114-1043	1" x 1.0m Flex Tubing with Quick Duisconnect Coupling to 1" NPT/BSP	3.2
420-1231	W114-1231	3/4" NPT/BSP Vertical PVC Ball Check Valve for outflow of water switch	1.2
PEM W 115, 1 1/2" x 1 1/2" WATER SWITCH ASSEMBLIES			
492-2011	W115CS-2011-1	W 115 Water Switch & 815-1 Stream Jet	4.9
492-2012	W115CS-2011-2	W 115 & 815-1 Stream Jet, with 09-4 Stand & 1 1/2" Pipe Elbow	5.5
492-2051	W115CS-2015-1	W 115 & 953, 1 1/2" - 40mm Aerated Jet	4.9
492-2052	W115CS-2015-2	W 115 & 953, 1 1/2" / 40mm Aerated Jet, with 09-4 Stand & 1 1/2" NPT/BSP Elbow	5.9
492-2081	W115CS-2018-1	W 115 & 954, 2" / 50mm Aerated Jet	4.9
492-2082	W115CS-2018-2	W 115 & 954, 2" / 50mm Aerated Jet, with 09-4 Stand & 1 1/2" NPT/BSP Elbow	5.8
420-1047	W115-1047	1 1/2" x 1.0m Flex Tubing with Quick Disconnect Coupling to 1 1/2" NPT/BSP	5.7
420-1236	W115-1236	1 1/2" NPT/BSP Vertical PVC Ball Check Valve for outflow of water switch	1.4
PEM W 116, 2" x 1 1/2" WATER SWITCH ASSEMBLIES			
492-3011	W116CS-3011-1	W 116 Water Switch & 846, 1 1/2" x 3/4" - 19.1mm Stream Jet	4.9
492-3011	W116CS-3011-2	W 116 & 846 Stream Jet with 0200 Stand & 2" NPT/ BSP Pipe Coupling	5.8
492-3011	W116CS-3013-1	W 116 Water Switch & 847, 2" x 0.875" / 22.3mm" Stream Jet	5.1
492-3011	W116CS-3013-2	W 116 & 847 Stream Jet with 0200 Stand & 2" NPT/ BSP Pipe Coupling	5.8
492-3011	W116CS-3015-1	W 116 Water Switch & 954, 2" / 50mm Aerated Jet	4.9
492-3011	W116CS-3015-2	W 116 & 953 1 1/2" / 40mm Aerated Jet with 0200 Stand & 2" NPT / BSP Elbow	5.8
492-3011	W116CS-3018-1	W 116 & 955, 3" / 76mm Aerated Jet	4.9
492-3011	W116CS-3018-2	W 116 & 955, 3" / 76mm Aerated Jet with 0200 Stand & 2" NPT / BSP Elbow	5.9
420-1058	W116-1058	2" x 1.0m Flex Tubing with Quick Disconnect Coupling to 2" NPT/BSP	7.4
420-1236	W115-1236	2" NPT/BSP Vertical PVC Ball Check Valve for outflow of water switch	1.5

09-4 Stand Assembly is for vertical water switch & Jet installation

0200 Stand Assembly is for horizontal water switch & vertical jet installation

For Assemblies not listed, specify requirements and request quotation.

PEM W 150 CAST BRONZE 1 1/2" WATER SWITCHES



**HORIZONTAL
TYPE**

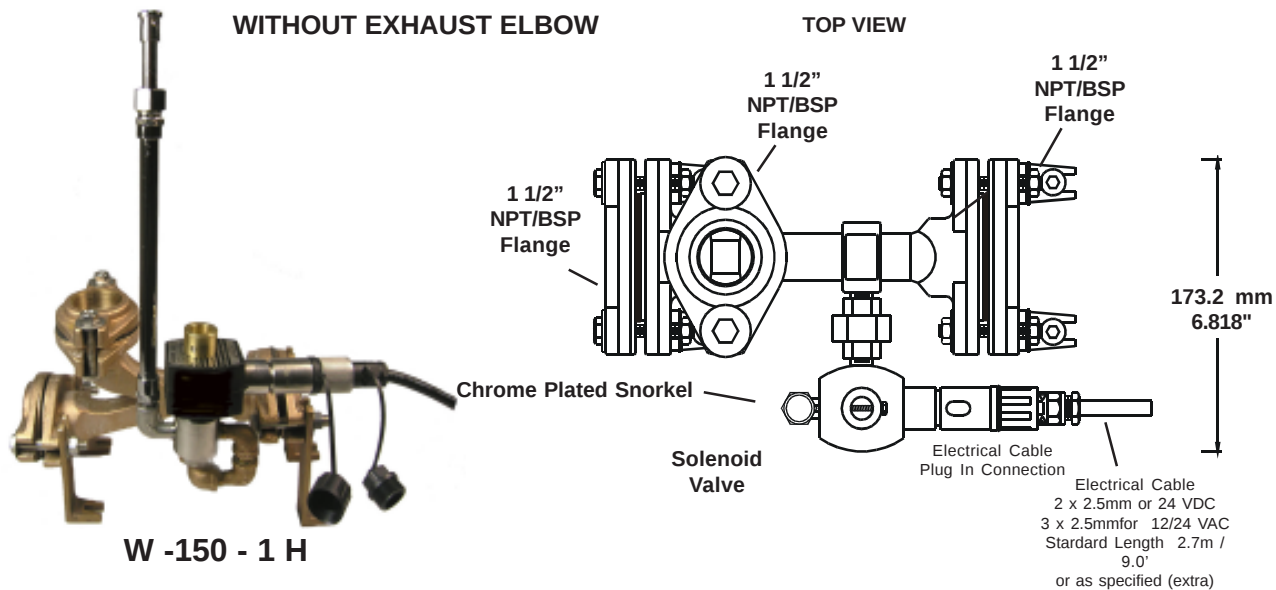
W -150 - 1 H + 14 + PEM 846



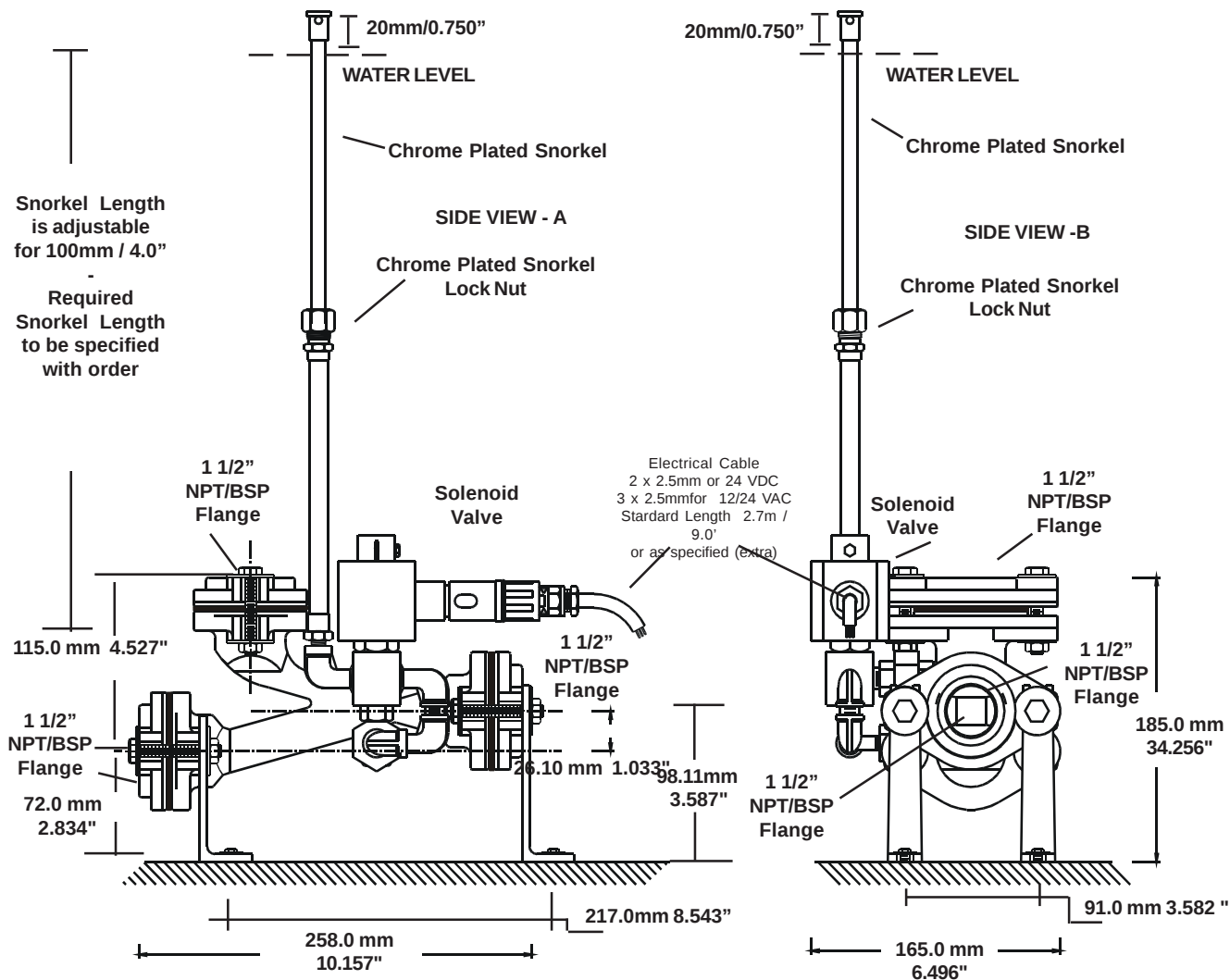
**VERTICAL
TYPE**

W -150 - 1V + 14 + PEM 846

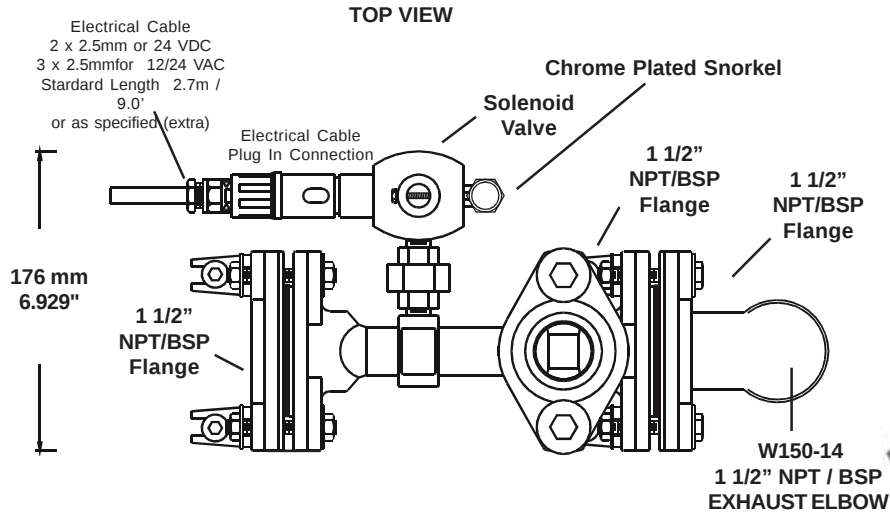
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W 150 - 1H HORIZONTAL	24
W 150 - 1H -14 HORIZONTAL WITH EXHAUST ELBOW	25
W 150 - 1H VERTICAL	26
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W 150 CAST BRONZE WATER SWITCH APPLICATION	30



OPERATING VOLTAGE OF SOLENOID VALVE TO BE SPECIFIED.

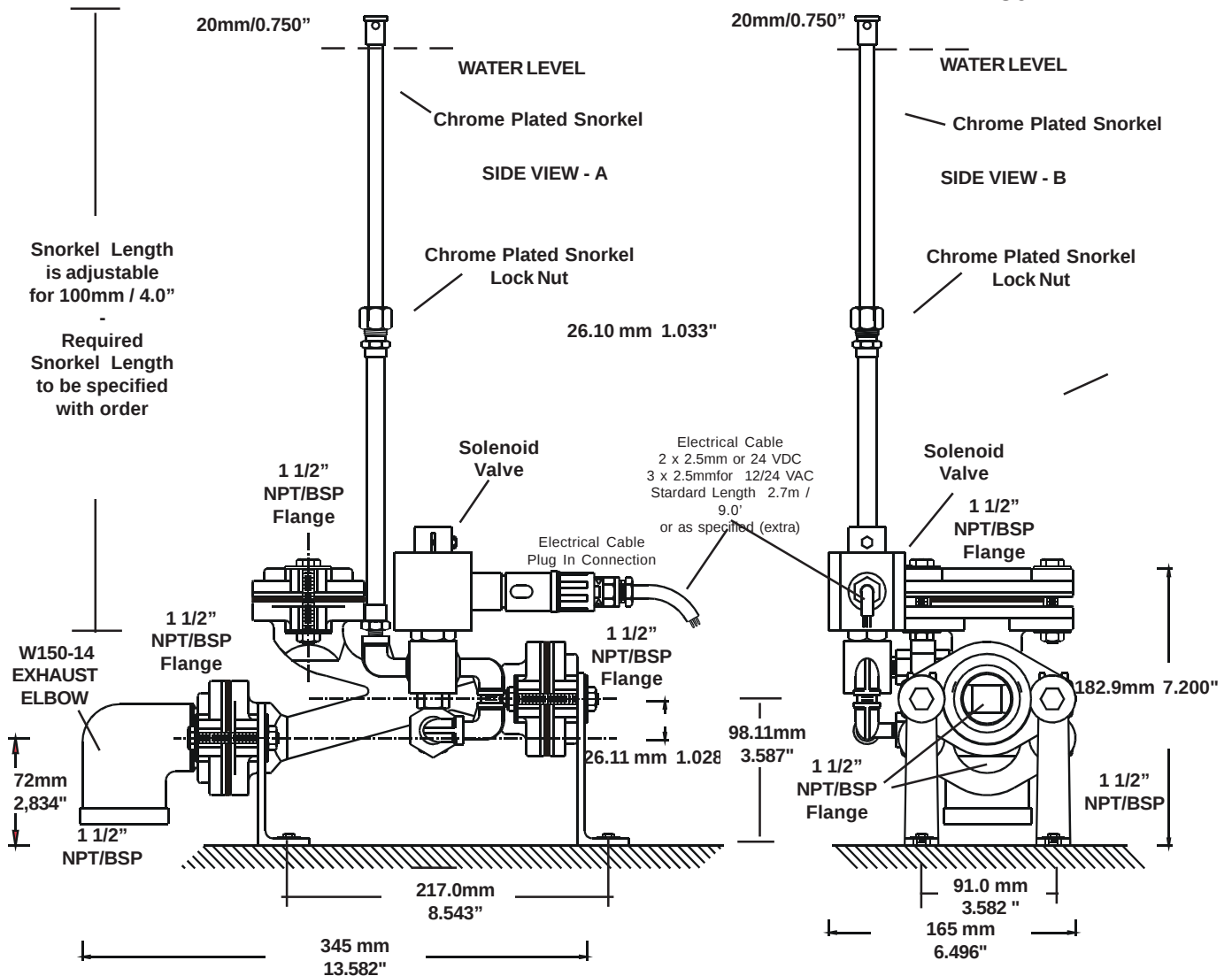


WITH W150-14 EXHAUST ELBOW



W -150 - 1 H - 14

OPERATING VOLTAGE OF SOLENOID VALVE TO BE SPECIFIED.

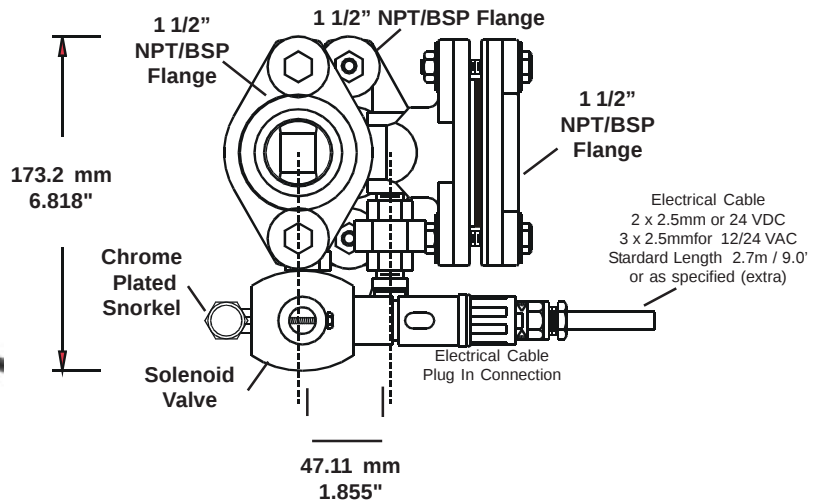


WITHOUT EXHAUST ELBOW

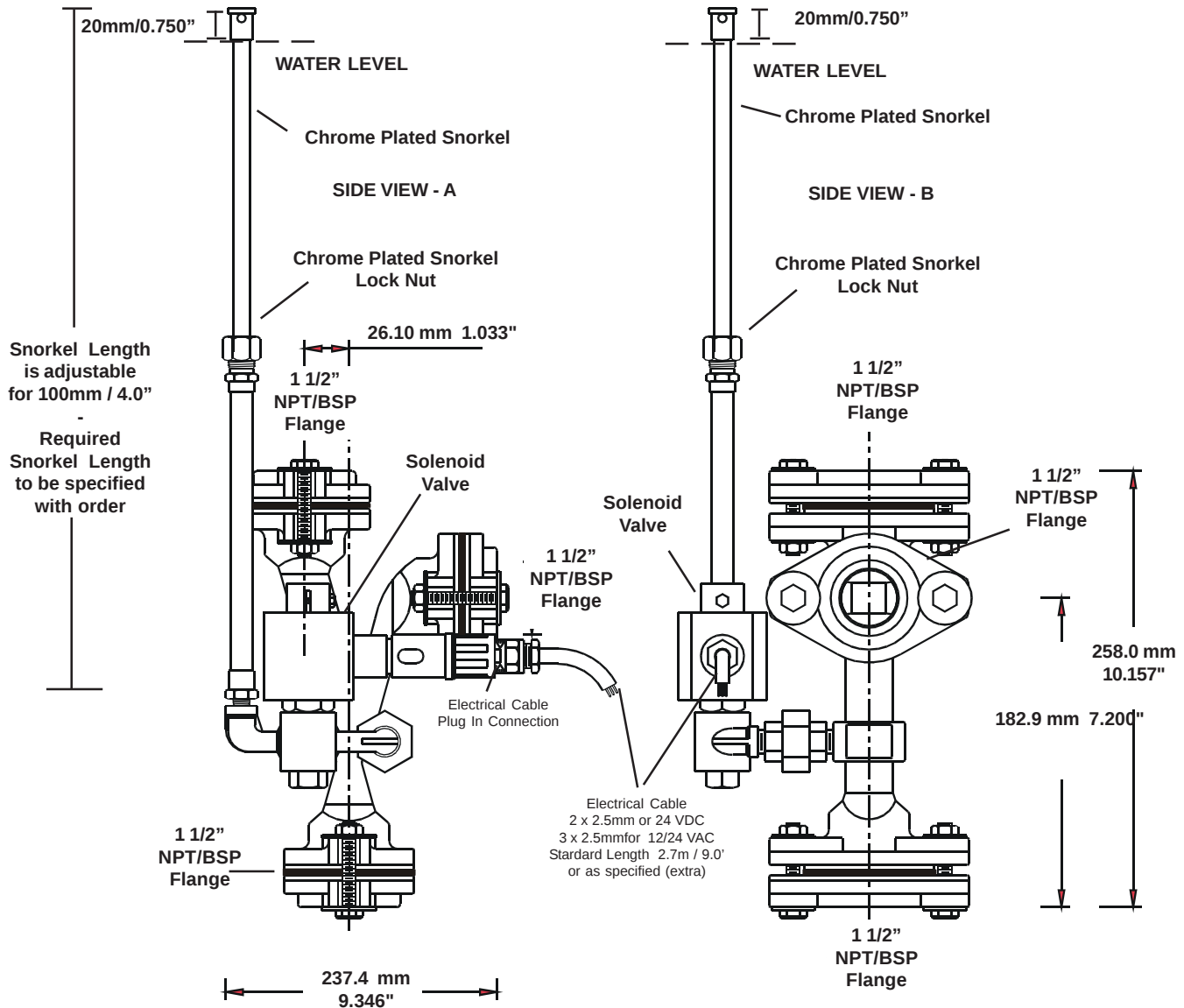


W -150 - 1 V

TOP VIEW

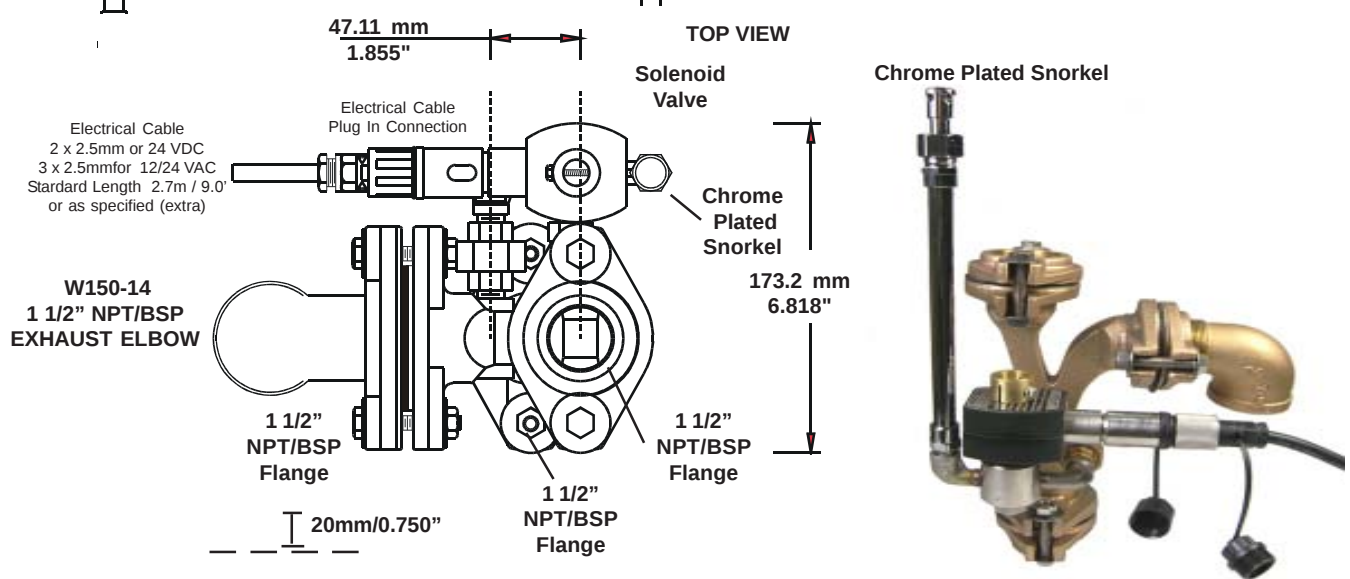


OPERATING VOLTAGE OF SOLENOID VALVE TO BE SPECIFIED.

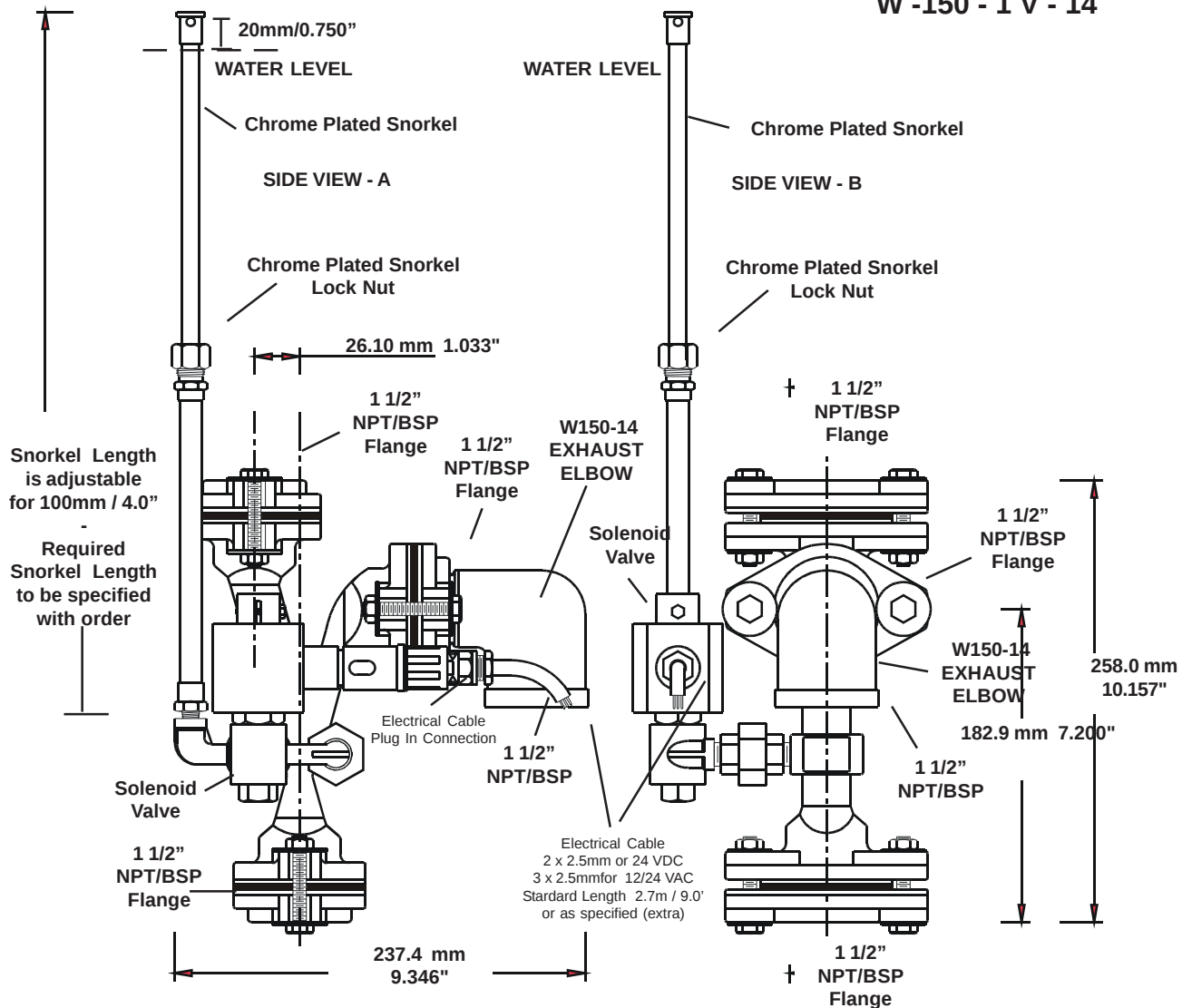


PEM W-150-1- H-14

WITH W150-14 EXHAUST ELBOW



OPERATING VOLTAGE OF SOLENOID VALVE TO BE SPECIFIED.



PEM W-150 - 1 1/2" CAST BRONZE WATER SWITCHES

ORDER INFORMATION

PEM W150 Cast Bronze Water
2" Flanged - 30

SERIAL	PEM	PEM W150, 1 1/2" WATER SWITCHES Cast Bronze Construction w.(3) threaded Flanges FRESH WATER FIXTURES FOR SALT WATER USE, PLEASE ENQUIRE	Shipping Weight Kg
PEM W150-1,1 1/2" VERTICAL WATER SWITCH with Cable Disconnect			
493-45500	W150-1V	PEM W150-1 with standard solenoid valve	2.1
493-45510	W150-2V	PEM W150-2 fitted for manual control	1.4
PEM W150-1,1 1/2" HORIZONTAL WATER SWITCH with Cable Disconnect			
493-45600	W150-1H	PEM W150-1 with standard solenoid valve	2.1
493-45610	W150-2H	PEM W150-2 fitted for manual control	1.4
493-45605	W150-05	Mounting Brackets (4) to bolt unit down unit.	1.3
PEM W150-1—MANUAL CONTROLS			
493-44005	110-5	Manual Step On Control (with 3.0m/10.0' tubing)	2.9
PEM W 150-1— OPTIONAL FITTINGS			
93-45514	W150-14	PEM W150-14, 1 1/2" 90 Degree Exhaust Brass Street Elbow	1.4
490-40500	08-5	PEM 08-5, 1 1/2" Vertical adjustment Flange	0.8
490-45696	12-6	W115 1 1/2" NPT/ BSP Quick Disconnect	2.3
493-45515	W150-15	PEM W150-15, 1 1/2" x 50mm Brass Pipe Nipple (for 12-6)	0.4
493-45516	W150-16	PEM W150-15, 1 1/2" x 100mm Brass Pipe Nipple	0.6
493-45517	W150-17	PEM W150-15, 1 1/2" x 150mm Brass Pipe Nipple	0.9
503-6017	01057	PEM 01057, 1 1/2" Flow Straightener in 45mm Brass Pipe Nipple	2.6

Extra Bronze

Flanges ,Gasket, St.St. Bolts etc.

493-45621	W150-21	Bronze Flange, Threaded BSPT 1 1/2 " (40mm)	3.0
493-45623	W150-23	Bronze Flange, Threaded ASA NPT 1 1/2 " (40mm)	3.0
493-45627	W150-27	3/8" x 1.5" st. st. Hex.Bolts/ Nuts (6 required)	0.2
493-45628	W150-28	3/8" st.st. Washers (6 required)	0.2
493-45629	W150-29	1 1/2" Flange Rubber Gasket (3 required)	0.2

SUGGESTED MAIN JETS for PEM W150

490-45510	815-2	PEM 815-2, 17mm & 1/2 x 100mm & 50mm Brass pipe,01057 & Coupling	5.5
490-45610	815-3	PEM 815-4, 19mm & 1 1/2 x 100mm & 50mm Brass pipe,01057 & Coupling	6.5
490-45620	815-5	PEM 815-5, 20mm & 1 1/2 x 100mm & 50mm Brass pipe,01057 & Coupling	1.6
490-45625	846C	PEM 846C, 19.1mm & 1 1/2 x 150mm & 50mm Brass pipe,01057 & Coupling	2.7
490-45630	953	PEM 953, 1 1/2" & 50mm Brass pipe & Coupling	1.4
490-45640	954	PEM 954 with 2" x 1 1/2" Brass Reducer & 50mm Brass pipe & Coupling	2.9
490-45650	626	PEM 626 with 1 1/2" x 150mm Brass pipe	2.5
490-45660	36928	PEM 02-6-1 1 1/2 x 150mm & 50mm Brass pipe,01057 & Coupling	2.8

Inside/Female Pipe Threads can be supplied BSP or NPT

For custom fitted cable & cable size & length please enquire

Use 1 extra Flow Straighteners for all Jets on W150 Water Switches

JETS ON W 150 WATER SWITCH PERFORMANCES

The performance requirements of jets and nozzles when mounted onto the PEM Water Switch differ greatly from standard performances due to pressure losses within the diverter and because of differences in installations. This also applies to jet performances when compared jets on other PEM Water Switches. Use the actual performances (established by actual testing) below and do not use performance tables as given elsewhere.

PEM Water Switches permit the use of a secondary spray jet on the exhaust port to work while the primary jet is off, both jets can oscillate with each other.

PEM Water Switches require a pipe size bypass valve between jet and Water Switch for spray jet adjustment or for small orifice jets and nozzles with low flows to prevent back pressure into the unit, that could cause malfunction or shut off.

Always pre-test the actual performances of diverter & jet combinations under required conditions.

For combinations (paired) Spray Effects, always test PEM W 115 Additional Performances Requirements.

The solenoid valves of the different size PEM Water Switches are identical allowing for mix and match combinations within same system

The jet and riser pipe above the Water Switch must be directly supported to avoid any stress on the Water Switch and its pipe connections. Often the cause of water switch breakage is by maintenance staff holding on to jet to support themselves and then slip, breaking off a water switch pipe connection.

For PEM 114,115 & 116 WATER SWITCHES IN ACTION, visit PEM Website:

www.pemfountain.ca / PEM Collection of Fountain Pictures

The creators of these water spectacles have videos with sound available.

PEM W150 Performances with PEM 815-1, 846B, Stream Jet

Spray Height	Flow L/min	Inlet Pressure
1.0m	75	7.6m
1.5m	87	9.4m
2.0m	100	11.0m
3.0m	120	14.4m
4.0m	127	18.0m

PEM W150 Performances with PEM 02-6 on 300mm, 1 1/2" Pipe

Spray Height	Flow L/min	Inlet Pressure
1.0m	120	30.0m
1.5m	150	45.0m
2.0m	175	60.0m
2.5m	220	76.0m

PEM W150 Performances with PEM 954

Spray Height	Flow L/min	Inlet Pressure
1.0m	100	23.0m
1.5m	120	32.0m
2.0m	143	40.0m
3.0m	165	54.0m

PEM W150 Performances with PEM 15-6C, Aerated Jet on 300mm x 1 1/2" Pipe

Spray Height	Flow L/min	Inlet Pressure
1.0m	160	46.0m
1.5m	180	57.0m
2.0m	210	67.0m
2.5m	230	77.0m

PEM W150 Performances with PEM 626

Spray Height	Flow L/min	Inlet Pressure
1.0m	65	12.0m
2.0m	82	17.0m
3.0m	100	23.0m
4.0m	120	30.0m

PEM W150 Performances with PEM 953

Spray Height	Flow L/min	Inlet Pressure
1.0m	69	9.0m
1.5m	80	15.0m
2.0m	100	22.0m
3.0m	120	28.0m



W -150 - 1 H & PEM 846



W -150 - 1 V & PEM 846

INLET PRESSURE = Water Pressure at Inlet to Water Switch!

DO NOT USE Regular performance tables of jets !

Always test actual Water Switch and Jet Combination performances before committing yourself !

W 150 CAST BRONZE WATER SWITCH APPLICATIONS

APPLICATION

For use in multiple spray effect water displays controlled by computer programmable low voltage sequencers without interference with other spray effects or back pressure. This device permits the installation of reasonably priced sequenced water displays or musical fountains. The water supply could be from a common single or multiple pump manifold.

DESCRIPTION

PEM Water Switches are intended to switch the flow of a water supply within 1/10th or less of a second from one outlet to another. Within this device, water pressure from the supply pipe is converted into flow velocity, then reconverted into a lower outlet pressure. The function can be described as follows: The water inflow from the supply pipe is directed at the junction of 2 branches of a Y-Tee. As the inflowing water entrains ambient air, replenishing air from the snorkel is drawn evenly through 2 transverse ports at the base of the Y. By opening or closing of these ports, a so called 'COANDA EFFECT' takes place, which bends the stream of the incoming water toward the Y leg that has its port closed. By controlling the air taken in by these ports from the snorkel with a low voltage solenoid valve, the COANDA EFFECT can be directed from one branch of the Y outlet to the other, in effect switching the flow of water from the one outlet to the other.

The very nature of the device does not permit valving or excessive back pressure of the outlets, the flow usually is controlled before entering the device or by the use of a by-pass valve on the outflow side of the water switch. Direct connection of a spray jet to the vertical outlet is recommended, nozzles not requiring laminar inflow are preferred. If the snorkel terminates below waterlevel, the unit does not work. Normally a larger spray jet or several smaller spray jets can be operated, with the horizontal port serving as exhaust, however this port can also be equipped with a spray jet to provide an alternating spray effect with a slightly lower outlet pressure.

In the selection of spray jets, waterlevel independent and low back pressure jets or nozzle can be used with suitable pipe fittings. Waterlevel dependent aerated jets and cascade jets should not be used.

It must be realized, that Water Switches requires full inflow at all times, even if the spray effect is not working.

CONSTRUCTION

PEM W 150 Water Switches are made of cast bronze for fresh water use and of special bronze for saltwater use, have bolted on Flange 1 1/2" NPT or BSP threaded pipe fittings. A stainless steel body, low voltage water service 3way, solenoid breather control valve is attached to the Water Switch body with brass pipe for fresh water, stainless steel pipe for salt water, the solenoid valve has a submersible coil with detachable electric cable..

ELECTRICAL

Operating Voltages:

Valve Manufacturer states:

Maximum operating voltage
variance of rated voltage:

+ 10% / - 15%

Verify at each Water Switch
with

PEM 003 Voltage Test

Device

Coil Voltages (Specify)

12 VAC, 50/60 Hz

24 VAC, 50/60 Hz

24 DC

Valve Manufacturer states
these inductive current
demands:

12 VAC

5.8 AMP. Inrush

3.4 AMP. Holding

PEM W 150 Water Switches are supplied as standard with plug in submersible disconnects at the solenoid valve to assist in installation and maintenance by not having to open sealed junction boxes. Connecting cable: 2 x 1.5mm² or 16/3 AWG (to be specified) is supplied in 2.7m / 9.0 Feet length for termination into submersible PEM Junction Box with suitable PEM Cordseal. As solenoid valve coils are voltage sensitive, utilizing the **PEM # 00-03 Low Voltage Test Device**, the actual operating voltage can be read with a suitable Multi Voltage Test Meter while the solenoid valve is energized. This initial testing to be done while pond is dry before filling, a test protocol be made and saved for future reference.

TO TEST VOLTAGE IN FILLED PONDS : DO NOT DISCONNECT UNDER WATER !

Always shut off electrical power first, drain pond or lift solenoid valve coil out of the water, affix 00-03 to supply cable and to solenoid valve coil, replace same on solenoid valve, then turn on electric power and check operating voltage.

The jet and riser pipe above the Water Switch must be directly supported to avoid any stress on the Water Switch and its pipe connections. Often the cause of water switch breakage is by maintenance staff holding on to a jet to support themselves and then slip, breaking off a water switch pipe connection. Most Installation positions of the water switch except for upside down are possible but the snorkel air intake must always be above waterlevel. For remote installations the snorkel must be replaced with a suitable plastic or metal tubing that terminates near or at the pond but always above the waterlevel. To keep flying insects out of snorkel; retrofit with **PEM # 420-0015 , 1-15 Insect Screen**. For winterizing in cold climates: drain pool & all piping, assure that it cannot fill up with snow melt. Remove water switches with jets to frost free storage for the winter.

**For pipe thread sealant use
only Teflon Tape. The use
of other pipe thread
sealants voids warranty!**

1 USGPM = 3.785 L/min +/- 1 m Head = 3.28 m Head

PEM W 300 CAST BRONZE WATER SWITCHES



PEM W 300H
with W300H-11 Stand and
typical assembly with
PEM 873 Stream Jet,
PVC piping & Flanges
Vertical Ball Check Valve
Copper breather tube
Backthrust neutralizing Tee



PEM W300 V

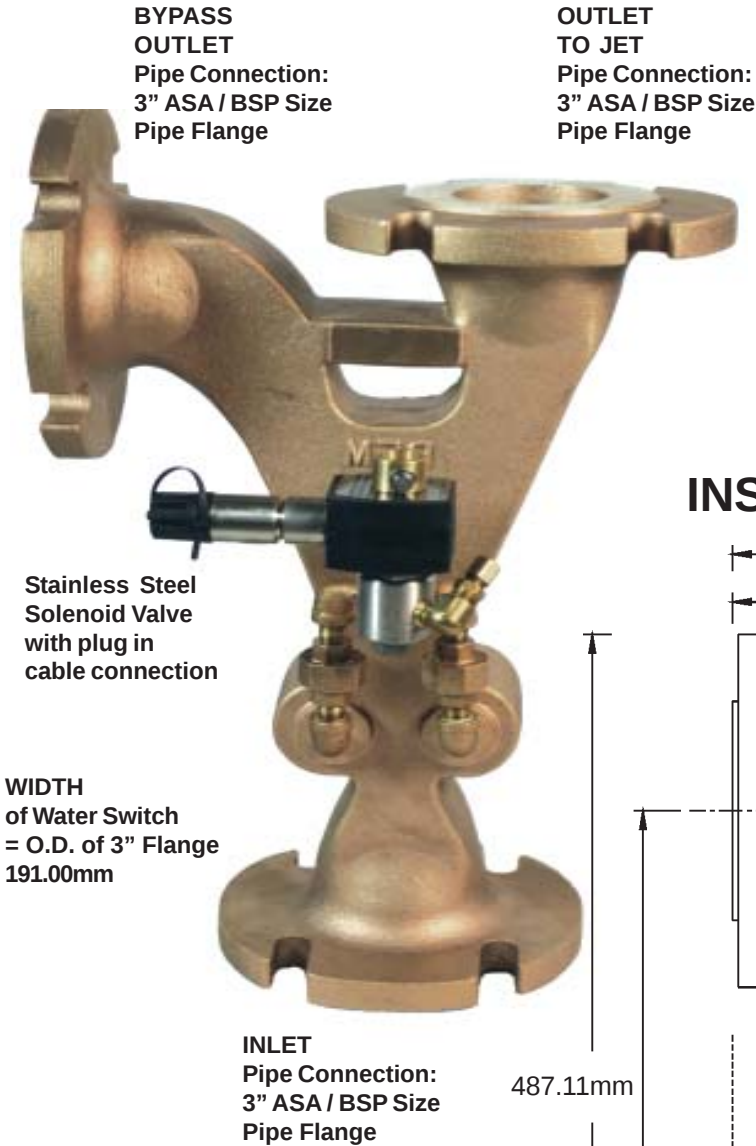


PEM W300 H

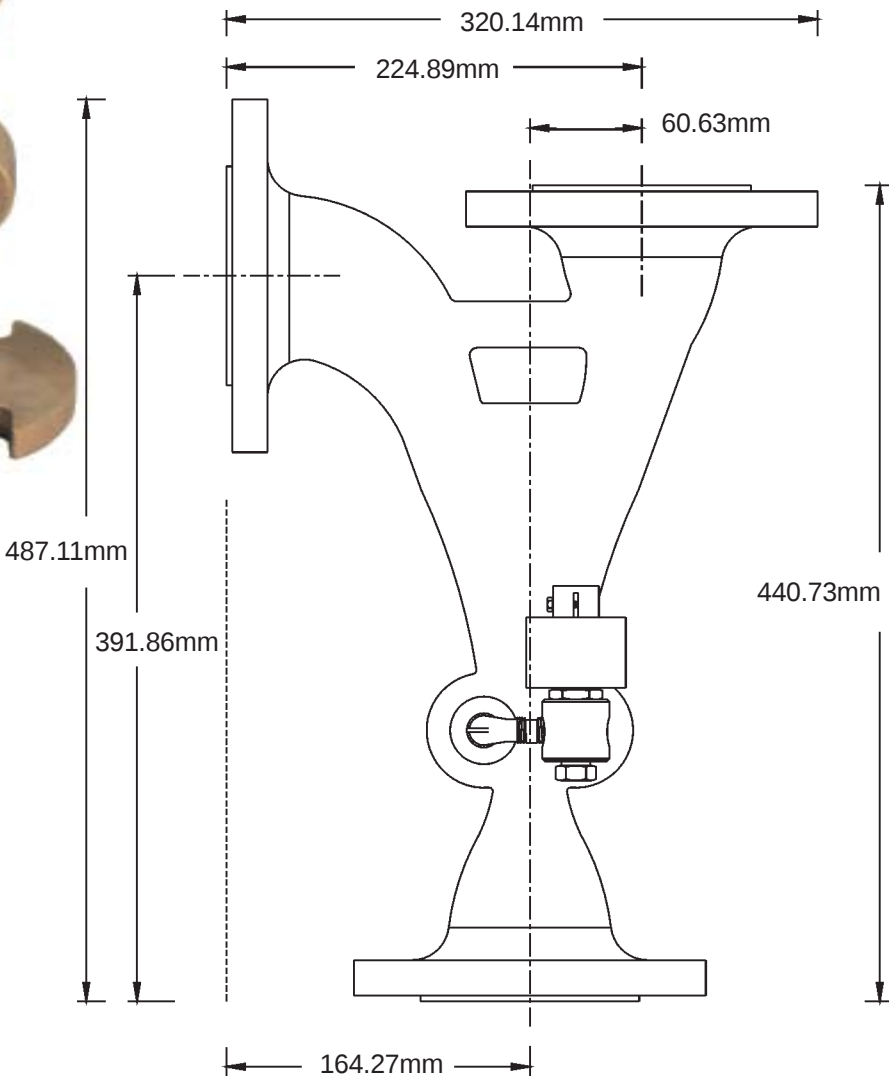
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PEM W 300V

3" VERTICAL HIGH PRESSURE WATER SWITCH
FOR DEEPER WATER INSTALLATION,
12VAC, 24VAC, 24 VDC



INSTALLATION DIMENSIONS



PEM W 300H

3" HORIZONTAL HIGH PRESSURE WATER SWITCH FOR SHALLOW WATER INSTALLATION, 12VAC, 24VAC, 24 VDC

OUTLET
TO JET
Pipe Connection:
3" ASA / BSP Size
Pipe Flange

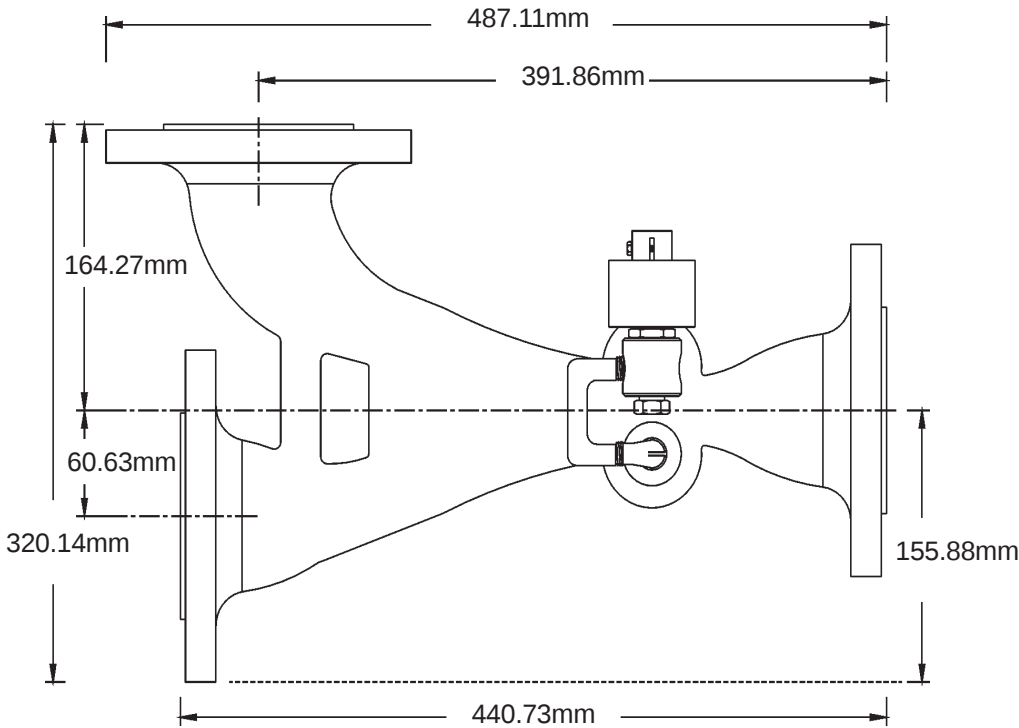
INLET
Pipe Connection:
3" ASA / BSP Size
Pipe Flange

Stainless Steel
Solenoid Valve
with plug in
cable connection

BYPASS
OUTLET
Pipe Connection:
3" ASA / BSP Size
Pipe Flange

WIDTH
of Water Switch
= O.D. of 3" Flange
191.00mm

INSTALLATION DIMENSIONS



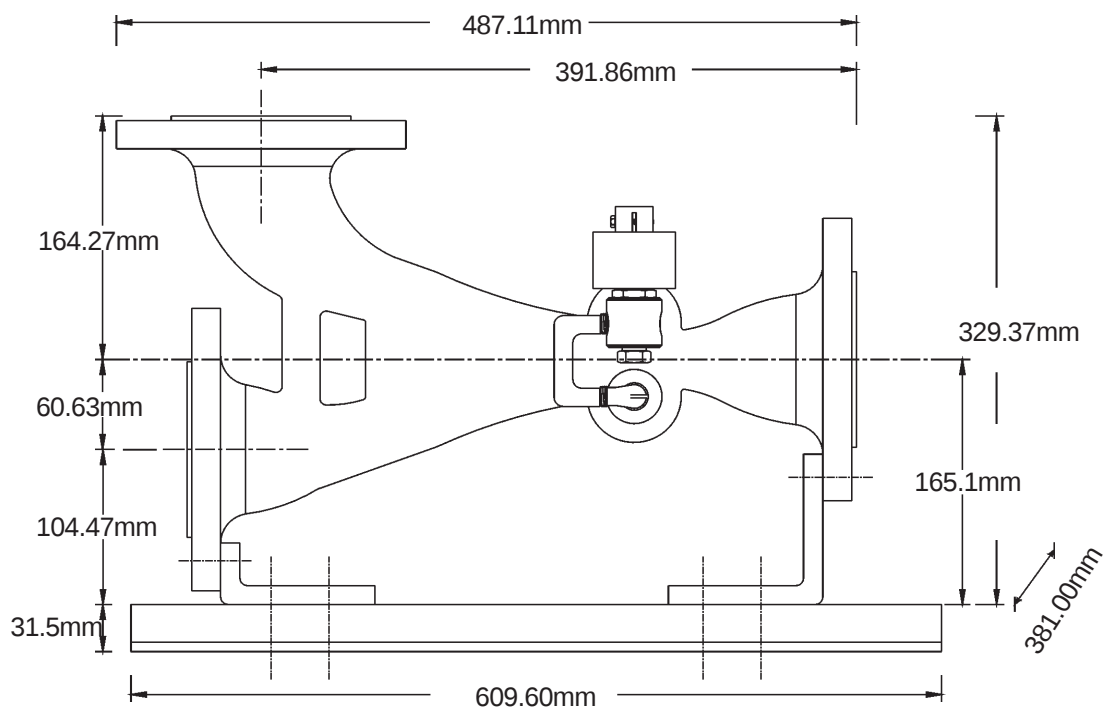
PEM W 300H on W300-11 Stand

HORIZONTAL 3" HIGH PRESSURE WATER SWITCH WITH STAND
FOR SHALLOW WATER INSTALLATION

12VAC, 24VAC, 24 VDC



INSTALLATION DIMENSIONS



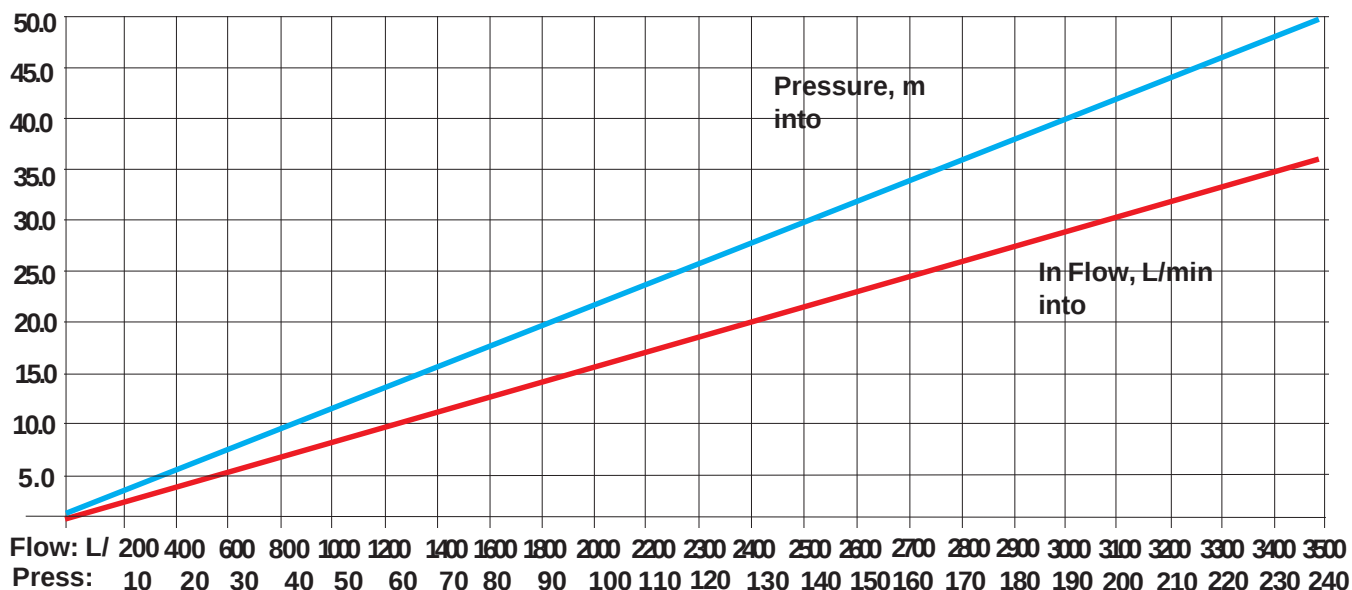
PEM W 300 WATER SWITCH PERFORMANCE REQUIREMENTS



Video Pictures show multiple water switch on/off activation in rising streams of spray.

PEM 873, 3" NPT/BSP, 38.1mm Orifice on PEM W300H (Horizontal) Water Switch
with 3" vertical Check Valve at water switch outflow,
Reaction time: 0.03 second for full flow / shut of (diversion)

Sprayheight



PEM W 300 WATER SWITCHES DESCRIPTION

APPLICATION

For use in multiple high pressure spray effect water displays controlled by computer programmable low voltage sequencers without interference with other spray effects or back pressure. This device permits the installation of reasonably priced sequenced water displays or musical fountains. The water supply could be from a common single or multiple pump manifold.

DESCRIPTION

PEM Water Switches are intended to switch the flow of a water supply within 1/10th or less of a second from one outlet to another. Within this device, water pressure from the supply pipe is converted into flow velocity, then reconverted into a lower outlet pressure. The function can be described as follows: The water inflow from the supply pipe is directed at the junction of 2 branches of a Y-Tee. As the inflowing water entrains ambient air, replenishing air from the snorkel is drawn evenly through 2 transverse ports at the base of the Y. By opening or closing of these ports, a so called 'COANDA EFFECT' takes place, which bends the stream of the incoming water toward the Y leg that has its port closed. By controlling the air taken in by these ports from the snorkel with a low voltage solenoid valve, the COANDA EFFECT can be directed from one branch of the Y outlet to the other, in effect switching the flow of water from the one outlet to the other.

The very nature of the device does not permit valving or back pressure of the outlets. The flow usually is controlled before entering the device or by the use of a by-pass valve on the outflow side of the water switch. Direct connection of a spray jet to the vertical outlet is NOT recommended,. If the snorkel terminates below waterlevel, the unit does not work. Normally a Larger spray jet or several smaller spray jets can be operated, with the horizontal port of PEM W300H serving as exhaust. however this port can also be equipped with a spray jet to provide an alternating spray effect with a slightly lower outlet pressure. The same applies for vertical installed (PEM W300H and 300V are not interchangeable !)

In the selection of spray jets, waterlevel independent and low backpressure jets or nozzle can be used with suitable pipe fittings. Waterlevel dependent aerated jets and cascade jets should not be used, at least not without a vertical ball check valve on the outflow side of the water switch to the jet. All jets requiring a flow straightener should be so equipped with PEM 21000 or PEM 23000 Flow straightener, in many instances the insertion of a ball check valve might also improve stream quality. It must be realized, that Water Switches requires full inflow at all times, even if the spray effect is not working. For these high pressure devices, the by-pass outflow back pressure must be neutralized with a Pipe -Tee termination with equal outflow to both sides of the Tee, thereby neutralizing the back thrust.

CONSTRUCTION

PEM W300 Water Switches are made of cast bronze, 85,5,5,5 Copper Alloy, are available at extra cost in Lead Free Bronze or Seawater, Naval, Bronze with 3" ASA / BSP Flanged Pipe Connections. PEM W300 are supplied with 3.0m / 10' of 1/4" -6mm soft coppertubing with 2 pcs of 3" pipe gear clamps to attach tubing to jet rise pipe and nozzle. To keep flying insects out of snorkel tube ; use **PEM # 420-0015 , 1-15 Insect Screen**.

A stainless steel body, low voltage water service 3 way, solenoid breather control valve is attached to the Water Switch body. The solenoid valve has a submersible coil and is supplied as standard with plug in submersible disconnect at the solenoid valve to assist in installation and maintenance by not having to open sealed junction boxes. Connecting cable: 2 x 1.5mm² or 16/3 AWG (to be specified) is supplied in 2.7m / 9.0 Feet length, for termination into a submersible PEM Junction Box with suitable PEM Cordseal. As solenoid valve coils are voltage sensitive, utilizing the **PEM # 00-03 Low Voltage Test Device**, the actual operating voltage can be read with a suitable Multi Voltage Test Meter while the solenoid valve is energized. The initial testing to be done while pond is dry, before filling, a test protocol be made and saved for future reference.

TO TEST VOLTAGE IN FILLED PONDS : DO NOT DISCONNECT UNDER WATER ! Always shut off electrical power first, drain pond or lift solenoid valve coil out of the water, affix 00-03 to supply cable and to solenoid valve coil, replace same on solenoid valve, then turn on electric power and check operating voltage.

The jet and riser pipe above the Water Switch must be directly supported to avoid any stress on the Water Switch and its pipe connections. Often the cause of water switch breakage is by maintenance staff holding on to jet to support themselves and then slip, breaking off a water switch pipe connection. For remote installations, the snorkel must be replaced with a suitable plastic or metal tubing that terminates near or at the pond but always above its waterlevel. For winterizing in cold climates: Remove W300 units into frost free winter storage.

ELECTRICAL REQUIREMENTS

Operating Voltages:

Valve Manufacturer states:
Maximum operating voltage
variance of rated voltage:

+ 10% / - 15%

Verify at each Water Switch with
PEM 003 Voltage Test Device

Coil Voltages (Specify)

12 VAC, 50/60 Hz

24 VAC, 50/60 Hz

24 DC

Valve Manufacturer states
these inductive current
demands:

12 VAC

5.8 AMP. Inrush

3.4 AMP. Holding

24 VAC

2.9 AMP. Inrush

1.7 AMP. Holding

24 DC

0.48 AMP

PEM W 300 WATER SWITCH

ORDER INFORMATION

SERIAL	PEM #	PEM W300 WATER SWITCHES	WEIGHTS
		FRESH WATER FIXTURES FOR SALT WATER PLEASE ENQUIRE Description	
493-0020	W300V	3" Vertical Water Switch,12VAC,24VAC,24VDC	30.0
		Weight with SHIPPING CRATE (Plywood)	55.0
493-0022	W300H	3" Horizontal Water Switch,12VAC,24VAC,24VDC	30.0
		Weight with SHIPPING CRATE (Plywood)	55.0
493-1122	W300H	3" Horizontal Water Switch,12VAC,24VAC,24VDC	
		mounted on W300H-11 Stainless Steel Stand	37.0
		Weight with SHIPPING CRATE (Plywood)	62.0
OPTIONAL FITTINGS			
493-1100	W300H-11	Stainless Steel Stand for W300H only	7.0
Bronze Flanges ,Gasket, St.St. Bolts			
650-3461	6546,BSP	Bronze Flange, Threaded BSPT 3" (75mm) (3 required).	3.0
650-3462	6546,ASA	Bronze Flange, Threaded NPST 3".(3 required)	3.0
493-0223	W300-223	5/8" x 3" st. st. Hex.Bolts/ Nuts (12 required)	0.2
493-0224	W300-224	5/8" st.st. Washers (24 required)	0.2
493-0225	W300-225	3" Flange Rubber Gasket (3 required)	0.2
PVC Flanges ,Gaskets, St.St. Bolts			
(Not available for 75mm BSP/Metric Size, use applicable metric Fittings)			
493-0331	W300-331	PVC 80, Flange, Socket 3" PVC	0.7
493-0332	W300-332	PVC 80, Flange, Threaded 3" NPT	0.7
493-0223	W300-223	5/8" x 3" Flange st st. Hex. Bolts / Nuts (12 required)	0.2
493-0224	W300-224	5/8" st.st Washers (24 required)	0.2
493-0225	W300-225	3" Flange Rubber Gasket (3 required)	0.2
Manifold PVC (3" - 76.2 mm) Pipe Fittings			
(Not available for 75mm BSP/Metric Size, use applicable metric Fittings)			
493-0412	W300-412	3" PVC,Socket Vertical Check Valve	2.7
493-0426	W300-426	PVC # 40, 3" Socket Tee	0.9
493-0436	W300-436	PVC # 40, 3" Socket x Male NPT Adapter	0.2
493-0445	W300-445	PVC # 40 Pipe Nipple, 10cm	0.1
493-0448	W300-448	PVC # 40 Pipe, 50cm	1.4

PEM

SUBMERSIBLE LIGHTFIXTURES

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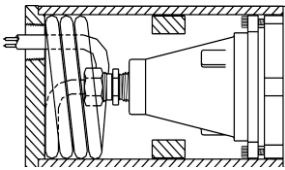
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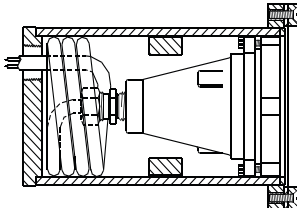
PEM C21



C21 no Niche

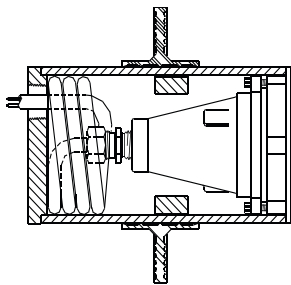


C21 with Niche



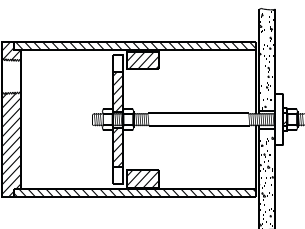
C21 with Niche

+ 67 Surface Liner Clamp



C21 with Niche

=C40+ 68 Concrete Collar Assembly



C21 with Niche

+ 70 Installation Assist Clamp

312 2018

SERIAL	PEM		CABLE	W.
306-30000	Cat.	FOR LAMPS AS INDICATED (Not included)	Length & Size	Kg
	Select cable size to suit Lamp Wattage, Amperage			
	Lightfixture only w. Convex Fresnel Lens, No Niche, No Cable			
		For 12 V or 24V , MR16 Lamps		
306-31104	C21-1-04	With 1 Cordseal for 2 x 1.5mm2 Cable	No Cable	1.5
306-31105	C21-1-05	With 1 Cordseal for 2 x 2.5mm2 Cable	No Cable	1.5
306-31106	C21-1-06	With 1 Cordseal for 2 x 4mm2 Cable	No Cable	1.5
306-31107	C21-1-07	With 1 Cordseal for 2 x 6mm2 Cable	No Cable	1.5
		For 120V / 230V, GU10 Lamps, No Niche		
306-31161	C21-1-61	With 1 Cordseal for 3 x 1.5mm2 Cable	No Cable	1.5
	Lightfixture only w. Convex Fresnel Lens, No Niche, with Cable			
		For 12 V or 24V , MR16 Lamps		
306-31114	C21-2-14	With 1 Cordseal & CABLE	2.7m x 2 x 1.5mm2	2.1
306-31115	C21-2-15	With 1 Cordseal & CABLE	5.0m x 2 x 1.5mm2	3.1
306-31116	C21-2-16	With 1 Cordseal & CABLE	2.7m x 2 x 2.5mm2	2.1
306-31117	C21-2-17	With 1 Cordseal & CABLE	5.0m x 2 x 2.5mm2	2.1
306-31118	C21-2-18	With 1 Cordseal & CABLE	5.0m x 2 x 4.0mm2	2.8
306-31119	C21-2-19	With 1 Cordseal & CABLE	10.0m x 2 x 6.0mm2	4.7
	For 120V / 230V, GU10 Lamps, No Niche,with Cable			
306-31121	C21-2-21	With 1 Cordseal & CABLE	5.0m x 3 x 1.5mm2	2.8
	For MR 16, 12V or 24V Lamps, Lightfixture & PVC Niche, No Cable			
306-31126	C21-3-26	With Cord Seals for 2 x 1.5mm2 Cable	No Cable	1.5
	For GU10 120V / 230V Lamps, Lightfixtures & PVC Niche, No Cable			
306-31128	C21-3-28	With Cord Seals for 2 x 1.5mm2 Cable	No Cable	1.5
	For MR 16, 12V or 24V Lamps, Lightfixture & PVC Niche, with Cable			
306-31134	C21-4-34	With Cord & Niche Seals, Niche & CABLE	2.7m x 2 x 1.5mm2	1.9
306-31135	C21-4-35	With Cord & Niche Seals, Niche & CABLE	5.0m x 2 x 1.5mm2	3.1
306-31136	C21-4-36	With Cord & Niche Seals, Niche & CABLE	2.7m x 2 x 2.5mm2	2.1
306-31137	C21-4-37	With Cord & Niche Seals, Niche & CABLE	5.0m x 2 x 2.5mm2	2.1
306-31138	C21-4-38	With Cord & Niche Seals, Niche & CABLE	5.0m x 2 x 4.0mm2	2.8
306-31139	C21-4-65	With Cord & Niche Seals, Niche & CABLE	9' 16/3 STWA/SOW	4.9
	For GU10 120V / 230V Lamps, Lightfixtures & PVC Niche, with Cable			
306-31176	C21-4-76	With Cord & Niche Seals, Niche & CABLE	2.7m x 3 x 1.5mm2	1.9
306-31177	C21-4-77	With Cord & Niche Seals, Niche & CABLE	5.0m x 3 x 1.5mm2	3.1
		ADD ON TO STANDARD FIXTURES		
391-0210	C21-10	FACERING WITH LENS GUARD		0.9
391-0220	+/-14-1B	80mm Convex Clear Lens, No Fresnels	See Lightfixture Supplement	0.1
391-0260	+/-30-1	80mm Flat Clear lens	See Lightfixture Supplement	0.1
391-0270	+/-35-1-00?	80mm Flat Dichro Color Lens.	See Lightfixture Supplement	0.1
350-0222	+67	Surface Pool Liner Clamp	Request Spec. Sheet	0.9
350-0225	+68	DIN Concrete Collar Assembly	Request Spec. Sheet	0.9
350-0227	+59-2	Tile Mask	Request Spec. Sheet	0.3
350-0229	+ 70	Installation Assist Clamp	Request Spec. Sheet	0.3
385-3330	T 301	Transformer,240V,50Hzx12V/24V,300VA	IP23	2.2

SUBMERSIBLE LIGHTFIXTURE **PEM C21**

NICHE MOUNTED

FOR LAMP: (specify type of Lamp to be used)

Lamp is not included with fixture!

MR16, GX 5.3 base, 12VAC, 24VAC / 24VDC

GU10, GZ10 base, 120 / 240V, Max. 50 W.

CONSTRUCTION OF LIGHTFIXTURE & NICHE

FIXTURE HOUSING:

Fixture body is designed to permit water circulation within the niche when installed horizontally. The lightfixture is secured into the niche from the outside front of the facering.

The fixture and facering are of cast bronze body, Stainless Steel fitted.

Sufficient cable length is to be stored inside the niche.

(Up to approx. 0.6m / 2.0 feet to be stored within the niche for lifting of the fixture from the niche to above the water for re-lamping).

Maximum installation depth is to be 150mm / 6.0 inches below water level.

Fixtures are tested for IPX 8 rating of 1.0m / 3.0 feet water depth over lens.

PVC NICHE: 100 mm I.D., 115 mm O.D. x 205 mm Length

1/2" Inside Drain required for vertical installation

SEALED CONDUIT ENTRY INTO NICHE:

3/4" NPT - BSP conduit entry with cordseal as specified on opposite page

LAMP HOLDER: For MR16 Aluminized Reflector Lamp: (Specify!)

Rim clamp & Bi Pin Socket GX 5.3.

LAMP HOLDER: For GU10 Lamp: (Specify)

Bi Pin Socket GZ10.

LENS : See Lightfixture Supplements, Lenses

STANDARD: CONVEX FRESNEL LENS

In clear or 5 colors

OPTIONAL :

CLEAR LENS, 14-1, without Fresnels for Spot Lights

FLAT CLEAR LENS

FLAT DICHRO COLOR LENS Choice of 10 colors.

LENS GASKET: 'U' shape high temperature Silicon Rubber

ELECTRICAL CABLE: Approved for the purpose with integral epoxy encapsulated compression type cable entry in factory assembled fixtures.

See Lightfixture Supplements for cable sizing

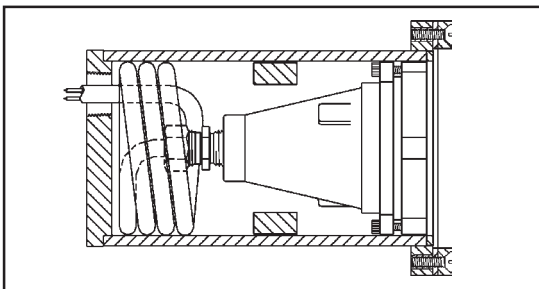
OPTIONAL:

-70 niche clamp for clamping of niche to concrete wall form. The clamping assist can be re-used .

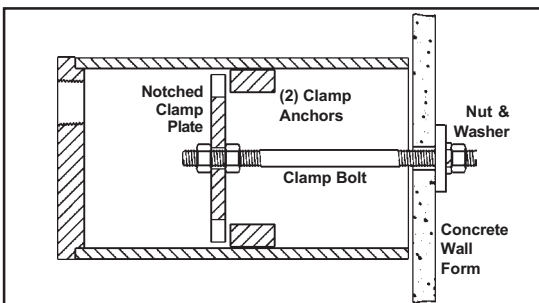
-B60 Surface Liner clamp with bronze clamp ring and Stainless Steel clamp bolts.

-68 DIN for in concrete Water Proofing Collar, Neoprene with Stainless Steel clamp.

NICHE WITH B60 SURFACE LINER CLAMP



NICHE +70 INSTALLATION ASSIST



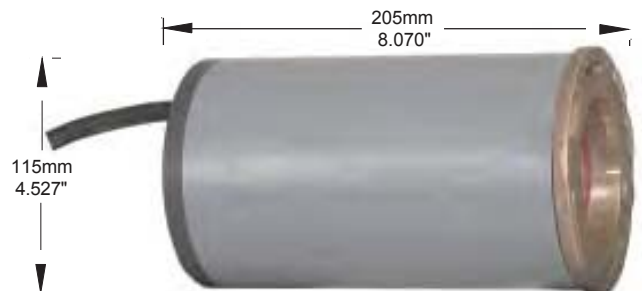
PEM C21 With Rockguard -10



PEM C21



C21 + PVC NICHE



C21 + PVC NICHE + 68, DIN W.P. COLLAR





C131 + 14-2-9



C131 + 14-2-9, Full Tilt



C131-1+14-2-9



C131-3 & -4 + 14-2-9



C131-7 & -8 + 14-2-9

SERIES	PEM		CABLE	W.
307-27000	Cat.		Length & Size	Kg
		FOR LAMPS AS INDICATED (Not included)		
		Select cable size to suit lamp(s) wattage (Amperage)		
		FIXTURES W. CAST BRONZE NICHE, SWIVEL MOUNTED, Cord & Niche Seal & Cable		
307-27813	C131-1-3	For 1 x 12V, AR111/PAR 36	5.0m x 2 x 2.5mm2	4.9
307-27815	C131-1-5	For 1 x 12V, AR111/PAR 36	5.0m x 2 x 4mm2	5.7
307-27819	C131-1-9	For 1 x 12V, AR111/PAR 36 UL, cUL	15' / 4.5m x 16/3 AWG	6.2
307-27832	C131-3-2	For 3 x 12V, MR16, single circuit	5.0m x 2 x 2.5mm2	4.8
307-27833	C131-3-3	For 3 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	5.2
307-27835	C131-3-5	For 3 x 12V, MR16, single circuit	5.0m x 2 x 6mm2	6
307-27837	C131-3-7	For 3 x 12V, MR16, single circuit,UL,cUL	15' / 4.5m x 12/3 AWG	7.3
307-27841	C131-4-1	For 3 x 12V, MR16, 3 circuits	5.0m x 5 x 1.5mm2	5.2
307-27842	C131-4-2	For 3 x 12V, MR16, 3 circuits	5.0m x 5 x 2.5mm2	5.7
307-27844	C131-4-4	For 3 x 12V, MR16, 3 circuits,UL,cUL	15' / 4.5m x 16/7 AWG	4.6
307-27853	C131-5-3	For 3 x 120V, GU-10 , single circuit	5.0m x 3 x 1.5mm2	5.2
307-27863	C131-6-3	For 3 x 120V, GU-10 , 3 circuits	5.0m x 5 x 1.5mm2	5.2
307-27865	C131-6-5	For 3 x 120V, GU-10 , 3 circuits, UL,cUL	15' / 4.5m x 16/7 AWG	4.8
307-27872	C131-7-2	For 4 x 12V, MR16, single circuit	5.0m x 2 x 2.5mm2	4.8
307-27873	C131-7-3	For 4 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	5.2
307-27875	C131-7-5	For 4 x 12V, MR16, single circuit	5.0m x 2 x 6mm2	6
307-27877	C131-7-7	For 4 x 12V, MR16, single circuit,UL,cUL	15' / 4.5m x 12/3 AWG	7.3
307-27881	C131-8-1	For 4 x 12V, MR16, 4 circuits	5.0m x 5 x 1.5mm2	5.3
307-27882	C131-8-2	For 4 x 12V, MR16, 4 circuits	5.0m x 5 x 2.5mm2	5.7
307-27884	C131-8-4	For 4 x 12V, MR16, 4 circuits,UL,cUL	15' / 4.5m x 16/7 AWG	4.6
307-27891	C131-9-1	For 3 x 240V, GU-10 , single circuit	5.0m x 3 x 1.5mm2	5.2
307-27901	C131-10-3	For 3 x 240V, GU-10 , 3 circuits	5.0m x 5 x 1.5mm2	5.2
		ADD ON TO STANDARD FIXTURES		
391-1998	+/-30-1	Installation Cover with Bolts	Request:Spec.Sheet	1.7
391-2001	+/-30-2	143mm Clear Flat Lens	See: Supplement	
391-2000	+/-35-2-?	143mm Flat Dichro Color Lens. Color ?	See: Supplement	
391-0114	+/- 14-2-9	143mm x 15mm Clear Flat Armored Lens	See: Supplement	
391-0431	+/-C40	143mm LensGasket, Silicone Rubber	See: Supplement	
350-4164	+/-63	Surface Liner Clamp	Request:Spec.Sheet	2.3
350-4890	+/-58-09	Tile Mask	Request:Spec.Sheet	1.9
385-3330	T 301	Transformer 240V,50Hzx12V/24V,300VA	CE / IP23	2.2

LIGHTFIXTURE TYPES with approvals:

C 131-1

1 x AR111 Lamp (UL/cUL & CE)
Max. 12V, Submerged - 100W, - Dry - 20W

C 131-3

3 x MR16 Lamps (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 3 x 65W, Dry 3 x 20W

C 131-4

3 x MR16 Lamps (UL/cUL & CE) 3 Circuits
Max. 12V*, 3 x 50W for 3 COLOUR CHANGING

C 131-5

3 x GU10 Lamps, Single Circuit, UL/cUL
Max. 120V, Submerged 3 x 50W, Dry 3 x 20W

C 131-6

3 x GU10 Lamps (UL/cUL) 3 Circuits, UL/cUL
Max. 120V, 3 x 50W for 3 COLOUR CHANGING

C 131-7 (UL/cUL)

4 x MR16 Lamps, (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 4 x 75W, Dry 4 x 20W

C 131-8 (UL/cUL) Submerged

4 x MR16 Lamps, (UL/cUL & CE) 4 Circuits
Max. 12V*, 4 x 1 x 50W for 4 COLOUR CHANGING

C 131-9

3 x GU10 Lamps, single Circuit
Max. 240V, Submerged 3 x 50W, Dry 3 x 20W

C 131-10

3 x GU10 Lamps Submerged, 3 Circuits
Max. 240V, 3 x 1 x 50W for 3 COLOUR CHANGING

* = Outside North America Max. 24 VAC / 24 VDC

SUBMERSIBLE LIGHTFIXTURE



PEM C131

NICHE MOUNTED



C131-3



C131-1

CONSTRUCTION OF LIGHTFIXTURES

LAMP(S as per Type): Not part of fixture.

PAR36 or AR111 Lamps, Spring Ring

MR 16 Lamps, LED/Halogen, GX 5.3

MR 11 Lamps, LED/Halogen, GX 5.3

GU10 Lamps, LED/Halogen, GZ10

LAMP HOLDERS: Lamp to be specified w. order

Spring Ring for PAR 36/AR111, GX 5.3 or GZ10

Clamp Ring for 3W and 5W LED Lamps

STANDARD LENSES:

See Lightfixture Supplements Section, ' Lenses & Gaskets'

CONVEX LENSES, Clear

5 colors (convex colour lenses for submersible use only).

OPTIONAL LENSES:

FLAT CLEAR LENSES.

FLAT DICHRO COLOUR LENSES. Choice of 10 colors.

FLAT, CLEAR ARMoured LENSES. 15mm thickness.

Replaces rockguard in certain applications.

LENS GASKET :

High Temperature Silicone Rubber. A single 'U' shaped gasket with unique safety sealing lips and contours.

ELECTRICAL CABLE:

Approved for the purpose with integral epoxy

encapsulated, compression type cable entry.

See Lightfixture Supplements Section for cable sizing

LENSGUARD:

Not Available, use Armor Lens

CONSTRUCTION OF LIGHTFIXTURE & NICHE

FIXTURE HOUSING:

All cast bronze body and facering with machined face.

Stainless Steel fitted.

NICHE :

All cast bronze construction with machined joints.

Vertical installed Niches must have bottom drain in

freezing climates.

Directional adjustable ball joint mounting of light fixture.

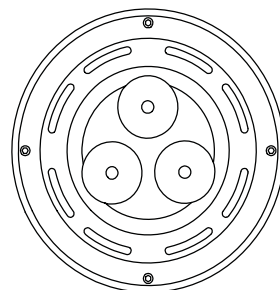
SEALED CONDUIT ENTRY INTO NICHE : Standard

3/4" NPT / BSP Conduit entry in side or bottom (specify)

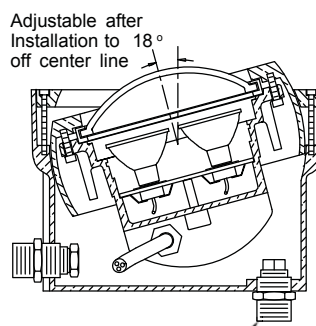
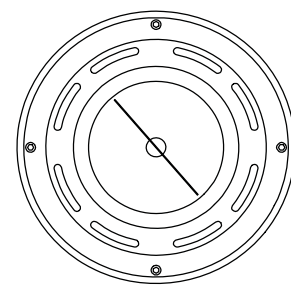
FOR FIXTURE OPTIONS & PARTS:

See Opposite Page

227mm
8.940"

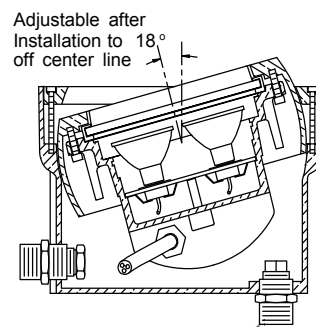


227mm
8.940"

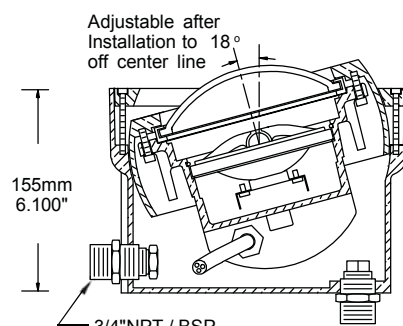


Optional 3/4" NPT / BSP Drain

C131-3+ 14-9

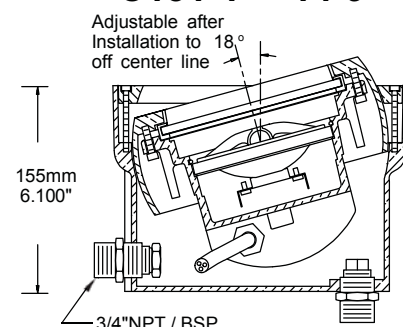


Optional 3/4" NPT / BSP Drain



155mm
6.100"

C131-1 + 14-9



155mm
6.100"

3/4" NPT / BSP
Sealed Conduit

PEM C133 + B46



C133+B46



C133+B46



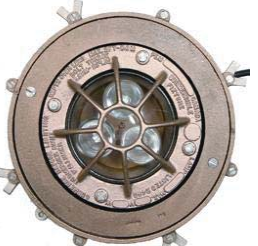
C133-1+B46-13



C133-3+B46-32



C133-7+B46-73



C133-10-7-B46

SERIAL	PEM		Cable	W.
307-29000	Cat.		Length & Size	Kg
FOR LAMPS AS INDICATED (Not included)				
Select cable size to suit lamp(s) wattage (Amperage)				
FIXTURES W. CAST BRONZE NICHE, Cord, Niche Seal & Cable				
307-29113	C133-1+B46-13	For 1 x 12V, AR111/PAR 36	5.0m x 2 x 2.5mm2	4.9
307-29115	C133-1+B46-15	For 1 x 12V, AR111/PAR 36	5.0m x 2 x 4mm2	5.7
307-29118	C133-9+B46-19	For 1 x 12V, AR111/PAR 36 UL, cUL	15'/4.5m x 16/3 AWG	6.2
307-29132	C133-3+B46-32	For 3 x 12V, MR16, single circuit	5.0m x 2 x 1.5mm2	4.8
307-29133	C133-3+B46-33	For 3 x 12V, MR16, single circuit	5.0m x 2 x 2.5mm2	5.2
307-29135	C133-3+B46-35	For 3 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	6
307-29136	C133-3+B46-35	For 3 x 12V, MR16, single circuit	5.0m x 2 x 6mm2	6
307-29138	C133-3+B46-36	For 3 x 12V, MR16, single circuit,UL,cUL	15'/4.5m x 12/3 AWG	6
307-29142	C133-4+B46-42	For 3 x 12V, MR16, 3 circuits	5.0m x 5 x 1.5mm2	5.7
307-29143	C133-4+B46-43	For 3 x 12V, MR16, 3 circuits	5.0m x 5 x 2.5mm2	5.3
307-29148	C133-4+B46-44	For 3 x 12V, MR16, 3 circuits,UL,cUL	15'/4.5m x 16/7 AWG	4.6
307-29155	C133-5+B46-55	For 3 x 120, GU-10 , single circuit	5.0m x 3 x 1.5mm2	4.8
307-29163	C133-6+B46-63	For 3 x 120, GU-10 , 3 circuits	5.0m x 5 x 1.5mm2	5.2
309-29168	C133-6+B46-65	For 3 x 120, GU-10 , 3 circuits, UL,cUL	15'/4.5m x 16/7 AWG	4.8
307-29173	C133-7+B46-73	For 4 x 12V, MR16, single circuit	5.0m x 2 x 2.5mm2	5.2
307-29175	C133-7+B46-75	For 4 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	6
307-29176	C133-7+B46-75	For 4 x 12V, MR16, single circuit	5.0m x 2 x 6mm2	6
307-29178	C133-7+B46-76	For 4 x 12V, MR16, single circuit,UL,cUL	15'/4.5m x 12/3 AWG	6
307-29182	C133-8+B46-82	For 4 x 12V, MR16, 4 circuits	5.0m x 5 x 1.5mm2	5.7
307-29183	C133-8+B46-83	For 4 x 12V, MR16, 4 circuits	5.5m x 5 x 2.5mm	5.4
307-29188	C133-8+B46-84	For 4 x 12V, MR16, 4 circuits,UL,cUL	15'/4.5m x 16/9 AWG	4.6
307-29192	C133-9+B46-82	For 3 x 240V, GU-10 , single circuit	5.0m x 3 x 1.5mm2	4.8
307-291202	C133-10+B46-84	For 3 x 240V, GU-10 , 3 circuits	5.0m x 5 x 1.5mm2	6.8
ADD ON TO STANDARD FIXTURES				
391-1999	+/-B11a	Installation Cover with bolts	Request Spec Sheet	2.7
391-2001	+/-30-2	143mm Clear Flat Lens	See Lightfixture Supplements	0.1
391-2000	+/-35-2-?	143mm Flat Dichro Color Lens. Color ?	See Lightfixture Supplements	0.1
391-0114	+/-B2214-2-9	143mm x 15mm Clear Flat Armored Lens	See Lightfixture Supplements	1.2
391-0431	+13-2	143mm LensGasket, Silicone Rubber	See Lightfixture Supplements	0.1
350-0029	+/-10-7	Lensguard (In Addition To Lightfixture Only)	Request Spec Sheet	0.7
350-4164	+/-63	Surface Liner Clamp	Request Spec Sheet	2.3
350-4890	+/-58-09	Tile Mask	Request Spec Sheet	1.9
385-3330	T 301	Transformer 240V,50Hz x 12V/24V, 300VA	IP23	2.2

LIGHTFIXTURE TYPES with approvals:

C 133-1 + B46

1 x AR111 Lamp (UL/cUL & CE)
Max. 12V, Submerged - 100W, - Dry - 20W

C 133-3 + B46

3 x MR16 Lamps (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 3 x 65W, Dry 3 x 20W

C 133-4 + B46

3 x MR16 Lamps (UL/cUL & CE) 3 Circuits
Max. 12V*, 3 x 50W for 3 COLOUR CHANGING

C 133-5 + B46

3 x GU10 Lamps, Single Circuit, UL/cUL
Max. 120V, Submerged 3 x 50W, Dry 3 x 20W

C 133-6 + B46

3 x GU10 Lamps (UL/cUL) 3 Circuits, UL/cUL
Max. 120V, 3 x 50W for 3 COLOUR CHANGING

C 133-7 + B46 (UL/cUL)

4 x MR16 Lamps, (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 4 x 75W, Dry 4 x 20W

C 133-8 + B46 (UL/cUL) Submerged

4 x MR16 Lamps, (UL/cUL & CE) 4 Circuits
Max. 12V*, 4 x 1 x 50W for 4 COLOUR CHANGING

C 133-9 + B46

3 x GU10 Lamps, single Circuit
Max. 240V, Submerged 3 x 50W, Dry 3 x 20W

C 133-10 + B46

3 x GU10 Lamps Submerged, 3 Circuits
Max. 240V, 3 x 1 x 50W for 3 COLOUR CHANGING

12V * = Outside North America Max. 24 VAC / 24 VDC

CONSTRUCTION OF LIGHTFIXTURES

For use in fresh water, for seawater use, please enquire
FACEPLATE for flush into concrete surface installation
within grout frame. Bronze Casting with natural finish.
Stainless Steel fitted.

NICHE: 304 Stainless Steel, Stainless Steel fitted

SEALED CONDUIT ENTRY INTO NICHE:

3/4" NPT / BSP Conduit entry with suitable cordseal.
See opposite page.

(-B11A) FLOOR INSTALLATION FACEPLATE OF NICHE.

(Optional & Extra) (Re-useable)
Made for flush floor installation, to permit surface finishing.

NICHE DRAIN (Optional & Extra), 1/2" NPT/BSP with Plug

Niches must have bottom drain in freezing climates.

(-B11B) WALL INSTALLATION OF NICHE

(Optional & Extra) (Re-useable)

For bolting to concrete wall form.

FIXTURE HOUSING :

Cast bronze body and facering. Stainless Steel fitted.

LAMP(S) as per Type : Not part of fixture.

PAR36 or AR111 Lamps

MR 16 Lamps , LED/Halogen, GX 5.3

MR 11 Lamps, LED/Halogen, GX 5.3

GU10 Lamps, LED/Halogen, GZ10

LAMP HOLDERS: Lamp(s) to be specified w. order

Spring Ring for PAR 36/AR111, GX 5.3 or GZ10

Clamp Ring for 3W and 5W LED Lamps

STANDARD LENS:

See Lightfixture Supplements Section, ' Lenses'

CONVEX LENS, Clear

5 colors (convex colour lenses for submersible use only).

OPTIONAL LENS:

FLAT CLEAR LENS.

FLAT DICHRO COLOUR LENS. Choice of 10 colors.

FLAT, CLEAR ARMoured LENS. 15mm thickness.

Replaces rockguard in certain applications.

LENS GASKET :

High Temperature Silicone Rubber. A single 'U' shaped gasket
with unique safety sealing lips and contours.

ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated,
compression type cable entry.

See Lightfixture Supplements Section for cable sizing

STAND ASSEMBLIES: OPTIONAL

See selection of stand assemblies on opposite page.

Lensguard: OPTIONAL (Not for 14-9 Armoured Lens)

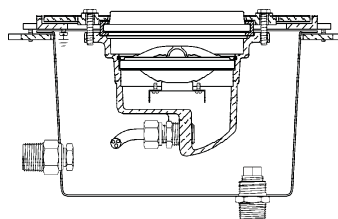
See opposite page

Not intended for or to be used
in Swimming Pools !

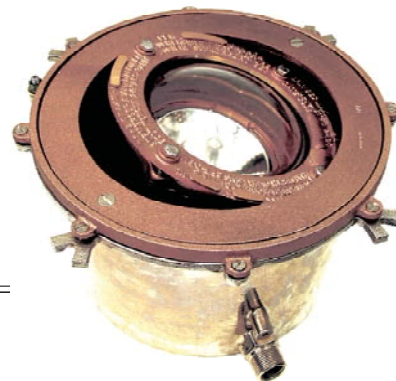
PEM C133 + B46

STAINLESS STEEL WET NICHE MOUNTED & DIRECTIONAL ADJUSTABLE SUBMERSIBLE LIGHT FIXTURES

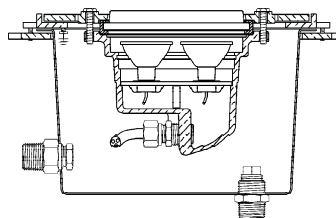
C133-1 + B46



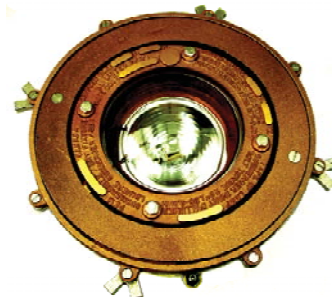
C133-1 + B46 (Tilt to 15°)



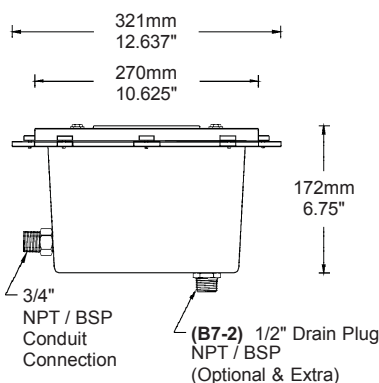
C133- 3 to 8 + B46



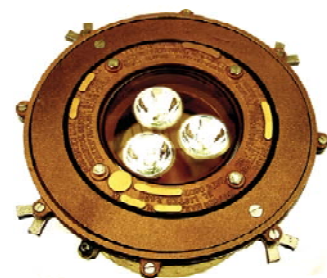
C133-1 + B46



C133 + 46

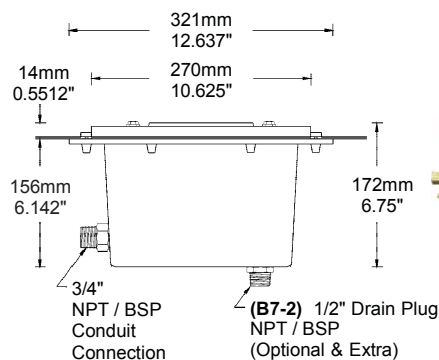


C133- 3 & 6 + B46

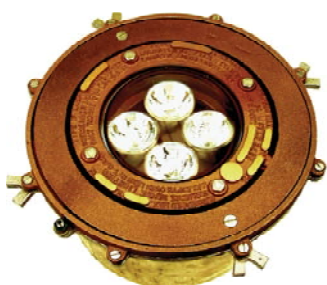


C133 + B46-63

WITH SURFACE MEMBRANE CLAMP
(Optional & Extra)



C133- 7 & 8 + B46



PEM C133



C133-1



C133-3/4/5/6



C133-7/8



C133-8+B1



C133-7+B6-2



C133 + B30

SERIAL	PEM		CABLE	W.
307-34000	Cat.		Length & Size	Kg
		FOR LAMPS AS INDICATED (Not included)		
		Select cable size to suit lamp(s) wattage (Amperage)		
		FIXTURES, NO STAND, NO LAMP(s) with Convex Lens		
307-34813	C133-1-3	For 1 x 12V, AR111/PAR 36	2.7m x 2 x 2.5mm2	4.9
307-34815	C133-1-5	For 1 x 12V, AR111/PAR 36	5.0m x 2 x 4mm2	5.7
307-34817	C133-1-7	For 1 x 12V, AR111/PAR 36 UL, cUL	9' / 2.7m x 16/3 AWG	4.8
307-34832	C133-3-2	For 3 x 12V, MR16, single circuit	2.7m x 2 x 1.5mm2	4.8
307-34833	C133-3-3	For 3 x 12V, MR16, single circuit	5.0m x 2 x 1.5mm2	5.2
307-34835	C133-3-5	For 3 x 12V, MR16, single circuit	2.7m x 2 x 4mm2	6
307-34837	C133-3-7	For 3 x 12V, MR16, single circuit,UL,cUL	9' / 2.7m x 16/3 AWG	7.3
307-34841	C133-4-1	For 3 x 12V, MR16, 3 circuits	2.7m x 5 x 1.5mm2	5.2
307-34842	C133-4-2	For 3 x 12V, MR16, 3 circuits	5.0m x 5 x 1.5mm2	5.7
307-34843	C133-4-2	For 3 x 12V, MR16, 3 circuits	2.7m x 5 x 2.5mm2	5.3
307-34844	C133-4-4	For 3 x 12V, MR16, 3 circuits,UL,cUL	9' x 16/7 AWG	5.9
307-34853	C133-5-3	For 3 x 120V, GU-10 , single circuit	2.7m x 3 x 1.5mm2	5.2
307-34855	C133-5-5	For 3 x 120V, GU-10 , single circuit	5.0m x 3 x 1.5mm2	4.8
307-34863	C133-6-3	For 3 x 120V, GU-10 , 3 circuits	2.7m x 5 x 1.5mm2	5.2
307-34865	C133-6-5	For 3 x 120V, GU-10 , 3 circuits, UL,cUL	2.7m x 16/7 AWG	4.8
307-34872	C133-7-2	For 4 x 12V, MR16, single circuit	2.7m x 2 x 1.5mm2	4.8
307-34873	C133-7-3	For 4 x 12V, MR16, single circuit	5.0m x 2 x 2.5mm2	5.2
307-34875	C133-7-5	For 4 x 12V, MR16, single circuit	2.7m x 2 x 4mm2	6
307-34877	C133-7-7	For 4 x 12V, MR16, single circuit,UL,cUL	9' / 2.7m x 16/3 AWG	7.3
307-34881	C133-8-1	For 4 x 12V, MR16, 4 circuits	2.7m x 5 x 1.5mm2	5.3
307-34882	C133-8-2	For 4 x 12V, MR16, 4 circuits	5.0m x 5 x 1.5mm2	5.7
307-34883	C133-8-3	For 4 x 12V, MR16, 4 circuits	5.0m x 2 x 2.5mm2	5.4
307-34884	C133-8-4	For 4 x 12V, MR16, 4 circuits,UL,cUL	2.7m x 16/9 AWG	5.9
307-34891	C133-9-1	For 3 x 240V, GU-10 , single circuit	2.7m x 3 x 1.5mm2	5.2
307-34892	C133-9-2	For 3 x 240V, GU-10 , single circuit	5.0m x 3 x 1.5mm2	4.8
307-27901	C133-10-3	For 3 x 240V, GU-10 , 3 circuits	2.7m x 5 x 1.5mm2	5.2
307-27902	C133-10-4	For 3 x 240V, GU-10 , 3 circuits	5.0m x 5 x 1.5mm2	6.8
		ADD ON TO STANDARD FIXTURES		
391-2001	30-2	143mm Clear Flat Lens	See Lightfixture Supplement	0.1
391-2000	35-2-0000	143mm Flat Dichro Color Lens	See Lightfixture Supplement	0.1
391-0114	14-2-9	143mm x 15mm Clear Flat Armored Lens	See Lightfixture Supplement	1.2
350-1123	+/-2C	2 Cable entries, 2 x 6.0mm2 & 2 x 2.5mm2	Factory wired only	+0.4
350-1133	+/-2D	2 Cable entries, 2 x 6.0mm2 & 2 x 4.0mm2	Factory wired only	+0.5
334-3292	+/-6/-92	Brass Lens Shade for Dichro Color Lens		0.8
350-0014	+/-10-2	Clip On Rockguard		0.8
350-0026	+/-10-6	Swing Up Rockguard		0.7
350-0029	+/-10-7	Lensguard (not for 14-2-9)		0.2
350-0109	+/-B1	Tripod Stand, 40cm WD		1.4
350-0110	+/-B1S	Tripod Stand, 25cm WD		1.2
350-0130	+/-B4	Ring Stand, 60cm WD		2.8
350-0270	+/-B6-2	Mounting Brackets,18cm WD		2.0
350-0300	+/-B7S	Mounting Yoke		0.7
350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length	3.7
350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length	3.7
350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length	3.7
350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length	3.7
385-3330	T 301	Transformer 240V,50Hzx12V/24V,300VA	IP23	2.2

LIGHTFIXTURE TYPES

C 133-1

1 x AR111 Lamp (UL/cUL & CE)
Max. 12V, Submerged - 100W, - Dry - 20W

C 133-3

3 x MR16 Lamps (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 3 x 65W, Dry 3 x 20W

C 133-4

3 x MR16 Lamps (UL/cUL & CE) 3 Circuits
Max. 12V*, 3 x 50W for 3 COLOUR CHANGING

C 133-5

3 x GU10 Lamps, Single Circuit, UL/cUL
Max. 120V, Submerged 3 x 50W, Dry 3 x 20W

C 133-6

3 x GU10 Lamps (UL/cUL) 3 Circuits, UL/cUL
Max. 120V, 3 x 50W for 3 COLOUR CHANGING

C 133-7 (UL/cUL)

4 x MR16 Lamps, (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 4 x 75W, Dry 4 x 20W

C 133-8 (UL/cUL) Submerged

4 x MR16 Lamps, (UL/cUL & CE) 4 Circuits
Max. 12V*, 4 x 1 x 50W for 4 COLOUR CHANGING

C 133-9

3 x GU10 Lamps, single Circuit
Max. 240V, Submerged 3 x 50W, Dry 3 x 20W

C 133-10

3 x GU10 Lamps Submerged, 3 Circuits
Max. 240V, 3 x 1 x 50W for 3 COLOUR CHANGING

12V * = Outside North America Max. 24 VAC / 24 VDC

CONSTRUCTION OF LIGHTFIXTURES

FIXTURE HOUSING :

Cast bronze body and facer. Stainless Steel fitted.

LAMP(S) as per Type : Not part of fixture.

PAR36 or AR111 Lamps

MR 16 Lamps, LED/Halogen, GX 5.3

MR 11 Lamps, LED/Halogen, GX 5.3

GU10 Lamps, LED/Halogen, GZ10

LAMP HOLDERS: Lamp(s) to be specified w. order

Spring Ring for PAR 36/AR111, GX 5.3 or GZ10

Clamp Ring for 3W and 5W LED Lamps

STANDARD LENS:

See Lightfixture Supplements Section, ' Lenses & Gaskets'

CONVEX LENS, Clear

5 colors (convex colour lenses for submersible use only).

OPTIONAL LENS:

FLAT CLEAR LENS.

FLAT DICHRO COLOUR LENS. Choice of 10 colors.

FLAT, CLEAR ARMoured LENS. 15mm thickness.

Replaces rockguard in certain applications.

LENS GASKET :

High Temperature Silicone Rubber. A single 'U' shaped gasket with unique safety sealing lips and contours.

ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated, compression type cable entry.

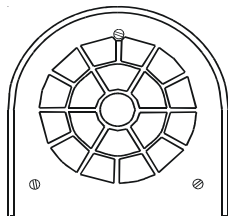
See Lightfixture Supplements Section for cable sizing

STAND ASSEMBLIES: OPTIONAL

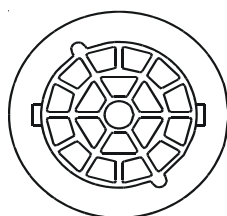
See selection of stand assemblies on opposite page.

ROCKGUARD: OPTIONAL (Not for 14-9 Armoured Lens)

See selection on opposite page



C133 + B57



C133 + B56

SUBMERSIBLE OR DRY LIGHTFIXTURE

PEM C133

CAST BRONZE LIGHTFIXTURES



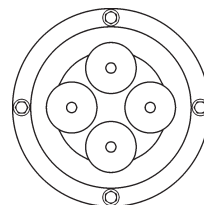
**C133 -3 to -6
+ B1S**



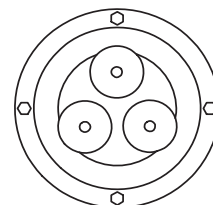
**C133 -1
+ B1S**



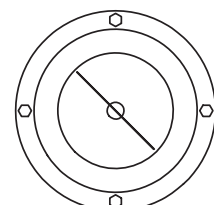
**C133 -7 & -8
+ B1S**



C133-7/8



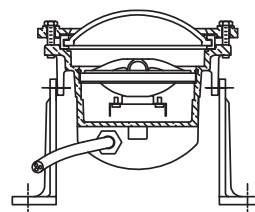
C133-3/4/5/6



C133-1

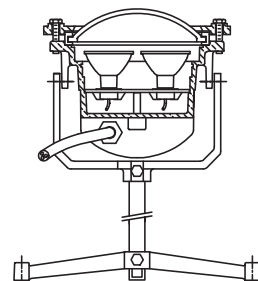
191mm
7.500"

C133-1 + B6-2



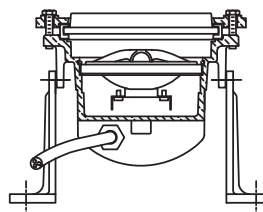
183mm
7.20"

C133-3, / -8 + B1S



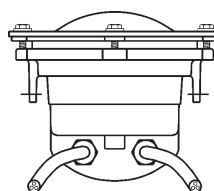
356mm
14.00"
to
420mm
16.50"

C133-1 + 14-9 + B6-2

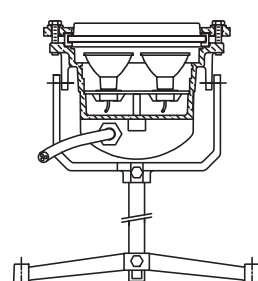


167mm
6.58"

C133-2



C133-3, / -8 + 14-9 + B1S



343mm
13.50"
to
406mm
16.00"

254mm / 10.0"



D145A



D145B



D145A+B1



D145B+B4



D145 + B30



D145 + B46 Vertical



D145 + B46 Full Tilt

SERIAL	PEM		CABLE	W.
305 0000	Cat.		Length & Size	Kg
ONLY FOR HARD GLASS COVER PAR 38 LAMPS AS INDICATED (not included)				
FOR ALL OTHER PAR 38 USE PEM E150-1				
Select cable size to suit lamp(s) wattage (Amperage)				
A' TYPE FIXTURES WITH ROCKGUARD CORDSEAL , NO STAND & NO CABLE				
305-0302	D145A-1-02	Max. 240V, 150W with 3 x 1.5mm2 Cable Cordseal	No Cable	2.9
305-0303	D145A-1-03	Max. 12 / 24V, 150W with 2 x 2.5mm2 Cable Cordseal	No Cable	2.9
305-0304	D145A-1-04	Max. 12 / 24V, 150W with 2 x 4mm2 Cable Cordseal	No Cable	3.1
305-0305	D145A-1-05	Max. 12 / 24V, 150W with 2 x 6mm2 Cable Cordseal	No Cable	3.2
A TYPE FIXTURES 240V NO STAND WITH CABLE				
305-0312	D145A-2-12	Max.240V, 150w with cable	2.7m x 3 x 1.5mm2	3.3
305-0313	D145A-2-13	Max.240V, 150w with cable	5.0m x 3 x 1.5mm2	3.8
305-0314	D145A-2-14	Max.240V, 150w with cable	10.0m x 3 x 1.5mm2	4.8
A TYPE, 12V-24V FIXTURES NO STAND WITH CABLE				
305-0322	D145A-2-22	Max. 12 / 24V, 150W with cable	2.7m x 2 X 2.5mm2	3.3
305-0323	D145A-2-23	Max. 12 / 24V, 150W with cable	5.0m x 2 x 4mm2	4.1
306-0324	D145A-2-24	Max. 12 / 24V, 150W with cable	10m x 2 x 6mm2	6.2
B TYPE FIXTURES, NO ROCKGUARD WITH CORDSEAL , NO STAND & NO CABLE				
305-0402	D145B-1-02	Max. 240V, 150W with 3 x 1.5mm2 Cable Cordseal	No Cable	3.0
305-0406	D145B-1-06	Max. 12 / 24V, 150W with 2 x 2.5mm2 Cable Cordseal	No Cable	3.0
305-0407	D145B-1-07	Max. 12 / 24V, 150W with 2 x 4mm2 Cable Cordseal	No Cable	3.1
305-0408	D145B-1-08	Max. 12 / 24V, 150W with 2 x 6mm2 Cable Cordseal	No Cable	3.4
305-0435	D145A-2-35	cUL-Max.120V, max. 250W wet , 150W dry, with cable	2.7m x 16/3 AWG	3.3
305-0445	D145A-2-40	cUL-Max.120V, max. 250W wet , 150W dry, with cable	2.7m x 16/3AWG	3.5
B TYPE , FIXTURES 240V NO STAND WITH CABLE				
305-0415	D145B-2-15	Max.240V, 150w with cable	2.7m x 3 x 1.5mm2	3.5
305-0416	D145B-2-16	Max.240V, 150w with cable	5.0m x 3 x 1.5mm2	4.5
305-0417	D145B-2-17	Max.240V, 150w with cable	10.0m x 3 x 1.5mm2	5.5
B TYPE FIXTURES 12V-24V NO STAND WITH CABLE				
305-0426	D145B-2-26	Max. 12 / 24V, 150W with cable	2.7m x 2 X 2.5mm2	3.5
305-0427	D145B-2-27	Max. 12 / 24V, 150W with cable	5.0m x 2 x 4mm2	4.6
305-0429	D145B-2-29	Max. 12 / 24V, 150W with cable	10m x 2 x 6mm2	6.2
305-0433	D145B-2-33	UL-Max.120V, max. 250W wet , 150W dry, with cable	2.7m x 16/AWG3	3.5
ADD ON TO STANDARD FIXTURES				
350-0003	+/-07	Thermal Cut Off for 120V / 240V only	Factory wired only	0.1
350-0011	+/-2A	2. Cable entry, 240V, 3 x 1.5m2 cable	Factory wired only	0.1
350-0013	+/-2B	2. Cable entry, 12V / 24V , 2 x 4.0mm2 & 2 x 2.5mm2	Factory wired only	0.1
350-0023	+/-2C	2. Cable entry, 12V / 24V , 2 x 6.0mm2 & 2 x 2.5mm2	Factory wired only	0.2
350-0033	+/-2D	2. Cable entry, 12V / 24V , 2 x 6.0mm2 & 2 x 4.0mm2	Factory wired only	0.3
350-0109	+/-B1	Tripod Stand, 40cm WD		1.4
350-0130	+/-B4	Ring Stand, 60cm WD		2.8
350-4111	+/-B46-1	Stainless Steel Niche		6.5
350-4031	+/-B50A	Walk Over Stainless Steel		8.2
350-4330	+/-58-03	Tile Mask for Niche		2.3
350-2310	+/-B56-1	Slab Hanger		3.2
350-2320	+/-B56-1A	Slab Hanger with Locks		3.5
350-2410	+/-B57-1	Waterfall Slab Hanger		2.8
350-2420	+/-B57-1A	Waterfall Slab Hanger with Locks		3.2
350-0733	+/-B23-6	Bracket for 6 Lights on 3" Pipe		1.0
350-0734	+/-B23-7	Bracket for 6 Lights on 4" Pipe		1.6
350-0742	+/-B23-2-1	16mm x 100mm Mounting Rod For B23		0.3
350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length	3.7
350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length	3.7
350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length	3.7
350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length	3.7
385-3330	T301	Transformer 240V,50Hzx12V/24V,300VA	IP23	2.2

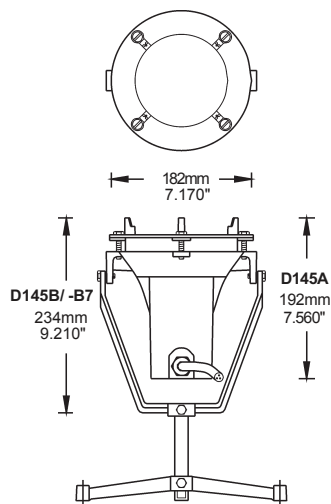


SUBMERSIBLE or DRY LIGHTFIXTURE

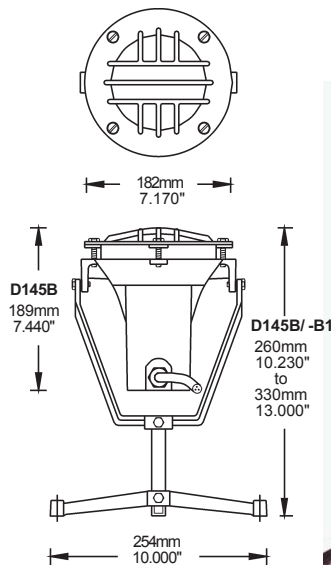
PEM D145

Lightfixtures for PAR 38/BR 32
Lamps: 12V, 24V, 120V & 240V

D145A + B1



D145B + B1



APPROVALS

Canada - cUL, 120V / 24V & 12V,
All in A or B Option, excluding - 2
USA - UL, 120V / 24V & 12V
All in 'B' Option, excluding - 2



DESCRIPTION:

PEM D145 Cast Bronze Lightfixtures are for **Dry, Submersed or Partial Immersed Installation**. This lightfixture is especially designed for those applications where the fixture is submerged only intermittently or is used under falling or splashing water inside or outside of a pool. This lightfixture is designed for BR30 or PAR38 Sealed Beam Lamps with heavy welded on flat glass cover configurations for outdoor use. The lightfixture is sealed at the neck of the lamp with a high temperature silicone rubber 'O' ring compressing the lamp into the fixture body by the facering and facering bolts. (**See NOTE below**). The lightfixture is designed for single cable entry for direct connection to power supply or dual cable entries for use in a fixture chain where permissible. Maximum immersion of lightfixture: 0.6m / 24" of water depth over lens. For dry installation the fixture must be clear of combustible materials.

FIXTURE RATINGS:

MAXIMUM 250W AT 120V FOR SUBMERGED USE FOR UL / cUL FIXTURES.
MAXIMUM 150W AT 120V FOR DRY USE FOR UL / cUL FIXTURES.
MAXIMUM 150W AT 240V FOR SUBMERGED OR DRY USE.
MAXIMUM 150W AT 24V FOR SUBMERGED OR DRY USE.
MAXIMUM 100W AT 12V FOR SUBMERGED OR DRY USE.

CONSTRUCTION OF LIGHT FIXTURE:

Housing & Facering:

For use in fresh water:

Cast bronze (85/5/5/5 Copper Alloy). Stainless Steel fitted.

LAMP:

OPTIONAL & ADDITIONAL - Normally not supplied with fixture.

BR30 or PAR38 Lamps with E26 / E27 medium screw bases with heavy welded on flat glass cover configuration. Most 240V, 120V & 24V Lamps have max. 2000 hours or more average life or as specified by Lamp manufacturer at rated Lamp voltage. 12V Lamps have a max. 1000 hours average life or as specified by Lamp manufacturer at rated Lamp voltage. MAXIMUM rating is the maximum useable wattage at voltage rating for a particular fixture. Certain types of very thin wall lamps are not suitable for this application.

ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated, compression type cable entry in factory assembled fixtures. See Lightfixture Supplements Section

Lamp Holder:

E26 / E27 - Ceramic medium screw with copper alloy screw shell and parts.

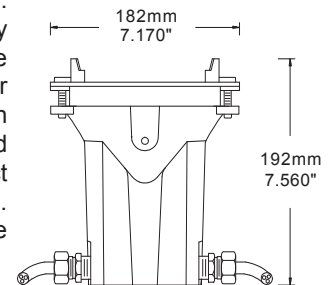
Lamp Seal:

High temperature silicone rubber 'O' Ring around neck of lamp.
The neck of the lamp must be smooth and not pitted.

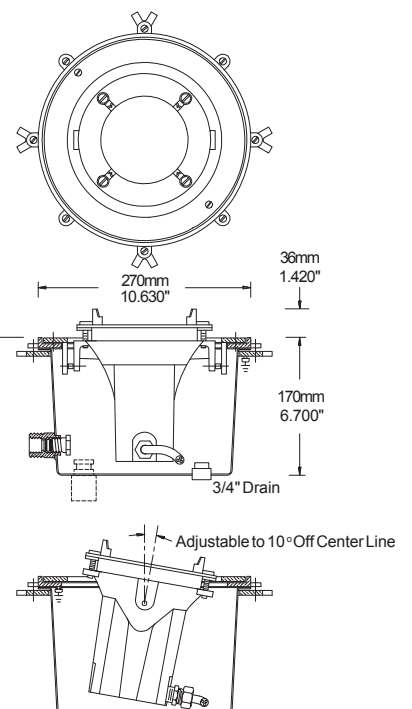
Mounting: See opposite Page

NOTE: A face ring bolt tightening torque of 45.6 Ncm / 64 oz inch is required to seal PAR38 Lamps. It is imperative that the facering bolts are tightened evenly cross wise by approx. 1/2 turn of each bolt (Bolt # 1, then #3, then #4, then #2, then #4, then #1 etc.) in a clockwise direction to avoid lamp breakage. A proper ratchet torque wrench is required to avoid lamp breakage.

D145A + 2A



D145A + B46-1



DO NOT USE THIN, GLASS BLOW MOLDED LAMPS.



E40A (UL)



E40B (CSA)



E40B + 05



E40LVA+B10-1(UL)



E40LVB+B10-1 (CSA)



E40LVA+B10-3

E40LVB+B10-3



E40LVA + B12 (UL)



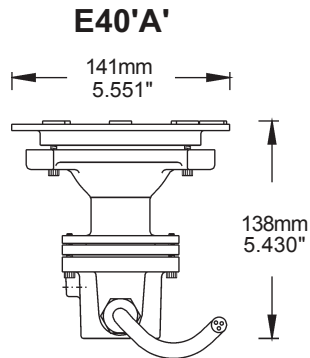
E40LVB + B12 (CSA)

SERIAL	PEM	Website - Index # 6	CABLE	W.
309-00000	Cat.	Catalog. Pages 322 & 323	SIZE & LENGTH	Kg
		FOR LAMPS AS INDICATED (Not included)		
		Select cable size to suit lamp(s) wattage (Amperage)		
CSA & U.L."A' Type FIXTURES WITH CONVEX FRESNEL LENS, & CABLE , NO STAND				
309-102610	E40A-S-1-2-10	UL/cUL- T4- E11,max.120V, 250W Wet, 20W Dry	2.7mx16/3 AWG	3.5
309-102620	E40A-F-1-2-20	UL/cUL- T4- E11,max.120V, 250W Wet, 20W Dry	2.7mx16/3 AWG	3.5
309-102640	E40A-S-2-2-40	UL/cUL- JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	2.7mx16/3 AWG	3.5
309-102650	E40A-F-2-2-50	UL/cUL-JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	2.7mx16/3 AWG	3.5
309-102660	E40A-LV-2-60	UL/cUL-MR16,12V/24V,Max.150W Wet,max 50 W.Dry	2.7mx16/3 AWG	3.5
B Type FIXTURE WITH CONVEX FRESNEL LENS & CORDSEAL, NO CABLE & NO STAND				
309-102701	E40B-S-1-01	For T4- E11,max.240V, 250W	For 9-11mm Cable	2.4
309-102702	E40B-F-1-01	For T4- E11,max.240V, 250W	For 9-11mm Cable	2.4
309-102703	E40B-S-2-01	For JC, Bi Pin, 6.35-1, 12V/ 24V, max 150W	For 9-11mm Cable	2.3
309-102704	E40B-F-2-01	For JC, Bi Pin, 6.35-1, 12V/ 24V, max 150W	For 9-11mm Cable	2.3
309-102705	E40B-LV-1-01	For MR16, 12V/24V, MAX 5W	For 9-11mm Cable	2.3
B Type FIXTURE WITH CONVEX FRESNEL LENS & CABLE , NO STAND				
309-102715	E40B-S-1-2-15	For T4- E11,max.240V, 250W Wet, 20W Dry	2.7m x 3 x 1.5mm2	3.3
309-102716	E40B-S-1-2-16	For T4- E11,max.240V, 250W Wet, 20W Dry	5.0m x 3 x 1.5mm2	7.0
309-102723	E40B-F-1-2-23	For T4- E11,max.240V, 250W Wet, 20W Dry	2.7m x 3 x 1.5mm2	3.3
309-102725	E40B-F-1-2-25	For T4- E11,max.240V, 250W Wet, 20W Dry	5.0m x 3 x 1.5mm2	7.0
309-102743	E40B-S-2-2-43	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	2.7m x 2 x 2.5mm2	3.3
309-102745	E40B-S-2-2-45	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	5.0m x 2 x 2.5mm2	4.0
309-102753	E40B-F-2-2-53	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	2.7m x 2 x 2.5mm2	3.3
309-102756	E40B-F-2-2-56	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	5.0m x 2 x 2.5mm2	4.0
309-102762	E40B-LV-2-62	For MR16, 12V/24V, Max. 20W Dry, max 20 W. Wet	2.7m x2x 1.5mm2	3.1
309-102764	E40B-LV-2-64	For MR16, 12V/24V, Max. 20W Dry, max 20 W. Wet	2.7m x2x 2.5mm2	3.1
309-102765	E40B-LV-2-65	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	2.7m x2x 1.5mm2	3.1
309-102767	E40B-LV-2-67	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	5.0m x 2 x 2.5mm2	5.5
ADD ON TO FIXTURES				
391-0224	+/-14-1B	80mm Convex Clear Lens, No Fresnels	See: Light.Supplement	0.1
391-1001	+/-30-1	80mm Flat Clear lens	See: Light.Supplement	0.1
391-1000	+/-35- 1-30	80mm Flat Dichro Color Lens	See: Light.Supplement	0.1
330-3041	+/- E40-5-1	Flat Lens Adaptation for T4-MC & JC (Required)	Factory installed	0.5
350-0003	+/-07	Thermal Cut Off for 120/240V only	Factory installed	0.0
334-3191	+/-05	Brass Lens Shade for Dichro Color		0.1
350-0011	+/- -2-1	2. Cable Cordseal, 9-11mm Cable O.D.	Factory wired only	0.1
350-0520	+/- -B10-1	B10-1 Ring Stand, 19cm WD		1.5
350-0540	+/- -B10-2	B10-2 Ring Stand, 25cm WD		2.0
350-0560	+/- -B10-3	B10-3 Ring Stand, 38cm WD		2.5
350-0610	+/- -B12	B12 Mounting Bracket ,15cm WD		0.25
350-0662	+/- -B23-2	Bracket for 2 x E 40 on 1 1/2" Pipe		1.0
350-0733	+/- -B23-6	Bracket for 6 Lights on 3" Pipe		1.0
350-0734	+/- -B23-7	Bracket for 6 Lights on 4" Pipe		1.6
350-0742	+/- B23-2-1	E40, 100mm Mounting Rod For B23		0.3
385-3330	T 301	Transformer 240V,50Hz x 12V/24V, 300VA	IP23	2.2

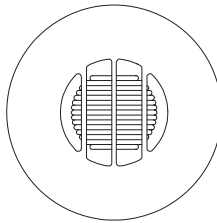


SUBMERSIBLE LIGHTFIXTURE

PEM E40



E40'A'
(With Rockguard)



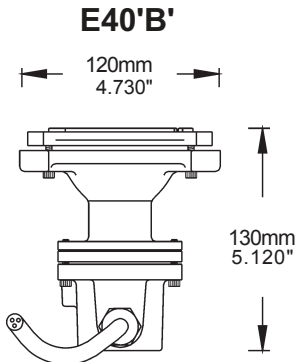
E40'A'
UL Listed
Wet: 250W
Dry: 50
-
E40A&B
Wet: 250W
cUL



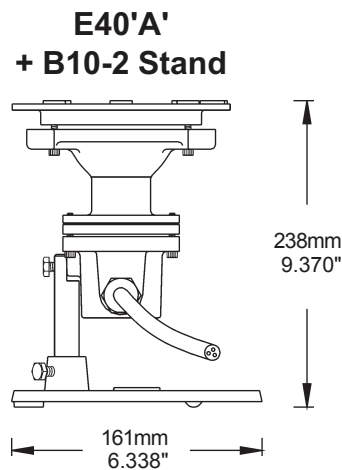
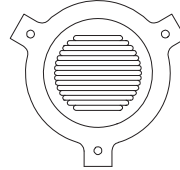
E40'A'
(A Option) + B10-2



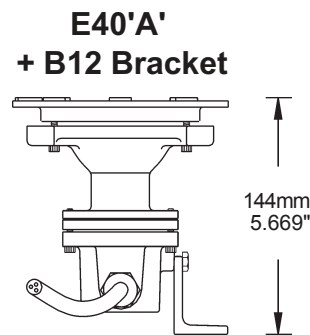
E40'B'
(B Option) + B10-2



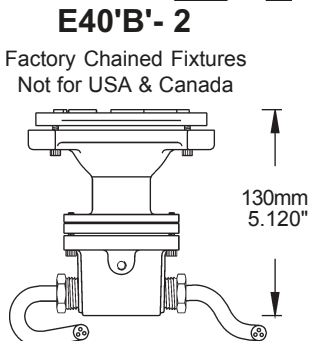
E40'B'
(Without Rockguard)



E40'A'
+ B10-2 Stand



E40'A'
+ B12 Bracket



E40'B'-2

Factory Chained Fixtures
Not for USA & Canada

FIXTURE TYPES

1. T4-MC, cUL, 120V, max. 250W 'A' & 'B' Option. Excluding -2.
2. T4-MC, UL, 120V, max. 250W 'A' Option. Excluding -2.
3. T4-MC, cUL, 240V, max. 250W 'A' & 'B' Option. Excluding -2.
4. JC, UL, 12V max. 75W / 24V max. 150W. 'A' Option Excluding -2.
5. JC, cUL/CS/CE, 12V max. 75W or 24V max. 150W. 'A' & 'B' Option. Excluding -2.
6. LV, UL 12V, 'A' UL Option. Excluding -2. (For MR 16 Lamps) 12V max. 75W.
7. LV, cUL/CS/CE, 12V, max. 75W. Submersible Use: 'A' & 'B' Option. Excluding -2. (For MR 16 Lamps)
8. DW-UL, cUL, 120V, Max. 50W, GU10 Reflector Lamp, GZ10 Base.
9. DW-240V, Max. 50W., GU10 Reflector Lamp, GZ10 Base.

LIGHTFIXTURE CONSTRUCTION

FIXTURE OPTIONS: (Options A & S, A & F, B & S, B & F can be combined)

'S' and 'F' type fixtures have water cooled and chromed parabolic reflector integral with housing.

'A' Option Fixtures have wide facering and built in rockguard.

'B' Option Fixtures have narrow facering and no rockguard.

'S' Option, for T4 & JC Types have polished reflector with 11° included beam output - **Spotlight**.

'F' Option, for T4 & JC Types have diffused output with 100° included beam- **Flood light**.

'LV' & 'DW' have natural bronze body fitted for Lamp Rim Clamps.

FIXTURE HOUSING & FACERING:

Cast Bronze, Stainless Steel fitted.

LAMPS: OPTIONAL, Not part of fixture:

T4-MC: 120V / 240V, Mini Candelabra, T4-MC / E11 base.

DW: 120V / 240V, (Max. 50W), GU10 Reflector Lamp, GZ10 Base.

JC- 12V or 24V: JC Type 2 pin Lamp, 6.35-1.0 base (24V, use Axial Filament lamps only).

LV- 12V: MR16(50mm), GX5.3 base LED or Halogen with Aluminized Reflector only.

LAMP HOLDERS:

T4-MC, 120V and 240V: -S25 Mini Candelabra (E11) - ceramic.

'LV', 12V: Rim Clamps & Bi Pin Socket GX 5.3.

'JC', 12V & 24V: Bi Pin Socket G 6.35-1.0.

'DW', 120-240V: Rim Clamps & GZ10 Twist lock Socket.

LENSES: (See Lightfixture Supplements Section.)

CONVEX FRESNEL LENS: 80mm / 3.149" O.D., Clear or 5 colors.

OPTIONAL & EXTRA:

CONVEX CLEAR LENS without Fresnels for MR16 & GU10 Spot Lamps.

FLAT CLEAR LENS & FLAT DICHRO COLOR LENSES (10 Colors)

LENS GASKET:

Custom molded 'U' shape. Made of high temperature Silicone Rubber (U.L. listed).

DICHROIC LENS SHADE: E40 - 0-5 (Required for dichroic colors).

THERMAL CUT OFF: Optional, 120V only, integral, automatic self resetting type to protect cable entry.

ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated compression type cable entry in factory assembled fixtures. See Lightfixture Supplements Section for sizing.

For Factory chained fixtures - Enquire. (Not UL or cUL)

MOUNTING OPTIONS: See opposite Page

PEM E 40 LIGHT OUTPUT (Measured in open air)

E40-S, 120V - T4-MC Lamp

Clear Flat Lens, Included Beam Angle 11°

Distance	Diameter	* fc
0.5m	0.1m	19880
1.0m	0.2m	6600
1.5m	0.4m	3230
2.0m	0.5m	1440
3.0m	0.9m	790
4.0m	1.2m	485

*fc = appr. foot candles at center

E40-F, 120V - T4-MC Lamp

Clear Flat Lens, Included Beam Angle 100°

Distance	Diameter	* fc
0.5m	0.8m	3344
1.0m	1.6m	1143
1.5m	2.4m	518
2.0m	3.4m	315
3.0m	5.4m	153
4.0m	7.4m	96

*fc = appr. foot candles at center



E41 Top View



E41 3° Angled in Niche



E41 Side View

SERIAL	PEM		CABLE	W.
311 0000	Cat.		Length & Size	Kg
		FOR LAMPS AS INDICATED (Not included)		
		Select cable size to suit lamp(s) wattage (Amperage)		
		FIXTURE WITH STAINLESS STEEL NICHE, CONVEX LENS & CABLE		
310-102810	E41-S-1-10	UL/cUL- T4- E11,max.120V, 250W Wet, 20W Dry	4.5m/15' x 16/3 STWA	7.5
311-402815	E41-S-1-15	For T4- E11,max.240V, 250W Wet, 20W Dry	5m x 3 x 1.5mm2	7.5
310-102816	E41-S-1-16	For T4- E11,max.240V, 250W Wet, 20W Dry	10.0m x 3 x 1.5mm2	8.7
310-102820	E41-F-1-20	UL/cUL- T4- E11,max.120V, 250W Wet	4.5m/15' x 16/3 STWA	7.5
310-102823	E41-F-1-23	For T4- E11,max.240V, 250W Wet, 20W Dry	5.0m x 3 x 1.5mm2	8.7
310-102825	E41-F-1-25	For T4- E11,max.240V, 250W Wet, 20W Dry	10.0m x 3 x 1.5mm2	8.7
310-102840	E41-S-2-40	UL/cUL- JC, Bi Pin,12V/ 24V, max 150W Wet	4.5m/15' x 16/3 STWA	7.5
310-102843	E41-S-2-43	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	5.0m x 3 x 1.5mm2	7.5
310-102845	E41-S-2-45	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	10.0m x 3 x 1.5mm2	8.7
310-102850	E41-F-2-50	UL/cUL-JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	4.5m/15' x 16/3 STWA	6.8
310-102853	E41-F-2-53	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	5.0m x 3 x 1.5mm2	8.7
310-102856	E41-F-2-56	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	10.0m x 3 x 1.5mm2	8.7
310-102860	E41-LV-1-60	UL/cUL-MR16,12V/24V,Max.20W Dry, max 75 W. Wet	4.5m/15' x 16/3 STWA	7.4
310-102862	E41-LV-1-62	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	5.0m x 3 x 1.5mm2	8.7
310-102864	E41-LV-1-64	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	10.0m x 3 x 1.5mm2	8.7
310-102865	E41-LV-1-65	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	5.0m x 2 x 2.5mm2	9.8
310-102867	E41-LV-1-67	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	10.0m x 2 x 2.5mm2	9.8
		For CUL- SOW-3/16 Cable is used.		
		ADD ON TO FIXTURES		
391-1000	35-1-0000	80mm Flat Dichro Color Lens, (LV only)	See Lightfixt. Supplement	0.1
350-0003	+/-07	Thermal Cut Off for 120/240V only	Factory installed only	
385-3330	T 301	Transformer 240V,50Hz x 12V/24V, 300VA	IP23	2.2
350-4120	+/-11	Installation Cover for Niche	Request Spec. Sheet	1.9
350-4121	+/-60	Surface Puddle Flange	Request Spec. Sheet	1.2
350-4123	+/-63	Surface Liner Clamp	Request Spec. Sheet	2.9
350-4110	+/-58-1	Round Tile Mask	Request Spec. Sheet	0.4
350-4220	+/-58-2	Square Tile Mask	Request Spec. Sheet	0.7



FIXTURE TYPES

1. T4-MC, cUL, 120V, max. 250W.
2. T4-MC, UL, 120V, max. 250W.
3. T4-MC, CS, 240V, max. 250W.
4. JC, UL, 12V max. 100W / 24V max. 150W.
5. JC, cUL/CS/CE, 12V max. 100W or 24V max. 150W.
6. LV, UL/cUL/CE, 12V, MR16 LED / Halogen 75W, LED / Halogen Outside Canada / USA 24 VAC / 24VDC
7. DW, 120V / 240V, Max. 50W, (For GU10 Reflector Lamp)

DESCRIPTION:

A high intensity lightfixture, ball joint mounted in niche that can be externally directionally adjusted after installation to a max. of 30 degrees included angle within a 360 degree range. Grout frame of niche permits flush installation into concrete surface. Large vent openings in facering are to promote cooling water or air circulation around fixture in niche.

CONSTRUCTION OF LIGHTFIXTURE

FIXTURE OPTIONS: Fixture & Facering are of cast bronze, Stainless Steel fitted.

'S' and 'F' type fixtures have water cooled parabolic reflector integral with housing.

'S': Option has polished reflector with concentrated beam output - spotlight.

'F': Option has diffused output with better color rendition - flood light.

FIXTURE HOUSING & FACERING:

Cast Bronze with stainless steel fasteners and Neoprene Seals.

LAMPS: Quartz Halogen-OPTIONAL. Not part of fixture.

T4-MC: 120V / 240V, Mini Candelabra, T4-MC / E11 base .

DW: 120V / 240V, Max. 50W, GU10 Reflector Lamp, GZ10 Base.

JC-12V: JC Type Bi pin Lamp, 6.35-1.0 base, max. 100W.

JC-24V: JC Type Bi pin Lamp, 6.35-1.0 base, max. 150W/24V (Axial Filament Lamps).

LV- 12V: MR16(50mm), GX5.3 base LED or Halogen with Aluminized Reflector Halogen.

LAMP HOLDERS:

T4-MC, 120V and 240V -S25 Mini Candelabra (E11) - ceramic.

'LV', 12V Rim clamp & Bi Pin Socket GX 5.3.

'JC', 12V & 24V: Bi Pin Socket G 6.35-1.0.

'DW': Rim Clamp & GZ10 Twist lock Socket.

LENSES: CONVEX LENS: 80mm / 3.149" O.D.

Tempered cast boron silicate glass with amplifying output, fresnels on inside center of lens.

Available in clear or 5 colors at no extra cost (See Lightfixture Supplements Section.)

LENS GASKET: Custom molded U shape high temperature Silicone Rubber.

THERMAL CUT OFF: Optional for 120V & 240V Fixtures only.

Integral, automatic self resetting type to protect cable entry.

ELECTRICAL CABLE: Approved for the purpose with integral epoxy encapsulated compression type cable entry in factory assembled fixtures.

See Lightfixture Supplements Section.

NICHE: Standard

Spun stainless steel with cast bronze face and anchor rings, Stainless Steel fitted.

Cable entry through side, combination conduit entry, 3/4" male NPT / BSP, 1/2" female NPT / BSP and removable internal cordseal. Enquire for other applications. Niche has 2 tie up anchors for mounting to concrete form with bare solid copper wire.

TILE MASK: See opposite page.

Standard: TMR Round,

Optional: TMS, Square, natural cast bronze for epoxy grout mounting.

Chrome plating of tile mask includes plating of niche rim and fixture facering.

Chrome plating with original order only.

WATER PROOFING OPTIONS (ADD ON) : See opposite page.

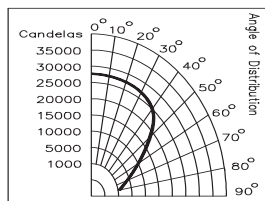
350-4121 - 60 SURFACE FLANGE. For liquid surface waterproofing membrane.

350-4123 - 63 SURFACE LINER CLAMP. Gasketed for surface metal or fibreglass liners.

INSTALLATION COVER WITH BOLTS FOR NICHE INSTALLATION:

See opposite page.

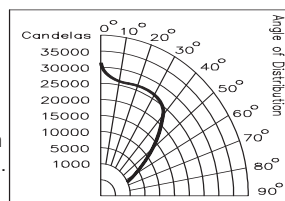
CANDLE POWER with 250 W / 120V lamp (In open air) 1m / 3.28 feet from clear lens.



With Lens Fresnels VERTICAL

E40-T4-MC 'S' Type Fixture CANDLE POWER LIGHT OUTPUT

with 250W / 120V Lamp (In open air) 1m / 3.28 feet from clear lens.

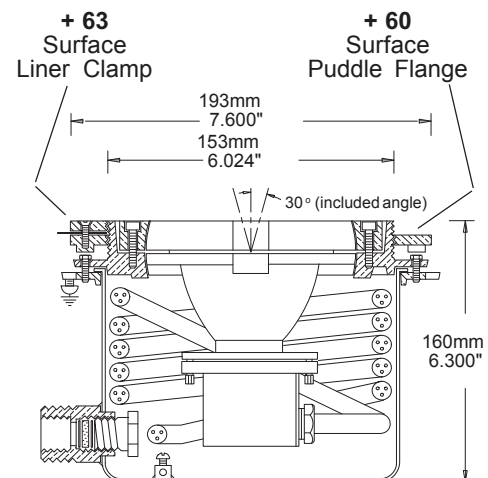
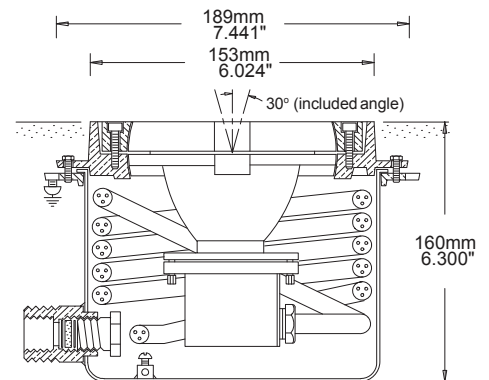
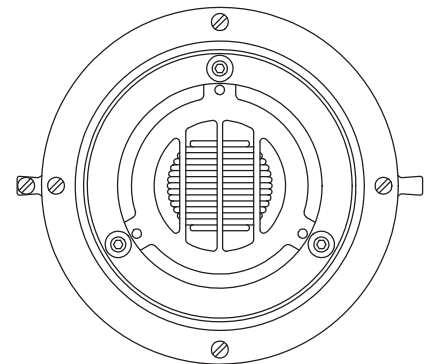


With Lens Fresnels HORIZONTAL

SUBMERSIBLE LIGHTFIXTURE

PEM E41

NICHE FIXTURE



PEM E100



E100-2



E100-3, Vertical



E100-3, Horizontal



E100-2 + / -01 Rockguard



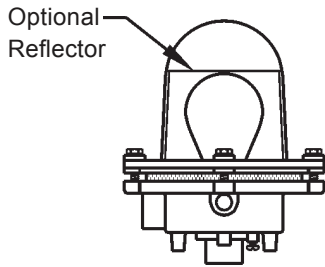
E100-2 + / -02 Reflector

[illegible]

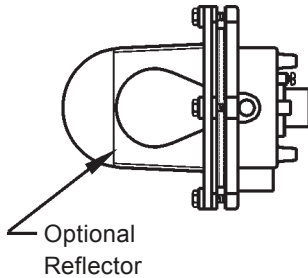
SUBMERSIBLE LIGHTFIXTURE **PEM E100**

POND LIGHT WITH FLANGED GLOBE

12 / 24 / 120 / 240V max. 100W
127mm / 5.000" x 96mm / 3.750"



E100-1



184mm
7.244"

150mm
5.906"



APPROVAL: CANADA, Max. 120V / 100W, Submerged

DESCRIPTION

PEM E100 Submersible lightfixture is designed for use as a submersible pond light to illuminate the water in a pond or wherever a sealed light source is required. An optional insertable half round polished stainless steel reflector can be adjusted to direct the light output or to hide the source of light. Clear Globe available only.

ELECTRICAL RATINGS:

Max. 100W / 240V For E100 = Max. 100W / 120V (E100 - CSA = 100W / 120V)

CONSTRUCTION OF LIGHTFIXTURE

HOUSING & FACERING:

Cast bronze (85/5/5/5 Copper Alloy). Stainless Steel fitted.

REFLECTOR (Optional)

Adjustable polished Stainless Steel within globe.

CABLE:

Approved for the purpose.

See Lightfixture Supplement for cable sizing

LAMP: OPTIONAL, (Long Life Traffic Signal Lamp.)

Medium Screw Base, E26 / 27 size,

Max. Length of lamp = 112 mm / 4.375"

LAMP HOLDER:

E27, Ceramic, medium screw socket with copper alloy screw shell.

GLOBE:

Cast glass, heat resistant and tempered. Available in clear only. (for colored illumination use colored lamps).

GLOBE GASKET:

Molded of approved material Single piece 'U' shape gasket.

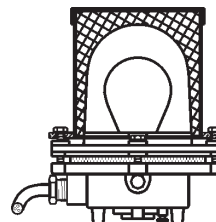
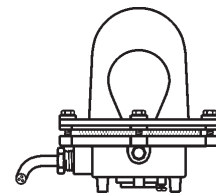
THERMAL CUT - OFF:

Not available for E100.

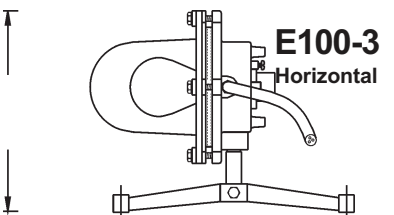
10-1, ROCKGUARD:

Sleeve Type. Made of expanded brass - Retrofittable.

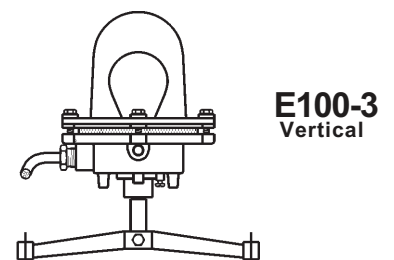
175mm
6.889"



184mm
7.244"



230mm
9.056"



254mm
10.000"



E150-1



E150-2



E150-3



E150 + B30



E150-1+B46-1



E150-1+B46-1, tilted

SERIAL	PEM	Web Index # 6 /	CABLE	W.
313-0000	Cat.	Catalog. Pages 328 - 329	Length & Size	Kg
FOR LAMPS AS INDICATED-(Not included)				
E150A-1, & 2 Require Lens Adapter for Flat Lens-- MOL = Main overall length of lamp				
Select cable size to suit lamp(s) wattage (Amperage)				
FIXTURE w. CONVEX LENS, NO STAND, WITH CORDSEAL, NO CABLE				
313-10011	E150A-1-01	PAR38,E26,E27, 12V to 240V, for 136mm MOL Lamp	For 3 X 1.5mm2 Cable	4.4
313-10021	E150A-2-01	R40 E26/E27, 12V to 240V, for 165mm MOL Lamp	For 3 X 1.5mm2 Cable	4.8
313-10031	E150A-3-01	R40,E26/E27,12V to 240V, for 185mm MOL Lamp	For 3 X 1.5mm2 Cable	5.2
313-10012	E150A-1-02	PAR38,E26,E27, 12V to 240V, for 136mm MOL Lamp	For 2 X 2.5mm2 Cable	4.4
313-10022	E150A-2-02	R40 E26/E27, 12V to 240V, for 165mm MOL Lamp	For 2 X 2.5mm2 Cable	4.8
313-10032	E150A-3-02	R40,E26/E27,12V to 240V, for 185mm MOL Lamp	For 2 X 2.5mm2 Cable	5.2
313-10013	E150A-1-03	PAR38,E26,E27, 12V to 240V, for 136mm MOL Lamp	For 2 X 4mm2 Cable	4.4
313-10023	E150A-2-03	R40 E26/E27, 12V to 240V, for 165mm MOL Lamp	For 2 X 4mm2 Cable	4.8
313-10033	E150A-3-03	R40,E26/E27,12V to 240V, for 185mm MOL Lamp	For 2 X 4mm2 Cable	5.2
313-10014	E150A-1-04	PAR38,E26,E27, 12V to 240V, for 136mm MOL Lamp	For 2 X 6mm2 Cable	4.4
313-10024	E150A-2-04	R40 E26/E27, 12V to 240V, for 165mm MOL Lamp	For 2 X 6mm2 Cable	4.8
313-10034	E150A-3-04	R40,E26/E27,12V to 240V, for 185mm MOL Lamp	For 2 X 6mm2 Cable	5.2
FIXTURE w. CONVEX LENS, NO STAND WITH CABLE				
313-10051	E150A-1-10	UL/cUL-PAR38, max.120V, for 136mm MOL Lamp with	2.7m, 9' x 16/3AWG	4.4
313-10053	E150A-2-10	UL/cUL-R40, max.120V, for 165mm MOL Lamp with	2.7m, 9' x 16/3AWG	4.9
313-10056	E150A-3-10	UL-cUL-R40, max.120V, for 185mm MOL Lamp with	2.7m, 9' x 16/3AWG	5.1
313-10061	E150A-1-11	PAR38, E26 max. 240V, for 136mm MOL Lamp with	2.7m, 3 x 1.5mm2	4.9
313-10062	E150A-1-12	PAR38, E26 max. 240V, for 136mm MOL Lamp with	5.0m, 3 x 1.5mm2	7.9
313-10063	E150A-1-13	PAR38, E26 max. 240V, for 136mm MOL Lamp with	10.0m, 3 x 1.5mm2	7.3
313-10064	E150A-1-16	PAR38, E26 12V - 24V, for 136mm MOL Lamp with	2.7m x 2 x 2.5mm2	5.5
313-10065	E150A-1-17	PAR38, E26 12V - 24V, for 136mm MOL Lamp with	5.0m x 2 x 4.0mm2	5.8
313-10066	E150A-1-18	PAR38, E26 12V - 24V, for 136mm MOL Lamp with	10.0m x 2 x 6.0mm2	8.7
313-30703	E150A-3-11	R40, E26, max.240V,300W, for185mm MOL Lamp with	2.7m, 3 x 1.5mm2	5.4
313-30705	E150A-3-12	R40, E26, max.240V,300W, for185mm MOL Lamp with	5.0m, 3 x 1.5mm2	6.4
313-30707	E150A-3-13	R40, E26, max.240V,300W, for185mm MOL Lamp with	10.0m, 3 x 1.5mm2	4.7
313-30901	E150C	PAR38,BR30,max.240V-150W, for 165mm MOL Lamp	1/2" NPS/BSP Conduit	8.1
ADD ON TO STANDARD FIXTURES				
391-0431	13-A	High Temp. Silicon Rubber Lens Gasket	See: Lightfixture Supplement	0.1
332-3043	+/-8/-03 (A)	Dichro Adapter for E 150-1 for Flat Lens w.Gasket	Or use E 150-2 or -3	0.9
391-2001	+/-30-2	#2A, 143mm Clear Flat Lens	See: Lightfixture Supplement	0.3
391-2000	+/-35-2-0000	#2, 143mm Flat Dichro Color Lens.	See: Lightfixture Supplement	0.3
350-0003	+/-07	Thermal Cut Off for 120V / 240V only	Factory wired only	0.1
350-0011	+/-2A	2. Cable entry, 240V, 3 x 1.5mm2 & 3 x 1.5mm2	Factory wired only	0.1
350-0013	+/-2B	2. Cable entry, 12V / 24V , 2 x 4.0mm2 & 2 x 2.5mm2	Factory wired only	0.1
350-0023	+/-2C	2. Cable entry, 12V / 24V , 2 x 6.0mm2 & 2 x 2.5mm2	Factory wired only	0.2
350-0033	+/-2D	2. Cable entry, 12V / 24V , 2 x 6.0mm2 & 2 x 4.0mm2	Factory wired only	0.3
334-3922	+/-05	Dichro Lens Shade	Clip On	0.9
350-0014	+/-10-2	Clip On Rockguard		0.8
350-0026	+/-10-6	Swing Up Rockguard		0.9
350-0029	+/-10-7	Lensguard (In Addition To Lightfixture Only)		0.7
350-0109	+/-B1	Tripod Stand, 40cm WD		1.4
350-0130	+/-B4	Ring Stand, 60cm WD		2.6
350-0290	+/-B7	Mounting Yoke		0.8
350-4011	+/-B46-1	Stainless Steel, Bronze Fitted Niche		6.5
350-4031	+/-B50A	Walk Over Stainless Steel, Bronze Fitted Niche		8.2
350-4330	+/-58-03	Tile Mask for Stainless Steel, Bronze Fitted Niche		2.3
350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted (E150-1 only)	Requires extra cable length	3.7
350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted (E150-1 only)	Requires extra cable length	3.7
350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted(E150-1 only)	Requires extra cable length	3.7
350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted(E150-1 only)	Requires extra cable length	3.7
350-2310	+/-B56-1	Slab Hanger		3.1
350-2320	+/-B56-1A	Slab Hanger with Locks		3.5
350-2410	+/-B57-1	Waterfall Slab Hanger		2.8
350-2420	+/-B57-1A	Waterfall Slab Hanger with Locks		3.2
385-3330	T301	Transformer 240V, 50Hz x 12V/24V, 300VA	IP23	2.2

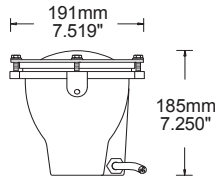


SUBMERSIBLE LIGHTFIXTURE

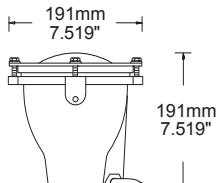
PEM E150

FOR USE WITH REFLECTOR LAMPS

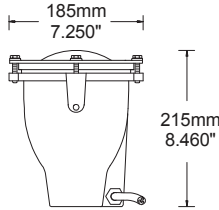
**E150A-1
(PAR38)**



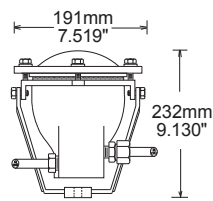
**E150A-2
(R40-120V)**



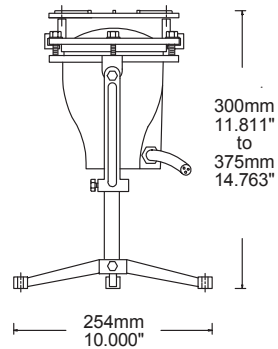
**E150A-3
(R40-240V)**



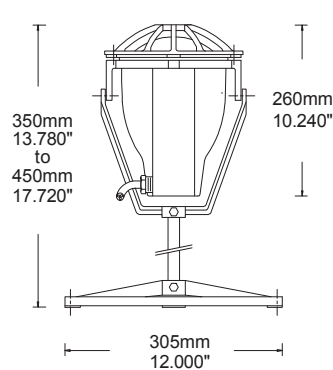
**E150A-2 + B7
(PAR38)**



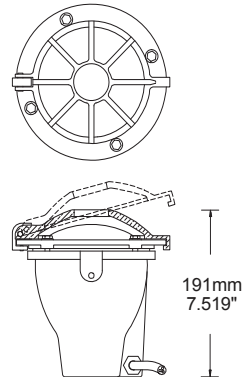
E150A-2 + 10-2 + B1



E150A-3 + 10-7 + B4



E150A-1 + 10-6



E150A/B1



E150A/-10-6/-B1

CONSTRUCTION OF LIGHTFIXTURE:

HOUSING & FACERING:

Cast bronze, Stainless Steel fitted.
Facerling states tightening torque for facerling bolts.

LAMP: OPTIONAL

Select E150 Fixture for lamp length (MOL) available.
Verify with supplier the availability of suitable Reflector Lamps.
See above and see opposite page.

LAMP HOLDER:

E27/E26, Ceramic screw socket with copper alloy screw shell and parts.

LENS: 143mm / 5.625" Diameter. See Lightfixture Supplement, Lenses

STANDARD: Convex cast glass, heat resistant and tempered.
Clear or 5 colors.

OPTIONAL: Convex Dichro Colour Lens, in 10 colours

OPTIONAL: Lens Shade for Dichro Colour Lens

LENS GASKET:

Molded, single piece 'U' shaped gasket of EDM for submerged use,
High temperature silicone rubber (optional) for dry use.

THERMAL CUT-OFF: OPTIONAL,

Specify /-07 Available for 120V-240V fixtures only.

CABLE: Approved for the purpose. Electrical cable with epoxy encapsulated compression type cable entry into housing. See Lightfixtures Supplements for cable sizing

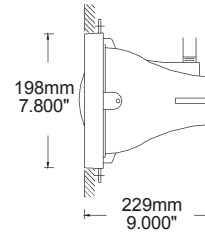
ROCKGUARD OR LENS GUARD: OPTIONAL

See opposite page

STAND OR MOUNTING ASSEMBLY: OPTIONAL.

See opposite page

E150-C (PAR38)



CAST INTO WALL FIXTURE
with 1/2" / 12mm conduit
connection. No Cable

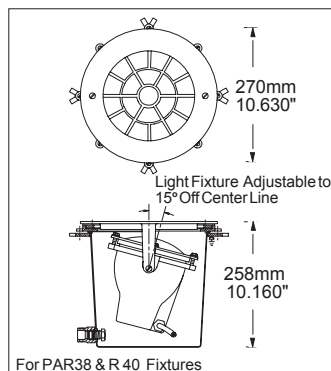
APPROVALS For Submerged use except E 150 C

cUL - 120 / 24 & 12V

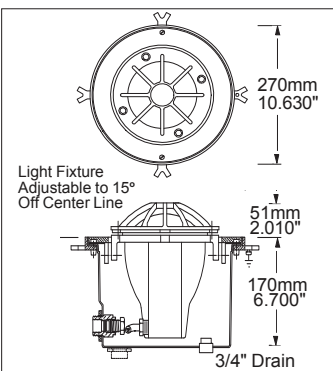
CS - 240 / 24 & 12V

UL - 120 / 24 & 12V

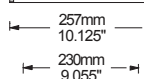
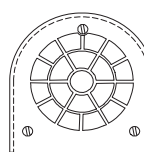
**E150-A1 & 2 + B50A
B50A WALK OVER WET NICHE**



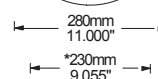
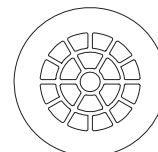
E150-A1 + 10-7 + B46



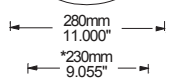
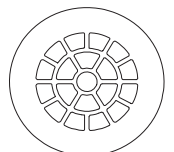
**E150A + B57
B57 Slab Hanger**



**E150A + B56-1
B56 on Pipe Stand
(10" PVC Pipe, by others)**



**E150A + B56
B56 Slab Hanger**



* Inside diameter of circular opening in floor or deck

PEM E200



E200A



E200A+10-2



E200A+10-6



E200A+10-7



E200A+B6-1



E200A+B1-S



E200A+B30-1

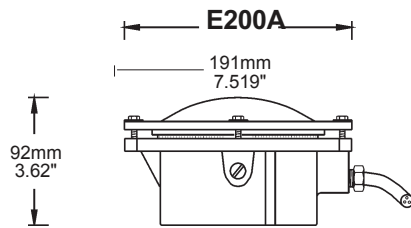
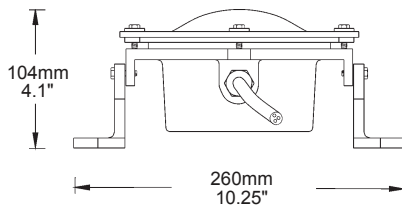


E200A+ B56-1

SERIAL	PEM		CABLE	W.
314-3000	Cat.		Length & Size	Kg
FOR LAMPS AS INDICATED (Not included)				
FIXTURE WITH CONVEX LENS, NO STAND, WITH CABLE				
314-3011	E200A-1-11	T4, MC, E11, 120V, UL/cUL max. 250W with	2.7mx16/3STWA/SOW	3.9
314-3013	E200A-1-13	T4, MC, E11, 240V, max. 250W with	2.7m x 3 x 1.5mm	3.9
314-3014	E200A-1-14	T4, MC, E11, 240V, max. 250W with	5.0m x 3 x 1.5mm	4.4
314-3015	E200A-1-15	T4, MC, E11, 240V, max. 250W with	10.0m x 3 x 1.5mm	5.4
314-3021	E200A-2-21	JC, Bi Pin G6.35 x 1, 0, 12V, 100W with	2.7m x 2 x 2.5mm2	3.9
314-3023	E200A-2-23	JC, Bi Pin G6.35 x 1, 0, 12V, 100W with	5.0m x 2 x 4mm2	4.4
314-3024	E200A-2-24	JC, Bi Pin G6.35 x 1, 0, 12V, 100W with	10.0m x 2 x 6mm2	6.3
314-3025	E200A-2-25	JC, Bi Pin G6.35 x 1, 0, 24V, 150W with	2.7m x 2 x 2.5mm2	3.9
314-3026	E200A-2-26	JC, Bi Pin G6.35 x 1, 0, 24V, 150W with	5.0m x 2 x 4mm2	4.4
314-3027	E200A-2-27	JC, Bi Pin G6.35 x 1, 0, 24V, 150W with	10.0m x 2 x 6mm2	6.3
ADD ON TO STANDARD FIXTURES				
391-2001	+/-30-2	#2A, 143mm Clear Flat Lens	See: Lightfixture Supplement	0.3
391-2000	+/-35-2-0000	#2, 143mm Flat Dichro Color Lens.	See: Lightfixture Supplement	0.3
334-3922	+/-05	Dichro Lens Shade	Clip On	0.3
350-0003	+/-07	Thermal Cut Off for 120V / 240 V only	Factory wired only	0.1
350-0014	+/-10-2	Clip On Rockguard		0.8
350-0026	+/-10-6	Swing Up Rockguard		0.9
350-0029	+/-10-7	Lensguard (Addition to Lightfixture Only)		0.7
350-0109	+/-B1	Tripod Stand, 40cm WD		1.4
350-0110	+/-B1S	Tripod Stand, 25cm WD		1.2
350-0130	+/-B4	Ring Stand, 60cm WD		2.4
350-0220	+/-B6-1	Mounting Brackets		1.1
350-0290	+/-B7	Mounting Yoke		0.8
350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length	3.7
350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length	3.7
350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length	3.7
350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length	3.7
350-0330	+/-B60-1	B60 Composite Niche	Requires extra cable length	4.5
350-4041	+/-B60-2	Bolt On Niche B 60 Rockguard		1.5
350-4042	+/-58-05	Tile Mask for B60 Niche		2.8
350-2310	+/-B56-1	Slab Hanger		3.1
350-2320	+/-B56-1A	Slab Hanger with Locks		3.5
350-2410	+/-B57-1	Waterfall Slab Hanger		2.8
350-2420	+/-B57-1A	Waterfall Slab Hanger with Locks		3.2
350-0733	+/-B23-6	Bracket for 6 Lights on 3" Pipe		1.0
350-0734	+/-B23-7	Bracket for 6 Lights on 4" Pipe		1.6
350-0742	+/-B23-2-1	16mm x 100mm Mounting Rod For B23		0.3
350-0742	T301	Transformer 240V, 50Hz x 12V/24V, 300VA	IP23	2.2



Low Profile Lightfixture with parabolic reflector
120V / 240V - max. 250W, 12V / 100W, 24V / 150W

**E200A + 10-2****E200A + B6-1**

APPROVALS
cUL, 120 / 24 & 12V
UL, 120 / 24 & 12V

**DESCRIPTION:**

Low profile submersible lightfixture with internal polished stainless steel parabolic reflector providing a vertical rectangular light output along the axis to the lamp base with maximum light concentration on center of solitary vertical spray effects. By using the stand assembly B8 the axis of the lightfixture can be rotated by 90 degrees providing a rectangular horizontal light output for spray rings or waterfalls.

CONSTRUCTION OF LIGHTFIXTURE:**FIXTURE HOUSING:**

Cast Bronze. Stainless Steel fitted.

REFLECTOR:

Stainless Steel highly polished parabolic surface beneath lamp and protective shielding over electrical components.

LAMP, Quartz Halogen - OPTIONAL

T4-MC: 120V / 240V, max. 250W, Mini Candelabra, E11 base.

JC: 12V or 24V 6.35-1.0 base, max. 100W - 12V & 150W - 24V.

LAMP HOLDER:

T4-MC: 120V / 240V fixtures: Ceramic, E11.

JC : G6.35-1.0, 2 Pin base.

LENS: 143mm / 5.625" Diameter. See Lightfixture Supplements

STANDARD: Convex cast glass, heat resistant and tempered.
Clear or 5 colors.

OPTIONAL: Convex Dichro Colour Lens, in 10 colours

OPTIONAL: Lens Shade for Dichro Colour Lens

LENS GASKET: Custom molded U shape.**DICHROIC LENS SHADE:** -0-5 (Required for clean (color) illumination).**ELECTRICAL CABLE:** Approved for the purpose with integral epoxy encapsulated, compression type cable entry into fixtures.

See Lightfixture Supplement for cable sizing

THERMAL CUT OFF:

Optional: For 120V & 240V fixtures only

MOUNTING OPTIONS: Optional

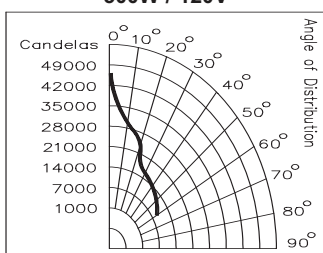
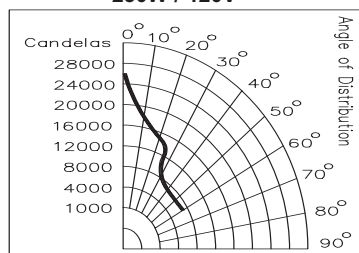
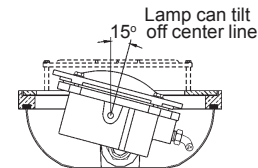
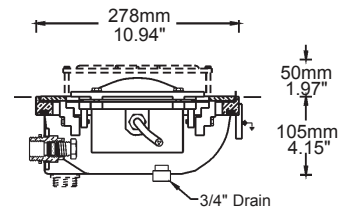
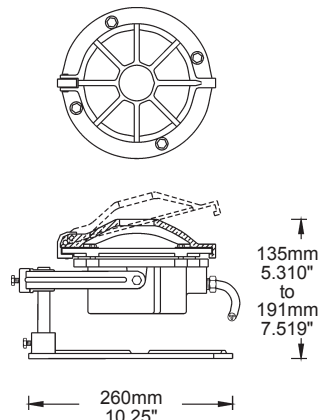
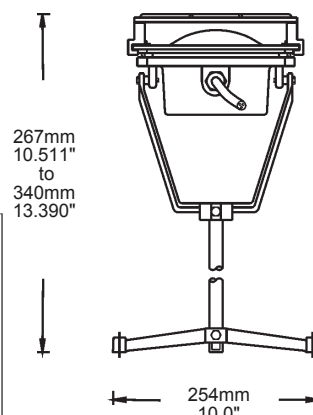
See opposite page.

Rockguards & Lensguard: Optional

See opposite Page

CANDLE POWER

measured in open air 2m / 6.56 feet from clear lens without rockguard.

500W / 120V**250W / 120V****E200A + B60-1 & 2**
Low Profile Niche**E200A + 10-2 + B1****E200A + 10-6 + B8A**

PEM E300



E300A



E300A+B6-1



E300A+B9+10-6



E300A+B9+10-6 (open)



E300A+B1S



E300A+B30-1



E300A+ B56-1

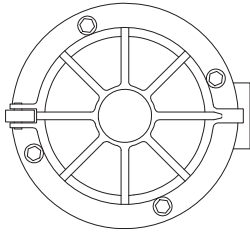
SERIAL	PEM	Web Site Index # 6 /	CABLE	W.
315-0000	Cat.	Catalog. Pages 332 - 333	Length & Size	Kg
		FOR LAMPs AS INDICATED (Not included)		
		FIXTURE, W. CONVEX LENS, NO STAND WITH CABLE		
315-1111	E300A-S-1-11	UL/cUL-For T4, MC, E11, 120V, max. 500W with cable	9' x 16/3STWA/SOW	3.5
315-1121	E300A-F-1-21	UL/cUL-For T4, MC, E11, 120V, max. 500W with cable	9' x 16/3STWA/SOW	3.7
315-1131	E300A-S-1-31	For T4, MC, E11, 240V, max. 500W with cable	2.7m x 3 x 1.5mm2	3.5
315-1132	E300A-S-1-32	For T4, MC, E11, 240V, max. 500W with cable	5.0m x 3 x 1.5mm2	4.5
315-1133	E300A-S-1-33	For T4, MC, E11, 240V, max. 500W with cable	10.0m x 3 x 1.5mm2	5.5
315-1141	E300A-F-1-41	For T4, MC, E11, 240V, max. 500W with cable	2.7m x 3 x 1.5mm2	3.7
315-1142	E300A-F-1-42	For T4, MC, E11, 240V, max. 500W with cable	5.0m x 3 x 1.5mm2	4.7
315-1143	E300A-F-1-43	For T4, MC, E11, 240V, max. 500W with cable	10.0m x 3 x 1.5mm2	5.7
315-1151	E300A-S-2-51	For JC, Bi Pin, max. 12v-100w / 24V-150W, with cable	2.7m x 2 x 2.5mm2	3.7
315-1152	E300A-S-2-52	For JC, Bi Pin, max. 12v-100w / 24V-150W, with cable	5.0m x 2 x 4mm2	4.4
315-1153	E300A-S-2-53	For JC, Bi Pin, max. 12v-100w / 24V-150W, with cable	10.0m x 2 x 6mm2	6.3
315-1161	E300A-F-2-61	For JC, Bi Pin, max. 12v-100w / 24V-150W, with cable	2.7m x 2 x 2.5mm2	3.7
315-1162	E300A-F-2-62	For JC, Bi Pin, max. 12v-100w / 24V-150W, with cable	5.0m x 2 x 4mm2	4.4
315-1163	E300A-F-2-63	For JC, Bi Pin, max. 12v-100w / 24V-150W, with cable	10.0m x 2 x 6mm2	6.3
315-1171	E300A-3-71	For AR111- max. 12v, 100W, with cable	2.7m x 2 x 2.5mm2	2.9
315-1172	E300A-3-72	For AR111- max. 12v, 100W, with cable	5.0m x 2 x 4mm2	3,1
315-1173	E300A-3-73	For AR111- max. 12v, 100W, with cable	10.0m x 2 x 6mm2	3.4
		ADD ON TO STANDARD FIXTURES		
391-2001	+/-30-2	#2A, 143mm Clear Flat Lens	See: Lightfixture Supplement	0.3
391-2000	+/-35-2-0000	#2, 143mm Flat Dichro Color Lens.	See: Lightfixture Supplement	0.3
332-3043	+/-0902	Flat Lens Adapter (Required for Flat Lenses)		0.9
391-0722	+/-05	Dichro Lens Shade	Clip On	0.9
350-0003	+/-07	Thermal Cut Off for 120V / 240V only	Factory wired only	0.1
350-0014	+/-10-2	Clip On Rockguard		0.8
350-0026	+/-10-6	Swing Up Rockguard		0.9
350-0029	+/-10-7	Lensguard (In Addition To Lightfixture Only)		0.7
350-0109	+/-B1	Tripod Stand, 40cm WD		1.4
350-0110	+/-B1S	Tripod Stand, 25cm WD		1.2
350-0130	+/-B4	Ring Stand, 60cm WD		2.4
350-0220	+/-B6-1	Mounting Brackets		1.1
350-0290	+/-B7	Mounting Yoke		0.8
350-0410	+/-B9	250mm Ring Stand , 184mm height		1.3
350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length	3.7
350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length	3.7
350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length	3.7
350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length	3.7
350-0330	+/-B60-1	B60 Composite Niche	Requires extra cable length	4.5
350-4041	+/-B60-2	Bolt On Niche B 60 Rockguard		1.5
350-4042	+/-58-05	Tile Mask for B30 & B60 Niche		2.8
350-2310	+/-B56-1	Slab Hanger		3.1
350-2320	+/-B56-1A	Slab Hanger with Locks		3.5
350-2410	+/-B57-1	Waterfall Slab Hanger		2.8
350-2420	+/-B57-1A	Waterfall Slab Hanger with Locks		3.2
350-0733	+/-B23-6	Bracket for 6 Lights on 3" Pipe		1.0
350-0734	+/-B23-7	Bracket for 6 Lights on 4" Pipe		1.6
350-0742	+/-B23-2-1	16mm x 100mm Mounting Rod For B23		0.3
350-0742	T301	Transformer 240V, 50Hz x 12V/24V, 300VA	IP23t	2.2



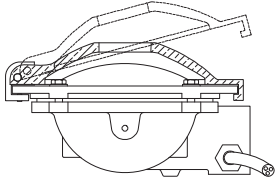
SUBMERSIBLE LIGHTFIXTURE **PEM E300**

Low Profile Lightfixtures with water cooled reflector
120V / 240V - Max. 500W , 12V / 100W , 24V / 150W

E300A + 10-6

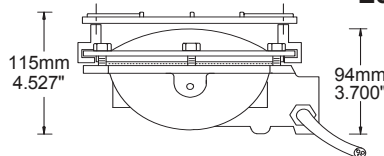


E300A + 10-6 + B9



115mm
4.527"

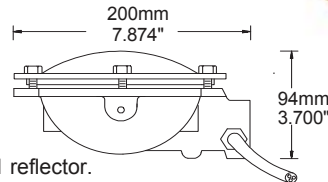
E300A + 10-2



E300A+B7S+B1S



E300A



E300A + B9



CONSTRUCTION OF LIGHTFIXTURE:

FIXTURE HOUSING & Facing : Cast Bronze. Stainless Steel fitted.

'S' and 'F' type fixtures have water cooled & chromed parabolic integral reflector.

'S' Option has polished reflector with concentrated beam output: Spot Light.

'F' Option has diffused output with better color rendition: Flood Light.

-36 Option has machined fit for AR111 / PAR36 Lamps.

LAMP, Quartz Halogen - OPTIONAL.

S & F, 120V / 240V, Max. 500W, Mini Candelabra, T4-MC / E11 base.

JC, 12V or 24V 6.35-1.0 base, Max. 100W / 12V & 150W / 24 V.

-36, 12V - AR111 max. 100W or PAR36 Lamps.

LAMP HOLDER:

For S & F, T4-MC: 120V / 240V fixtures: Ceramic, mini-candelabra E11

For JC fixtures: G 6.35-1.0, Bi Pin base.

For -36, Fork terminals for screw connection of lamps and (2) holding clamps.

LENS: 143mm / 5.625" Diameter. See Lightfixture Supplement, Lenses

STANDARD: Convex cast glass, heat resistant and tempered. Clear or 5 colors.

OPTIONAL: Convex Dichro Colour Lens, in 10 colours

LENS GASKET:

Custom molded 'U' shape made of approved material for the application.

LENS SHADE -0-5 :

OPTIONAL: Required for clean & even, dichro. color illumination.

THERMAL CUT OFF:

Optional integral to protect cable entry. 120V & 240V single cable fixtures only.

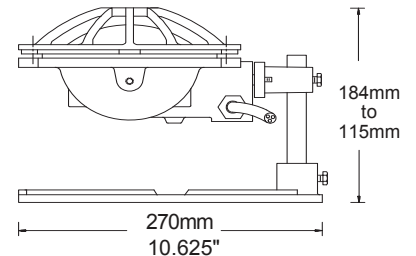
ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated, compression type cable entry in factory assembled fixtures.

See Lightfixture Supplement for cable sizing

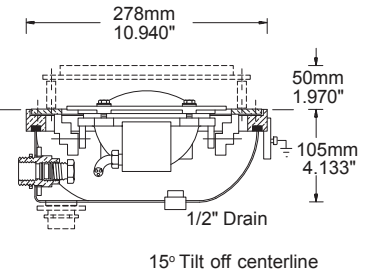
MOUNTING OPTIONS: Optional. See opposite Page

E300A+10-7+B9



E300A + B60-1-2

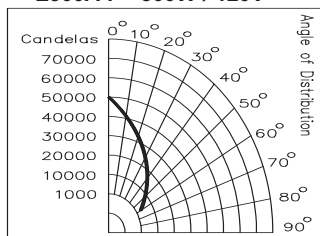
Low Profile Niche



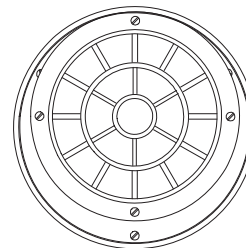
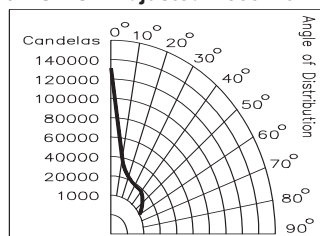
CANDLE POWER

measured in open air 2m / 6.56 feet from clear lens without rockguard.

E300A-F - 500W / 120V



E300A-S - SP Adjusted - 500W / 120V



PEM E500



SERIAL	PEM		CABLE	W.
316-20000	Cat.	FOR PAR 56 LAMPS (Not Included)	Length & Size	Kg
Select cable size to suit lamp wattage (Amperage)				
FIXTURE, CONVEX LENS, NO STAND, NO CABLE FOR:				
E500-2 Standard,external cordseal, cable sealing chamber				
316-20021	E500A-2-01	For PAR 56, 12/24V, max. 300W, 23 A.	For 2 x 4mm2 Cable	5.4
316-20022	E500A-2-02	For PAR 56, 12/24V, max. 300W, 30A.	For 2 x 6mm2 Cable	5.6
316-20023	E500A-2-03	For PAR 56, 240V, max. 500W, 5A	For 3 x 1.5mm2 Cable	5.3
E500-2 cUL, No cable, no cable sealing chamber				
316-20031	E500A-3-01	For PAR 56, 12/24V, max. 300W, 23 A.	For 2 x 4mm2 Cable	5.4
316-20032	E500A-3-02	For PAR 56, 12/24V, max. 300W, 30A.	For 2 x 6mm2 Cable	5.6
316-20033	E500A-3-03	For PAR 56, 240V, max. 500W, 5A	For 3 x 1.5mm2 Cable	5.3
FIXTURE, CONVEX LENS, NO STAND, WITH CABLE :				
316-20110	E500A-1-10	For 120V, max. 500W, cUL, UL	2.7m x 16/3 STWA/SOW	6.5
316-20120	E500A-1-20	For 12V, max. 300W, cUL, UL	2.7m x 10/3 STWA/SOW	9.8
316-20230	E500A-2-30	For 12/24V, max. 300W , 30A	2.7m x 2 x 4mm2	8.2
316-20240	E500A-2-40	For 12/24V, max. 300W , 30A	5.0m x 2 x 6mm2	11.9
316-20250	E500A-2-50	For 240V, max. 500W, 5A	2.7m x 3 x 1.5mm2	5.8
316-20260	E500A-2-60	For 240V, max. 500W, 5A	5.0m x 3 x 1.5mm2	6.3
ADD ON TO STANDARD FIXTURES				
350-0003	+/-07	Thermal Cut Off for single cable 120 / 240V only	Factory wired only	0.1
350-1111	+/-2A	2. Cable entry, 240V, 3 x 1.5mm2	Factory wired only	0.1
350-1113	+/-2B	2. Cable entry, 12V / 24V , 2 x 2.5mm2	Factory wired only	0.1
350-1123	+/-2C	2. Cable entry, 12V / 24V , 2 x 4mm2	Factory wired only	0.2
350-1133	+/-2D	2. Cable entry, 12V / 24V , 2 x 6mm2	Factory wired only	0.3
391-3001	+/-30-3	213mm Clear Flat Lens (0903 required)	See: Lightfixture Supplement	1.1
391-3000	+/-35-3-0000	213mm Flat Dichro Color Lens(0903 required)	See: Lightfixture Supplement	1.1
391-0723	+/-0903	Flat Lens Adapter (B4 or B4A Stand required)		2.8
334-3922	+/-05	Dichro Lens Shade	Clip On	0.9
350-0014	+/-10-3	Bolt On Rock Guard		1.5
350-0035	+/-10-8	Lensguard (In Addition To Lightfixture Only)		1.0
350-0026	+/-10-9	Swing Up Rock Guard		0.7
350-0290	+/-B7	B7 Yoke		0.8
350-0270	+/-B6-2	B6-2 Brackets	20cm W.D.	0.9
350-0109	+/-B1	B1, Tripod Stand	33 to 40cm WD	1.4
350-0200	+/-B4	B4 Ring Stand	33 to 40cm WD	2.6
350-0220	+/-B4A	B4A Ring Stand	0.5 / 1.0m WD	7.2
350-4062	+/-B69-1	B69-1 Stainless Steel Niche	Requires extra cable length	7
350-4660	+/-58-06	58-06 Tile Mask		2.3
350-4081	+/-B70A	Walk Over Stainless Steel Niche	Requires extra cable length	11.5
350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length	3.7
350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length	3.7
350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length	3.7
350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length	3.7
350-2510	+/-B76	B76 Walk OverSlab Hanger		5,4
350-2520	+/-B76A	B76A Slab Hanger With Locks		6,2
362-20030	PAR56 FSP, 240/500	Full Spot Lamp, 240V, 500W, 2000+ Hrs	GX16d	1
362-20051	PAR56 FSP, 24/250	Full Spot Lamp, 24V, 250W, 2000+ Hrs	Bolt on connection	1
385-3330	T301	Transformer 240V, 50Hz x 12v or 24V, 300VA	IP23	2.2



SUBMERSIBLE LIGHTFIXTURE **PEM E500**

For PAR 56 Lamps, 240V / 120V / 24V & 12V
WATTAGE & LIGHT OUTPUT AS PER LAMPS TO BE USED

E500A,Standard



E500A,UL



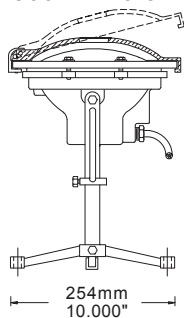
E500A,CSA



E500A-2



E500A + 10-9 + B1



318mm
12.500"
to
406mm
16.000"

254mm
10.000"



E500A + B1

E500A + B4



E500A + 10-3 + B1



318mm
12.500"
to
406mm
16.000"

254mm
10.000"



APPROVALS :
cUL, 120 / 24 & 12V
excluding -2
CS, 240 / 24 & 12V
excluding -2
UL, 120 / 24 & 12V
excluding -2

E500A + B70A
Walk Over Niche Mounting



246mm
9.680"



366mm
14.400"

CONSTRUCTION OF LIGHTFIXTURE:

HOUSING & FACERING:

Cast bronze (85/5/5/5 Copper Alloy) Stainless Steel fitted.
Facerling has cast in tightening torque specification for facerling bolts.

LAMPS: OPTIONAL. See Lightfixture Supplements, Lamps
120V & 240V, PAR56 Sealed Beam Lamps, Base (GX16d).
120V - 300W & 500W & 240V - 300W. 240V - 500W by PEM.
12V & 24V, PAR56 Sealed Beam Lamps, Screw Connections.
24V - 250W by PEM, 12V - 120W, 240W & 300W.

LAMP CONNECTOR:

120V / 240V : Ceramic Mogul PAR connector GX 16d (flat pins) with
high temperature leads and (3) holding clamps.
12V & 24V : Fork Connectors and (3) holding clamps.

LENS: 213mm / 8.375" Diameter. See Lightfixture Supplement, Lenses
STANDARD: Convex cast glass, heat resistant and tempered.
Clear or 5 colors.

OPTIONAL: Convex Dichro Colour Lens, in 10 colours

OPTIONAL: Lens Shade for Dichro Colour Lens

LENS GASKET:

Custom molded U shape made of material approved for the application.

THERMAL CUT - OFF: OPTIONAL, See opposite page

Factory installed integral thermal cut off for 240V, 120V, 24V & 12V.

CABLE:

Approved for the purpose electrical cable with epoxy encapsulated .
compression type cable entry into housing.

See Lightfixture Supplements for cable sizing

ROCKGUARD: OPTIONAL., See opposite Page

LENSGUARD, PART OF FACERING: OPTIONAL. See opposite Page

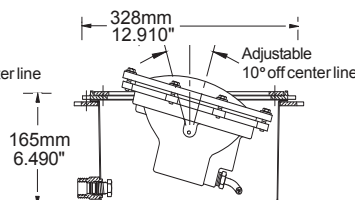
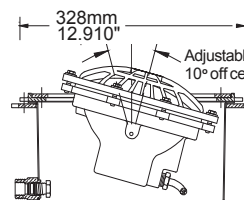
Must be used with vertical mounted Niche B69. Optional for all others.

STAND OR MOUNTING ASSEMBLY: OPTIONAL, See opposite Page

E500A + 10-8 + B69
Niche Mounting



E500A + B69
Niche Mounting





E600A



E600A+ 10-9



E600A-6



E600A+B30-1



E600A+B69A-1

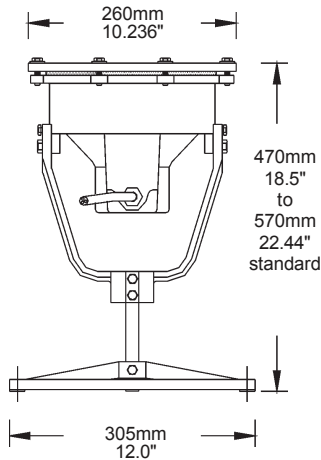


**E600A+B69A-1
tilted in Niche**

SERIAL	PEM	FOR LAMPS as Indicated (Not Included)	Cable	W.
317-0000	Cat.	4 Circuits = Multiple Conductor Cable	Length & Size	Kg
Select cable size to suit wattage (Amperage) of lamp(s)				
FOR PAR 56 SINGLE LAMP W. CORDSEAL, NO STAND, NO CABLE				
317-0111	E600A-1-1	For 12VAC, max. 300W	2 x 6.0mm ²	6.3
317-0211	E600A-1-2	For 24V, max. 250W	2 x 4.0mm ²	5.4
317-0311	E600A-1-3	For 240V, max. 500W	3 x 1.5mm ²	5.8
FOR PAR 56 SINGLE LAMP, NO STAND, WITH CABLE				
317-0211	E600A-2-1	For 12VAC, max. 300W	2.7m x 2 x 6.0mm ²	6.3
317-0214	E600A-2-1	For 12VAC, max. 300W	5.0m x 2 x 6.0mm ²	8.2
317-0221	E600A-2-3	For 24VAC, max. 250W	2.7m x 2 x 4.0mm ²	5.4
317-0231	E600A-2-5	For 240VAC, max. 500W	2.7m x 3 x 1.5mm ²	5.8
317-0241	E600A-2-6	For 12VAC, max. 300W, CSA, UL	2.7mx10/3 STWA/SOW	9.8
317-0251	E600A-2-7	For 24VAC, max. 250W, CSA, UL	2.7mx12/3 STWA/SOW	7.8
317-0261	E600A-2-8	For 120VAC, max. 500W, CSA, UL	2.7mx16/3 STWA/SOW	6.5
FOR 8 LAMPS W. CORDSEAL, , NO STAND, NO CABLE				
317-0311	E600A-3-1-1	For 8 x GU10, 240V, Single Circuit	3 x 1.5mm ²	5.3
317-0321	E600A-3-1-2	For 8 x GU10, 240V, Single Circuit	3 x 2.5mm ²	5.3
317-0411	E600A-3-4-1	For 8 x GU10, 240V, 4 Circuits	6 x 1.5mm ²	5.3
317-0421	E600A-3-4-2	For 8 x GU10, 240V, 4 Circuits	6 x 2.5mm ²	5.3
317-0511	E600A-4-1-1	For 8 x MR16, 12VAC, Single Circuit	2 x 2.5mm ²	5.3
317-0521	E600A-4-1-2	For 8 x MR16, 12VAC, Single Color Halogen	2 x 2 x 6.0mm ²	6.3
317-0651	E600A-4-4-1	For 8 x MR16, 12VAC, 4 Circuits	16/6 AWG(6/2.5mm ²)	5.3
317-0661	E600A-4-4-2	For 8 x MR16, 12VAC, 4 Circuits	16/9 AWG(9/2.5mm ²)	5.3
FIXTURE W. CONVEX LENS, NO STAND, WITH CABLE				
317-0311	E600A-5-1-1	For 8 x GU10, 240V, Single Circuit	2.7m x 3 x 1.5mm ²	5.3
317-0321	E600A-5-1-2	For 8 x GU10, 240V, Single Color	2.7m x 3 x 2.5mm ²	5.3
317-0411	E600A-5-4-3	For 8 x GU10, 240V, 4 Circuits	2.7m x 16/6 AWG	6.4
317-0421	E600A-5-4-4	For 8 x GU10, 240V, 4 Circuits	2.7m x 16/9 AWG	7.8
317-0511	E600A-6-1-1	For 8 x MR16, 12VAC, SingleCircuit	2.7m x 3 x 2.5mm ²	5.3
317-0541	E600A-6-1-2	For 8 x MR16, 12VAC, Single Circuit	2 x 2.7m x 2 x 6.0mm ²	8.9
317-0542	E600A-6-1-3	For 8 x MR16, 12VAC, Single Circuit	2 x 5.0m x 2 x 6.0mm ²	9.6
317-0651	E600A-6-4-1	For 8 x MR16, 12VAC, 4 Circuits	2.7m x 16/6 AWG	6.4
317-0661	E600A-6-4-2	For 8 x MR16, 12VAC, 4 Circuits	2.7m x 16/9 AWG	7.8
ADD ON TO STANDARD FIXTURES				
391-3001	30-3	213mm Flat Clear Lens.	See: Lightfixture Supplement	1.1
391-3021/30	35-3-21/30	213mm Flat Dichro Color Lens.	See: Lightfixture Supplement	1.1
334-3593	+/-0-5	(B) Dichro Lens Shade		1.2
334-3548	+/-2-1	Internal Holder for 161mm Color Filters		1.3
334-3548	+/-2-2	Internal Holder for 168mm Color Filters		1.3
350-0003	+/- -07	Thermal Cut Off for 120 / 240V only	Factory wired only	0.1
350-1111	+/- -2A	2. Cable entry, 240V, 3 x 1.5mm ²	Factory wired only	0.1
350-1113	+/- -2B	2. Cable entry, 12V / 24V , 2 x 2.5mm ²	Factory wired only	0.1
350-1123	+/- -2C	2. Cable entry, 12V / 24V , 2 x 4mm ²	Factory wired only	0.2
350-1133	+/- -2D	2. Cable entry, 12V / 24V , 2 x 6mm ²	Factory wired only	0.3
350-0014	+/- -10-3	Bolt On Rock Guard		1.5
350-0035	+/- -10-8	Lensguard (In Addition To Lightfixture Only)		1.0
350-0026	+/- -10-9	Swing Up Rock Guard		0.7
350-0220	+/- -B4A	B4A Ring Stand		7.2
350-4062	+/- -B69A-1	B69A-1 Stainless Steel Niche	Requires extra cable length	9.0
350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length	3.7
350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length	3.7
350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length	3.7
350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length	3.7
362-20030	PAR56 FSP	Full Spot Lamp, 240V, 500W, 2000+ Hrs	GX16d	1
362-20051	PAR56 FSP	Full Spot Lamp, 24V, 250W, 2000+ Hrs	Bolt on connection	1
385-3330	T301	Transformer 240V,50Hzx12V/24V,300VA	P23	2.2

PEM E 600A Lightfixtures
are available:

For custom fitting of
PAR 56 Size Strobes
or
PAR 56 HID Lamps
Please enquire.



E600A/-B4A

LAMPS: OPTIONAL

PAR LAMPS

See Lightfixture Supplements, Lamps

120V & 240V, PAR 56

Sealed Beam Lamps, Base (GX16d).

Max. 120V - 300W & 500W & 240V - 300W & 500W.

12V & 24V, PAR 56

Sealed Beam Lamps, Screw Connections.

Max. 24V - 250W, 12V - 120W, 240W & 300W.

MULTIPLE LED LAMPS

(8) MR 16, 12* VAC, 1.2W, 3W or 5W each

(8) GU 10, 12*VAC 1.2W, 3W or 5W each

* Outside North America: 12VAC, 24VAC or 24VDC

CONSTRUCTION OF LIGHTFIXTURE:

HOUSING & FACERING:

Cast bronze (85/5/5/5 Copper Alloy) with stainless steel fasteners.

Facering has cast in tightening torque specification for facering bolts.

CABLE:

Approved for the purpose electrical cable with epoxy encapsulated compression type cable entry into housing.

See Lightfixtures Supplements for cable sizing

LAMP CONNECTOR:

120V / 240V : Ceramic, Mogul PAR connector GX 16d (flat pins) with high temperature leads and (3) holding clamps.

12V & 24V : Fork Connectors and (3) holding clamps.

LENS: 213mm / 8.375" diameter. See Lightfixtures Supplement, Lamps

STANDARD: CONVEX LENS.

OPTIONAL:

FLAT DICHRO COLOR LENS. Choice of 10 colors.

INTERNAL DICHRO COLOR FILTER ADAPTER

TYPE -2-1, for 161mm / 6.338" diameter x 2+mm Dichro Color Filter.

TYPE -2-2, for 168mm / 6.614" diameter x 2+mm Dichro Color Filter.

For internally mounted dichro color filters by various manufacturers.

Must be high heat resistant & tempered. Adapter has 3 point filter holding.

LENS GASKET:

Custom molded U shaped made of material approved for the application.

DICHROIC LENS SHADE: -0-5 Required for clean color illumination.

THERMAL CUT - OFF: OPTIONAL

Factory installed integral thermal cut off for 240V, 120V, 24V & 12V.

ROCKGUARD: OPTIONAL. See opposite Page

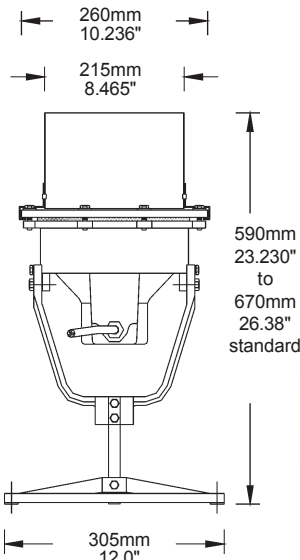
LENSGUARD, PART OF FACERING: OPTIONAL. See opposite Page

Must be used if required with Niche B69. Optional for all others.

STAND OR MOUNTING ASSEMBLY: OPTIONAL. See opposite Page



SUBMERSIBLE LIGHTFIXTURE **PEM E600** FOR DICHRO COLOR ILLUMINATION



E600A/-0-5/-B4A
Fixture w.dichro lens shade

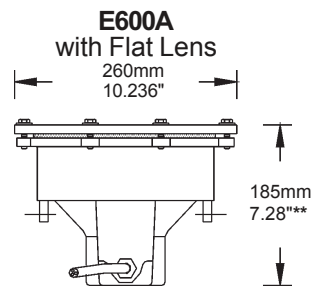
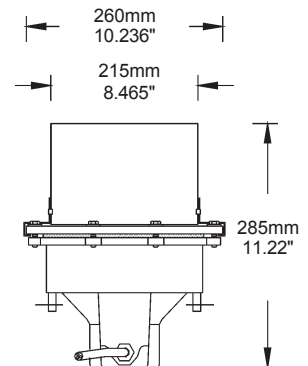


E600A/-B4A
Ring Stand Mounting
Higher Stands Optional & Extra

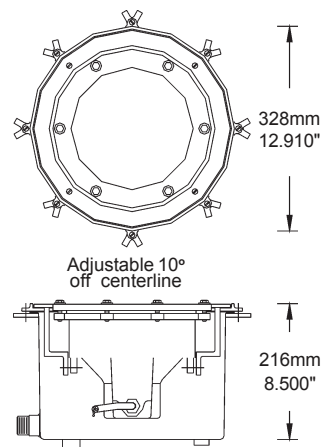


E600A/-0-5/-B4A
Ring Stand Mounting
Higher Stands Optional & Extra

E600A/-0-5
with Dichro Lens Shade

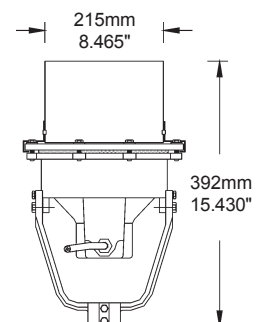


E600A/-B69A
Niche Mounting



** = For Convex
Lens add:
20mm / 0.75"

E600A/-0-5/-B7A
Yoke Mounting





E700A



E700A + 10-6



E700A + B30-1



E700A + B46-1



**E700A + B46-1
(tilted)**



E700A + B66-1

SERIAL	PEM	CABLE	W.
318-0000	Cat.	Length & Size	Kg
For Lamps as indicated (Not Included)			
FIXTURE, CONVEX LENS, NO STAND, NO CABLE			
318-3001	E700A-S-1-01-0	For T4, MC, E11, 240V, max 250W for 3 X 1.5mm2 Cable	No Cable 4.9
318-4001	E700A-F-1-01-0	For T4, MC, E11, 240V, max 250W for 3 X 1.5mm2 Cable	No Cable 4.9
318-5101	E700A-S-1-02-1	For JC, Bi Pin, G6.35-1, 12 / 24V, for 2 x 2.5mm2 Cable	No Cable 4.9
318-5102	E700A-S-1-02-2	For JC, Bi Pin, G6.35-1, 12 / 24V, for 2 x 4mm2 Cable	No Cable 5.1
318-5103	E700A-S-1-02-3	For JC, Bi Pin, G6.35-1, 12 / 24V, for 2 x 6mm2 Cable	No Cable 5.1
318-5201	E700A-F-1-02-1	For JC, Bi Pin, G6.35-1, 12 / 24V, for 2 x 2.5mm2 Cable	No Cable 5.1
318-5202	E700A-F-1-02-2	For JC, Bi Pin, G6.35-1, 12 / 24V, for 2 x 4mm2 Cable	No Cable 5.1
318-5103	E700A-F-1-02-3	For JC, Bi Pin, G6.35-1, 12 / 24V, for 2 x 6mm2 Cable	No Cable 5.1
FIXTURE, CONVEX LENS, NO STAND, WITH CABLE			
318-1100	E700A-S-2-1	UL/cUL-For T4, MC, E11, 120V, max. 250W with cable	9' x 16/3STWA/SOW 5.4
318-2100	E700A-F-2-1	UL/cUL-For T4, MC, E11, 120V, max. 250W with cable	9' x 16/3STWA/SOW 5.4
318-3002	E700A-S-2-4	For T4, MC, E11, 240V, max. 250W with cable	2.7m x 3 x 1.5mm2 5.6
318-3003	E700A-S-2-5	For T4, MC, E11, 240V, max. 250W with cable	5.0m x 3 x 1.5mm2 6.1
318-3004	E700A-S-2-6	For T4, MC, E11, 240V, max. 250W with cable	10.0m x 3 x 1.5mm2 7.1
318-4002	E700A-F-2-4	For T4, MC, E11, 240V, max. 250W with cable	2.7m x 3 x 1.5mm2 5.6
318-4003	E700A-F-2-5	For T4, MC, E11, 240V, max. 250W with cable	5.0m x 3 x 1.5mm2 6.1
318-4004	E700A-F-2-6	For T4, MC, E11, 240V, max. 250W with cable	10.0m x 3 x 1.5mm2 7.1
318-5102	E700A-S-3-4	JC, Bi Pin, G6.35-1, max. 12v-100w / 24V-150W, with	2.7m x 2 x 2.5mm2 5.6
318-5103	E700A-S-3-5	JC, Bi Pin, G6.35-1, max. 12v-100w / 24V-150W, with	5.0m x 2 x 4mm2 6.4
318-5104	E700A-S-3-6	JC, Bi Pin, G6.35-1, max. 12v-100w / 24V-150W, with	10.0m x 2 x 6mm2 8.1
318-5202	E700A-F-3-4	JC, Bi Pin, G6.35-1, max. 12v-100w / 24V-150W, with	2.7m x 2 x 2.5mm2 5.6
318-5203	E700A-F-3-5	JC, Bi Pin, G6.35-1, max. 12v-100w / 24V-150W, with	5.0m x 2 x 4mm2 6.4
318-5204	E700A-F-3-6	JC, Bi Pin, G6.35-1, max. 12v-100w / 24V-150W, with	10.0m x 2 x 6mm2 8.1
319-1000	E700C-S-5-4	240V, 250W Wall Fixture w. Niche	5m x 3 x 1.5mm2 12.1
319-2000	E700C-F-5-5	240V, 250W Wall Fixture w. Niche	5m x 3 x 1.5mm2 12.1
319-3000	E700C-S-5-6	12V, 100W or 24V, 150W Wall Fixture w. Niche	5m x 2 x 4mm2 14.5
319-4000	E700C-F-5-7	12V, 100W or 24V, 150W Wall Fixture w. Niche	5m x 2 x 6mm2 14.5
ADD ON TO STANDARD FIXTURES			
391-0431	13-A	High Temp. Silicon Rubber Lens Gasket	See: Lightfixture Supplement 0.1
391-2001	+/-30-2	#2A, 143mm Clear Flat Lens for -0902	See: Lightfixture Supplement 0.3
391-2000	+/-35-2-0000	#2, 143mm Flat Dichro Color Lens for -0902 .	See: Lightfixture Supplement 0.3
332-3043	+/-0902	Flat Lens Adapter (Required for Flat Lenses)	0.9
391-0722	+/-05	Dichro Lens Shade	Clip On 0.9
350-0003	+/-07	Thermal Cut Off for 120V / 240V only	Factory wired only 0.1
350-0014	+/-10-2	Clip On Rockguard	0.8
350-0026	+/-10-6	Swing Up Rockguard	0.9
350-0029	+/-10-7	Lensguard (In Addition To Lightfixture Only)	0.7
350-0109	+/-B1	Tripod Stand, 40cm WD	1.4
350-0130	+/-B4	Ring Stand, 60cm WD	2.4
350-0220	+/-B6-2	Mounting Brackets	2.0
350-0290	+/-B7	Mounting Yoke	0.8
350-0330	+/-B46-1	Stainless Steel Niche	Requires extra cable length 4.5
350-4330	+/-58-03	Tile Mask for B46-1 Niche	2.8
350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length 3.7
350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length 3.7
350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length 3.7
350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length 3.7
350-2310	+/-B56-1	Slab Hanger	3.1
350-2320	+/-B56-1A	Slab Hanger with Locks	3.5
350-2410	+/-B57-1	Waterfall Slab Hanger	2.8
350-2420	+/-B57-1A	Waterfall Slab Hanger with Locks	3.2
350-0733	+/-B23-6	Bracket for 6 Lights on 3" Pipe	1.0
350-0734	+/-B23-7	Bracket for 6 Lights on 4" Pipe	1.6
350-0742	+/-B23-2-1	16mm x 100mm Mounting Rod For B23	0.3
350-0742	T301	Transformer 240V, 50Hz x 12V or 24V, 300VA	IP23 2.2

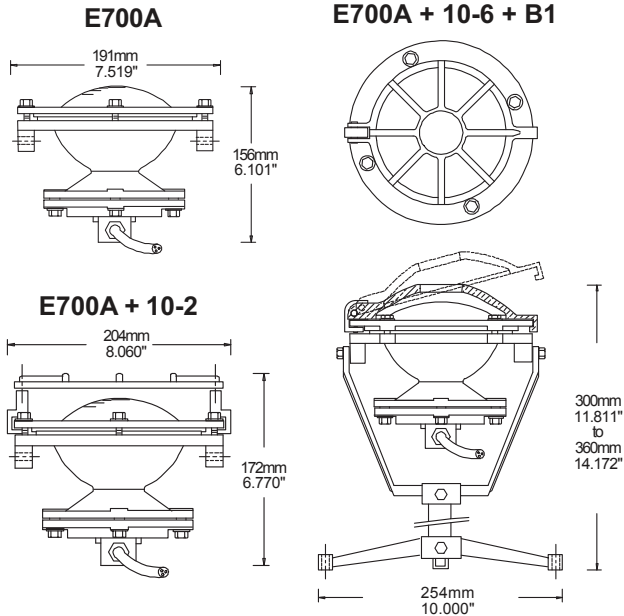


SUBMERSIBLE LIGHTFIXTURE

PEM E700

For Quartz Halogen Lamps

120V / 240V - max. 250W, 12V - 100W, 24V - 150W



APPROVALS
cUL & UL
120 / 24 & 12V

CONSTRUCTION OF LIGHTFIXTURE:

FIXTURE HOUSING & FACERING:

Cast Bronze. Stainless Steel fitted.

'S' and 'F' type fixtures have water cooled & chromed parabolic integral reflector.

'S' Option has polished reflector with concentrated beam output: Spot Light.

'F' Option has diffused output with good color rendition: Flood Light.

LAMP, Quartz Halogen - OPTIONAL

S & F, 120V / 240V. Max. 250W, Mini Candelabra, T4-MC / E11 base.

JC - S & F, 12V or 24V, 6.35-1.0 base. Max. 100W / 12V & 150W / 24 V.

LAMP HOLDER:

T4-MC: 120V / 240V fixtures: Ceramic, mini-candelabra E11 screw base.

JC -12V or 24V fixtures, 6.35-1.0 base.

LENS: 143mm / 5.625" Diameter. See Lightfixture Supplement, Lenses

STANDARD: Convex cast glass, heat resistant and tempered. Clear or 5 colors.

OPTIONAL: Convex Dichro Colour Lens, in 10 colours

OPTIONAL: Lens Shade for Dichro Colour Lens

LENS GASKET:

Custom molded U shaped made of material approved for the application .

THERMAL CUT OFF:

Optional integral to protect cable entry. Single cable, 120V -240V fixtures only.

ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated,

compression type cable entry in factory assembled fixtures

See Lightfixture Supplement for cable sizing

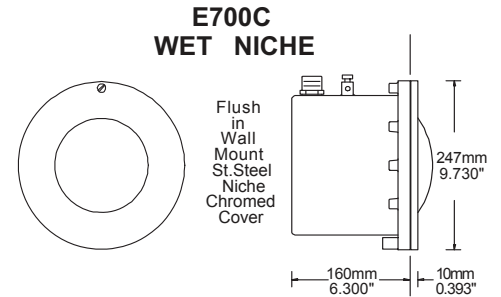
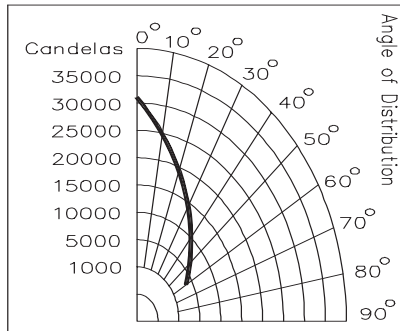
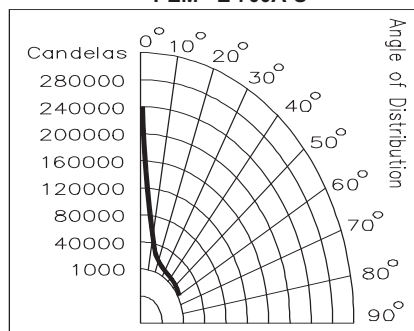
ROCKGUARD & LENS GUARD : OPTIONAL. See opposite Page

MOUNTING OPTIONS: OPTIONAL. See opposite Page

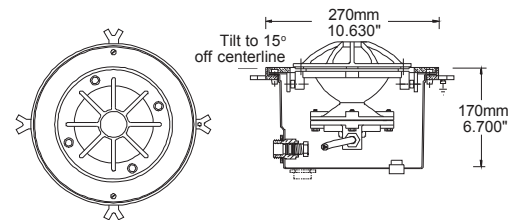
CANDLE POWER with 250W / 120V Lamp (In open air) 2m / 6.56 feet from clear lens.

PEM E 700A-S

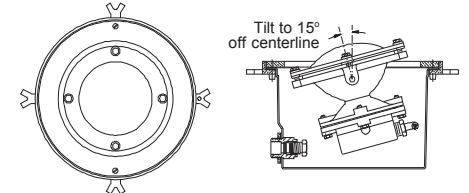
PEM E 700A-F



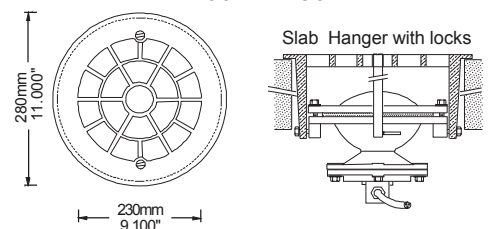
E700A + 10-7 + B46-1



E700A + B46-1



E700A + B56-1A



PEM E800



E800A



E800A + 10-6



E800A + B30-1



E800A + B46-1



E800A + B46-1 (tilted)



E800A + B56-1

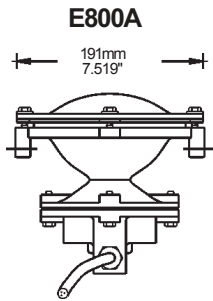
SERIAL	PEM		CABLE	W.
324-0000	Cat.		Length & Size	Kg
For LAMPS as indicated (Not Included)				
E800 FOR USE WITH 120V & 240V ONLY				
FIXTURE, CONVEX LENS, NO STAND, WITH CABLE				
324-1000	E800A-S-1	UL/cUL-T4, MC, E11, 120V, 500W with	2.7m/9' x 16/3STWA/SOW	6.0
324-2000	E800A-F-1	UL/cUL-T4, MC, E11, 120V, 500W with	2.7m/9' x 16/3STWA/SOW	6.1
324-5002	E800A-S-4	T4, MC, E11, 240V, 500W with	2.7m x 3 x 1.5mm2	6.0
324-5003	E800A-S-5	T4, MC, E11, 240V, 500W with	5.0m x 3 x 1.5mm2	6.5
324-5004	E800A-S-6	T4, MC, E11, 240V, 500W with	10.0m x 3 x 1.5mm2	7.5
324-7002	E800A-F-7	T4, MC, E11, 240V, 500W with	2.7m x 3 x 1.5mm2	6.1
324-7003	E800A-F-8	T4, MC, E11, 240V, 500W with	5.0m x 3 x 1.5mm2	6.7
324-7004	E800A-F-9	T4, MC, E11, 240V, 500W with	10.0m x 3 x 1.5mm2	7.7
ADD ON TO STANDARD FIXTURES				
391-2001	+/-30-2	#2A, 143mm Clear Flat Lens	See: Lightfixture Supplement	0.3
391-2000	+/-35-2-0000	#2, 143mm Flat Dichro Color Lens.	See: Lightfixture Supplement	0.3
332-3043	+/-0902	Flat Lens Adapter (Required for Flat Lenses)		0.9
391-0722	+/-05	Dichro Lens Shade	Clip On	0.9
350-0003	+/-07	Thermal Cut Off for 120V / 240V only	Factory wired only	0.1
350-0014	+/-10-2	Clip On Rockguard		0.8
350-0026	+/-10-6	Swing Up Rockguard		0.9
350-0029	+/-10-7	Lensguard (In Addition To Lightfixture Only)		0.7
350-0109	+/-B1	Tripod Stand, 40cm WD		1.4
350-0130	+/-B4	Ring Stand, 60cm WD		2.4
350-0290	+/-B7	Mounting Yoke		0.8
350-0330	+/-B46-1	Stainless Steel Niche	Requires extra cable length	4.5
350-4330	+/-58-03	Tile Mask for B46-1 Niche		2.8
350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length	3.7
350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length	3.7
350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length	3.7
350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length	3.7
350-2310	+/-B56-1	Slab Hanger		3.1
350-2320	+/-B56-1A	Slab Hanger with Locks		3.5
350-2410	+/-B57-1	Waterfall Slab Hanger		2.8
350-2420	+/-B57-1A	Waterfall Slab Hanger with Locks		3.2
350-0733	+/-B23-6	Bracket for 6 Lights on 3" Pipe		1.0
350-0734	+/-B23-7	Bracket for 6 Lights on 4" Pipe		1.6
350-0742	+/-B23-2-1	16mm x 100mm Mounting Rod For B23		0.3
350-0742	T301	Transformer 240V, 50Hzx12V/24V,300VA	IP23	2.2



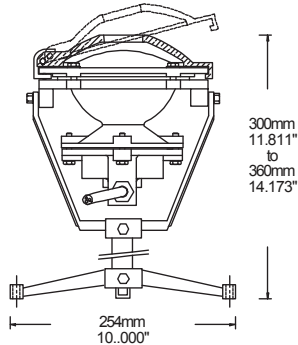
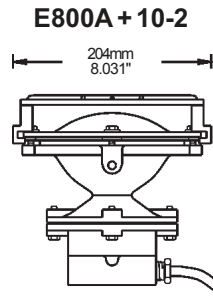
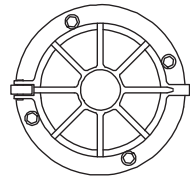
SUBMERSIBLE LIGHTFIXTURE

PEM E800

Submersible Lightfixture with water cooled parabolic reflector
for Quartz Halogen Lamps - 120V / 240V, 400W- 500W



E800A + 10-6 + B1



E800A + B4



E800A + B1

APPROVALS
cUL - UL

CONSTRUCTION OF LIGHTFIXTURE:

FIXTURE HOUSING:

Cast Bronze. Stainless Steel fitted.

'S' and 'F' type fixtures have water cooled & chromed parabolic integral reflector.

'S' Option has polished reflector with concentrated beam output: Spot Light .

'F' Option has diffused output with better color rendition: Flood Light.

LAMP, Quartz Halogen - OPTIONAL.

S & F , 120V / 240V, 400w - 500W, Mini Candelabra, T4-MC / E11 base .

LAMP HOLDER:

T4-MC: 120V / 240V fixtures: Ceramic, mini-candelabra E11 screw base.

LENS: 143mm / 5.625" Diameter. See Lightfixture Supplement, Lenses

STANDARD: Convex cast glass, heat resistant and tempered. Clear or 5 colors.

OPTIONAL: Convex Dichro Colour Lens, in 10 colours

OPTIONAL: Lens Shade for Dichro Colour Lens

LENS GASKET:

Custom molded U shaped made of material approved for the application.

THERMAL CUT OFF:

Optional integral to protect cable entry, single cable fixtures only.

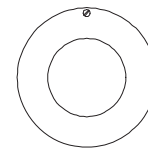
ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated compression type cable entry in factory assembled fixtures.
See Lightfixture Supplement for cable sizing

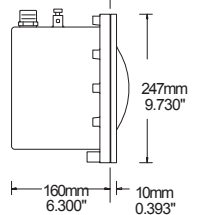
ROCKGUARD & LENS GUARD : OPTIONAL. See opposite Page

MOUNTING OPTIONS: OPTIONAL. See opposite Page

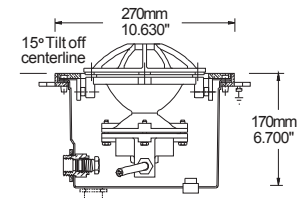
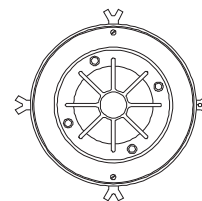
E800C WET NICHE



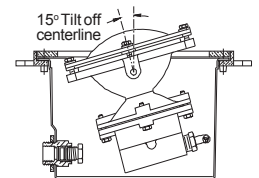
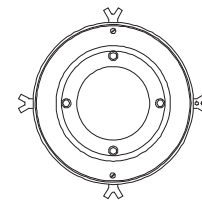
Flush in
Wall
Mount
St. Steel
Niche
Cover



E 800A +10-7 + B46-1

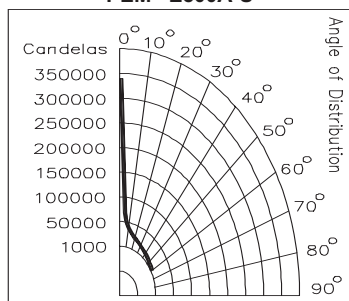


E 800A + B46-1

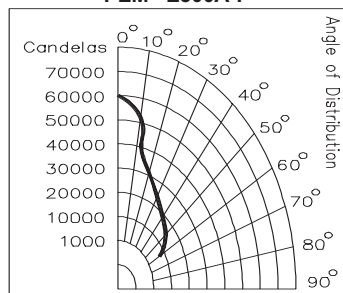


CANDLE POWER with 500W / 120V lamp (In open air) 2m / 6.56 feet from clear lens.

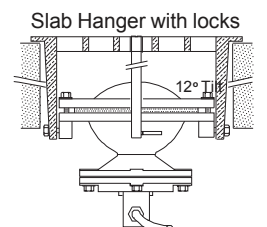
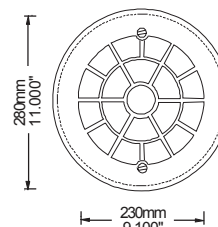
PEM E800A-S



PEM E800A-F



E800A + B56-1A



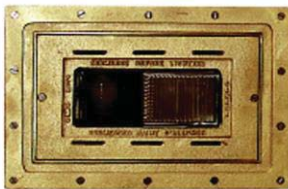
PEM E900



E910 & E950



E910 & E950 + 10-4



E910 & E950 + 63

SERIAL	PEM		CABLE	W.
327-0000	Cat.		Length & Size	Kg
		For LAMP AS INDICATED (Not Included)		
		E910 FIXTURE WITH CABLE		
327-1010	E910-1-1	UL-A19, max. 120V, 100W, MOL 113mm with	15' x 16/3 AWG	9.3
327-1020	E910-1-2	cUL-A19, max. 120V, 100W, MOL 113mm with	15' x 16/3 AWG	9.3
327-1032	E910-1-3	A26 / 27, max. 240V, 100W, MOL 113mm with	5.0 m x 3 x 1.5mm2	9.3
327-1033	E910-1-4	A26 / 27, max. 240V, 100W, MOL 113mm with	10.0m x 3 x 1.5mm2	10.4
327-1042	E910-1-5	A26 / 27, max. 24, 100W, MOL 113mm with	5.0m x 2 x 2.5mm2	9.3
327-1052	E910-1-6	A26 / 27, max. 12V, 60W, MOL 113mm with	5.0m x 2 x 2.5mm2	9.3
		E950 FIXTURES WITH CABLE		
327-4010	E950-1-1	UL-T4, MC, E11, 120V, max. 250W with	15' x 16/3 AWG	9.3
327-4020	E950-1-2	cUL-T4, MC, E11, 120V, max. 250W with	15' x 16/3 AWG	9.3
327-4032	E950-1-3	T4, MC, E11, 240V, max. 250W with	5.0m x 3 x 1.5mm2	9.7
327-4033	E950-1-4	T4, MC, E11, 240V, max. 250W with	10.0m x 3 x 1.5mm2	10.6
327-4042	E950-1-5	JC, Bi Pin, max.12V-100W , 24V-150W with	5.0m x 2 x 2.5mm2	9.7
		ADD ON TO STANDARD FIXTURES		
350-0003	+/-07	Thermal Cut Off for 120 / 240V only	Factory wired only	0.1
350-0020	+/-10-4	Rockguard		0.7
350-4172	+/-63	Surface Liner Clamp		2.1
385-3330	T301	Transformer 240V, 50Hz x 12V or 24V, 300VA	IP23	2.2



UL LISTED SUBMERSIBLE LIGHTFIXTURE

PEM E900

IN - WALL LIGHT

E910 / E950 + 10-4

Top View



APPROVALS
cUL - UL

Side View



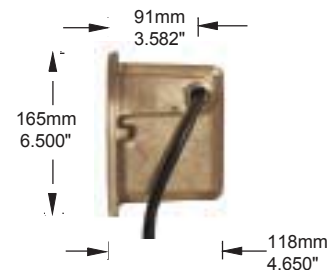
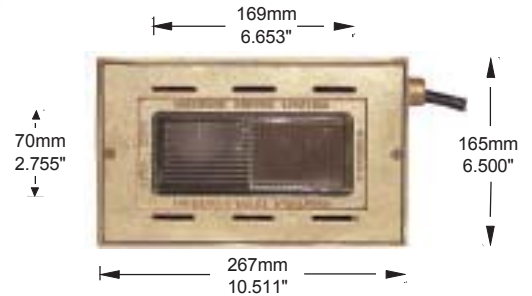
E910 / E950 + 63



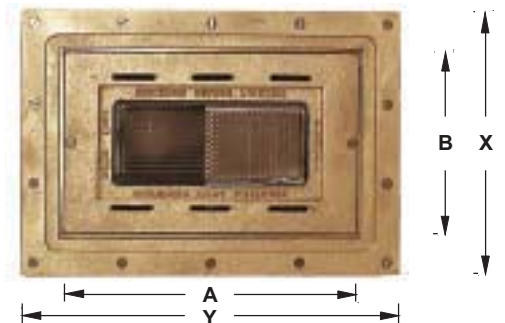
E910/E950



E910/E950



**E910 / E950 + 63, SURFACE
WATERPROOFING LINER CLAMP**



Waterproofing Dimensions:

A	267mm / 10.515"
B	165mm / 6.500"
C	123mm / 4.840"
X	225mm / 8.858"
Y	329mm / 12.950"

CONSTRUCTION OF LIGHTFIXTURE

NICHE:

Standard niche is of cast bronze. Stainless Steel fitted.

LIGHTFIXTURES:

E910 Fixtures are for pond illumination with standard long life E26 / E27 lamps.

E950 Fixtures are for water feature illumination with quartz halogen lamps.

LENS:

Clear cast glass, heat resistant and tempered fresnel lens with 3 different embedded directional output prisms that permit 3 different light outputs from the same fixture, adjustable after installation of niche.

The fixtures are normally shipped with light output **15 degrees DOWN**.

By rotating the fixture in the niche a **15 degrees UP** light output is achieved.

By turning only the lens upside down a **55 degrees HORIZONTAL** light output is achieved.

LENS GASKET: Custom made U shaped made of material approved for the purpose.

LAMPS: Optional

E910: A19 - E 27 Med. Screw Base, Long Life, Max.100 / 116 Watts, Traffic. Signal Type lamp, with maximum M.O.L. = 113mm / 4.437" x D.F. = 62mm / 2.437".

E950: Quartz Halogen, 120V / 240V, Max. 250W, T4, MC, E11 base .

E950-JC: Max. 12V / 100W or 24V / 150W Quartz Halogen Lamp: G6.35 -1.0.

LIGHT FIXTURE HOUSING & FACEPLATE :

Cast bronze . Stainless Steel fitted.

REFLECTOR:

Corrosion and heat resistant Stainless Steel reflector and protective shielding over electrical components.

ELECTRICAL CABLE:

Approved for the purpose with integral, epoxy encapsulated, compression type cable entry into housing.

See Lightfixture Supplement for cable sizing

LAMP HOLDER:

E910: A19 - E 27 Med. Screw Base

E950: Quartz Halogen, T4, Mini-Candelabra, E11 base.

E950-JC: Quartz Halogen Bi Pin: G6.35 -1.0 .

THERMAL CUT - OFF:

OPTIONAL for 120V -240V only.

ROCKGUARD:

OPTIONAL .See opposite Page

ELECTRICAL CONDUIT CONNECTION:

STANDARD : 3/4" NPT/BSP

OPTIONAL: J13 - 5: internal conduit cordseal with 3/4" & 1/2" NPT/ BSP threaded conduit connection.

WATERPROOFING OPTIONS: OPTIONAL and EXTRA

Puddle flange membrane and liner clamps are made of cast bronze solder sealed to outside of wet niche . Stainless Steel fitted. See opposite Page.

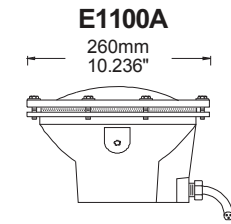
	SERIAL	PEM		CABLE	W.
	329-0000	Cat.		Length & Size	Kg
	FOR PAR 64, max. 1000W, 120V LAMPs (not Included)				
	E 1100 FIXTURE W. CONVEX LENS, NO STAND, NO CABLE				
	329-4001	E1100A-01	PAR64, 240V with 3x 1.5mm2 cordseal	No Cable	8.6
	329-4011	E1100A-02	2 x 120V at 240V w.2x 3 x 1.5mm2 cordseals	No Cable	8.7
	E 1100 FIXTURE W. CONVEX LENS, NO STAND, WITH CABLE				
	329-1001	E1100A-1-1	PAR64, 120V, max. 1000W, UL	2.7m (9') x 16/3	9.1
	329-1002	E1100A-1-2	PAR64, 120V, max. 1000W, UL	2.7m (9') x 12/3	9.1
	239-1005	E1100A-1-3	PAR64, 120V, max. 1000W, cUL	2.7m (9') x 16/3	9.1
	329-4002	E1100A-1-5	PAR64, 120/240V, max. 1000W	2.7m x 3 x 2.5mm2	9.1
	329-4003	E1100A -1-6	PAR64, 120/240V, max. 1000W	5.0m x 3 x 2.5mm2	9.6
	329-4012	E1100A-2-5	For pairing of 2x120V on 240V with -1-5/6 above	2.7m x 3 x 1.5mm2	9.2
	329-4013	E1100A-2-6	For pairing of 2x120V on 240V with -1-5/6 above	5.0m x 3 x 1.5mm2	9.7
	In-fixture cable pairing in factory only, otherwise in-junction box pairing				
	For custom cable size, length & pairing please enquire				
		ADD ON TO STANDARD FIXTURES			
	391-3001	+/-30-3	213mm Clear Flat Lens	See: Lightfixture Supplement	1.1
	391-3000	+/-35-3-0000	213mm Flat Dichro Color Lens	See: Lightfixture Supplement	1.1
	391-0724	+/-0904	Flat Lens Adapter, Requires B4A Yoke/Stand		3.2
	359-0000	+/- -9 / -94(D)	Dichro Lens Shade (Clip On)		0.5
	350-1111	+/- -2A	2. Cable entry, 3x1.5mm2 or 3x2.5mm2 cable	(2 x 120V Lamps on 240V)	0.1
	350-0003	+/- -07	Thermal Cut Off for single 120 / 240V only	Factory wired only	0.1
	350-0014	+/- -10-3	Bolt On Rock Guard		3.0
	350-0026	+/- -10-9	Swing Up Rock Guard		2.0
	350-0035	+/- -10-8	Lensguard (In Addition To Lightfixture Only)		3.5
	350-0290	+/- -B7	Yoke		1.0
	350-0295	+/- -B7A	Heavy Duty Yoke (For Flat Lens Adapter)		2.1
	350-0270	+/- -B6-2	B6-2 Brackets		2.0
	350-0140	+/- -B2	B2, Tripod Stand	33 to 40cm Water Depth	2.2
	350-0200	+/- -B4	B4 Ring Stand	33 to 40cm Water Depth	3.5
	350-0220	+/- -B4A	Heavy Duty B4A Ring Stand	0.5 / 1.0m Water Depth	4.5
	350-4062	+/- B69-1A	B69A-1 Stainless Steel Niche	Requires extra cable length	9.5
	350-4660	+/- -58-06	58-06 Tile Mask		2.3
	350-4081	+/- -B70A	B70A Walk Over Stainless Steel Niche	Requires extra cable length	11.5
	350-2510	+/- B76	B76 Walk OverSlab Hanger	Requires extra cable length	6.5
	350-2520	+/- -B76A	B76A Slab Hanger w. locks		7.2
	350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length	3.7
	350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length	3.7
	350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length	3.7
	350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length	3.7



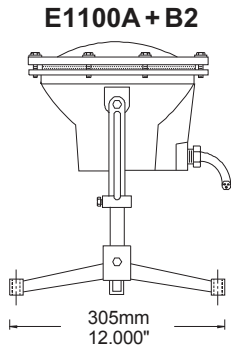
SUBMERSIBLE LIGHTFIXTURE

PEM E1100

**PAR 64 Lamps, 1000W - 120V & 1KW - 240V
12 VAC SPECIALTY OR MULTIPLE LAMPS**



E1100A



E1100A+B2



**E1100A-0904-05-B4A
with Dichro Lens Adapter,
Lens & Lens Shade**

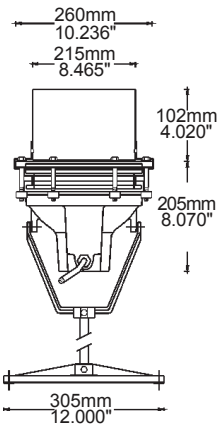


**E1100A-0904-B4A
with Dichro Lens Adapter & Lens**

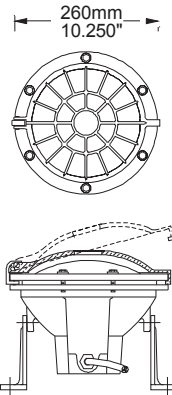


E1100A/B2

**E1100A
/-DICHRO+ B4A**



E1100A + B6-2 + 10-9

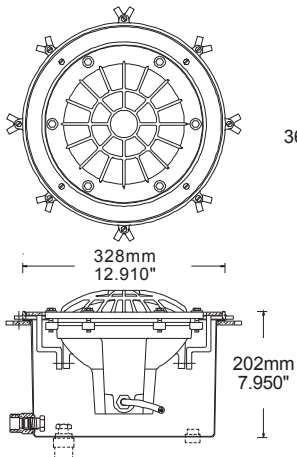


APPROVALS
cUL & UL, 120V, 1000W
CS, 240V, 1KW.

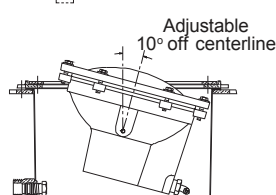
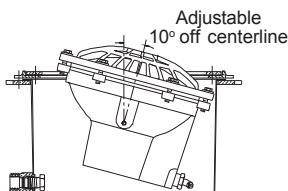
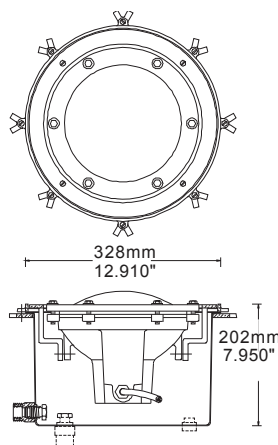
**E1100A + B70A
Walk Over Niche Mounting**



**E1100A + 10-8 + B69A
IN FLOOR / WALL NICHE**



**E1100A + B69A
IN FLOOR / WALL NICHE**



CONSTRUCTION OF LIGHTFIXTURE:

HOUSING & FACERING:

Cast bronze (85/5/5/5 Copper Alloy). Stainless Steel fitted. Facing has cast in tightening torque specification for facering bolts.

LAMPS: OPTIONAL

PAR 64, max. 120V & 240V, 1000W, Sealed Beam Lamps, Base (GX16d)

LAMP CONNECTOR:

120V / 240V : Ceramic, Mogul PAR connector GX 16d (flat pins) with high temperature leads.

LAMP HOLDING: Lamp is held by (3) spacing clips under lens gasket

LENS: 213mm / 8.375" diameter.

See Lightfixture Supplement, Lenses

STANDARD: Convex clear or in 5 colors.

OPTIONAL:

CONVEX DICHRO COLOR LENS, Choice of 10 colors.

ADAPTER -0904 required for Flat Lens. Not for use with niche B70A.

Cast bronze. Stainless Steel fitted with silicon rubber gasket.

Requires stand assembly B4A to carry added weight.

Increases installation height of B 69A niche mountings.

FLAT CLEAR LENS. FLAT DICHRO COLOR LENS, Choice of 10 colors.

DICHROIC LENS SHADE: -0-5 Required for clean (color) illumination.

LENS & LENS ADAPTER GASKETS:

Custom molded U shaped made of high temperature silicone rubber.

CABLE:

See Lightfixture Supplement for cable sizing

Approved for the purpose electrical cable with epoxy encapsulated compression type cable entry into housing.

THERMAL CUT - OFF: OPTIONAL.

Factory installed integral thermal cut off for 120V

ROCKGUARD: OPTIONAL. See opposite Page

LENSGUARD, PART OF FACERING: OPTIONAL. See opposite Page

Must be used if required with Niche B69A. Optional for all others.

STAND OR MOUNTING ASSEMBLY: OPTIONAL.

PEM SUBMERSIBLE LIGHTFIXTURES & WIRING DEVICES

GENERAL INSTALLATION INFORMATION AND SUGGESTIONS

All PEM Submersible Lightfixtures that are supplied in assembled form from our Canadian plant are factory tested as follows:

Full Operational Functions

Dielectric isolation to 1300 Volts AC

Water tightness to 45 PSI, 3.1 bar internal air pressure to comply with IP-68, 1.0m submergence requirement

Approvals are as indicated. For verification consult factory.

IMPORTANT !

The designers, installers and end-users utilizing the equipment described in this catalogue assume full responsibility for compliance with all applicable codes, requirements and / or ordinances and their applicable articles, intents and consequences. Where the manufacturer / supplier of the equipment described herein does **not** control its application or usage he assumes no responsibility whatsoever for any or all consequences arising out of the application, installation and / or usage of this or any other associated equipment or materials.

ALL THREADED ELECTRICAL CONNECTIONS MUST HAVE SUITABLE WATER TIGHT THREAD SEALANT APPLIED BEFORE JOINING. ALL UNDERWATER JUNCTION BOXES & CONDUITS IN A POOL SHALL BE SELF DRAINING IN A VISIBLE LOCATION OUTSIDE OF THE POOL

ALL ELECTRICAL INSTALLATIONS MUST CONFORM WITH ALL APPLICABLE LOCAL ELECTRICAL CODES.

The use of groundfault circuit interrupters / earth leakage protection is mandatory for all fountain installations.

The rate of protection varies from North America at 5MA to most other parts of the world at 30MA.

JOB SITE ASSEMBLY OF LIGHTFIXTURES:

Certain PEM lightfixtures are available outside of approval areas for job site assembly such as for chain lighting etc. The actual supplier and assembler must assume full responsibility in writing for these lightfixtures and electrical cable thus assembled as well as all consequences arising thereof, relieving the fixture manufacturer of all responsibilities whatsoever. The lightfixtures for Job Site Assembly are permanently coded on fixture so as to identify assembler / supplier and date of manufacture.

LAMPS:

No warranty applies for any lamp supplied by itself or as part of a fixture.

NOTE: Halogen Lamps are voltage sensitive. Best life expectancy is at 95/98% of rated voltage as indicated on lamp. **Overvoltage** will shorten life expectancy dramatically. **Undervoltage**, below approximately 80-90% of rated voltage of lamp, the lamps might turn black, but will clean themselves, when operated at full rated voltage for a short time.

For Low Voltage cable length sizing to maintain operating voltage: **See voltage losses for 12V & 24 Cables**

TIGHTENING TORQUES

Ratchet Torque Wrenches with inch pound (inch / Lbs) or equivalent metric rating are mandatory for tightening of lightfixture facing bolts or leakage & lens breakage might occur .

(Ratchet Type Torque Wrenches for inch pound (inch / Lbs) torques have 3/8" / 95mm square drive, socket is 7/16" / 10.1mm) , always tighten facing bolts evenly cross wise (1 & 3 , 2 & 4 or 1 & 4 , 3 & 6 , 5 & 2 etc) .

All Fixtures except D145, E40 & E41 have on the facing the tightening torque for facing bolts of : 29 inch / lbs / 3.28 Nm

PEM D145 requires the indication on the facing for tightening torque of facing bolts of : 5 inch / lbs / 0.57 Nm

PEM E40 & E41 Face ring bolts require the tightening torque of facing bolts of : 20 inch / lbs / 2.26 Nm

PEM E40 & E41 Base to Body bolts require the tightening torque of : 30 inch/lbs / 3.39 Nm

Tightening Torque for integral cordseal plugs with neoprene seal : 50 Ft / Lbs / 68 Nm

Tightening Torque for J14 Cordseal Compression Nuts : 7.5 Ft / Lbs / 10.2 Nm (.935" Wrench)

Tightening Torque for J14 Cordseal Bases : 60 Ft / Lbs / 82 Nm (.875" Wrench)

(For Cordseals use Ratchet Type Torque Wrenches for foot pound (Ft / Lbs) torques that have 1/2" / 12.7mm square drive with a claw wrench. Never use this type of wrench for facing bolts!)

Torque Wrenches are sold upon request, please enquire

OZONE ADVISORY:

As there is a possibility of damage caused by free OZONE in the water (introduced by direct discharge of gaseous ozone into pool water) to the organic components of submerged electrical equipment such as the cable, gaskets and seals in contact with the water so purified. No warranty can be given for equipment thus damaged.

SEAWATER / SALTWATER USAGE:

PEM Underwater Lightfixtures can be supplied in special construction for use in sea water (salt water) at extra cost.

For use in open to ocean lagoons to maximum 15m / 49.21' water depth. Certain PEM Underwater lightfixtures can be supplied with low voltage electrical field lens protection against certain marine growth such as barnacles. For such applications the electrical cable might have to be protected with flexible metal armor (could be by short lengths of stainless steel or plastic thin wall (light weight) tubing pieces threaded over the full length of the immersed cable). Please enquire stating water composition if possible.

PEM SUPPLEMENTS FOR PEM SUBMERSIBLE LIGHTFIXTURES

INDEX 2018

300 SECTION

SUPERSEDES

2008 - 1

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LENSES - GASKETS

#	PEM	DESCRIPTION
# 35-1, FLAT DICHROIC COLOR LENSES, 80mm (3.110") diam.		
391-1021	35-1-21	Primary Blue
391-1022	35-1-22	Primary Red
391-1023	35-1-23	Primary Green
391-1024	35-1-24	Deep Magenta
391-1025	35-1-25	Turquoise
391-1026	35-1-26	Cyan
391-1027	35-1-27	Medium Pink
391-1028	35-1-28	Orange
391-1029	35-1-29	Yellow
391-1030	35-1-30	Flame Red
# 35 - 2, FLAT DICHROIC COLOR LENSES, 143mm (5.625" diam.)		
391-2021	35-2-21	Primary Blue
391-2022	35-2-22	Primary Red
391-2023	35-2-23	Primary Green
391-2024	35-2-24	Deep Magenta
391-2025	35-2-25	Turquoise
391-2026	35-2-26	Cyan
391-2027	35-2-27	Medium Pink
391-2028	35-2-28	Orange
391-2029	35-2-29	Yellow
391-2030	35-2-30	Flame Red
# 30-3, FLAT DICHROIC COLOR LENSES, 213mm (8.375") diam.		
391-3021	35-3-21	Primary Blue
391-3022	35-3-22	Primary Red
391-3023	35-3-23	Primary Green
391-3024	35-3-24	Deep Magenta
391-3025	35-3-25	Turquoise
391-3026	35-3-26	Cyan
391-3027	35-3-27	Medium Pink
391-3028	35-3-28	Orange
391-3029	35-3-29	Yellow
391-2330	35-3-30	Flame Red
Flat Dichroic Color Lenses:		
A regular inventory is kept in stock - when out of stock		
Allow approx. 3 to 4 weeks for delivery ex works		
# 30-4, CONVEX DICHROIC COLOR LENSES		
Available for 143mm / 5.625" & 213mm / 8.375" size Lenses		
For Quotation provide size of Lens		
391-4021	35-4-21	Primary Blue
391-4022	35-4-22	Primary Red
391-4023	35-4-23	Primary Green
391-4024	35-4-24	Deep Magenta
391-4025	35-4-25	Turquoise
391-4026	35-4-26	Cyan
391-4027	35-4-27	Medium Pink
391-4028	35-4-28	Orange
391-4029	35-4-29	Yellow
391-4330	35-4-30	Flame Red
Convex Dichroic Color Lenses are custom made only		
Allow approx. 4 to 5 weeks for delivery ex works		
PEM Lens Shades must be used with convex dichro color lenses.		

#	PEM	DESCRIPTION
# 30 - 1, FLAT CLEAR LENSES, 80 mm (3.110") diam.		
391-1001	30 - 1	Clear, No Fresnels
# 30 - 2, FLAT CLEAR LENSES, 143mm (5.625") diam.		
391-2001	30 - 2	Clear
# 30-3, FLAT CLEAR LENSES, 213mm (8.375") diam.		
391-3001	30 - 3	Clear
# 14 - 1, CONVEX CLEAR LENSES, 80mm (3.110") diam.		
391-0214	14 - 1A	Clear, With Fresnels
391-0224	14 - 1B	Clear, No Fresnels
# 15 - 1, CONVEX COLOR LENSES, 80mm (3.110") diam.		
391-0251	15-1-1	Blue, With Fresnels
391-0252	15-1-2	Red, With Fresnels
391-0253	15-1-3	Green, With Fresnels
391-0254	15-1-4	Amber / Yellow, With Fresnels
391-0255	15-1-5	Turquoise, With Fresnels
# 14- 2, CONVEX CLEAR LENSES, 143mm (5.625") diam.		
391-0414	14 - 2	Clear
# 15 - 2, CONVEX COLOR LENSES, 143mm (5.625") diam.		
391-0451	15-2-1	Blue
391-0452	15-2-2	Red
391-0453	15-2-3	Green
391-0454	15-2-4	Amber / Yellow
391-0455	15-2-5	Turquoise
# 14- 3, CONVEX CLEAR LENSES, 213mm (8.375") diam.		
391-0514	14 - 3	Clear
# 15 - 3, CONVEX COLOR LENSES, 213mm (8.375") diam.		
391-0551	15-3-1	Blue
391-0552	15-3-2	Red
391-0553	15-3-3	Green
391-0554	15-3-4	Amber / Yellow
391-0555	15-3-5	Turquoise
SPECIALTY CLEAR LENSES		
Flat armored Lens, 143mm (5.625") diam. x 15mm thick		
391-0114	14-2-9	For C 131 & C 133
Rectangular lens with output fresnels		
391-0640	E900-14	For E910 & E950
Globe for pond light		
391-0310	E100-14	For E100
LENS GASKETS		
LENS SIZE		
MATERIAL		
391-0231	80mm (3.110")	H.T. Silicone Rubber
391-0330	E 100	EPDM
391-0430	143mm (5.625")	EPDM
391-0431	143mm (5.625")	H.T. Silicone Rubber
391-0530	213mm (8.375")	EPDM
391-0531	213mm (8.375")	H.T. Silicone Rubber
391-0630	E910 & E950	EPDM

Color Selection of Optional Flat, Dichro. Lenses PEM

Dichroic Color Lenses have a minimum loss of light



Optional PEM tempered Flat Dichroic Colour Lenses are available in 3 Lens Sizes:

The dichro color coating is on the inside of the lens, protected from water and surface abrasion.

PEM Dichroic Color Lenses are for submersible or dry use with PEM Lightfixtures and PEM Lens Gaskets.

Size #35-1-0000, 80mm / 3.110" diameter for: **C20, E40 & E41**

Size #35-2-0000, 143mm / 5.625" diameter for: **C131, C133, E150-1**

Size #35-3-0000, 213mm / 8.375" diameter for: **E600**

Lens Shades (Optional) are required to contain opposite prismatic stray colors around lenses

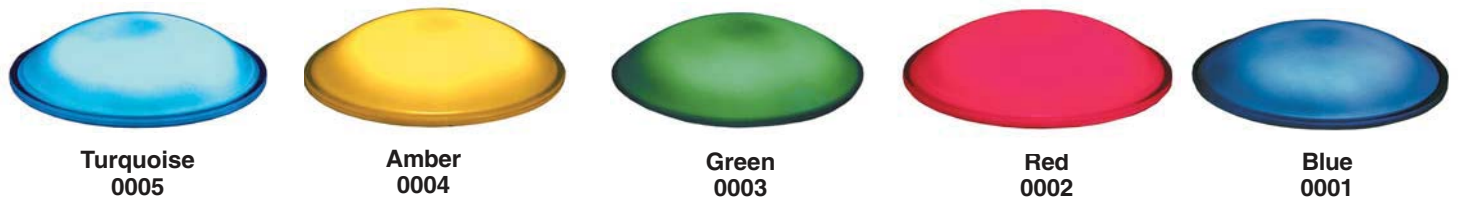
PEM Flat Dichroic Color Lenses for PEM Lightfixtures other than listed above, require special adapters which are listed with the fixtures.

PEM custom made Convex Dichroic Colour Lenses are available in 143mm & 213mm sizes on special order

These lenses can replace convex color lenses without adapter, however Lens Shades (Optional) are required to contain opposite prismatic stray colors around lenses. Please enquire at factory.

Color Selection of standard convex Lenses PEM

NOTE: Standard Convex Color Lenses, especially Blue & Green have light output loss up to 85% , Red color loses app. 50%
Dichroic Lenses only have a light output loss of 5% +/-.



Convex Color Lenses are available AT NO EXTRA CHARGE WHEN INCLUDED WITH PURCHASE OF FIXTURES.

Will fit all PEM Submersible Lightfixtures except D145, E100 & E900.

Lens Sizes : **Size #15-1 for C20, E40 & E41**

Size #15-2 for C131, C133, E150, E200, E300, E700 & E800

Size #15-3 for E 500, E600 & E1100

All Convex Lenses are tempered, for submerged or dry use with PEM Lightfixtures and PEM Lens Gaskets.

VOLTAGE DROPS (LOSSES) IN 24 V SUBMERSIBLE ELECTRICAL CABLE

Requires
Voltage
Increase

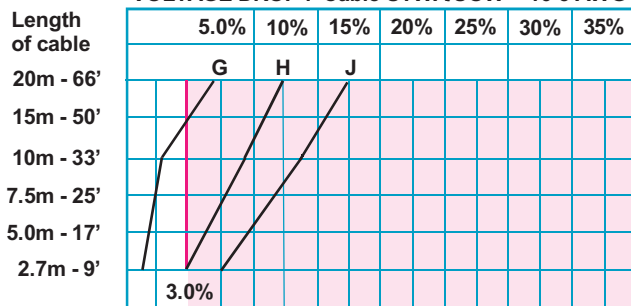
LAMPS tested:

#	Volts	Watts	Amperes
G	24	50	1.8
H	24	150	5.4
J	24	250	8.4

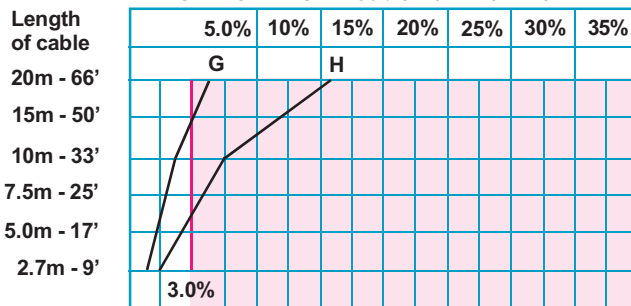
Voltage drops (Losses) in shaded areas require special attention as most Halogen Lamps might turn black on voltages reduced by 5% or more. To clean lamps operate for short period at full rated

3% = Permissible Voltage Drop (North America)
3 Wire Low Voltage Cable in North America,
2 Wire Low Voltage cable outside of North America

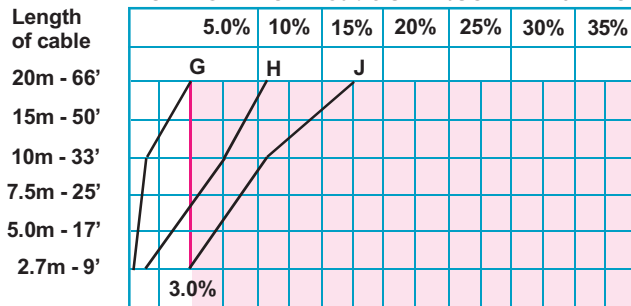
VOLTAGE DROP : Cable STWA/SOW - 16-3 AWG



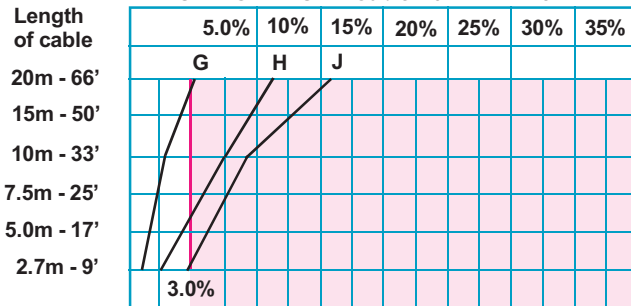
VOLTAGE DROP : Cable H0R7 - 3 x 1.5mm2



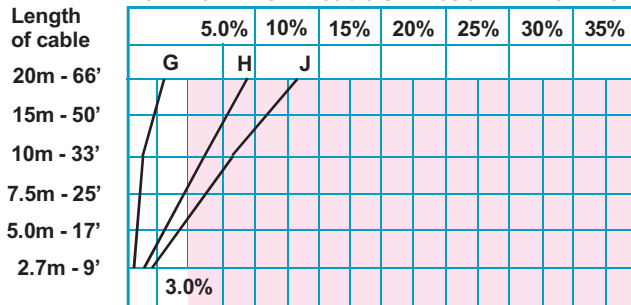
VOLTAGE DROP : Cable STWA/SOW - 14-3 AWG



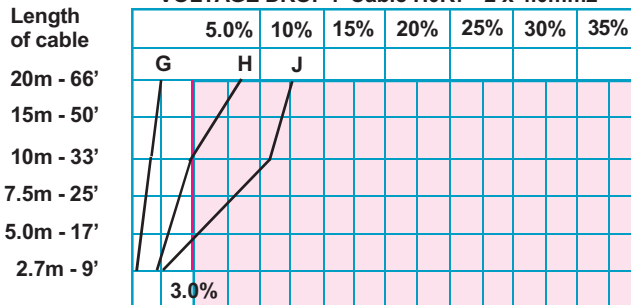
VOLTAGE DROP : Cable H0R7 - 2 x 2.5mm2



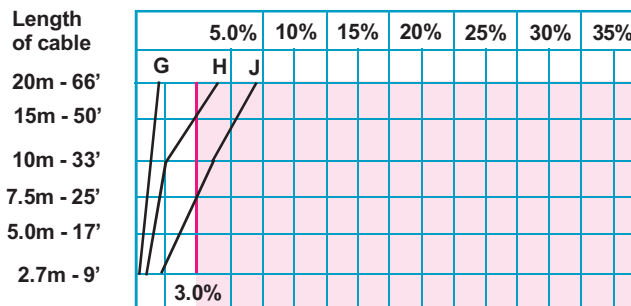
VOLTAGE DROP : Cable STWA/SOW - 12-3 AWG



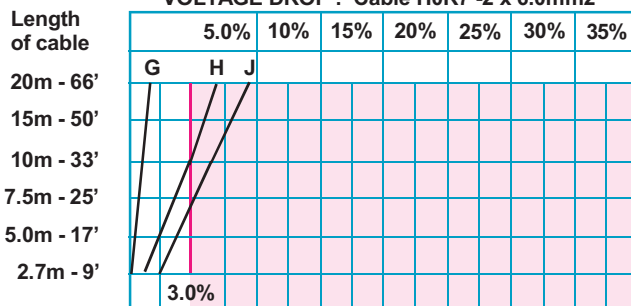
VOLTAGE DROP : Cable H0R7 - 2 x 4.0mm2



VOLTAGE DROP : Cable STWA/SOW - 10-3 AWG



VOLTAGE DROP : Cable H0R7 - 2 x 6.0mm2



Actual Voltage Drop Tests were conducted at 23 C Ambient air temperature with straight lengths of cable connected to a 120V x 12V - 1000 VA Transformer and lamp holder leads (where applicable) as utilized in PEM Submersible Lightfixtures.

To establish Amperes - Watts : Volts = Amperes

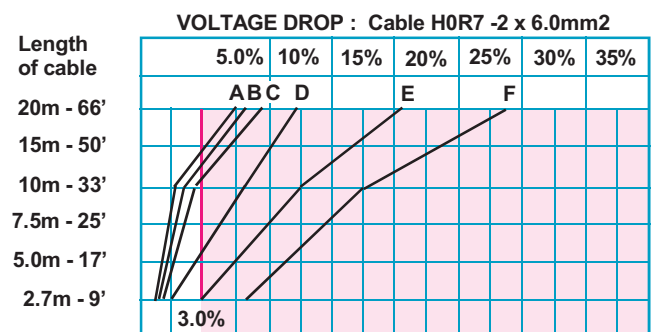
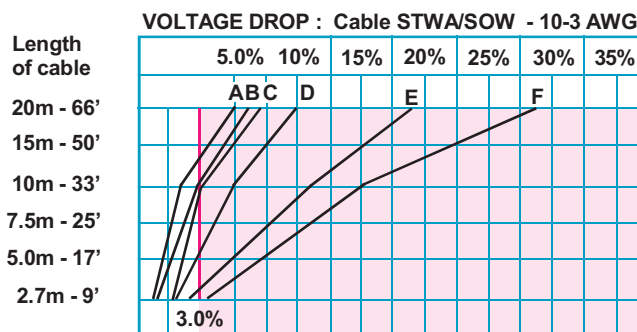
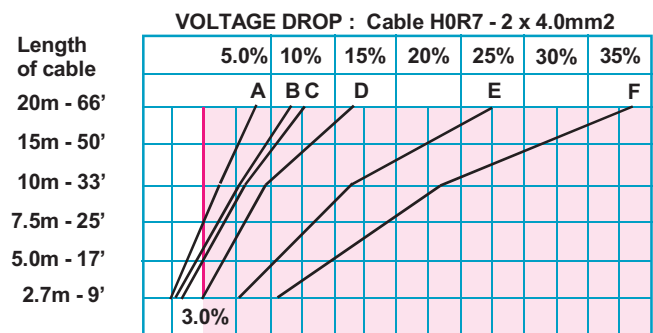
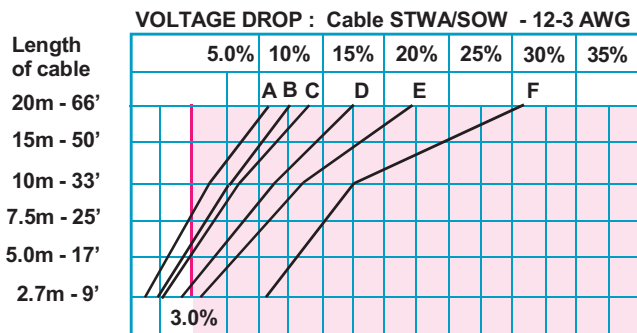
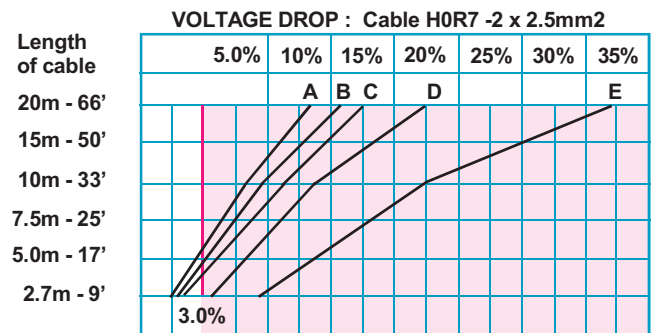
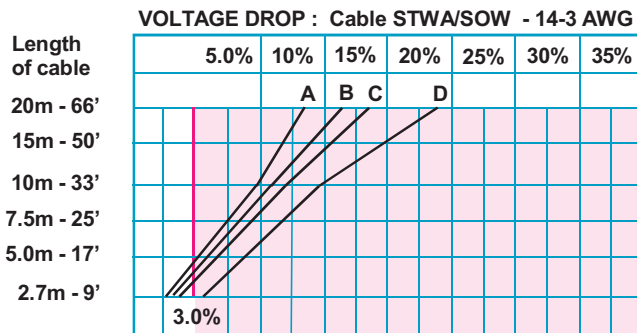
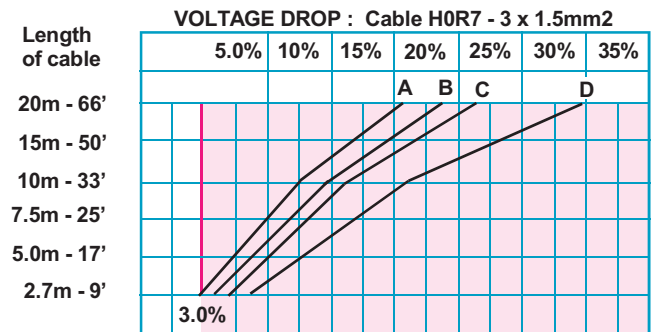
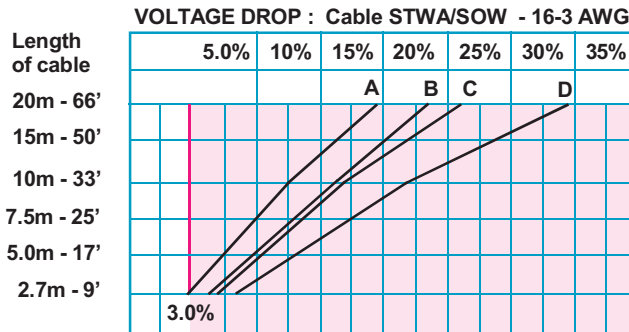
LAMPS tested:			
#	Volts	Watts	Amperes
A	12	50	4.5
B	12	65	5.5
C	12	75	6.1
D	12	100	8.8
E	12	240	13.7
F	12	300	24.4

VOLTAGE DROPS (LOSSES) IN 12 VAC SUBMERSIBLE ELECTRICAL CABLE

Requires
Voltage
Increase

- 3% = Permissible Voltage Drop (North America)
 3 Wire Low Voltage Cable in North America, Max. 15 VAC
 2 Wire Low Voltage cable outside of North America

Voltage drops (Losses) in shaded areas require special attention as most Halogen Lamps might turn black on voltages reduced by 5% or more, to clean lamps, operate for short period at full rated voltage.



Actual Voltage Drop Tests were conducted at 23 C Ambient air temperature with straight lengths of cable connected to a 120V x 12V - 1000 VA Transformer and lamp holder leads (where applicable) as utilized in PEM Submersible Lightfixtures.

To establish Amperes - Watts : Volts = Amperes

PEM PAR 56 FSP Lamps for Underwater Light Fixtures

Full Spot Projection Halogen Lamps

(Sealed beam lamps with Parabolic Aluminized Reflector)

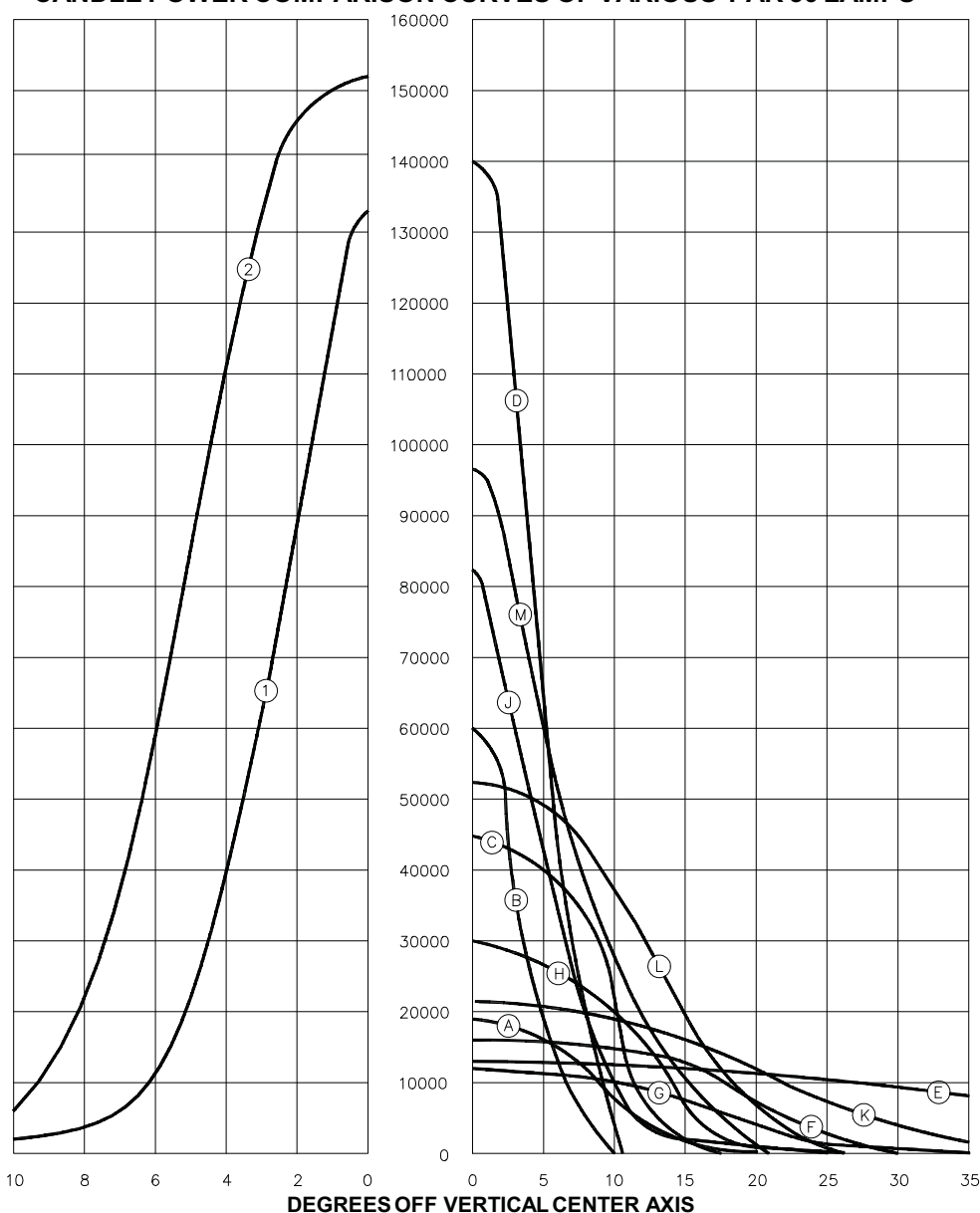


Screw-On Connections
24 Volts, 250W, 10.4 Amperes, 3000 Hrs + *,
PEM #362-2005



Mogul End Prong Connections
240 Volts, 500W, 2.5 Amperes, 3000 Hrs + *,
PEM #362-2003

CANDLE POWER COMPARISON CURVES OF VARIOUS PAR 56 LAMPS



Projection Patterns

FSP: Full Spot Projection

NSP: Narrow Spot Projection

MFL: Medium Flood Projection

WFL: Wide Flood Projection

PEM PAR 56 LAMPS:

1 240V, FSP, 500W

2 24V, FSP, 250W

G.E. 12V

A 12V, MFL, 120W

B 12V, NSP, 120W

C 12V, MFL, 240W

D 12V, VNSP, 240W

E 12V, WFL, 300W

PHILIPS 12V

F 12V, WFL, 300W

G.E. 120V

G 120V, WFL, 300W

H 120V, MFL, 300W

J 120V, NSP, 300W

K 120V, QWFL, 500W

L 120V, QMFL, 500W

M 120V, QNSP, 500W

Safety Transformers - T301

230V x 12V & 24V,
300VA (W),

As Per IP 23:

PEM #385-3330

* **Rated Average Life Hours** depend on rated supply voltage. **Over voltage** and high voltage spikes will shorten life hours. **Undervoltage** by more than 10% can result in halogen tubes turning black but by using rated voltage for approximately 30 minutes the tubes will clean themselves.

PEM LIGHTFIXTURE PARTS LAMP SPECIFICATIONS

PEM FIXTURES	C21-1-00	C21-1-61	D145	E40LV	E40-JC	E40-MC	E40-DW	E100	E150-1	E150--2	E150-3
	C21-2-10	C21-2-21		E41LV	E41-JC	E41-MC	E41-DW				
	C21-4-30	C21-3-28									
Type of Lamp(s)	MR 16	GU-10	PAR 38*	MR16	Bi-Pin	T4-MC	GU10	A19	PAR38*	R40*	R40*
Lamp Connection	GX 5.3	GZ-10	E26/27	GX 5.3	6.35-1	E-11	GZ-10	E26/27	E26/27	E26/27	E26/27
240V, max. Watts	-	50	150	-	-	250	50	100	250	300	-
120V, max. Watts	-	50	150	-	-	250	50	100	150	150	300
24V, max. Watts	75	-	100	75	150	-	-	100	120	120	150
12V, max. Watts	75	-	100	75	100	-	-	100	100	100	100
Rockguard #10-2/-6	-	-		-	-	-	-	-	X	X	X
Rockguard #10-3/-8/-9	-	-		-	-	-	-	-	-	-	-
Rockguard #10-1	-	-		-	-	-	-	X	-	--	-
Lensguard in Facing -10	X	X	-	-	-	-	-	-	-	-	-
Lensguard in Facing -10-7	-	-	-	-	-	-	-	-	X	X	X
Lensguard in Facing 'A',	-	-	-	X	X	X	X	-	-	-	-
Lensguard in Facing 'B'	-	-	X	-	-	-	-	--	-	-	-
FIXTURE PARTS											
Facing Bolts (Set)		-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
Lamp Connector(s)		-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
Lamp Rim Clamps,Pair		X	-	-	X	-	-	-	-	-	-
Lamp Mounting Plate		-	-	-	-	-	-	-	-	-	-
Lamp / Plate Spring		-	-	-	-	-	-	-	-	-	-
Lens Gasket		-13	-13	-	-13	-13	-12	-13	-13	-13	-13
Clear Flat Lens		-30-1	-30-1	-	-30-1	-30-1	-30-1	-	-30-2	-30-2	-30-2
Dichro Color Lens (Color ?)	-35-2	-35-2	-	-35-2	-35-2	-35-2	-35-2	-	-35-2	-35-2	-35-2
Clear Convex Lens		-14-2	-14-2	-	-14-2	-14-2	-14-2	-	-14-2	-14-2	-14-2
Clear Convex Globe		-	-	-	-	-	-	X	-	-	-
Clear Convex Fresnel Lens	-14-1	-14-1	-	-14-1	-14-1	-14-1	-14-1	-	-	-	-
Color Convex Lens (Color ?)	-15-1	-15-1	-	-15-1	-15-1	-15-1	-15-1	-	-15-2	-15-2	-15-2
Cordseal Gland		-	-	-	-17	-17	-17	-17	-17	-17	-17
Cordseal Washer		-	-	-	-18	-18	-18	-18	-18	-18	-18
Cordseal Plug		-		-	-19	-19	-19	-19	-19	-19	-19
Cord Seal J Type**	X	X	X	-	-	-	-	-	-	-	-
Body 'O' Ring Seal		-	-	X	-	-	-	-	-	-	-
Base 'O' Ring Seal		-	-	-	X	X	X	X	-	-	-
* = Verify lamp size (M.O.L.) to fit lightfixture											
**= Cord Seal, Cable Size? Check PEM Junction Boxes & Cord Seals											

PEM LIGHTFIXTURE PARTS LAMP SPECIFICATION

PEM FIXTURES	C131-1	C131-3	C131-4	C131-5	C131-6	C131-7	C131-8	C131-9	C131-10
	CI 33-1	CI 33-3	CI 33-4	CI 33-5	CI 33-6	CI 33-7	CI 33-8	CI 33-9	CI 33-10
Type of Lamp(s)	AR111	3xMR16	4xMr16	3xGU10	3xGU10	4xMR16	4xMR16	3xGU10	3xGU10
Lamp Connection	Bolts	3xG3.35-1	4xGZ-1 0	3xGZ-1 0	3xGZ-1 0	4xG3.35-1	4xGZ-1 0	3xGZ-1 0	3xGZ-1 0
240V, max. Watts	-	-	-	50x3	3x50	-	-	3x50	50x3
120V, max. Watts	-	-	-	50x3	3x50	-	-	3x50	50x3
24V, max. Watts	-	3x75	75x3	-	-	4x75	75x4	-	-
1 2V, max. Watts	100	3x75	75x3	-	-	4x75	75x4	-	-
Rockguard #10-21-61-7	X	X	X	X	X	X	X	X	X
Lensguard#10-7	X	X	X	X	X	X	X	X	X
FIXTURE PARTS									
Facering Bolts (Set)	-	-11	-11	-11	-11	-11	-11	-11	-11
Lamp Mounting Plate	-	-	-50	-50	-50	-50	-50	-50	-50
Lamp / Plate Spring	-	-	-51	-51	-51	-51	-51	-51	-51
Lamp Holding Plate/Bolt	-	-55	-55	-55	-55	-55	-55	-55	-55
Lens Gasket	-13	-13	-13	-13	-13	-12	-13	-13	-13
Clear Flat Lens	-30-2	-30-2	-30-2	-30-2	-30-2	-30-2	-30-2	-30-2	-30-2
Clear Convex Lens	-14-2	-14-2	-14-2	-14-2	-14-2	-14-2	-14-2	-14-2	-14-21
Dichro Color Lens (Color?)	-35-2	-35-2	-35-2	-35-2	-35-2	-35-2	-35-2	-35-2	-35-2
Color Convex Lens (Color?)	-15-2	-15-2	-15-2	-15-2	-15-2	-15-2	-15-2	-15-2	-15-2
Cord Seal J Type**	X	X	X	X	X	X	X	X	X
* = Verify lamp size (M.O.L) to fit lightfixture									
= _Cord_Seal,_Cable_Size?_Check PEM Junction_Boxes_&_Cord_Seals									

PEM
LIGHTFIXTURE PARTS
LAMP SPECIFICATIONS

PEM FIXTURES	E200	E200JC	E300-1	E300-2	E300-3	E500-1	E500-2	E500-LV	E600-1	E600LV	E600-3/5	E600-4/6LV
Type of Lamp(s)	MC	JC	MC	JC	AR111*	PAR 56	PAR 56	PAR 56	PAR 56	PAR 56	8xGU 10	8xMR 16
Lamp Connection	E11	G6.35-1	E11	G6.35-1	Bolts	GX16d	GX16d	Bolts	GX16d	Bolts	GZ-10	GX 5.3
240V, max. Watts	-250	-	-250	-	-	-500	-500	-	-500	-	-400	-
120V, max. Watts	-250	-	-250	-	-	-500	-500	-	-500	-	-400	-
24V, max. Watts	-	-150	-	-150	-	-	-	-250	-	-250	-	600**
12V, max. Watts	-	-100	-	-100	-100	-	-	-300	-	-300	-	600**
Rockguard #10-3/-8/-9	-	-	-	-	-	X	X	X	X	X	X	-
Rockguard #10-2/-6	X	X	X	X	X	-	-	-	-	-	-	-
Lensguard -10-7	X	X	X	X	X	X	X	X	X	X	X	X
FIXTURE PARTS												
Facering Bolts (Set)	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
Lamp Plate/Bolt	-	-	-	-	-	-	-	-	-	-	-44	-44
Lamp Connector(s)	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
Lens Gasket	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13
Clear Flat Lens	-30-2	-30-2	-30-2	-30-2	-30-2	-30-3	-30-3	-30-3	-30-3	-30-3	-30-3	-30-2
Clear Convex Lens	-14-2	-14-2	-14-2	-14-2	-14-2	-14-3	-14-3	-14-3	-14-3	-14-3	-14-3	-14-2
Convex Color(?)Lens	-15-2	-15-2	-15-2	-15-2	-15-2	-15-3	-15-3	-15-3	-15-3	-15-3	-15-3	-15-3
Dichro Color(?)Lens	-35-2	-35-2	-32-2	-35-2	-35-2	-35-3	-35-3	-35-3	-35-3	-35-3	-35-3	-35-2
Cordseal Gland	-17	-17	-17	-17	-17	-17	-	-17	-17	-17	-	-
Cordseal Washer	-18	-18	-18	-18	-18	-18	-	-18	-18	-18	-	-
Cordseal Plug	-19	-19	-19	-19	-19	-19	-	-19	-19	-19	-	-
Cord Seal(s)JType***	-	-	-	-	-	-	X	-	-	-	X	X
St. St. Reflector	-37	-37	-	-	-	-	-	-	-	-	-	-
St. St. Wiring Cover	-39	-39	-39	-39	-	-	-	-	-	-	-	-
* = Verify lamp size (M.O.L.) to fit lightfixture												
**= Cord Seal, Cable Size? Check PEM Junction Boxes & Cord Seals												

PEM LIGHTFIXTURE PARTS LAMP SPECIFICATIONS

PEM	E700	E700JC	E800	E910	E950JC	E950LV	E1100	E1100+35-3
Type of Lamp(s)	MC	Bi-Pin	MC	A19/26	MC	Bi-Pin	PAR 64	PAR 64
Lamp Connection	E11	G6.35-1	E11	A19/26	E11	G6.35-1	GX16d	GX16d
240V, max. Watts	-250	-	-500	-100	--	-	_*	_*
120V, max. Watts	-250	-	-500	-100	--	-	-1000	-1000
24V, max. Watts	-	-150	-	-	-150	-100	-150	-
12V, max. Watts	-	-100	-	-	-100	-60	-100	-
Rockguard 10-4	-	-	-	X	X	X	X	_
Rockguard #10-2/-6	X	X	X	-	-	-	-	-
Rockguard #10-3/-8/-9	-	-	-	-	-	-	X	X
Lensguard -10-7	X	X	X	-	-	-	X	X
FIXTURE PARTS								
Facering Bolts (Set)	-11	-11	-11	-11	-11	-11	-11	-11
Lamp Connector(s)	-12	-12	-12	-12	-12	-12	-12	-12
Clear Flat Lens	-30-2	-30-2	-30-2	-30-2	-30-3	-30-3	-30-3	-30-3
Fresnel Lens	-	-	-14	-14	-14	-	-	-
Flat Dichro Lens Adapter	-	-	-	-	-	-	-	X
Flat Dichro Color(?)Lens	-35-2	-35-2	-32-2	-35-2	-35-3	-35-3	-35-3	-35-3
Clear Convex Lens	-14-2	-14-2	-14-2	-14-2	-14-3	-14-3	-14-3	-14-3
Convex Color(?) Lens	-15-2	-15-2	-15-2	-15-2	-15-3	-15-3	-15-3	-15-3
Cordseal Gland	-17	-17	-17	-17	-17	-	-17	-17
Cordseal Washer	-18	-18	-18	-18	-18	-	-18	-18
Cordseal Plug	-19	-19	-19	-19	-19	-	-19	-19
Cord Seal(s) J Type***	-	-	-	-	-	-	X**	X**
Adapter Lens Gasket	-	-	-	-	-	-	-	-13
Adapter Bolts (Set)	-	-	-	-	-	-	-	-11A
X** = 2 x Paired 120V, 1000W for 240V								
*** = Cord Seal Size(s), see Junction Boxes, Cordseals & Conduit Stup Ups								

PEM LED LIGHTS

2018



**SUBMERSIBLE LED LIGHT FIXTURES
by PEM FOUNTAIN COMPANY.
104 NEWKIRK RD, RICHMOND HILL, ONTARIO, CANADA, L4C 3G3
Tel: 800-387-3600 - Email: sales@pemfountain.ca - www.pemfountain.ca**

INDEX

PEM LED SUBMERSIBLE LIGHTFIXTURES 12VAC- 12VDC -24VDC

INDEX	PEM	DESCRIPTION LED LAMPS
		ELECTRICAL CABLE CONDUCTOR IDENTIFICATION CHART
1	E1490	LED plate (100W.MAX) - 24VDC NARROW BEAM LED'S DIRECT SWITCHING or DMX DIMMEABLE, WHITE / SINGLE COLOR / RGB
2	C17	LED Lamp Philips: 'i' Color / gen 3, RGB, MR16 or GU10,LED and Halogen Lamps
3	C17M	LED Plate DMX - RGB / 3 x 2.5W = 7.5W / RGBW / 4 x 2.5W = 10 W LED Plate Direct Switching or DMX Dimming - warm or cold White = 10W
4	E40	LED Lamp Philips: 'i' Color / gen 3, RGB, MR16 or GU10,LED and Halogen Lamps
5	E41	LED Lamp Philips: 'i' Color / gen 3, RGB, MR16 or GU10,LED and Halogen Lamps
6	E1200	LED Plate DMX -RGB / 3 x 3 x 2.5W = 22.5W / RGBW- 3 x 4 x 2.5W = 30W LED Plate Direct Switching or DMX Dimming -warm or cold White = 30W
7	E1450	LED Plate DMX - RGB / 6 x 3 x 2.5W = 45.0W / RGBW-DMX -6 x 4 x 2.5 = 60W LED Plate Direct Switching, or DMX Dimming -warm or cold White = 60W
8	E2100	LED Plate DMX - RGBW- 3 x 3 x 2.5W = 22.5W / RGBW- 3 x 4 x 2.5W = 30W LED Plate Direct Switching, or DMX Dimming -warm or cold White = 30W
9	E2500	LED Plate DMX - RGB / 6 x 3 x 2.5W = 45.0W / RGBW-DMX -6 x 4 x 2.5 = 60W LED Plate Direct Switching, or DMX Dimming -warm or cold White = 60W
10.a	C131/ 3/4	3 x LED Lamps : Philips, 'i' Color / gen 3, RGB, MR16 or GU10,LED and Halogen Lamps
10.b	C131/ 7/8	4 x LED Lamps : Philips, 'i' Color / gen 3, RGB, MR16 or GU10,LED and Halogen Lamps
11.a	C133-B46/ 3/4	3 x LED Lamps : Philips, 'i' Color / gen 3, RGB, MR16 or GU10,LED and Halogen Lamps
11.b	C133-B46/ 7/8	4 x LED Lamps : Philips, 'i' Color / gen 3, RGB, MR16 or GU10,LED and Halogen Lamps
11.c	C133/ 3/4	3 x LED Lamps : Philips, 'i' Color / gen 3, RGB, MR16 or GU10,LED and Halogen Lamps
11.d	C133/ 7/8	4 x LED Lamps : Philips, 'i' Color / gen 3, RGB, MR16 or GU10,LED and Halogen Lamps
12	E600/ 4/6	8 x LED Lamps : Philips, 'i' Color / gen 3, RGB, MR16 or GU10,LED and Halogen Lamps
13	LED MR16	Lamps for LED Fixtures in # 2, 4, 5,10a,b,11a.b.c.d & 12
14	E500 LED	Submersible LED Light Fixture, Voltage : 120V-60W

For GU-10 lamp socket LED Lamps, Check lamp supplier first for availability. PEM Fixtures with GU-10 Lamp Sockets can be supplied in above # 2, 4, 5,10a,b,11a.b.c.d & 12 PEM Light Fixtures at same price as for MR 16 Lamp socket equipped Fixtures

Above PEM LED submersible light fixtures are UL/cUL Listed
and are also available with C.E. manufacturers declaration for C.E. countries. All LED PLATES in PEM submersible light fixtures are assembled in Canada.

For more information, Email: Sales@pemfountain.ca

SEE INDEX 8 ON PEM WEBSITE

Limitation of Liabilities

Where the manufacturer or supplier of PEM Equipment and / or lightfixtures does not control the application, handling, installation and / or use of its products offered and sold, this manufacturer does not assume any responsibility whatsoever for any or all claims, consequences and / or conditions arising out of the purchase, handling, installation and or use of his products offered. In no event shall this manufacturer be liable for any loss of profits or other special or consequential damages, even if this manufacturer has been advised of the possibility of such damages.

Installation / Use Suggestions

The owner/operator of the complete electrical installation to be provided by the designer / installer with a scaled installation plan of all ed equipment. Each lightfixture to be identified by installation number and serial number of LED Plate, which is required for replacement within Electrical and or DMX control circuits ! This is absolute required for multi color (DMX) changing illumination !!

**MANUFACTURER
OF LIGHTFIXTURE(S) :**
PEM FOUNTAIN CO.

104 Newkirk Rd,
Richmond Hill, ON,
Canada L4C 3G3
Tel: 905 -737-7264
Tel: 800 -387-3600
Fax: 905 - 884 - 8941

E Mail:
sales@pemfountain.ca
Website :
www.pemfountain.ca

**For LED Plate replacement(s)
specify Serial Number
of each failed LED Plate
in replacement order !**

PEM 2018
**ELECTRICAL CABLE CONDUCTOR IDENTIFICATION
FOR PEM SUBMERSIBLE LED LIGHT FIXTURES
with Canadian made R. T. LED PLATE**

R.T. LED PLATES ARE DESIGNED FOR 12VDC / 12VAC OR 24VDC BUT NOT 24VAC !

Installers not familiar with 512A-DMX REMOTE CONTROLS, please see below!

(60HZ-SYSTEMS)

3
Conductor
SOOW Cable
AWG-16-3

1. BLACK (+) IN-12VAC, 12VDC, 24VDC POWER
2. WHITE (-) IN-12VAC, 12VDC, 24VDC POWER
3. GREEN / GROUND

(DO NOT USE GROUND WITH VDC)

**12/24 VDC /12 VAC
DIRECT FIXTURE
SWITCHING**

(60HZ-SYSTEMS)

5
Conductor
SOOW Cable
AWG 18-5

1 BLACK (+) IN-12VAC, 12VDC, 24VDC
2 WHITE (-) IN-12VAC, 12VDC, 24VDC
3 RED (+) DMX IN
4 ORANGE (-) DMX - IN
5 GREEN GROUND

(DO NOT USE GROUND WITH VDC)

**POWER &
DMX - 512A
- IN PARALLEL-**

(60HZ-SYSTEMS)

7
Conductor
SOOW Cable
AWG 18-7

1 BLACK (+) IN 12VAC / 12/24VDC
2 WHITE (-) IN 12VAC / 12/24VDC
3 RED (+) DMX IN
4 ORANGE (-) DMX IN
5 BLUE (+) DMX OUT
6 White/BlackStripe (-) DMX OUT
7 GREEN GROUND

(DO NOT USE GROUND WITH VDC)

**POWER
IN PARALLEL
DMX - 512A
IN SERIES
(DMX- IN -
DMX- OUT)**

(50HZ-SYSTEMS)

3
Conductor
Cable
H07RN-F-
3x1.5mm2

1 BLACK (+) IN-12VAC / 12/24VDC POWER
2 BLUE (-) IN 12VAC / 12/24 VDC POWER
3 YELLOW / GREEN / EARTH

(DO NOT USE EARTH WITH VDC)

**DIRECT FIXTURE
SWITCHING NO DMX**

(50HZ-SYSTEMS)

5
Conductor
Cable
H07RN-F-
5x1.5mm2

1 BLACK (+) 12 / 24VDC / 12VAC
2 BLUE (-) 12 / 24VDC / 12VAC
3 RED (+) DMX-IN
4 ORANGE (-) DMX-IN
5 YELLOW / GREEN / EARTH

(DO NOT USE EARTH WITH VDC)

**POWER &
DMX - 512A
- IN PARALLEL-**

(50HZ-SYSTEMS)

7
Conductor
Cable
H07RN-F-
7x1.5mm2

1 IN (+) 12/24 VDC / 12VAC
2 IN (-) 12/24 VDC / 12VAC
3 IN (+) DMX
4 IN (-) DMX
5 OUT (+) DMX
6 OUT (-) DMX
7 EARTH

(DO NOT USE EARTH WITH VDC)

**ALL CONDUCTORS
ARE BLACK WITH
WHITE NUMBERS
EVERY 30 MM**

**POWER IN PARALLEL
DMX 512A IN SERIES
DMX IN - DMX OUT**

DMX 512A CONTROL ASSISTANCE

A number of long time PEM distributors who became specialized in DMX 512A waterfountain and fountain-illumination control systems have indicated to us, that they might be interested to share under a confidential contract umbrella their design expertise with other non competitive PEM distributors who are interested in the supply and installation of water displays, water parks etc. But do not have the required expertise with DMX 512A remote control system design and engineering experience to partake in such undertakings. When interested please Email to: Pres@pemfountain.ca; with letter heading "DMX Fountain Controls" Such message will be forwarded without obligation to known to PEM, DMX 512A Expert(s) for direct reply..

IMPORTANT NOTICE

It is recommended for LED / HALOGEN Fountain Lightfixture Installers and / or service personal to wear protective WELDING GOGGLES (Lightweight Type) when directional adjusting or servicing lit LED or Halogen Lightfixtures to protect the eyes when looking close up directly into the intense light output for any length of time that might cause damage to eyes!

TERMS & CONDITIONS OF SALE 2018

(1) GOVERNING LAW

All purchase orders are accepted by this manufacturer at his address in Richmond Hill, Ontario, Canada.

Trade Restrictions: This corporation has to abide by the laws of Ontario and Canada and comply with them.

Legal Status: For all transactions made by this corporation, the laws of Ontario, Canada shall prevail.

(2) QUALITY ASSURANCE

This manufacturer shall have no obligation to ensure that any equipment or parts purchased from him meet any special purchaser's quality or performance specifications and/or any other special purchaser's requirements unless such specifications and/or other requirements are specifically set forth in the purchaser's purchase order and expressly accepted by this manufacturer in writing..

In the event that any such goods supplied by this manufacturer or in connection therewith, are applied by and to an end user without the appropriate specification and/or other requirements as having been set forth in the purchaser's purchase order and expressly accepted by this manufacturer in writing, the purchaser shall indemnify and hold this manufacturer harmless against any and all damages or claims for damages made by any person or for any injury, fatal or nonfatal, to any person or for any damage to the property of any person incident to or arising out of such application.

(3) WARRANTY

This manufacturer warrants that its products will conform to and perform in accordance with the products specifications when properly installed in compliance with all installation and/or use information provided by this manufacturer.

All PEM products as made by this manufacturer are warranted for a period of 1 (one) year after date of this manufacturer's invoice to be free of defects in workmanship and material. Warranty repairs are made free of charge at the works of this manufacturer or authorized place of repair. Claims under this warranty must be made in writing and written authorization by this manufacturer must be obtained before prepaid return of goods for warranty service.

Warranty for goods of other manufacturers purchased through this corporation as part of PEM equipment or by itself, is as given by the original manufacturer without any obligation to this corporation. PEM products damaged by direct into pool water injected Ozone as water purification are not covered by this warranty. This manufacturer warrants that to the best of his knowledge his products do not infringe upon any copyright, patents, or trademarks.

The foregoing warranty is in lieu of all other warranties, express or implied, including, but not limited to those concerning fitness for a particular purpose.

(4) LIMITATION ON LIABILITIES

Where this manufacturer does not control the application, handling, installation and / or use of its products offered and sold, this manufacturer does not assume any responsibility whatsoever for any or all claims, consequences and / or conditions arising out of the purchase, handling, installation and / or use of its products offered and sold.

Because of the difficulty of ascertaining and measuring damages hereunder, it is agreed that, except for claims for bodily injury, this manufacturer's liability to the purchaser or any third party, for any losses or damages, whether direct or otherwise arising out of the purchase of product from this manufacturer by the purchaser shall not exceed the total amount billed and billable to the purchaser for the product hereunder.

In no event shall this manufacturer be liable for any loss of profits or other special or consequential damages, even if this manufacturer has been advised of the possibility of such damages.

(5) TECHNICAL ASSISTANCE

Unless otherwise expressly stated by this manufacturer: (a) any technical advice provided by this manufacturer with respect to the use of equipment furnished to the purchaser shall be without charge and this manufacturer does not assume an obligation or liability for any such advice, or for any results occurring as a result of the application of such advice. The purchaser shall have sole responsibility for selection and specification of the goods appropriate for the end use of such goods.

(6) ELECTRICAL APPROVALS

Approvals of PEM electrical equipment are as indicated in the PEM Catalog for each applicable item.

EU - CE Declarations of conformity are supplied with electrical, low voltage equipment shipped into Europe, for sample declaration contact European PEM Equipment Importer.

(7) PATENTS

This manufacturer shall not be liable for any costs or damages incurred by the purchaser as a result of any suit or proceeding brought against the purchaser so far as based on claims that use of any equipment, or any part thereof, furnished hereunder, in combination with products not supplied by this manufacturer or that a manufacturing or other process utilizing any equipment, or any part thereof furnished hereunder, constitute either direct or contributory infringement of any valid patent.

The purchaser shall hold this manufacturer harmless against any expense or loss resulting from infringement or patents or trademarks arising from compliance with the purchaser's designs, specifications or instructions.

(8) PRICE LIST CHANGE

This Price List, its descriptions, prices and the equipment described herein are subject to change, alteration, deletion and / or improvement without notice.

(9) COMPLETE AGREEMENT

The terms and conditions set forth herein together with any other documents incorporated herein by reference constitute the sole and entire agreement between the purchaser and this manufacturer with respect to any order superseding completely any oral or written communications. No additions to or variations from such terms and conditions whether contained in purchaser's purchase order, any shipping release or elsewhere shall be binding upon this manufacturer unless expressly agreed to in writing by this manufacturer

PEM E 1490 LED LIGHT FIXTURES

24VDC-100w Max Single color,100w MAX RGB NARROW BEAM LED'S

DIRECT SWITCHING or DMX DIMMEABLE



**PEM E 1490-04, Red,SUBMERSIBLE NARROW BEAM (7° – 14° – 30° – 45° LEDS)
LED LIGHT FIXTURE WITH LOW VOLTAGE , 24 VDC CIRCUITS .**

- PEM E 1490-01, Cold White, 100w Max, direct switching, with 3 cable conductors.**
- PEM E 1490-01A, Cold White, 100w Max, DMX, Dimming, Channel Control with 5 cable conductors.**
- PEM E 1490-02, Warm White,100w Max, direct switching, with 3 cable conductors.**
- PEM E 1490-02A, Warm White, 100w Max, DMX,Dimming, Channel Control with 5 cable conductors.**
- PEM E 1490-03, Amber, 100w Max, direct switching, with 3 cable conductors.**
- PEM E 1490-03A, Amber, 100w Max, DMX,Dimming, Channel Control with 5 cable conductors.**
- PEM E 1490-04, Red, 100w Max, direct switching, with 3 cable conductors.**
- PEM E 1490-04A, Red, 100w Max, DMX,Dimming, Channel Control with 5 cable conductors.**
- PEM E 1490-05, Green, 100w Max, direct switching, with 3 cable conductors.**
- PEM E 1490-05A, Green, 100w Max, DMX,Dimming, Channel Control with 5 cable conductors.**
- PEM E 1490-06, Blue 100w Max, direct switching, with 3 cable conductors.**
- PEM E 1490-06A, Blue, 100w Max, DMX,Dimming, Channel Control with 5 cable conductors.**
- PEM E 1490-07 RGB 93w Max,DMX, 3 Channel Control with 5 cable conductors.**

For Fixture Parts SEE PAGE 3 of this brochure.

**For colour & numerical coding of conductors in supply cable of light fixture,
SEE PAGE 4 of this brochure.**

NOTE: "For supply connection, use only an isolating low voltage power supply or transformer with ungrounded output".

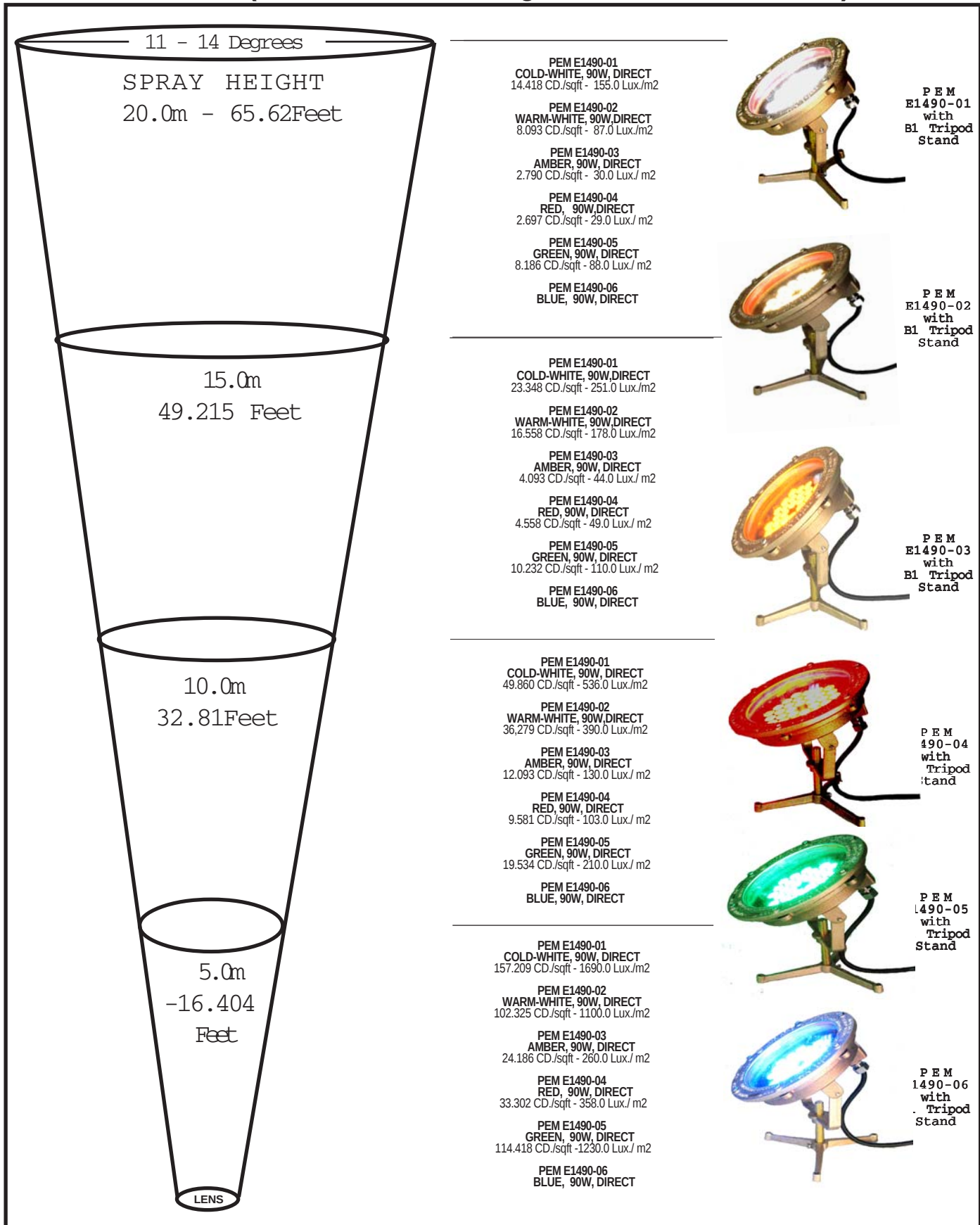
**SUBMERSIBLE LED LIGHT FIXTURES
by PEM FOUNTAIN COMPANY.**

104 NEWKIRK RD, RICHMOND HILL, ONTARIO, CANADA, L4C 3G3

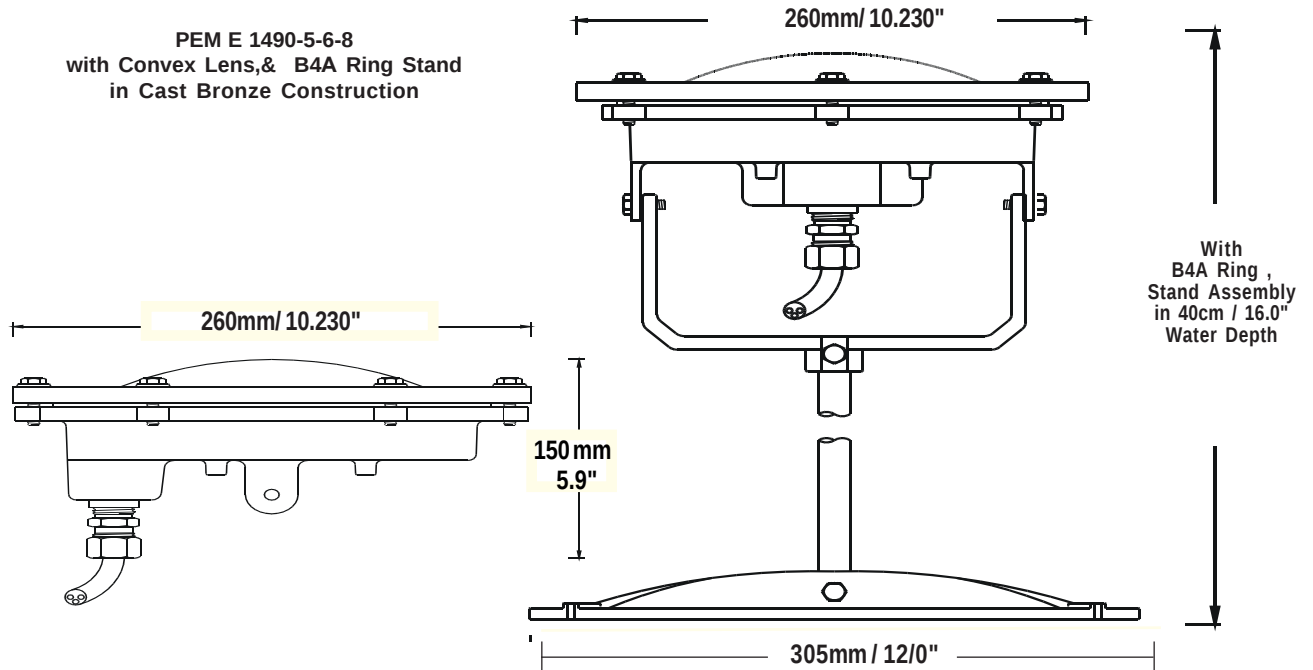
Tel: 800-387-3600 - Email: sales@pemfountain.ca - www.pemfountain.ca

PEM E 1490 LED LIGHT FIXTURES

11 - 14 DEGREES REFLECTIVE CENTER LINE LIGHT OUTPUT MEASUREMENT (36 x 2.5W x 11-14 degrees, Total 90W - 24VDC)



PEM E 1490 CONSTRUCTION



FIXTURE HOUSING & FACERING:

PEM E1490 Light Fixtures are for fresh water in Bronze ,Stainless Steel fitted.

PEM E1490 Light Fixtures (Marked:SW) for saltwater are available, please enquire.

LENS: 213mm / 8.375" Diameter. Convex clear cast glass,heat resistant and tempered.

OPTIONAL FLAT CLEAR GLASS LENS, heat resistant and tempered.

OPTIONAL LENS ROCK GUARD, required in USA .

LENS GASKET : High Temperature Silicone Rubber, 'U' shaped gasket with unique safety sealing lips .

ELECTRICAL CABLE: Standard 2.7M - 9 Feet.

Approved for the purpose with epoxy encapsulated, compression type cable entry
(PEM J Type Cordseal) in

factory assembled fixtures are Supplied with Type SOW / SOOW AWG Cable for UL
& cUL areas or with HORN-F-1mm2 - Cable with CE Declaration (when required) for other
than UL areas.

Longer cable (also with SHIELDED CONDUCTORS) available at extra cost, please enquire. **LED**

PLATE ASSEMBLIES connecting in fixture to power supply & DMX control conductors are
included in fixture at published terms / conditions of sale for: 'Lamps'.

NOTE: "For supply connection, use only an isolating low voltage power supply or transformer with ungrounded output".



SERIAL #	PEM ORDER	PEM E1490 LED LIGHT FIXTURES WITH LED Plates are factory functional tested prior to shipping.	W.
PEM:	#	LED Plates 100w Max with 8 to 14 degrees light spread are included with Light Fixtures.	Kg
		LED FIXTURES are warranted for one year from purchase date for failure in normal usage at specified voltage.	
		LED FIXTURES & LED PLATE failures due to faulty installation and/or usage are NOT warranted.	
		LED Plates are identified with registered Serial Number, that is required for any warranty or service claim.	
E16-E1490-01	E1490-01	Direct switching by remote Control, NO DMX connection in fixture	
		Cold White Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	5.2
E16-E1490-01A	E1490-01A	DMX- Dimming Control required: (For creation of overall CUSTOM COLOUR ILLUMINATION)	
		Cold White Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 5 x 1.5 mm2 Conductors	7.3
E16-E1490-02	E1490-02	Direct switching by remote Control, NO DMX connection in fixture	
		Warm White Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	5.2
E16-E1490-02A	E1490-02A	DMX- Dimming Control required: (For creation of overall CUSTOM COLOUR ILLUMINATION)	
		Warm White Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-5 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	7.3
E16-E1490-03	E1490-03	Direct switching by remote Control, NO DMX connection in fixture	
		Amber Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	5.2
E16-E1490-03A	E1490-03A	DMX- Dimming Control required: (For creation of overall CUSTOM COLOUR ILLUMINATION)	
		Amber Colour 100w Max = 90W - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	7.3
E16-E1490-04	E1490-04	Direct switching by remote Control, NO DMX connection in fixture	
		Red Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	5.2
E16-E1490-04A	E1490-04A	DMX- Dimming Control required: (For creation of overall CUSTOM COLOUR ILLUMINATION)	
		Red Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	7.3
E16-E1490-05	E1490-05	Direct switching by remote Control, NO DMX connection in fixture	
		Green Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	5.2
E16-E1490-05A	E1490-05A	DMX- Dimming Control required: (For creation of overall CUSTOM COLOUR ILLUMINATION)	
		Green Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	7.3
E16-E1490-06	E1490-06	Direct switching by remote Control, NO DMX connection in fixture	
		Blue Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	5.2
E16-E1490-06A	E1490-06A	DMX- Dimming Control required: (For creation of overall CUSTOM COLOUR ILLUMINATION)	
		Blue Colour 100w Max - 24VDC	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG Conductors / H0R7N-F, 3 x 1.5 mm2 Conductors	7.3
		RGB DMX	
E16-E1490-07	E1490-07	RGB DMX x 24VDC - 93w Max with 18-5 Cable	
		ADD ONS TO PEM E1490 FIXTURES	
350-0003	+/-30-3	213mm Clear Flat Lens (0903 required)	1.10
350-1113	+/-10-9	PEM -10-9 Hinged Rock Guard	0.70
350-11232	+/-B7S-B	B7S Yoke	0.80
391-3026	-B06	150mm / 6.0" x 15.9mm / 0.625" - brass stand rod	0.30
391-3001	+/-B1	B1, Tripod Stand Base,	1.40
391-3002	+/-B4	B4 Ring Stand Base	2.60
391-3003	+/-B4A	B4A Heavy Duty Tripod Stand Base	3.90
350-1133	+/-B6-2	B6-2 Stand Brackets	0.90
334-3922	+/-B69-1	B69-1 Stainless Steel Niche,with 4.50m / 15' of cable	7.00
350-11110	+/-10-8	Lensguard (In Addition To Lightfixture Only)	1.00
350-0035	+/-B70A	Walk Over Stainless Steel Niche with 4.50m / 15' of cable	11.5
350-0026	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted with 4.50m / 15' of cable	3.70
350-0200	+/-B76	B76 Walk Over Slab Hanger,with 4.50m / 15' of cable	5.40
350-0220	+/-B76A	B76A Slab Hanger with Locks,with 4.50m / 15' of cable	6.20

PEM C17 - 31*
SUBMERSIBLE LIGHT FIXTURES FOR :
12 VAC - 75 W.MAX, MR-16 HALOGEN - LAMPS FOR DIRECT SWITCHING
for White ILLUMINATION - Direct Switching
OR
24 VDC PHILIPS ' i ' COLOR MR-G3-LAMPS & DMX CONTROLS
for DMX multi colour illumination of smaller projects, MR16 or GU10 LED LAMPS

-
PEM C 17 -31 & 32**

UL - E49665

SOW-SOOW ELECTRIC FIXTURE CABLE

-
PEM C 17 -33 & 34**

UL - E49665

SOW-SOOW ELECTRIC FIXTURE CABLE

PAGE INDEX

Page 1	INDEX
Page 2	PEM C17 LED Light Fixtures
Page 3	PEM 17 Description & average effective Light Output
Page 4	PEM 17 Fixture Mountings & Stands
Page 5	PEM 17- 32 Fixture in Niche Mounting
Page 6	PEM C17M Order Page

FOR CABLE CONDUCTOR IDENTIFICATION ,
see page "A" of this brochure
MOUNTING OPTIONS & AD ONS :
See page 6 order list of this brochure

SUBMERSIBLE LED LIGHT FIXTURES
by PEM FOUNTAIN COMPAY.
104 NEWKIRK RD, RICHMOND HILL, ONTARIO, CANADA, L4C 3G3
Tel: 800-387-3600 - Email: sales@pemfountain.ca - www.pemfountain.ca



Certified for CE

PEM C17

LED LIGHT FIXTURES

FOR:

12 VAC - 10W /75W, MR-16 HALOGEN
LAMPS

FOR DIRECT SWITCHING

OR

24 VDC PHILIPS 'i' COLOR
MR-G3- LED LAMPS & DMX CONTROLS



PEM C17-32/34 with
B10-1 Ring Stand
& Philips i Color
LAMP # MR G3-17
DMX-RGB-Red



PEM C17-32/34 with
B10-1 Ring Stand
& Philips i Color
LAMP # MR G3-17
DMX-RGB-Green



PEM C17-32/34 with
B10-1 Ring Stand
& Philips i Color
LAMP # MR G3-17
DMX-RGB-Blue



PEM C17-32/34
with bottom Cable Entry



PEM C17-31/33
with Side Cable Entry

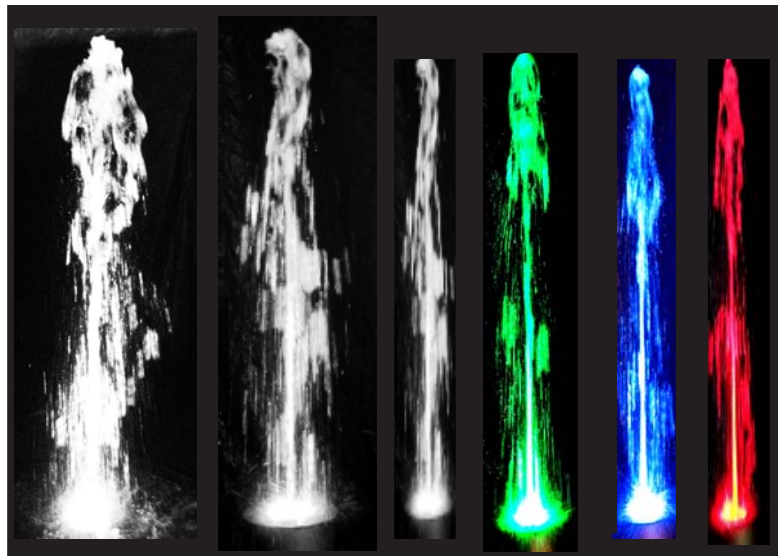


PEM C17-32 with MR-16 HALOGEN
LAMP & B1-2 Tripod Stand

PEM C17

SUBMERSIBLE LED LIGHT FIXTURES

SPRAYS at 2.0m PEM 953 PEM 953 PEM 951 PEM 951 PEM 951 PEM 951



MR -16- 75W White HALOGEN
MR -16 - 50W White HALOGEN
MR -16-10W White HALOGEN
'i' Colour LED Green
'i' Colour LED Blue
'i' Colour LED Red



PEM C17-31/33
with bottom Cable Entry



PEM C17-32/34
with side Cable Entry

PEM C17- SUBMERSIBLE & DRY LAMP TYPE LIGHT FIXTURES

U.L. Listing E49665 for PEM C 17-31 & pem C 17-32, for installation in Canada or USA

LAMPS - TYPE: MR-16 HALOGEN, NARROW SPOT,12 VAC, DIRECT SWITCHING, NO DMX!

MR16 - 10W-LED,WHITE - Submerged or Dry Installation (UL Listing)

MR16 - 20W-NSP,WHITE - Submerged or Dry Installation (UL Listing)

MR16 - 50W-NSP,WHITE - Submerged Installation only (UL Listing)

MR16 - 75W-NSP,WHITE - Submerged Installation only (UL Listing)

PHILIPS LED -'i' COLOR LED LAMPS , MR-G3-17-5W-RGB - 24 VDC,17 Degrees Beam Angle, Submerged or Dry Installation (UL Listing)

PHILIPS: 'i' COLOR PLAYER 3 - Master Control / DMX / Storage / 2 DMX Outputs

PHILIPS POWER SUPPLY # 1: Preprogrammed:120 VAC x 24 VDC for max.14 x 'i' Color Lamps

PHILIPS POWER SUPPLY # 2: DMX for max. 14 x 'i' Color Lamps

PHILIPS POWER SUPPLY # 3: Ethernet for max. 14 x 'i' Color Lamps

FIXTURE HOUSING

PEM C 17 - 31/33 With Side Entry Cable, made of Stainless Steel, # 316 Alloy

PEM C 17 - 32/34 With Bottom Entry Cable,made of Stainless Steel, # 316 Alloy

LENS: FLAT, OPTICAL CLEAR POLY CARBONATE LENS FOR LED LAMPS

LENS O Ring GASKET: Gasket made of flat EPDM Rubber.

LENS ROCK GUARD: OPTIONAL & EXTRA, Bolt on stainless steel rockguard .

INSTALLATION NICHES for Fresh Water

PEM C17 - 0084 SERIES NICHES with bottom entry, bronze casting and 304 St/Steel Pipe

PEM C17 - 0085 SERIES NICHES with side entry, bronze casting and 304 St/Steel Pipe.

INSTALLATION NICHES for Salt Water

PEM C17 - 0084 SERIES NICHES with bottom entry, made of saltwater bronze casting and Stainless Steel, # 316 Alloy.

PEM C17 - 0085 SERIES NICHES with Side entry, made of saltwater bronze casting and Stainless Steel, # 316 Alloy.

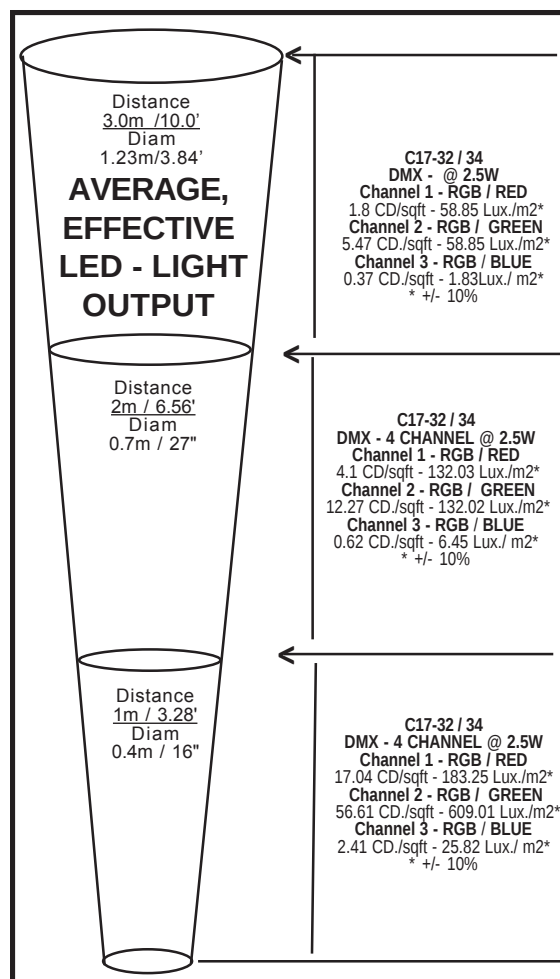
ELECTRICAL CABLE, 15 Feet - 4.5m: SUBMERGED OR DRY DUTY

12 VAC, MAX 75W. 3/16 AWG, Type SOW or SOOW

24VDC - Max.5W, LED, RGB / DMX, 16/3 AWG, Type SOW or SOOW

Other than CANADA & USA:

12 VAC = H0R7N-F-2 x 1.5 mm2 / 24 VDC = H0R7N-F-2 x 1 mm2



**REFLECTIVE ILLUMINATION STRENGTH
OF UNIVOLTAGE: (12VAC - 12 VDC - 24VDC)
LED LIGHT FIXTURES**

PEM C 17

SUBMERSIBLE LED LIGHT FIXTURES



PEM C17-31/33 with side cable entry



PEM C17-32/34 with bottom cable entry



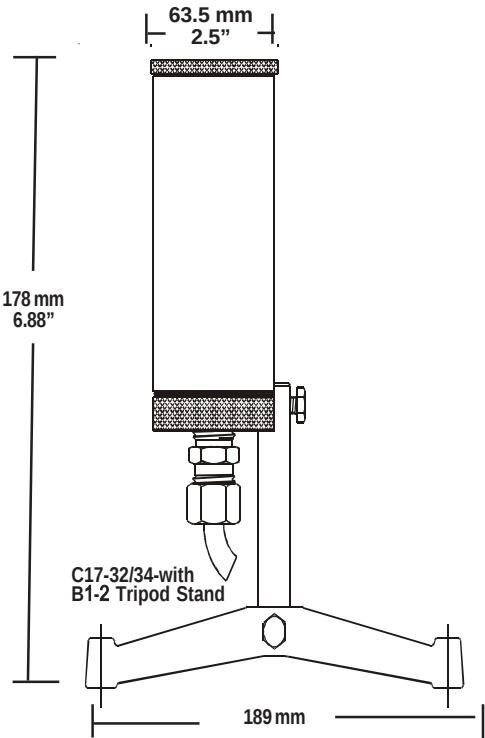
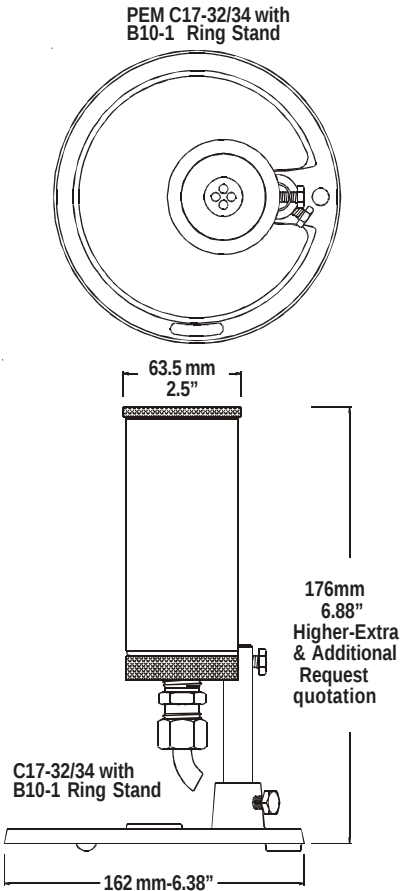
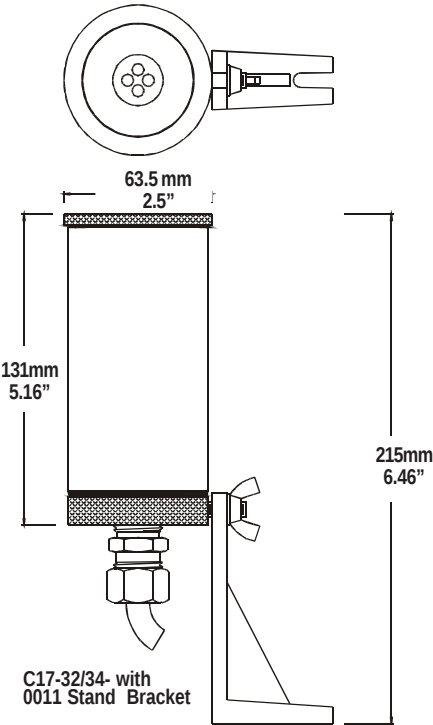
PEM C17-32/34 with 0011 Bracket Mount



PEM C17-32/34 with B10-1 Ring Stand



PEM C17-32/34 with B1-2 Tripod Stand



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Specify with order if for Dry or Submersible installation?

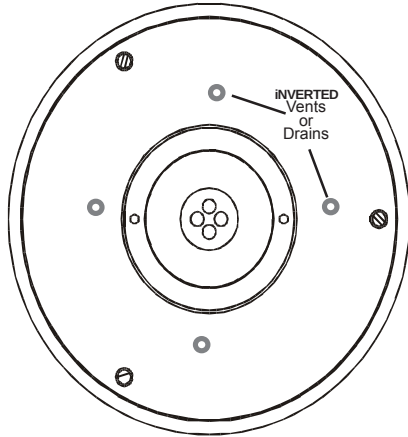
DRY INSTALLATION: (must be specified with order)

Decline cover vents! All unit(s) must be installed on self draining to frost free gravel beds reaching to below local ground frost level and must be equipped with drain sieve after removal of Drain Plug to prevent entry of insects!

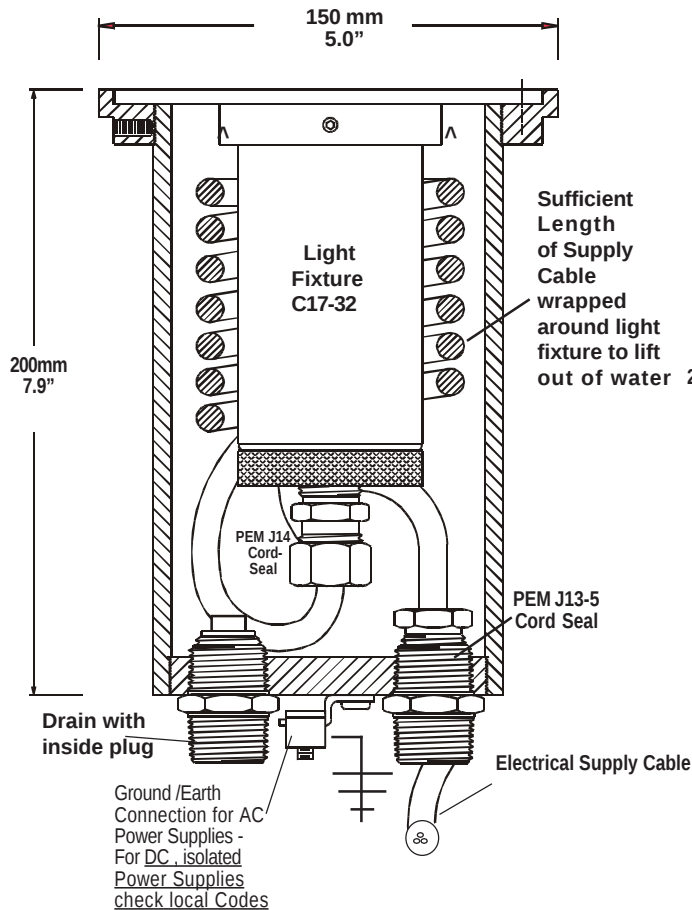
Order # C17-00750, 1/2" Drain plug, # C17-00760, 1/2" Drain Sieve

SUBMERSIBLE INSTALLATION: (must be specified with order)

Request cover vents and keep bottom drain open. In winter freezing climates, in vertical drainable pools to below local in ground frost level, leave units in pool, set together under bolted down plywood box cover(s), otherwise disconnect and store for winter in safe location for re-installation in spring time.!



C 17-32 in Niche 0084
BOTTOM ELECTRICAL CABLE ENTRY
INTO NICHE

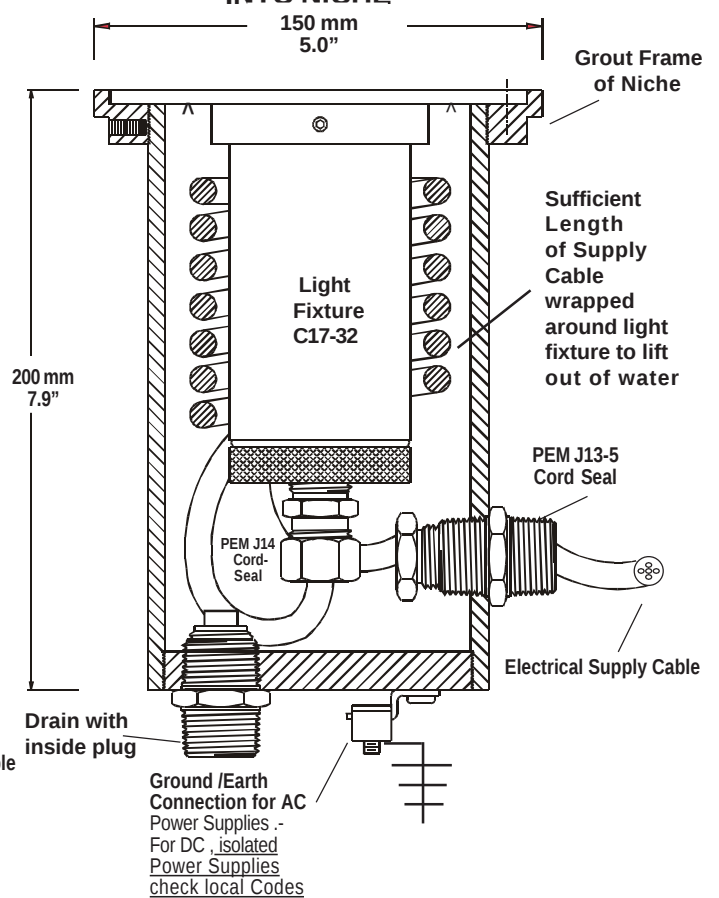


PEM C17-32 LIGHT FIXTURES NICHE 00840 & 00850 MOUNTED

Light fixture
with 0022
Cast Bronze
Flange
for mounting
into Niches
1840 or 185



C 17-32 in Niche 0085
SIDE ELECTRICAL CABLE ENTRY
INTO NICHE



FOR MR-16 AND PHILIPS LAMPS

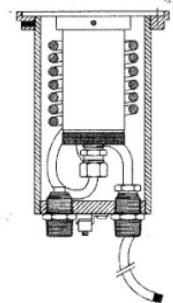
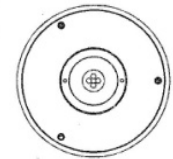
SERIAL #	ORDER #	PEM C 17, 60 Hz, LIGHT FIXTURES, UL & c.UL	Kg
		For: MR16 Lamps & Philips MR3 & 'I' Lamps	
		Electrical Cable : 2.70 M / 9 Feet, Type SOW or SOOW - AWG 16-3 SIZE	
305- 3100	C17 - 31	304 Stainless Steel Body, Side Cable Entry.	2.00
305- 3200	C17 - 32	304 Stainless Steel Body, Bottom Cable Entry.	2.40
		PEM C17, 50 Hz, LIGHT FIXTURES, (OTHER THAN UL)	
		For: MR16 Lamps & Philips MR3 & 'I' Lamps	
		Electrical Cable : 2.70 M / Type: H0R7N-F - 2 x 1.0 sqmm Conductors	
305- 3300	C17 - 33	304 Stainless Steel Body, Side Cable Entry.	2.00
305 - 3400	C17 - 34	304 Stainless Steel Body, Bottom Cable Entry.	2.40
		LAMPS ARE EXTRA & ADDITIONAL/ Lamp Manufacturers Warranty	
		MR 16 HALOGEN LAMPS	
	C17 - 0085	20W - NSP, White, No DMX - Submerged or dry use (UL Listing)	0.05
	C17 - 0051	35W - NSP, White, No DMX - Submerged or dry use (UL Listing)	0.05
	C17 - 0056	50W - NSP, White, No DMX - Submersed use only (UL Listing)	0.05
	C17 - 0062	75W - NSP, White, No DMX - Submersed use only (UL Listing)	0.05
		PHILIPS LAMPS	
101-00000200	MR-16-LED-24	12VAC,10W, White, No DMX 24 Degrees Beam Angle	0.12
101-00000400	MR-16-LED-36	12VAC,10W , White, No DMX, 36 Degrees Beam Angle	0.12
101-000074-01	('I'Color MR-3-17)	24VDC,5W - LED/RGB - Philips iColor MR gen3-17 Degrees Beam Angle	0.12
101-000074-02	('I' Color MR-3-30)	24VDC,5W - LED/RGB - Philips iColor MR gen3-30 Degrees Beam Angle	0.12
101-000074-03	('I'Color MR-3-90)	24VDC,5W - LED/RGB - Philips iColor MR gen3-90 Degrees Beam Angle	0.12
		PHILIPS 'I' COLOR LED - DMX - MASTER CONTROL- 120 VAC, UL	
102-0000-20-1	'I' PLAYER 3	DMX MASTER CONTROL/PROGRAM/STORAGE/2 X DMX OUTPUTS	2.3
		PHILIPS POWER SUPPLIES - 120 VAC - UL	
109-000018-00	PDS-70MR-24VDC	Pre-programmed - for max. 14 pcs Philips 'I' Color MR gen3 Lamps	4.00
109-000018-01	PDS-70MR-24VDC	DMX - for max. 14 pcs Philips 'I' Color MR gen3 Lamps	4.00
109-000018-02	PDS-70MR-24VDC	Ethernet - for max. 14 pcs Philips 'I' Color MR gen3 Lamps	4.00
		MOUNTING OPTIONS & SERVICE PARTS:	
334-31051-11	C17 - 0011	STAND BRACKET MOUNT, 10" / 25cm Water Depth	0.8
334-31051-14	C17 - 0014	B10-1 Ring Stand, 12" / 30cm Water Depth	1.3
334-31051-15	C17 - 0015	B1-2 Tripod Stand, 16" / 40cm Water Depth	1.9
334-31051-16	C17 - 0016	B4A-1 Ring Stand, 24" / 60cm Water Depth	2.4
334-31051-22	C17 - 0022	0022 Bronze Niche Flange,required for Niche Mounting *	2.7
334-31051-84	C17 - 0084	0084 NICHE Bottom Entry Cable Conduit Seal *	3.5
334-31051-85	C17 - 0085	0085 NICHE Side Entry Cable Conduit Seal*	3.5
334-31051-86	C17 - 0051	0051 FIXTURE SERVICE KEY	0.2
334-31051-88	C17 - 0056	0056 LENS SERVICE KEY FOR innner LENS REPLACEMENT	0.2
334-31051-51	C17 - 0062	0062 O RING SEAL FOR A Type FIXTURE LOWER COVER	0.1
334-31051-56	C17 - 0091	0091 REPLACEMENT LENS WITH O RING SEAL	0.3
334-31051-62	C17 - 0095	0095 REPLACEMENT COVER RING WITH SEALS	0.5
		* = Immersed installation requires vented Flange & drainable Niche	



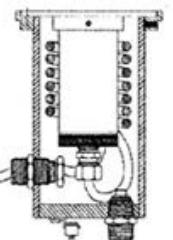
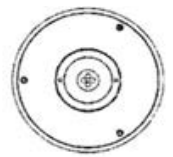
C 17-31/33



C 17-32/34



C17 - 0084/0022



C17 - 0085/0022

PEM C17M

SUBMERSIBLE LED LIGHT FIXTURES

UL - E49665

SOW-SOOW ELECTRIC FIXTURE CABLE

UNIVOLTAGE: 12 VAC, 12 VDC & 24VDC

C17M-1-3, 7.5W
3 x 2.5W-RGB - DMX

C17M-1-4, 10W
4 X 2.5W LED's R.G.B.W. - DMX

C17M-1-6 - A
10W LED'S, WARM WHITE - DMX 4 CHANNEL

C17M-1-6
10W LED'S, WARM WHITE - Direct Switching

C17M-1-8 - A
10W LED'S, COLD WHITE - DMX 4 CHANNEL

C17M-1-8
10W LED'S, COLD WHITE - Direct Switching

OUTSIDE UL Listing Areas

ELECTRIC FIXTURE CABLE: TYPE H0R7N-F

UNIVOLTAGE: 12 VAC, 12 VDC & 24VDC

C17M-2-3, 7.5W
3 x 2.5W-RGB - DMX

C17M-2-4, 10W
4 X 2.5W LED's R.G.B.W. - DMX

C17M-2-6 - A
10W LED'S, WARM WHITE - DMX 4 CHANNEL

C17M-1-6
10W LED'S, WARM WHITE - Direct Switching

C17M-2-8 - A
10W LED'S, COLD WHITE - DMX 4 CHANNEL

C17M-2-8
10W LED'S, COLD WHITE - Direct Switching

PAGE INDEX

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Page 2	COVER
Page 3	PEM 17M-5 Description & average effective Light Output
Page 4	PEM 17M Fixture Mountings & Stands
Page 5	PEM 17M Fixture in Niche Mounting
Page 6	PEM C17M Order Page

SUBMERSIBLE LED LIGHT FIXTURES
by PEM FOUNTAIN COMPANY.

104 NEWKIRK RD, RICHMOND HILL, ONTARIO, CANADA, L4C 3G3

Tel: 800-387-3600 - Email: sales@pemfountain.ca - www.pemfountain.ca

VOLTAGES: 12 VAC, 12 VDC & 24 VDC

PEM
LED
LIGHT
FIXTURES
C17M

C17M-1/2-3 (7.5W) 3 X 2.5W LED's R.G.B. - DMX

C17M-1/2-4 (10W) 4 X 2.5W LED's R.G.B.W. - DMX

C17M-1/2-6A,10W LED'S, WARM WHITE - Direct Dimming

C17M-1/2-6, 10W LED'S, WARM WHITE - DMX for Switching

C17M-1/2-8A,10W LED'S, COLD WHITE - Direct Dimming

C17M-1/2-8, 10W LED'S, COLD WHITE - DMX for Switching



C 17M-3-1/2 / RGBW-Red
with B4-1 RingStand
C 17M-4-1/2 / RGBW-Red
with B4-1 RingStand



C 17M-3-1/2 / RGBW-Green
with B4-1 RingStand
C 17M-4-1/2 / RGBW-Green
with B4-1 RingStand



C 17M-3-1/2 / RGBW-Blue
with B4-1 RingStand
C 17M-4-1/2 / RGBW-Blue
with B4-1 RingStand



C 17M-4-1/2 RGBW - White
with B4-1 RingStand



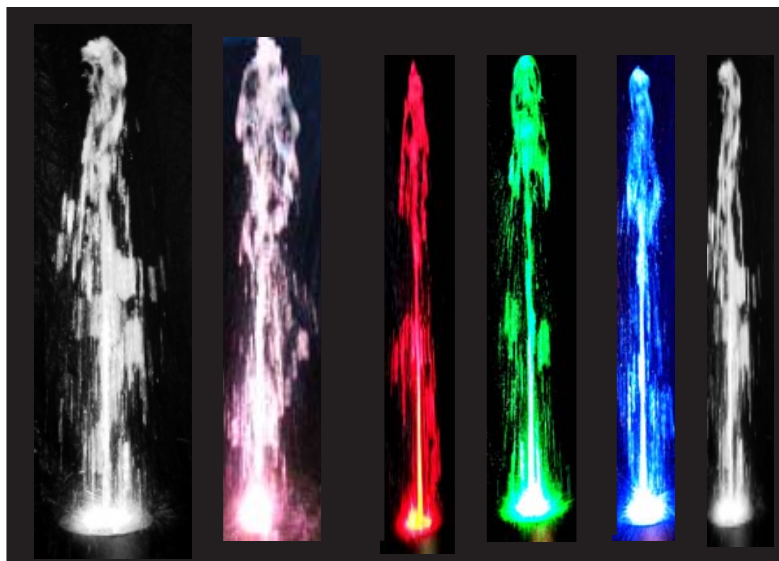
PEM C17M-32/34
with bottom Cable Entry



PEM C17M-31/33
with Side Cable Entry

SUBMERSIBLE LED LIGHT FIXTURES

SPRAYS at 2.0m PEM 953 PEM 953 PEM 952 PEM 952 PEM 952 PEM 952



C17M-8/8A Cold White C17M-6/6A Warm White C17M-3 C17M-4 Red C17M-3 C17M-4 Green C17M-3 C17M-4 Blue C17M-4 warm White



PEM C17M-32
with bottom Cable Entry



PEM C17M-31
with side Cable Entry

PEM C17M-1 & C17M-2

SUBMERSIBLE or DRY LED LIGHT FIXTURE FIXTURES:

PEM C 17M-1-31, 60 C.,12VAC,12VDC,24VDC - UL, With Side Entry Cable

PEM C 17M-1-32, 60 C.,12VAC,12VDC,24VDC-UL, With Bottom Entry Cable

PEM C 17M-2-33, 50 Hz.,12VAC,12VDC,24VDC, With Side Entry Cable

PEM C 17M-2-34, 50 Hz.,12VAC,12VDC,24VDC, With Bottom Entry Cable

For in fresh water use and public water splash pads

Fixture Body & Face Ring made in # 304 Alloy Stainless Steel, Bronze Niche & Flange

For Salt Water / Salted in Winter places / Desert Areas

Custom made, please enquire!

Fixture, Facing, Niche, Niche Flange & Fittings in # 316 Alloy Stainless Steel ..

LENS: FLAT, OPTICAL CLEAR POLY CARBONATE LENS FOR LED LAMPS

LENS GASKET: Made of EPDM .

NICHES for C17M - 32 & 34 Bottom entry light-fixture cable only!

Niche mounting requires PEM C17M-0022 Niche Flange for Light Fixture!

PEM C17M-0084 SERIES NICHES with bottom conduit entry.

PEM C17M- 0085 SERIES NICHES with side conduit entry

For fresh water:Niche & Cover Flange made in Cast Bronze, 304 & 316 Alloy Stainless Steel fitted.

Niches are equipped with drains to be connected to drain tubes leading into frost free drainable underground (Usual installationdepth of potable Water Mains in area).

Niches must be inside dry in Winter with open drains to avoid frost damage to units and surrounding concrete.

ELECTRICAL CABLE attached to Fixture 15 Feet - 4.5m :

C17M-1 - UL listed

SUBMERGED OR DRY DUTY - Type SOW or SOOW

12VAC/12VDC/24VDC - Max.11W, LED, RGB / DMX, 5/18 AWG, 9 Feet / 2.7m

Before making Ground/Earth Connections check local requirements

C17M-2 -

SUBMERGED & DRY DUTY other than UL listed.

4.5m, Power & DMX Electrical Cable H0R7N-F-4 x 1mm2,

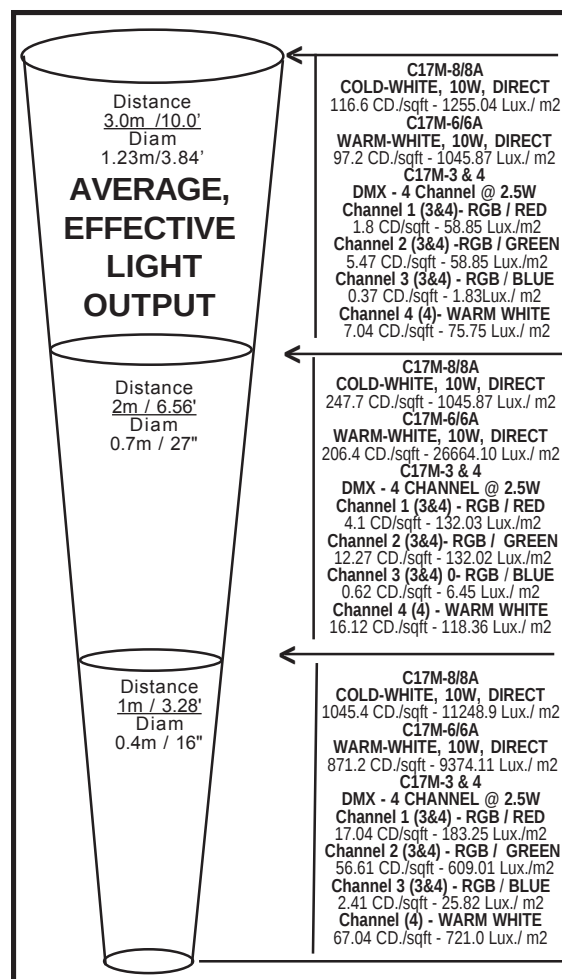
4.5m. Power Electrical Cable H0R7N-F-2 x 1.5mm2,

Before making Ground/Earth Connections check local requirements

RT- LED PLATE ASSEMBLIES WARRANTY :

Factory installed into fixture,connected to power supply & DMX controls.

All RT- LED plates are serialized and carry a one year from date of invoice replacement warranty fob factory. Serial Number of LED Plate and cause of failure must be stated with every claim for replacement or re-purchase after warranty period.



FOR ELECTRIC CABLE CONDUCTOR IDENTIFICATION :
See page 6 of this brochure

PEM C 17M

SUBMERSIBLE LED LIGHT FIXTURES



PEM C17M-32/34
with side Cable Entry



PEM C17M- 31/33
with bottom Cable Entry



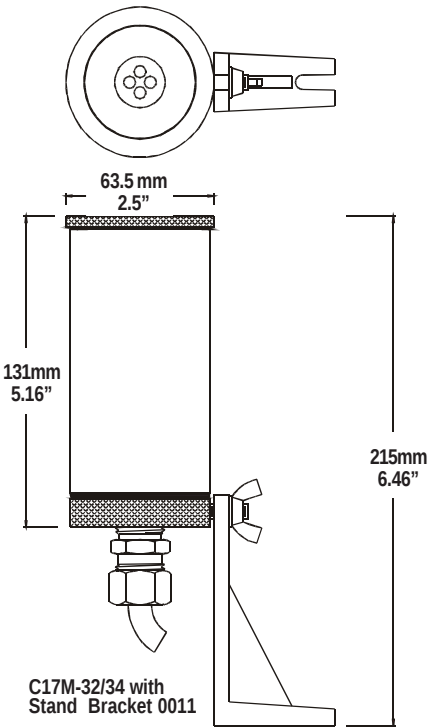
C17M- 32/34 with
Stand Bracket 0011



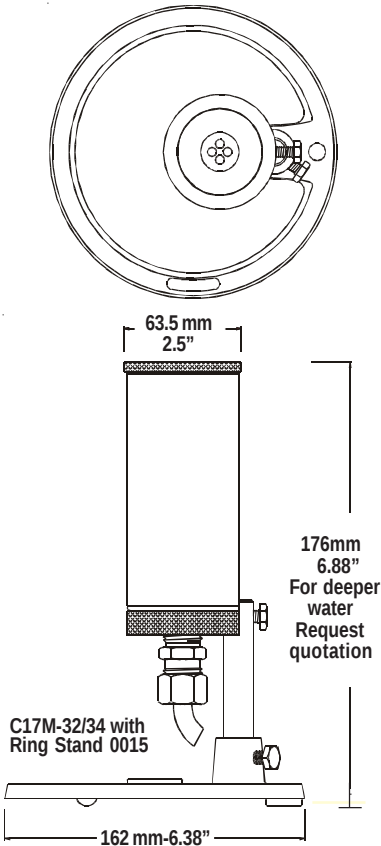
C17M-32/34
with Ring Stand 0014 (B10-1)



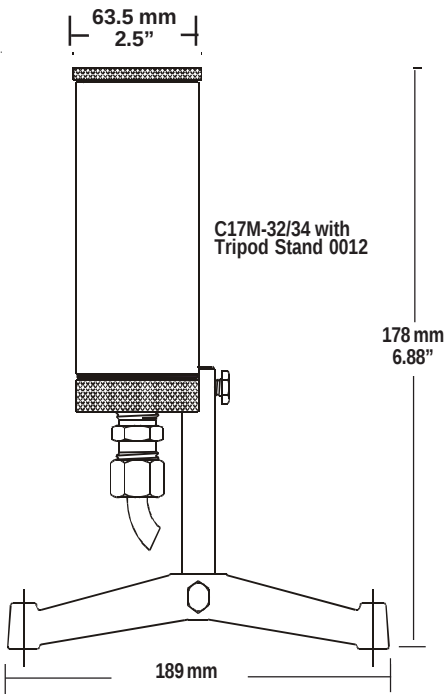
C17M-32/34 with
Tripod Stand 0012
(B1-2)



C17M-32/34 with
Stand Bracket 0011



C17M-32/34 with
Ring Stand 0015



C17M-32/34 with
Tripod Stand 0012

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DRY . FLUSH INSTALLATION into Concrete SPLASH PAD pavement:

All unit(s) must be installed self draining to below local ground freeze level* gravel bed under concrete surface pad, reaching to below local ground frost level * and must be equipped with drain sieve after removal of Drain Plug to prevent entry of insects from below and keep drain open and functioning in winter time to keep niche dry. If for some reason the drain is kept closed, the niche will fill up with polluted and rusty surface water and overflow onto surrounding surfaces, causing stench and discoloration, if this persists into winter time in freezing climates, the ice in the niche might cause cracking and breaking up of the concrete pad it is installed into - so the niche drain must be kept open and functioning.

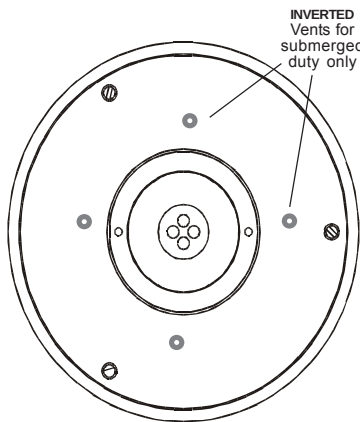
SUBMERSIBLE INSTALLATION: (must be specified with order for inverted Vents)

Request cover vents and keep bottom drain open. In winter freezing climates, in drainable shallow pools , drain pool, leave units in pool, set together close around Junction Box, under bolted down plywood box cover(s), otherwise disconnect and store for winter in safe location for re-installation in spring time.!

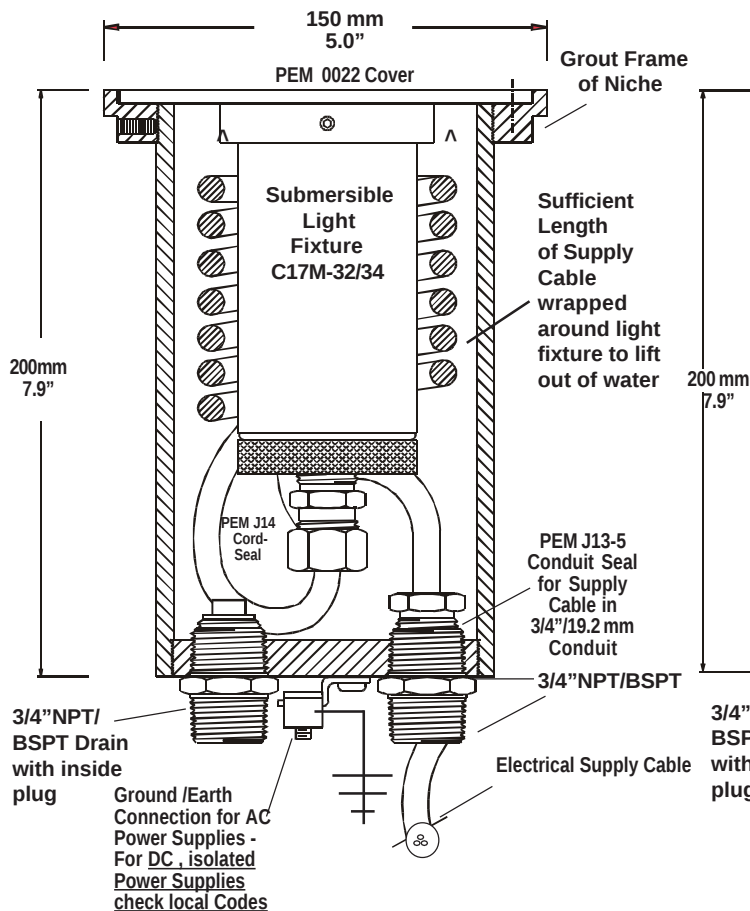
*(Installation depth of local water mains.

PEM C17M NICHES #0084 #0085

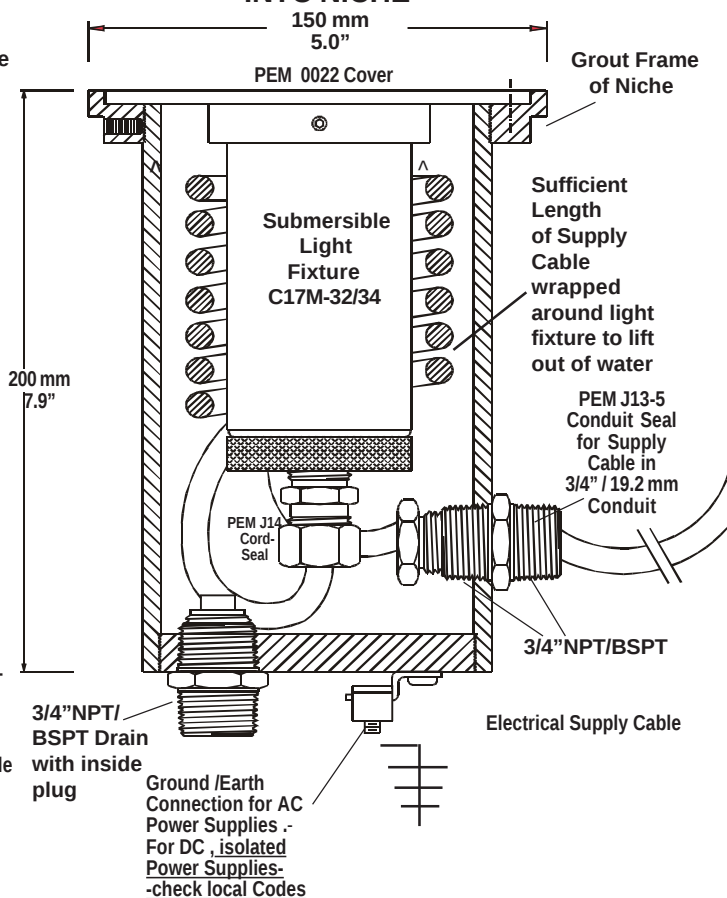
**C17M -32/34
with 0022
Cast Bronze
Flange
for mounting into
Niches
0084 or 0085**



C 17M-A in Niche 0084 BOTTOM ELECTRICAL CABLE ENTRY INTO NICHE



C 17M-32/34 in Niche 0085 SIDE ELECTRICAL CABLE ENTRY INTO NICHE

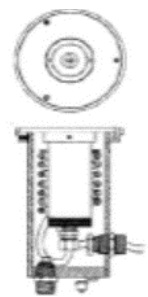
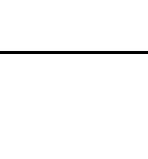


PEM C17M
SUBMERSIBLE
LED LIGHT FIXTURES



ORDER LIST

2018

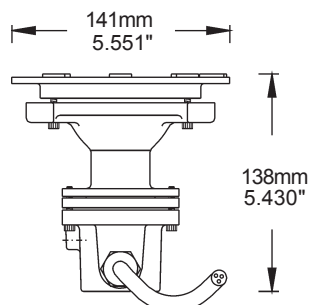
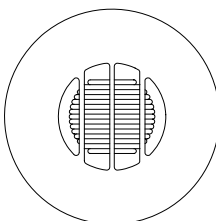
SERIAL #	ORDER #		Kg	
	C17M-1	PEM C17M-1, 12VAC, 12VDC, 24VDC, 60 Hz, LIGHT FIXTURES, UL & c.UL		
	C17M-1	Electrical Cable : 2.70 M / 9 Feet, Type SOW or SOOW - AWG 16-3 SIZE		
	C17M-1-3	7.5W = 3 X 2.5W, RGB, Red/Green/Blue, DMX,		
E15-305 - 3102	C17M-1-3-31	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.3	
E15-305 - 3103	C17M-1-3-32	16/3 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.3	
	C17M-1-4	10.0 W = 4 X 2.5W, RGB, Red/Green/Blue/White(warm), DMX,		
E15-305 - 3114	C17M-1-4-31	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.8	
E15-305 - 3116	C17M-1-4-32	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.8	
	C17M-1-6A	10W (4 x 2.5W) White(warm) for DMX, dimming,		
E15-305 - 3123	C17M-1-6-31	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.8	
E15-305 - 3126	C17M-1-6-32	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.8	
	C17M-1-6	10W (4 x 2.5W) White(warm) for DIRECT SWITCHING,		
E15-305-7122	C17M-1-6-31	16/3 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.3	
E15-305 -7128	C17M-1-6-32	16/3 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.3	
	C17M-1-8A	10W (4 x 2.5W) White(cold) for DMX, dimming,		
E15-305 - 4155	C17M-1-8-31	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.8	
E15-305 - 4166	C17M-1-8-32	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.8	
	C17M-1-8	10W (4 x 2.5W) White(cold) for DIRECT SWITCHING,		
E15-305 - 7134	C17M-1-6-31	16/3 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.3	
E15-305 - 7137	C17M-1-6-32	16/3 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.3	
	C17M-2	PEM C17M-2, 12VAC, 12VDC, 24VDC, 50 Hz, LIGHT FIXTURES (OTHER THAN UL)		
	C17M-2	Electrical Cable : 2.70 m , Type H0R7N-F - 4 x 1.5 mm2 Conductors		
	C17M-2-3	7.5W = 3 X 2.5W, RGB, Red/Green/Blue, DMX,		
E15-306-6103	C17M-2-3-31	18/3 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.3	
E15-306-6105	C17M-2-3-32	3 / 18 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.3	
	C17M-2-4	10W (4 x 2.5W) RGBW-Red, Green, Blue, White(warm) for DMX,		
E15-306 - 6122	C17M-2-4-31	18/3 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.8	
E15-306 - 6126	C17M-2-4-32	3 / 18 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.8	
	C17M-2-6A	10W (4 x 2.5W) White(warm) for DMX, dimming,		
E15-306 - 6131	C17M-2-6-31	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.8	
E15-306 - 6134	C17M-2-6-32	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.8	
	C17M-2-6-	10W (4 x 2.5W) White(warm) for DIRECT SWITCHING,		
E15-306 - 6324	C17M-2-6-31	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.3	
E15-306 - 6326	C17M-2-6-32	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.3	
	C17M-2-8A	10W (4 x 2.5W) White(cold) for DMX, dimming,		
E15-306 - 6145	C17M-2-8-31	18/3 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.8	
E15-306 - 6148	C17M-2-8-32	3 / 18 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.8	
	C17M-2-8	10W (4 x 2.5W) White(cold) for DIRECT SWITCHING,		
E15-306 - 6345	C17M-2-6-X-A	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Side Cable Entry.	2.3	
E15-306 - 6362	C17M-2-6-X-B	18/5 AWG, SOW-SOOW Cable, 316 Stainless Steel Body, Bottom Cable Entry.	2.3	
MOUNTING OPTIONS & SERVICE PARTS:				
E15-334-31071-11	C17M - 0011	0011 BRACKET MOUNT, 10" / 25cm Water Depth	0.8	
E15-334-31071-12	C17M-0012	B1-1 Tripod Stand / 40 cm Water Depth	2.3	
E15-334-31071-14	C17M - 0014	B10-1 Ring Stand, 12" / 30cm Water Depth	1.3	
E15-334-31071-15	C17M - 0015	B4-1 Ring Stand, 16" / 40cm Water Depth	1.9	
E15-334-31071-16	C17M - 0016	B4-2 Ring Stand, 16" / 40cm Water Depth	2.4	
E15-334-31071-22	C17M - 0022	Bronze Niche Flange, required for Niche Mounting*	2.7	
E15-334-31071-84	C17M - 0084	Bronze Niche, Bottom Entry Cable Conduit Seal, Drainable Niche Drain *	3.5	
E15-334-31071-85	C17M - 0085	Bronze Niche, Side Entry Cable Conduit Seal, Drainable Niche Drain *	3.5	
E15-334-31071-86	C17M - 0051	FIXTURE SERVICE KEY	0.2	
E15-334-31071-88	C17M - 0056	LENS SERVICE KEY TO REMOVE LENS FROM INSIDE	0.2	
E15-334-31071-51	C17M - 0062	REPLACEMENT INNER O RING SEAL FOR LENS	0.2	
E15-334-31071-56	C17M - 0091	REPLACEMENT LENS WITH O RING SEAL	0.3	
E15-334-31071-62	C17M - 0095	REPLACEMENT TOP COVER WITH O RING SEALS	0.5	
* = Immersed installation requires vented Flange & drainable niche				



SUBMERSIBLE LIGHTFIXTURE

PEM E40

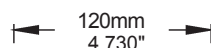
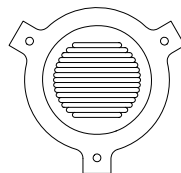
E40'A'

E40'A'
(With
Rockguard)

E40'A'
UL Listed
Wet: 250W
Dry: 50
-
E40A&B
Wet: 250W
cUL

E40'A'
(A Option) + B10-2E40'B'
(B Option) + B10-2

E40'B'

E40'B'
(Without
Rockguard)

FIXTURE TYPES

1. T4-MC, cUL, 120V, max. 250W 'A' & 'B' Option. Excluding -2.
2. T4-MC, UL, 120V, max. 250W 'A' Option. Excluding -2.
3. T4-MC, CS, 240V, max. 250W 'A' & 'B' Option. Excluding -2.
4. JC, UL, 12V max. 75W / 24V max.150W. 'A' Option Excluding -2.
5. JC, cUL/CS/CE, 12V max.75W or 24V max.150W. 'A'&'B' Option. Excluding -2.
6. LV, UL 12V, 'A' UL Option. Excluding -2. (For MR 16 Lamps) 12V max. 75W.
7. LV, cUL/CS/CE, 12V, max. 75W. Submersible Use: 'A' & 'B' Option. Excluding -2. (For MR 16 Lamps)
8. DW-UL,C-UL, 120V, Max. 50W, GU10 Reflector Lamp, GZ10 Base.
9. DW-240V, Max. 50W., GU10 Reflector Lamp, GZ10 Base.

LIGHTFIXTURE CONSTRUCTION

FIXTURE OPTIONS: (Options A & S, A & F, B & S, B & F can be combined)

'S' and 'F' type fixtures have water cooled and chromed parabolic reflector integral with housing.

'A' Option Fixtures have wide facering and built in rockguard.

'B' Option Fixtures have narrow facering and no rockguard.

'S' Option, for T4 & JC Types have polished reflector with 11° included beam output - **Spotlight**.

'F' Option, for T4 & JC Types have diffused output with 100° included beam- **Flood light**.

'LV' & 'DW' have natural bronze body fitted for Lamp Rim Clamps.

FIXTURE HOUSING & FACERING:

Cast Bronze, Stainless Steel fitted.

LAMPS: OPTIONAL, Not part of fixture:

T4-MC: 120V / 240V, Mini Candelabra, T4-MC / E11 base.

DW: 120V / 240V, (Max. 50W), GU10 Reflector Lamp, GZ10 Base.

JC- 12V or 24V: JC Type 2 pin Lamp, 6.35-1.0 base (24V, use Axial Filament lamps only).

LV- 12V: MR16(50mm), GX5.3 base LED or Halogen with Aluminized Reflector only.

LAMP HOLDERS:

T4-MC, 120V and 240V: -S25 Mini Candelabra (E11) - ceramic.

'LV', 12V: Rim Clamps & Bi Pin Socket GX 5.3.

'JC', 12V & 24V: Bi Pin Socket G 6.35-1.0.

'DW',120-240V: Rim Clamps & GZ10 Twist lock Socket.

LENS: (See Lightfixture Supplements Section.)

CONVEX FRESNEL LENS: 80mm / 3.149" O.D., Clear or 5 colors.

OPTIONAL & EXTRA:

CONVEX CLEAR LENS without Fresnels for MR16 & GU10 Spot Lamps.

FLAT CLEAR LENS & FLAT DICHRO COLOR LENSES (10 Colors)

LENS GASKET:

Custom molded 'U' shape. Made of high temperature Silicone Rubber (U.L. listed).

DICHROIC LENS SHADE: E40 - 0-5 (Required for dichroic colors).

THERMAL CUT OFF: Optional, 120V only, integral, automatic self resetting type to protect cable entry.

ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated compression type cable entry in factory assembled fixtures. See Lightfixture Supplements Section for sizing.

For Factory chained fixtures - Enquire. (Not UL or CSA)

MOUNTING OPTIONS: See opposite Page

PEM E 40 LIGHT OUTPUT (Measured in open air)

E40-S, 120V - T4-MC Lamp

Clear Flat Lens, Included Beam Angle 11°

Distance	Diameter	* fc
0.5m	0.1m	19880
1.0m	0.2m	6600
1.5m	0.4m	3230
2.0m	0.5m	1440
3.0m	0.9m	790
4.0m	1.2m	485

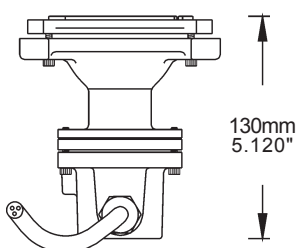
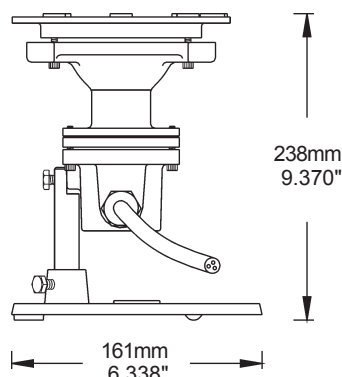
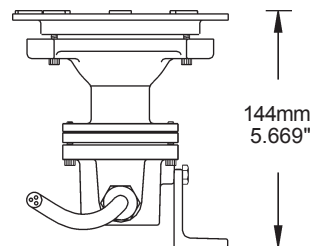
*fc = appr.foot candles at center

E40-F, 120V - T4-MC Lamp

ClearFlat Lens, Included Beam Angle 100°

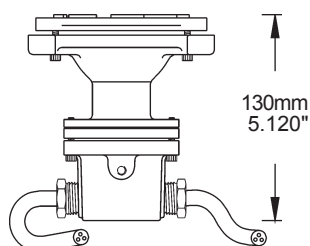
Distance	Diameter	* fc
0.5m	0.8m	3344
1.0m	1.6m	1143
1.5m	2.4m	518
2.0m	3.4m	315
3.0m	5.4m	153
4.0m	7.4m	96

*fc = appr.foot candles at center

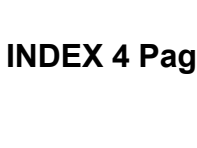
E40'A'
+ B10-2 StandE40'A'
+ B12 Bracket

E40'B'- 2

Factory Chained Fixtures
Not for USA & Canada



PEM E40

	SERIAL	PEM	Website - Index # 6	CABLE	W.
	309-00000	Cat.	Catalog. Pages 322 & 323	SIZE & LENGTH	Kg
			FOR LAMPS AS INDICATED (Not included)		
			Select cable size to suit lamp(s) wattage (Amperage)		
	CSA & U.L."A' Type FIXTURES WITH CONVEX FRESNEL LENS, & CABLE , NO STAND				
	309-102610	E40A-S-1-2-10	UL/cUL- T4- E11,max.120V, 250W Wet, 20W Dry	2.7mx16/3 AWG	3.5
	309-102620	E40A-F-1-2-20	UL/cUL- T4- E11,max.120V, 250W Wet, 20W Dry	2.7mx16/3 AWG	3.5
	309-102640	E40A-S-2-2-40	UL/cUL- JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	2.7mx16/3 AWG	3.5
	309-102650	E40A-F-2-2-50	UL/cUL-JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	2.7mx16/3 AWG	3.5
	309-102660	E40A-LV-2-60	UL/cUL-MR16,12V/24V,Max.150W Wet,max 50 W.Dry	2.7mx16/3 AWG	3.5
	B Type FIXTURE WITH CONVEX FRESNEL LENS & CORDSEAL, NO CABLE & NO STAND				
	309-102701	E40B-S-1-01	For T4- E11,max.240V, 250W	For 9-11mm Cable	2.4
	309-102702	E40B-F-1-01	For T4- E11,max.240V, 250W	For 9-11mm Cable	2.4
	309-102703	E40B-S-2-01	For JC, Bi Pin, 6.35-1, 12V/ 24V, max 150W	For 9-11mm Cable	2.3
	309-102704	E40B-F-2-01	For JC, Bi Pin, 6.35-1, 12V/ 24V, max 150W	For 9-11mm Cable	2.3
	309-102705	E40B-LV-1-01	For MR16, 12V/24V, MAX 5W	For 9-11mm Cable	2.3
	B Type FIXTURE WITH CONVEX FRESNEL LENS & CABLE , NO STAND				
	309-102715	E40B-S-1-2-15	For T4- E11,max.240V, 250W Wet, 20W Dry	2.7m x 3 x 1.5mm2	3.3
	309-102716	E40B-S-1-2-16	For T4- E11,max.240V, 250W Wet, 20W Dry	5.0m x 3 x 1.5mm2	7.0
	309-102723	E40B-F-1-2-23	For T4- E11,max.240V, 250W Wet, 20W Dry	2.7m x 3 x 1.5mm2	3.3
	309-102725	E40B-F-1-2-25	For T4- E11,max.240V, 250W Wet, 20W Dry	5.0m x 3 x 1.5mm2	7.0
	309-102743	E40B-S-2-2-43	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	2.7m x 2 x 2.5mm2	3.3
	309-102745	E40B-S-2-2-45	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	5.0m x 2 x 2.5mm2	4.0
	309-102753	E40B-F-2-2-53	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	2.7m x 2 x 2.5mm2	3.3
	309-102756	E40B-F-2-2-56	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	5.0m x 2 x 2.5mm2	4.0
	309-102762	E40B-LV-2-62	For MR16, 12V/24V, Max. 20W Dry, max 20 W. Wet	2.7m x2x 1.5mm2	3.1
	309-102764	E40B-LV-2-64	For MR16, 12V/24V, Max. 20W Dry, max 20 W. Wet	2.7m x2x 2.5mm2	3.1
	309-102765	E40B-LV-2-65	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	2.7m x2x 1.5mm2	3.1
	309-102767	E40B-LV-2-67	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	5.0m x 2 x 2.5mm2	5.5
	ADD ON TO FIXTURES				
	391-0224	+/-14-1B	80mm Convex Clear Lens, No Fresnels	See: Light.Supplement	0.1
	391-1001	+/-30-1	80mm Flat Clear lens	See: Light.Supplement	0.1
	391-1000	+/-35- 1-30	80mm Flat Dichro Color Lens	See: Light.Supplement	0.1
	330-3041	+/-E40-5-1	Flat Lens Adaptation for T4-MC & JC (Required)	Factory installed	0.5
	350-0003	+/-07	Thermal Cut Off for 120/240V only	Factory installed	0.0
	334-3191	+/-05	Brass Lens Shade for Dichro Color		0.1
	350-0011	+/-2-1	2. Cable Cordseal, 9-11mm Cable O.D.	Factory wired only	0.1
	350-0520	+/-B10-1	B10-1 Ring Stand, 19cm WD		1.5
	350-0540	+/-B10-2	B10-2 Ring Stand, 25cm WD		2.0
	350-0560	+/-B10-3	B10-3 Ring Stand, 38cm WD		2.5
	350-0610	+/-B12	B12 Mounting Bracket ,15cm WD		0.25
	350-0662	+/-B23-2	Bracket for 2 x E 40 on 1 1/2" Pipe		1.0
	350-0733	+/-B23-6	Bracket for 6 Lights on 3" Pipe		1.0
	350-0734	+/-B23-7	Bracket for 6 Lights on 4" Pipe		1.6
	350-0742	+/-B23-2-1	E40, 100mm Mounting Rod For B23		0.3
	385-3330	T 301	Transformer 240V,50Hz x 12V/24V, 300VA	IP23	2.2

SUBMERSIBLE LIGHTFIXTURE

PEM E41

NICHE FIXTURE

FIXTURE TYPES

1. T4-MC, cUL, 120V, max. 250W.
2. T4-MC, UL, 120V, max. 250W.
3. T4-MC, CS, 240V, max. 250W.
4. JC, UL, 12V max. 100W / 24V max.150W.
5. JC, cUL/CS/CE, 12V max.100W or 24V max.150W.
6. LV, UL/cUL/CE, 12V, MR16 LED / Halogen 75W,
LED / Halogen Outside Canada / USA 24 VAC / 24VDC
7. DW, 120V / 240V, Max. 50W, (For GU10 Reflector Lamp)

DESCRIPTION:

A high intensity lightfixture, ball joint mounted in niche that can be externally directionally adjusted after installation to a max. of 30 degrees included angle within a 360 degree range. Grout frame of niche permits flush installation into concrete surface. Large vent openings in facering are to promote cooling water or air circulation around fixture in niche.



CONSTRUCTION OF LIGHTFIXTURE

FIXTURE OPTIONS: Fixture & Facering are of cast bronze, Stainless Steel fitted.

'S' and 'F' type fixtures have water cooled parabolic reflector integral with housing.

'S': Option has polished reflector with concentrated beam output - spotlight.

'F': Option has diffused output with better color rendition - flood light.

FIXTURE HOUSING & FACERING:

Cast Bronze with stainless steel fasteners and Neoprene Seals.

LAMPS: Quartz Halogen-OPTIONAL. Not part of fixture.

T4-MC: 120V / 240V, Mini Candelabra, T4-MC / E11 base .

DW: 120V / 240V, Max. 50W, GU10 Reflector Lamp, GZ10 Base.

JC-12V: JC Type Bi pin Lamp, 6.35-1.0 base, max. 100W.

JC-24V: JC Type Bi pin Lamp, 6.35-1.0 base, max. 150W/24V (Axial Filament Lamps).

LV- 12V: MR16(50mm), GX5.3 base LED or Halogen with Aluminized Reflector Halogen.

LAMP HOLDERS:

T4-MC, 120V and 240V -S25 Mini Candelabra (E11) - ceramic.

'LV', 12V Rim clamp & Bi Pin Socket GX 5.3.

'JC', 12V & 24V: Bi Pin Socket G 6.35-1.0.

'DW': Rim Clamp & GZ10 Twist lock Socket.

LENSES: CONVEX LENS: 80mm / 3.149" O.D.

Tempered cast boron silicate glass with amplifying output, fresnels on inside center of lens.

Available in clear or 5 colors at no extra cost (See Lightfixture Supplements Section.)

LENS GASKET: Custom molded U shape high temperature Silicone Rubber.

THERMAL CUT OFF: Optional for 120V & 240V Fixtures only.

Integral, automatic self resetting type to protect cable entry.

ELECTRICAL CABLE: Approved for the purpose with integral epoxy encapsulated compression type cable entry in factory assembled fixtures.

See Lightfixture Supplements Section.

NICHE: Standard

Spun stainless steel with cast bronze face and anchor rings, Stainless Steel fitted.

Cable entry through side, combination conduit entry, 3/4" male NPT / BSP, 1/2" female NPT / BSP and removable internal cordseal. Enquire for other applications. Niche has 2 tie up anchors for mounting to concrete form with bare solid copper wire.

TILE MASK: See opposite page.

Standard: TMR Round,

Optional: TMS, Square, natural cast bronze for epoxy grout mounting.

Chrome plating of tile mask includes plating of niche rim and fixture facering.

Chrome plating with original order only.

WATER PROOFING OPTIONS (ADD ON) : See opposite page.

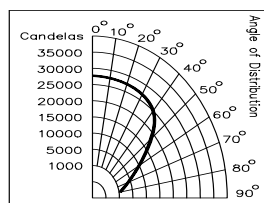
350-4121 - 60 SURFACE FLANGE. For liquid surface waterproofing membrane.

350-4123 - 63 SURFACE LINER CLAMP. Gasketed for surface metal or fibreglass liners.

INSTALLATION COVER WITH BOLTS FOR NICHE INSTALLATION:

See opposite page.

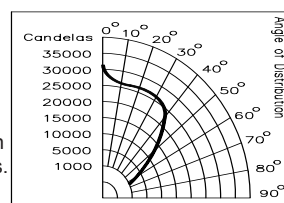
CANDLE POWER with 250 W / 120V lamp (In open air) 1m / 3.28 feet from clear lens.



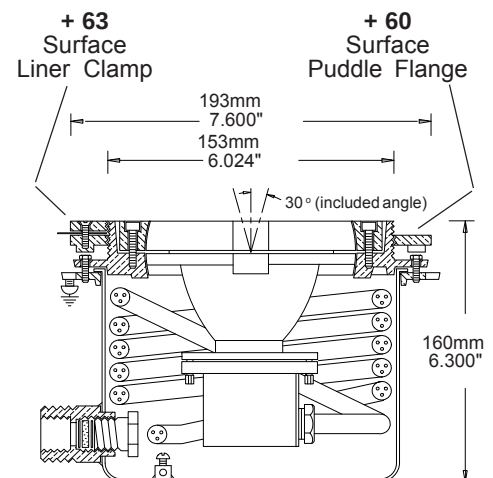
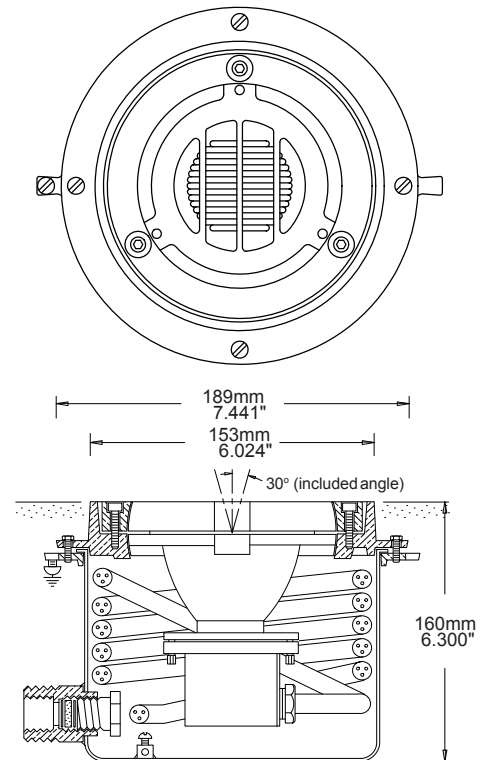
With Lens Fresnels VERTICAL

**E40-T4-MC
'S' Type Fixture
CANDLE POWER
LIGHT OUTPUT**

with 250W / 120V Lamp (In open air) 1m / 3.28 feet from clear lens.



With Lens Fresnels HORIZONTAL



PEM E41

 E41 Top View	SERIAL	PEM		CABLE	W.
	311 0000	Cat.		Length & Size	Kg
			FOR LAMPS AS INDICATED (Not included)		
			Select cable size to suit lamp(s) wattage (Amperage)		
			FIXTURE WITH STAINLESS STEEL NICHE, CONVEX LENS & CABLE		
 E41 3° Angled in Niche	310-102810	E41-S-1-10	UL/cUL- T4- E11,max.120V, 250W Wet, 20W Dry	4.5m/15' x 16/3 STWA	7.5
	311-402815	E41-S-1-15	For T4- E11,max.240V, 250W Wet, 20W Dry	5m x 3 x 1.5mm2	7.5
	310-102816	E41-S-1-16	For T4- E11,max.240V, 250W Wet, 20W Dry	10.0m x 3 x 1.5mm2	8.7
	310-102820	E41-F-1-20	UL/cUL- T4- E11,max.120V, 250W Wet	4.5m/15' x 16/3 STWA	7.5
	310-102823	E41-F-1-23	For T4- E11,max.240V, 250W Wet, 20W Dry	5.0m x 3 x 1.5mm2	8.7
	310-102825	E41-F-1-25	For T4- E11,max.240V, 250W Wet, 20W Dry	10.0m x 3 x 1.5mm2	8.7
	310-102840	E41-S-2-40	UL/cUL- JC, Bi Pin,12V/ 24V, max 150W Wet	4.5m/15' x 16/3 STWA	7.5
	310-102843	E41-S-2-43	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	5.0m x 3 x 1.5mm2	7.5
	310-102845	E41-S-2-45	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	10.0m x 3 x 1.5mm2	8.7
	310-102850	E41-F-2-50	UL/cUL-JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	4.5m/15' x 16/3 STWA	6.8
	310-102853	E41-F-2-53	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	5.0m x 3 x 1.5mm2	8.7
	310-102856	E41-F-2-56	For JC, Bi Pin,12V/ 24V, max 150W Wet, 20W Dry	10.0m x 3 x 1.5mm2	8.7
	310-102860	E41-LV-1-60	UL/cUL-MR16,12V/24V,Max.20W Dry, max 75 W. Wet	4.5m/15' x 16/3 STWA	7.4
	310-102862	E41-LV-1-62	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	5.0m x 3 x 1.5mm2	8.7
	310-102864	E41-LV-1-64	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	10.0m x 3 x 1.5mm2	8.7
 E41 Side View	310-102865	E41-LV-1-65	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	5.0m x 2 x 2.5mm2	9.8
	310-102867	E41-LV-1-67	For MR16, 12V/24V, Max. 20W Dry, max 75 W. Wet	10.0m x 2 x 2.5mm2	9.8
			For CSA - SOW-3/16 Cable is used.		
			ADD ON TO FIXTURES		
	391-1000	35-1-0000	80mm Flat Dichro Color Lens, (LV only)	See Lightfixt. Supplement	0.1
	350-0003	+/-07	Thermal Cut Off for 120/240V only	Factory installed only	
	385-3330	T 301	Transformer 240V,50Hz x 12V/24V, 300VA	IP23	2.2
	350-4120	+/-11	Installation Cover for Niche	Request Spec. Sheet	1.9
	350-4121	+/-60	Surface Puddle Flange	Request Spec. Sheet	1.2
	350-4123	+/-63	Surface Liner Clamp	Request Spec. Sheet	2.9
	350-4110	+/-58-1	Round Tile Mask	Request Spec. Sheet	0.4
	350-4220	+/-58-2	Square Tile Mask	Request Spec. Sheet	0.7

PEM E 1210 LED

SUBMERSIBLE LED LIGHT FIXTURE

UNI-VOLTAGE: 12 VAC, 12 VDC OR 24 VDC

E1210-3 : 20 Degree, 22.5 Watts, R. G. B. , DMX 3 Channel

E1210-4 : 20 Degree, 30 Watts, R. G. B. W, DMX 4 Channel

E1210-6: 20 Degree = 30 Watts, Warm White, No DMX



PEM E1210 on B1 Tripod Stand

SUBMERSIBLE LIGHT FIXTURE FOR LOW VOLTAGE.

LIGHTFIXTURE HOUSING AND COMPONENTS

PEM E1210 Light Fixtures are for fresh water in 85-5-5-5 Bronze Casting, #18-8 Stainless Steel fitted.

PEM E1210 Light Fixtures (Marked:SW) for saltwater are available, please enquire at extra cost.

LENS: 143mm / 5.625" Diameter. Convex clear cast glass,heat resistant and tempered.

OPTIONAL FLAT CLEAR GLASS LENS, heat resistant and tempered.

OPTIONAL LENS ROCK GUARD, required in USA .

LENS GASKET : High Temperature Silicone Rubber,'U' shaped gasket with unique safety sealing lips .

ELECTRICAL CABLE: Standard 2.7M - 9 Feet.

Approved for the purpose with epoxy encapsulated, compression type cable entry (PEM J Type Cordseal) in factory assembled fixture are supplied with Type SOW / SOOW AWG Cable for UL & cUL areas or with HORN-F-1mm2 - Cable with CE Declaration for other areas.

Longer cable (also with SHIELDED CONDUCTORS) available at extra cost, please enquire.

LED PLATE ASSEMBLIES: Factory installed with published terms / conditions of sale for: 'Lamps'.

HEAT TRANSFER PASTE for in factory installed LED Plates is extra and additional.

For LED plates & Fixture Parts SEE PAGE 3 of this brochure.

**For colour & numerical coding of conductors in supply cable of light fixture,
SEE PAGE 4 of this brochure.**

NOTE: "For supply connection, use only an isolating low voltage power supply or transformer with ungrounded output".

PEM E1210 Series

- E1210-3, RGB - DMX-3 Channel
- E1210-4, RGBW - DMX- 4Channel
- E1210-6, Warm WhiteDirect Switching
- E1210-6-A, Warm White DMX
- E1210-8, ColdWhite
- E1210-8-A, ColdWhite DMX

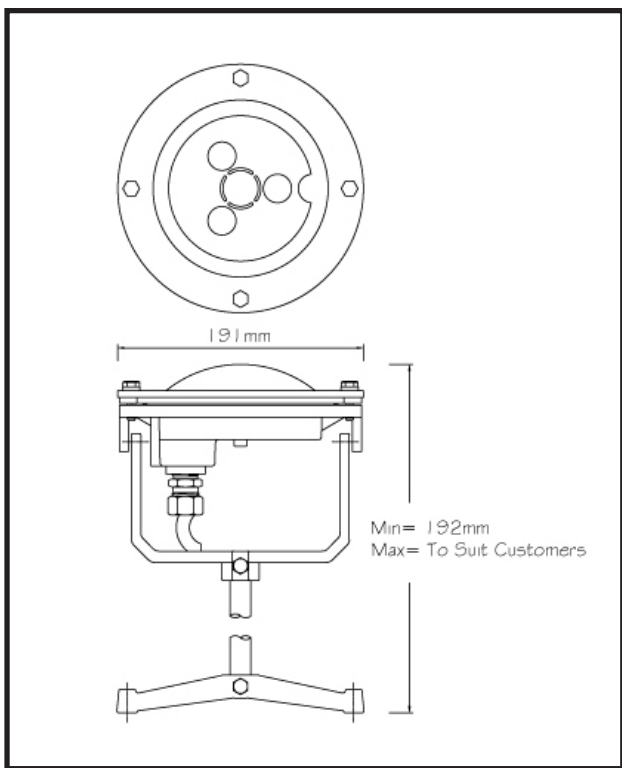
Maximum suggested sprayheight: 2.00m / 6.56

PEM : 953 953 953 952 952 952

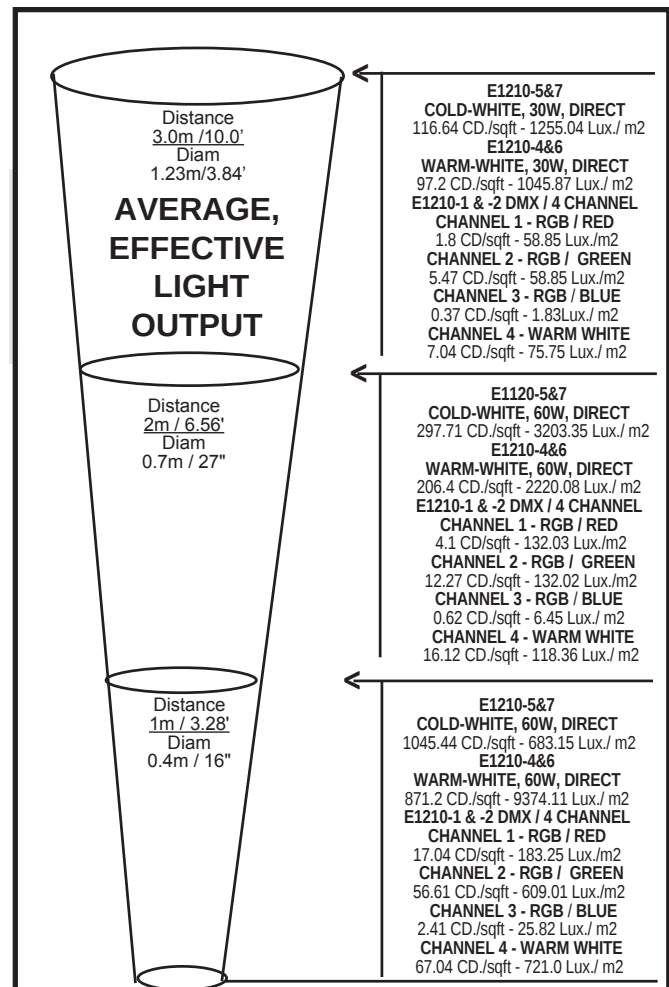


E1210-8 E1210-6 E1210-3-1 E1210-3-2 E1210-3-3
Cold White Warm White E1210-4-1 E1210-4-2 E1210-4-3 E1210-4-4
RGB-Red RGB-Green RGB-Blue RGBW White

PEM E1210 LED LIGHT FIXTURES, SUITABLE FOR DMX CONTROL = 4 CONDUCTORS + Ground
PEM E1210 LED LIGHT FIXTURES, SUITABLE FOR DIRECT SWITCHING = 2 CONDUCTORS + Ground
See: PEM CABLE CONDUCTOR COLOUR OR NUMERICAL CODING = PAGE 3



E1210 - B1S



PEM E1210

ORDER LIST

SERIAL #	PEM ORDER	LED FIXTURES (12VA /12VDC/24VDC)	W.
PEM:	#	LED Plates with 20 degrees light spread are included in price of Light Fixtures.	Kg
		LED Plates are warranted for one year from date of purchase for failure in normal usage.	
		LED failures due to faulty installation and/or usage are NOT warranted.	
		LED Plates are identified with registered Serial Number, which is required for any claim.	
		Light fixture are installed & pre-tested at factory for normal usage .	
E1210-3	E1210-3	DMX-3 Channel, RGB Control required: (For creation of CUSTOM COLOUR ILLUMINATION)	5.2
		R.G.B. (Red/Green/Blue), 22.5W (12VAC,12VDC or 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 18-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 5 x 1 mm2 Conductors	
E1210-4	E1210-4	DMX-4 Channel, RGBW Control required: (For creation of CUSTOM COLOUR ILLUMINATION)	5.2
		R.G.B.W. (Red/Green/Blue + warm White), 30w (12VAC,12VDC or 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 18-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 5 x 1 mm2 Conductors	
E1210-6	E1210-6	Direct switching by remote Control, NO DMX connection in fixture	5.2
		Warm White Colour 30W (at 12VAC, 12VDC OR 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16/3 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 3 x 1 mm2 Conductors	
E1210-6A	E1210-6A	Dimming by DMX - 1 Channel Control	5.2
		Warm White Colour 30W (at 12VAC,12VDC OR 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 18-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 5 x 1 mm2 Conductors	
E1210-8	E1210-8	Direct switching by remote Control, NO DMX connection in fixture	5.2
		Cold White Colour 30W (at 12VAC,12VDC OR 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 16-3 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 3 x 1 mm2 Conductors	
E1210-8A	E1210-8A	Dimming by DMX - 1 Channel Control	5.2
		Cold White Colour 30W (at 12VAC,12VDC OR 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 18-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 5 x 1 mm2 Conductors	
		PEM E1210 Fixtures selection. For standard equipped fixture with stand see Page 2 of Brochure	
391-0114	14-2-9	Clear Flat Armored Lens	1.2
391-2001	+/-30-2	#2A, 143mm Clear Flat Lens	0.3
350-0026	+/-10-6	Swing Up Rock Guard	0.9
350-0109	+/-B1	Tripod Stand, 40cm WD	1.4
350-0130	+/-B4	Ring Stand, 60cm WD	2.6
350-0270	+/-B6-2	Mounting Brackets,18cm WD	2.1
350-4011	+/-B46-1	Stainless Steel, Bronze Fitted Niche	6.5
350-4031	+/-B50A	Walk Over Stainless Steel, Bronze Fitted Niche	8.2
350-4330	+/-58-03	Tile Mask for Stainless Steel, Bronze Fitted Niche	2.3
350-2310	+/-B56-1	Slab Hanger	3.1
350-2320	+/-B56-	Slab Hanger with Locks	3.5
350-2410	+/-B57-1	Waterfall Slab Hanger	2.8
350-2420	+/-B57-	Waterfall Slab Hanger with Locks	3.2

(*) BUILT INTO FLOOR OR PAVEMENT NICHES SUBJECT TO FREEZING, TO HAVE THE BOTTOM DRAIN
CONNECTED TO VERTICAL INTO FROST FREE GROUND DEPTH PIPE OR TUBING.
BEFORE WINTER: DRAIN PLUGS TO BE REMOVED AND STORED IN SAFE PLACE!



E1210-3+4-B1 RED



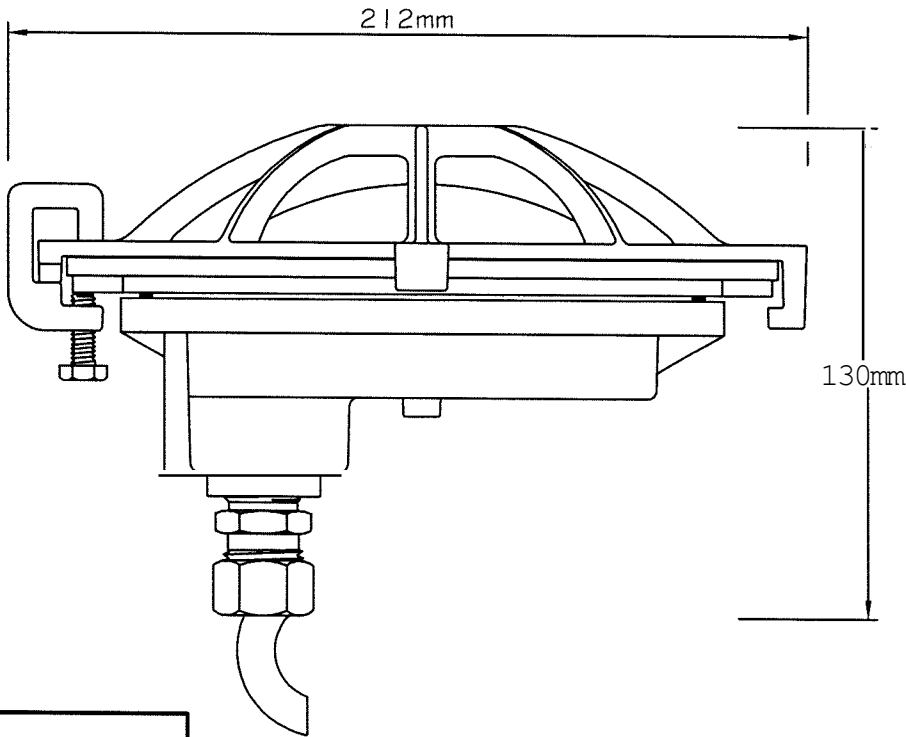
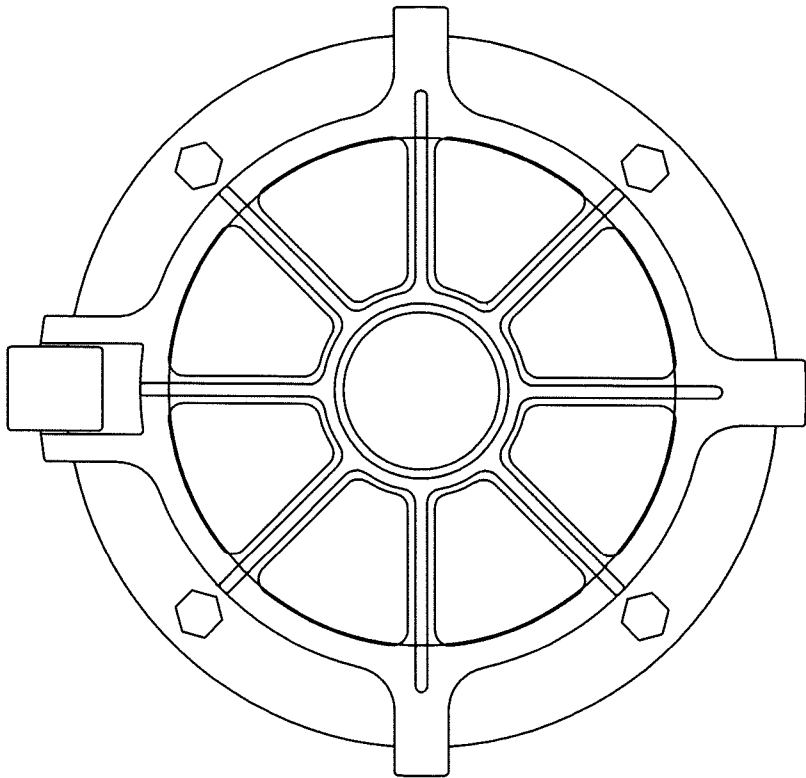
E1210-3+4-B1 GREEN



E1210-3+4-B1 BLUE

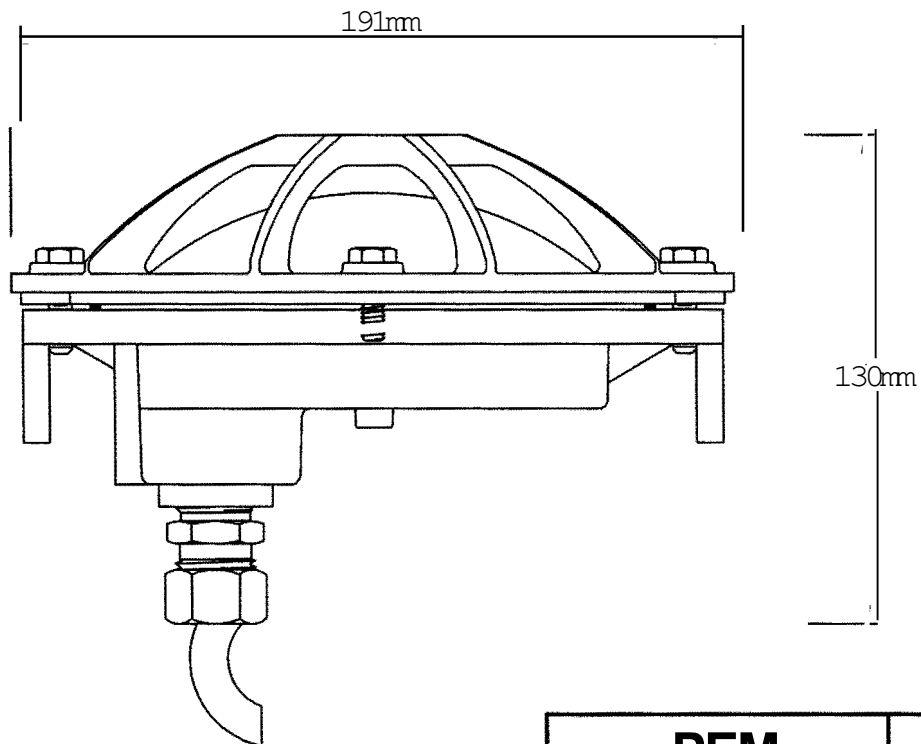
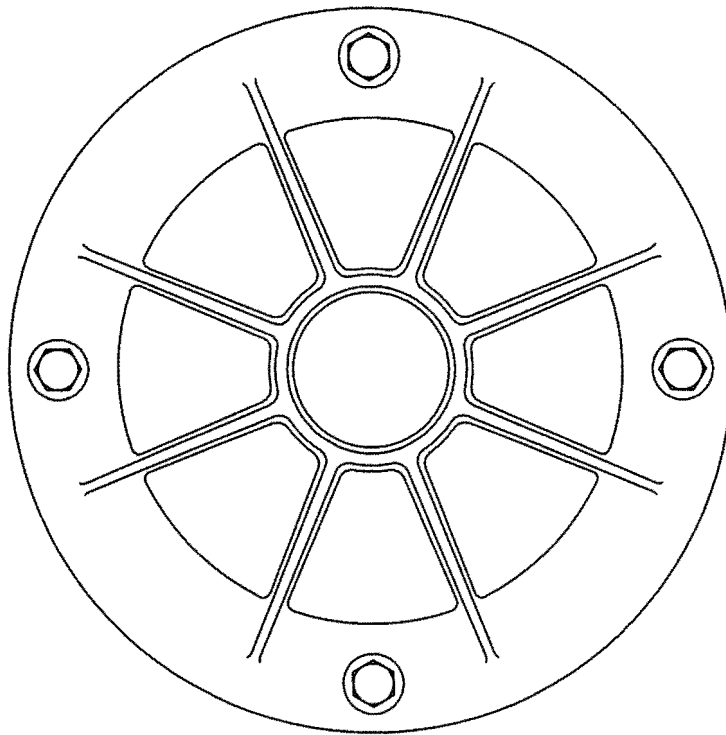


E1210-3+4-B1 WHITE



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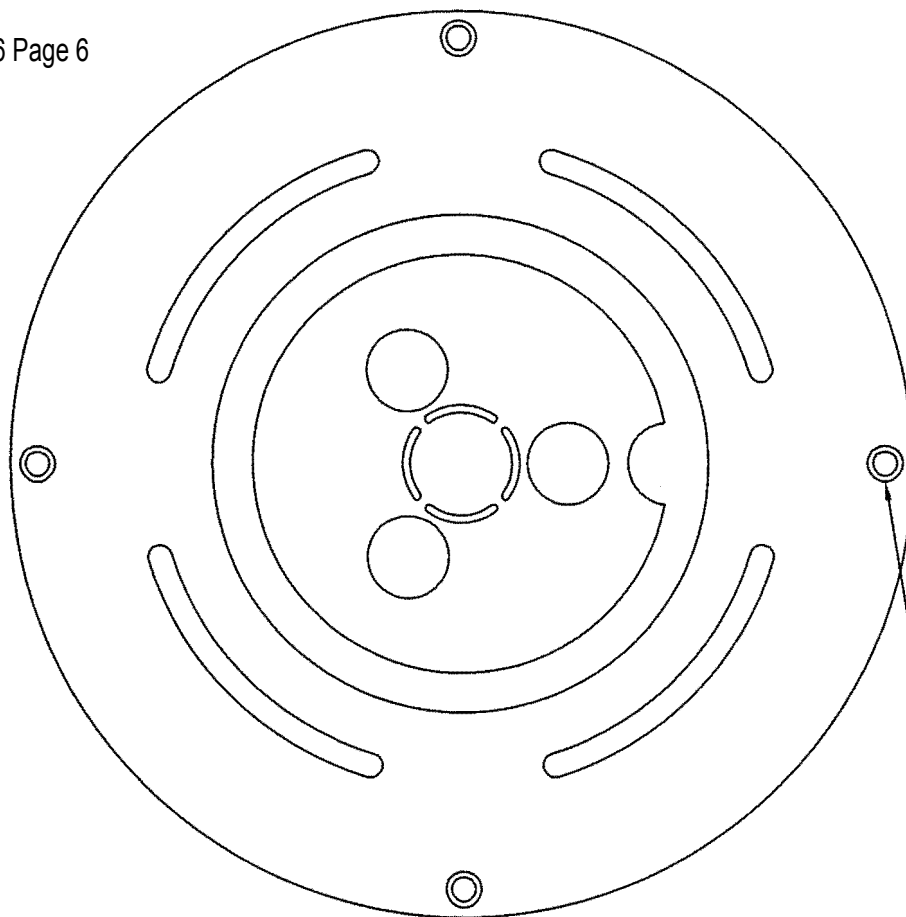
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E12101/ 10-7

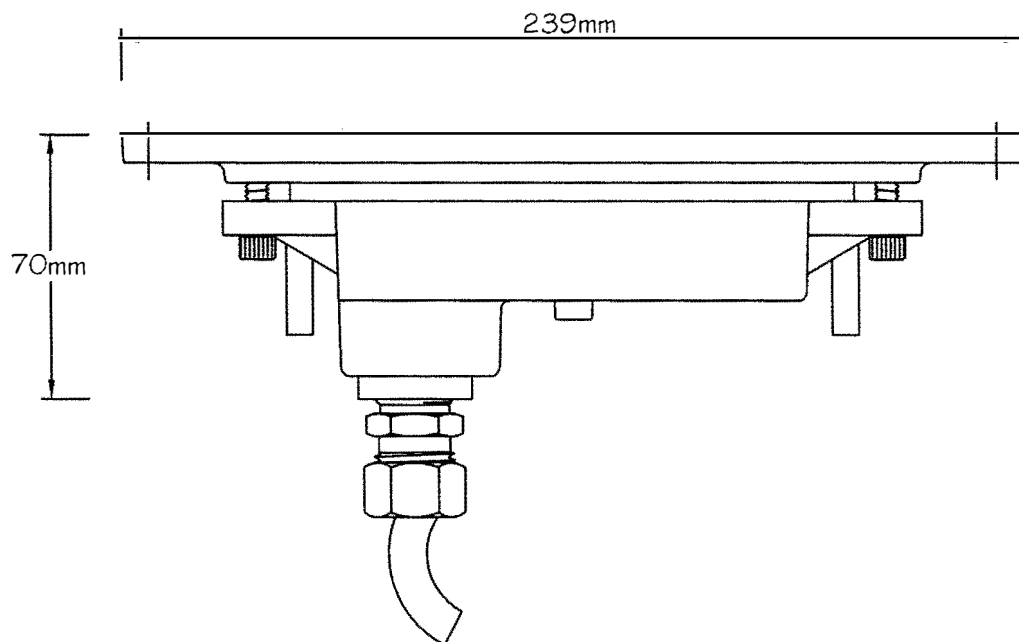
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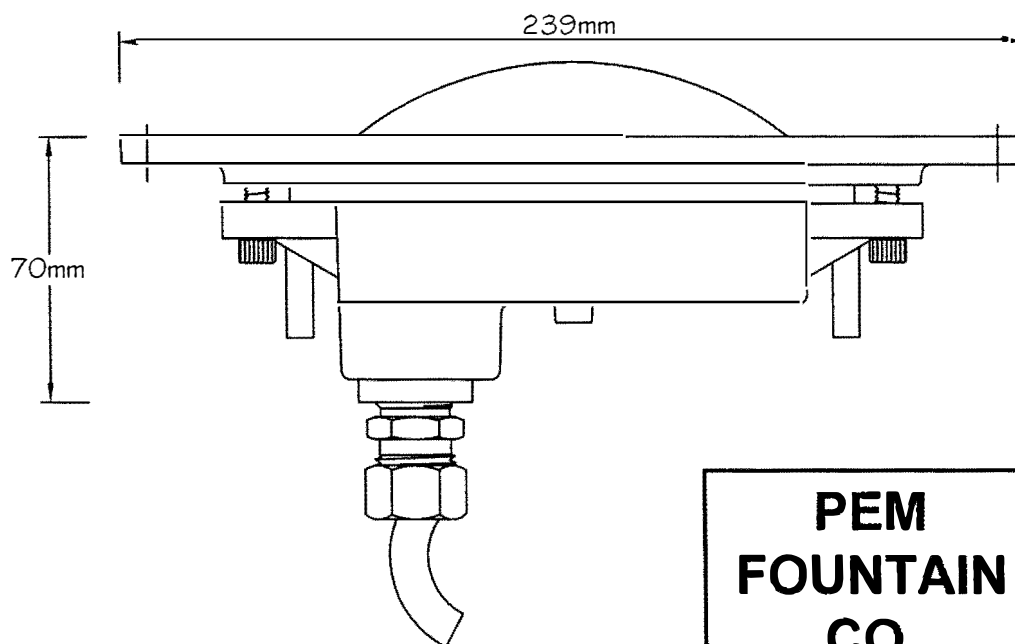
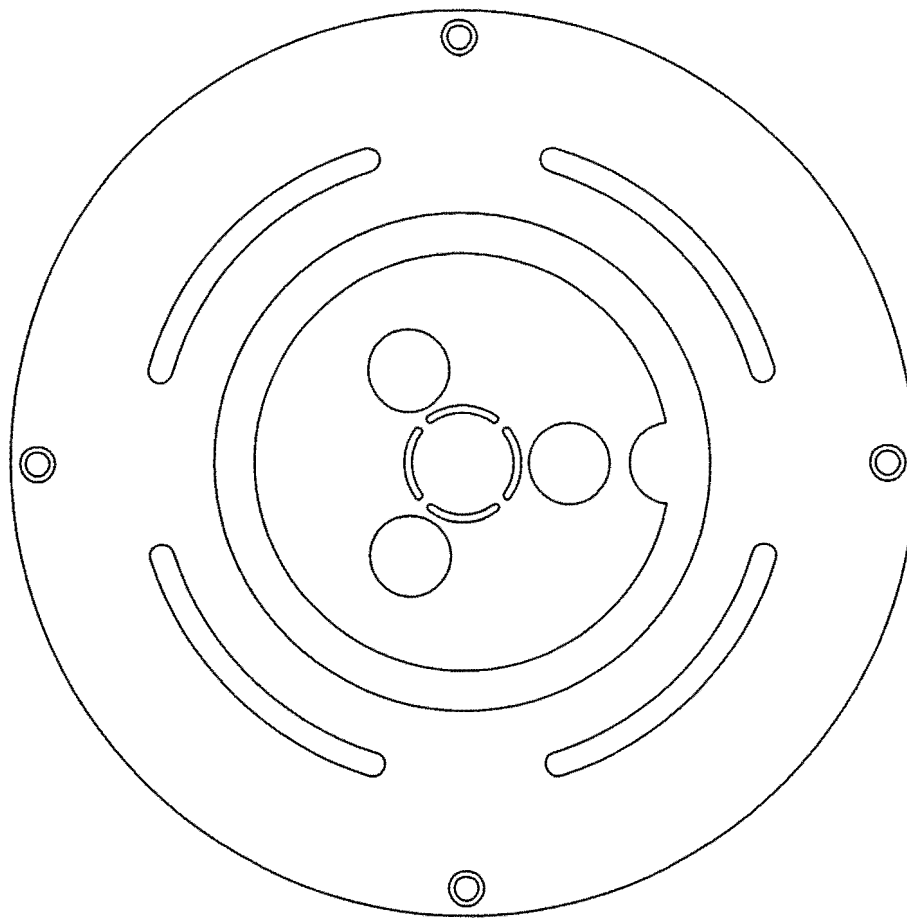
Optional Mounting Holes



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PEM FOUNTAIN CO.		E1210/ Wide Facering/ Flat Lens	
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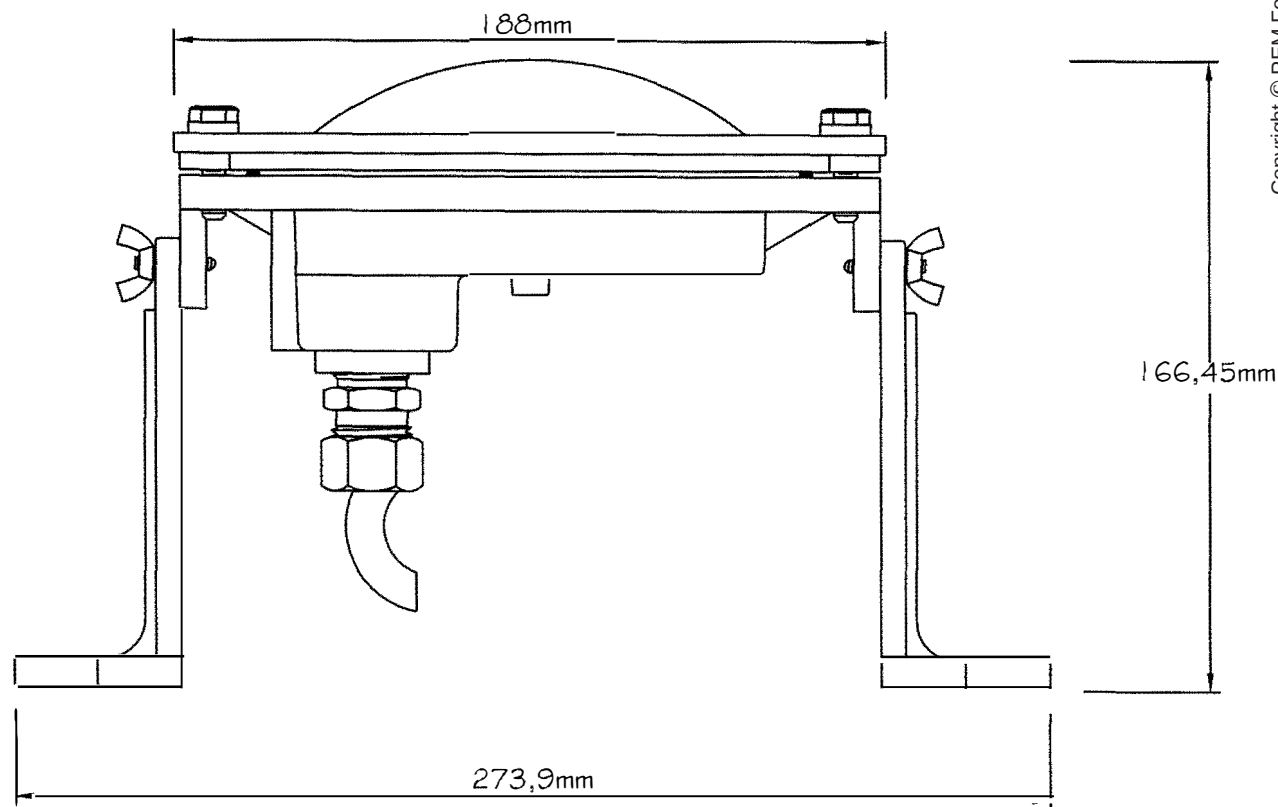
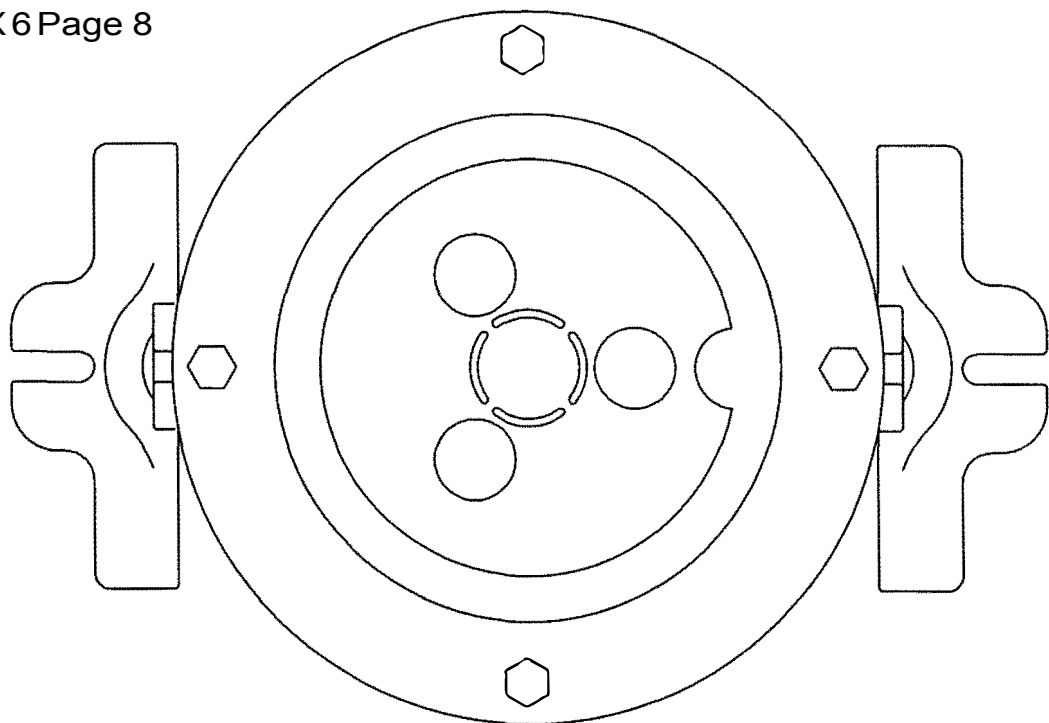
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**E1210Wide
Facering
Convex Lens**

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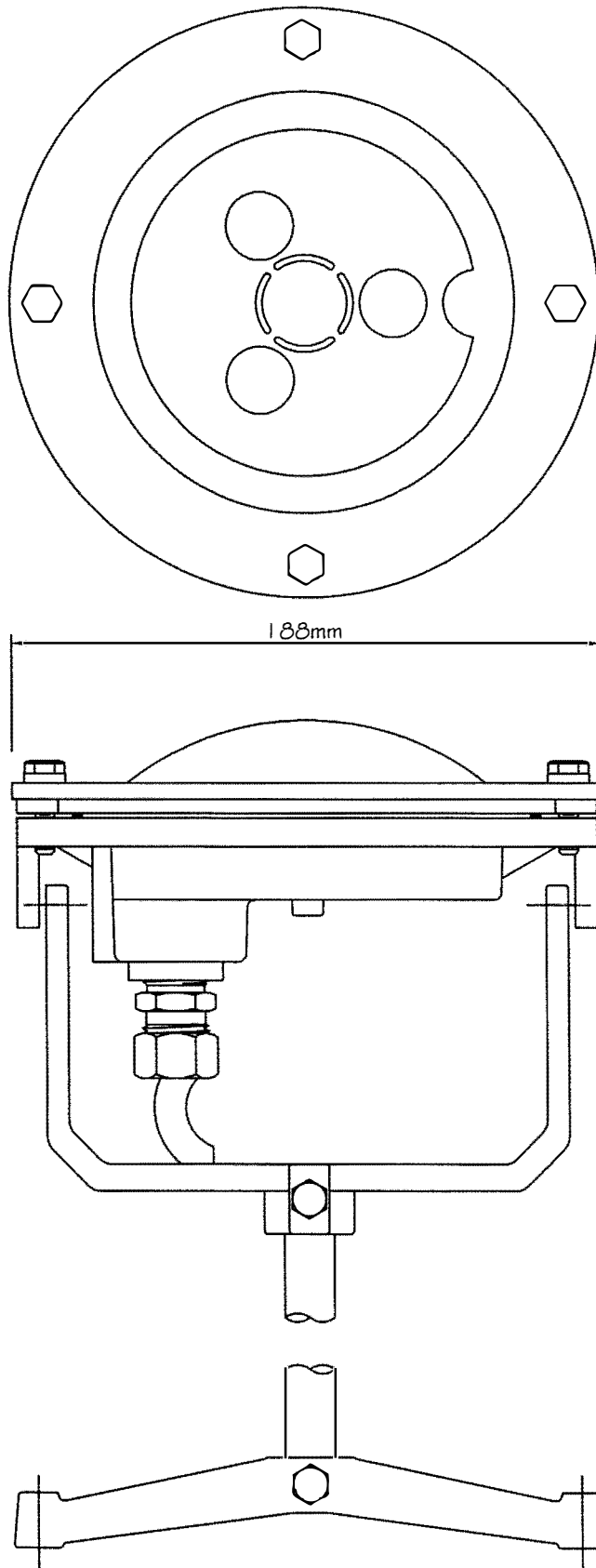
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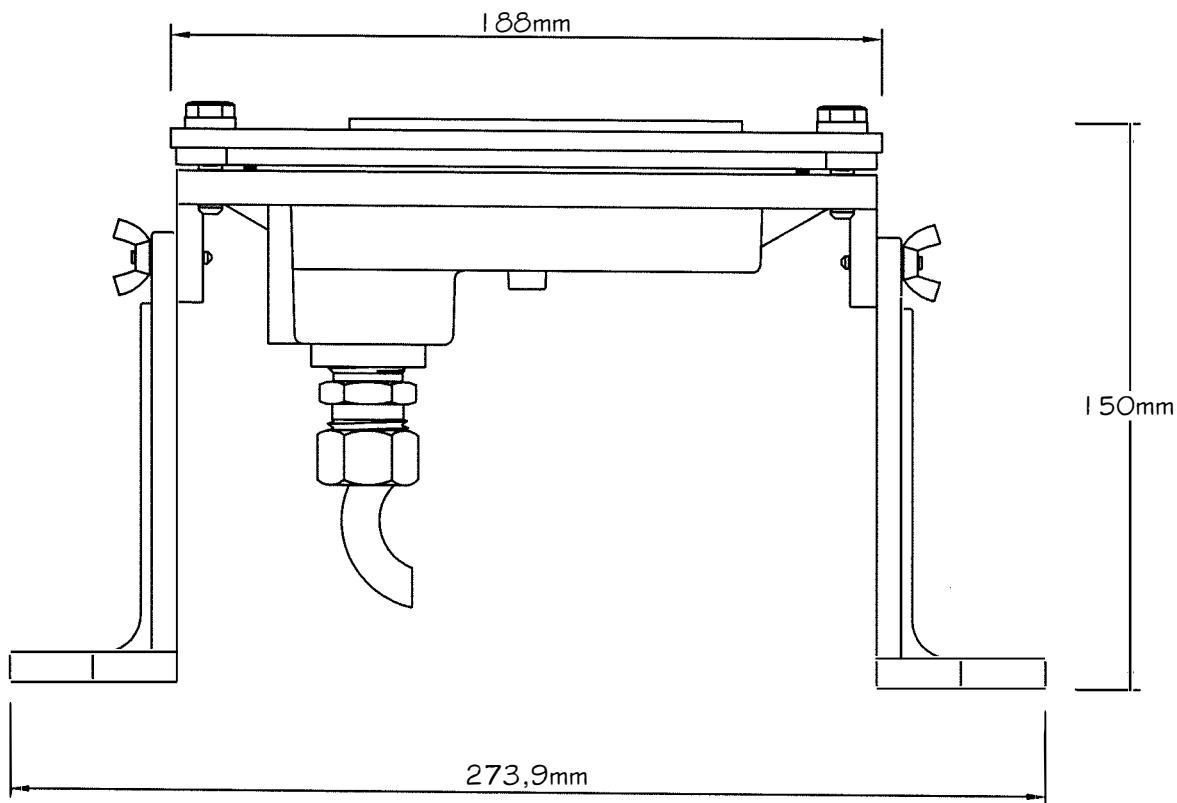
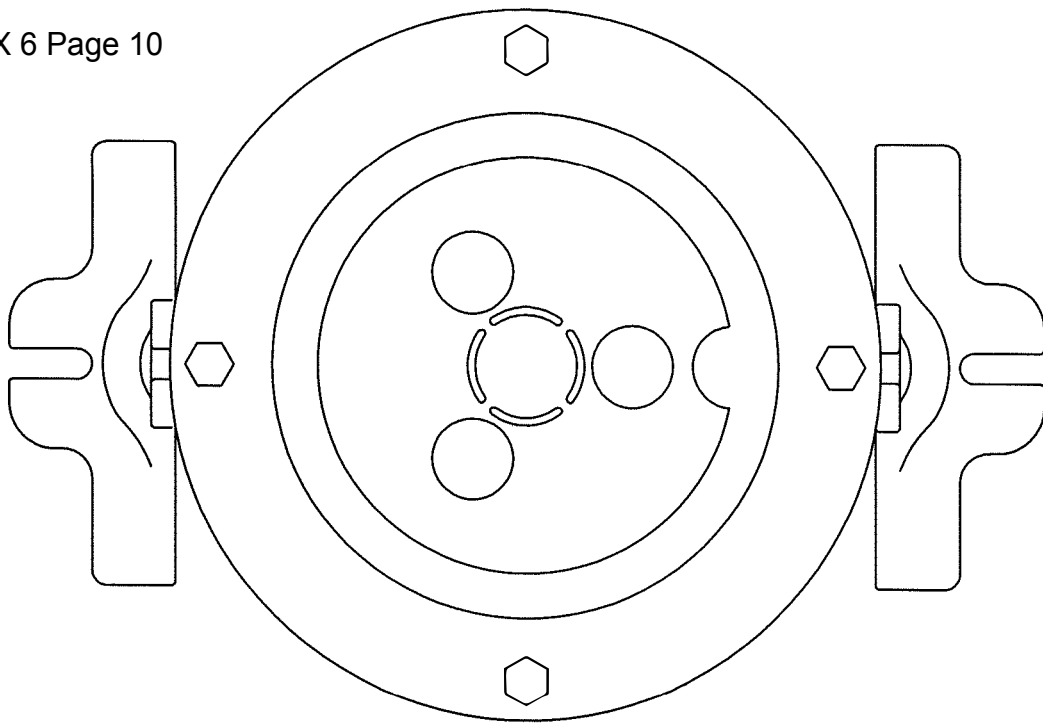
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**E1210/ B1S
Convex Lens**

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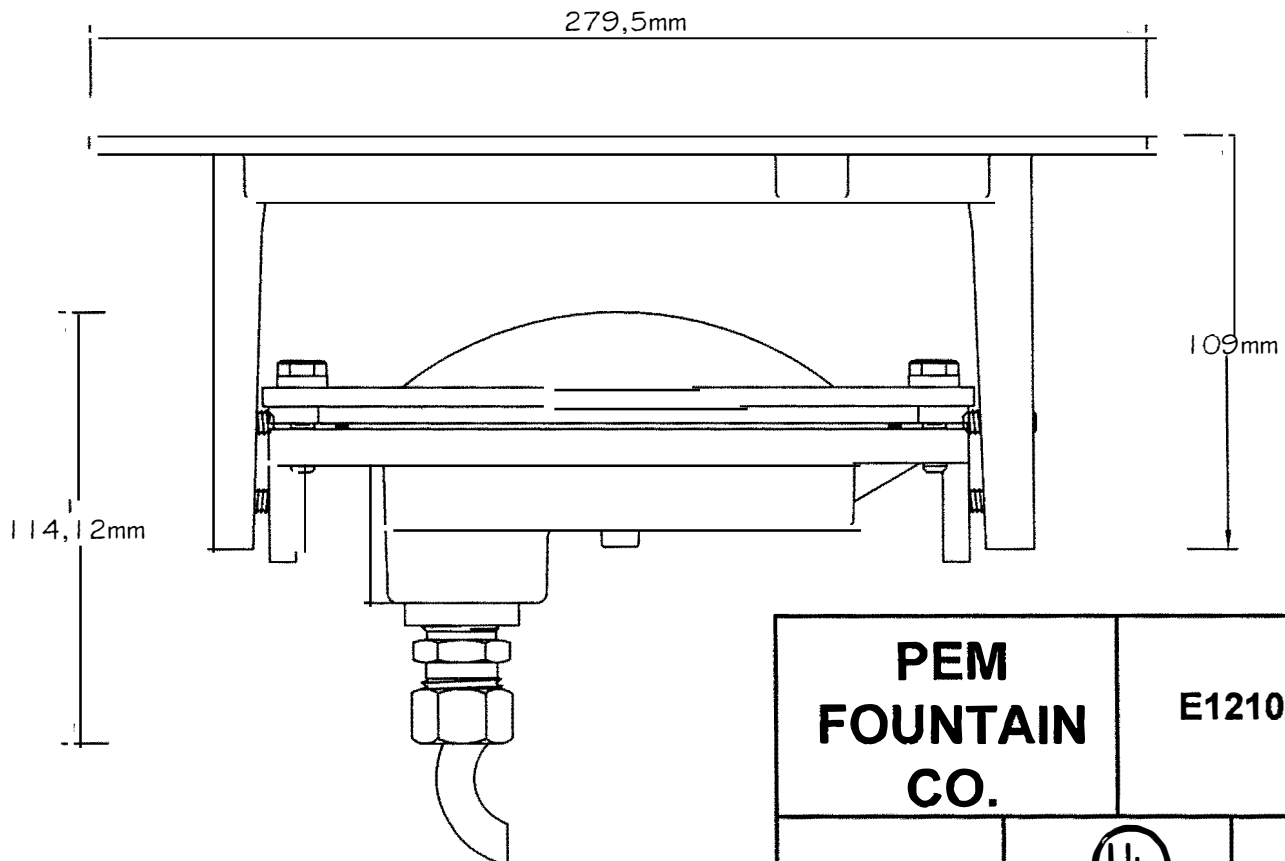
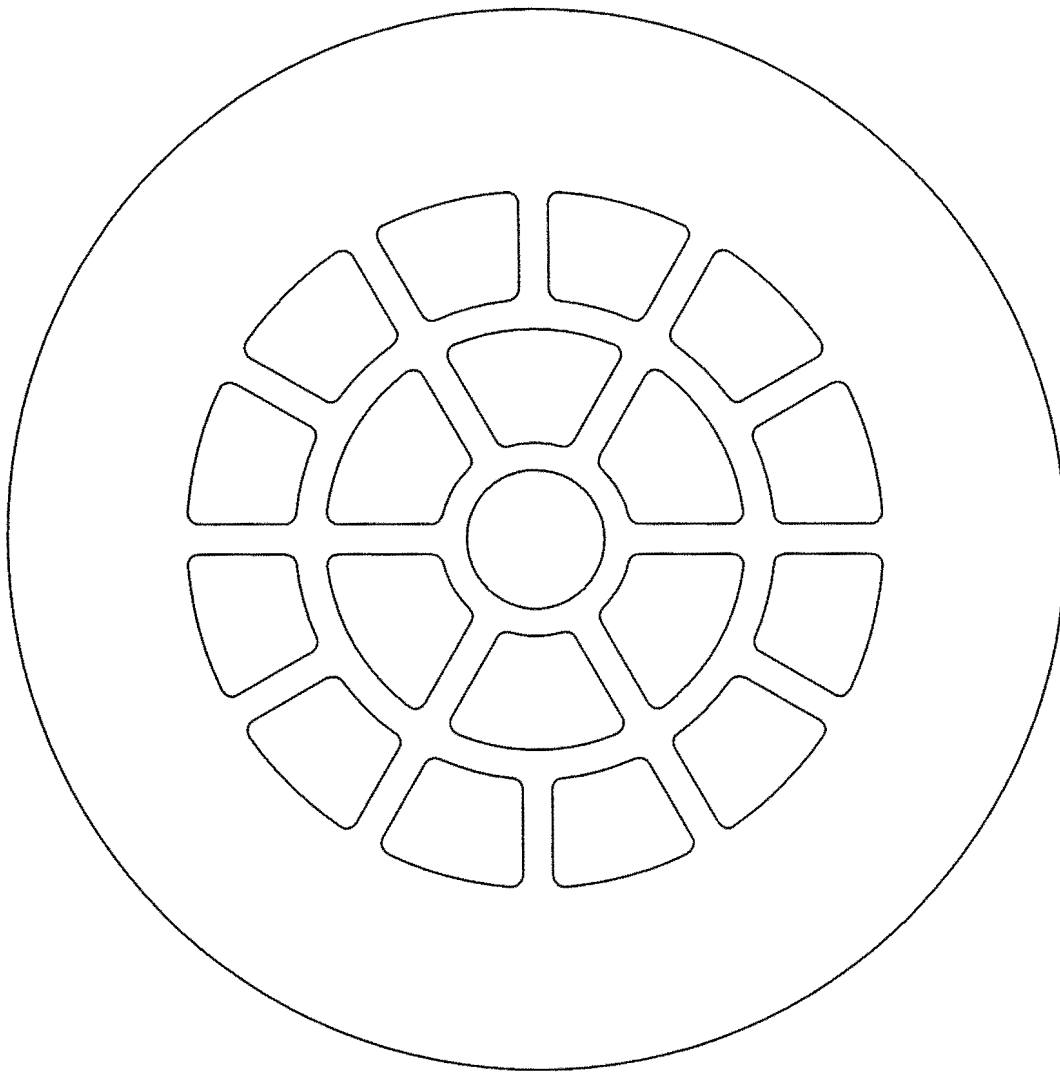


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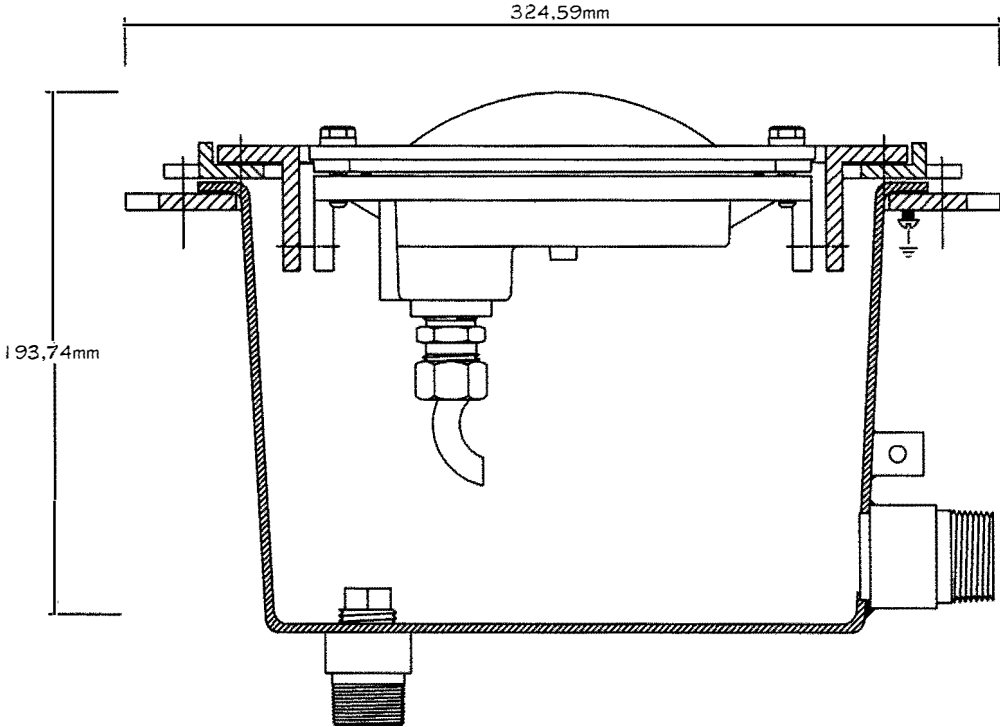
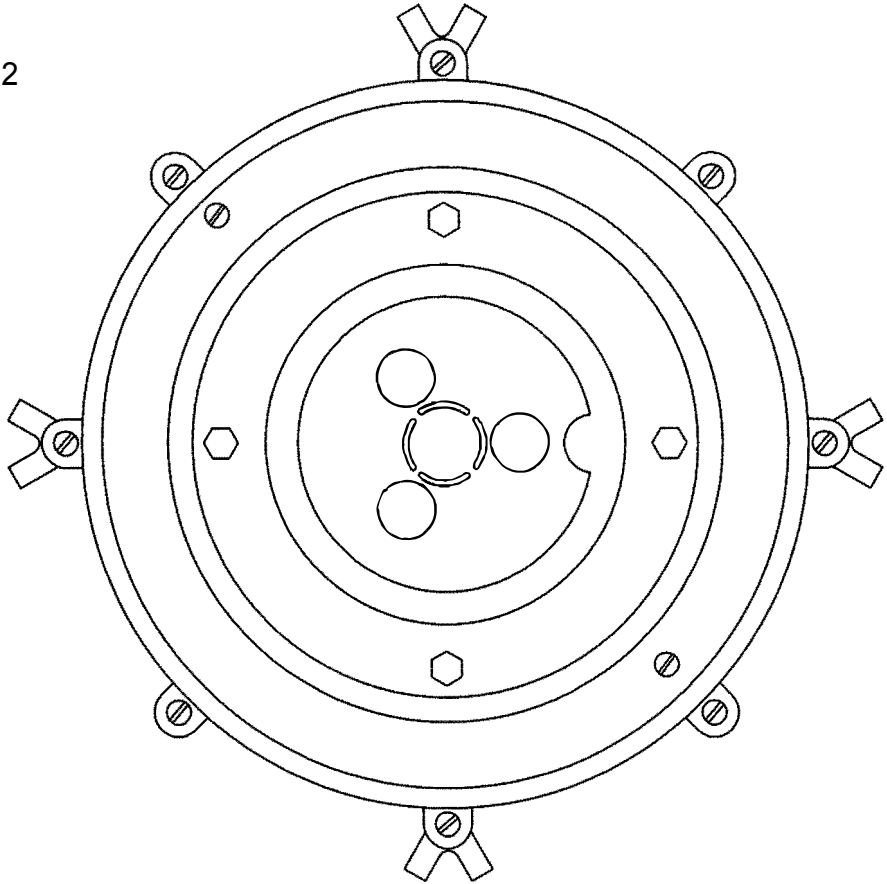
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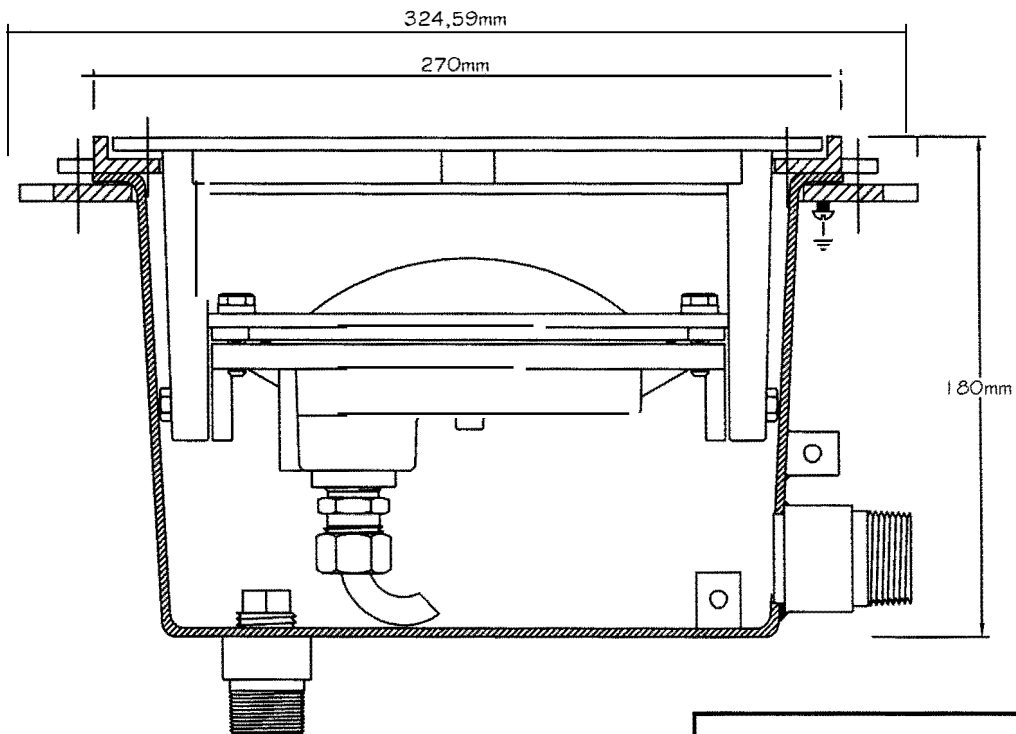
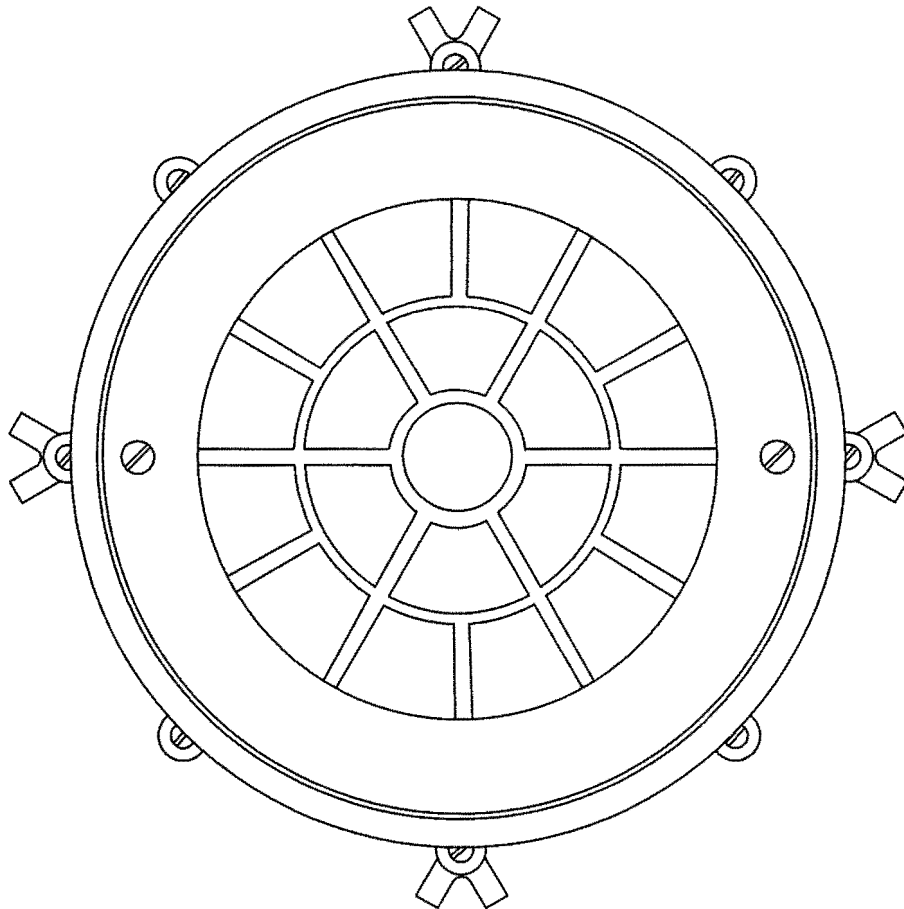
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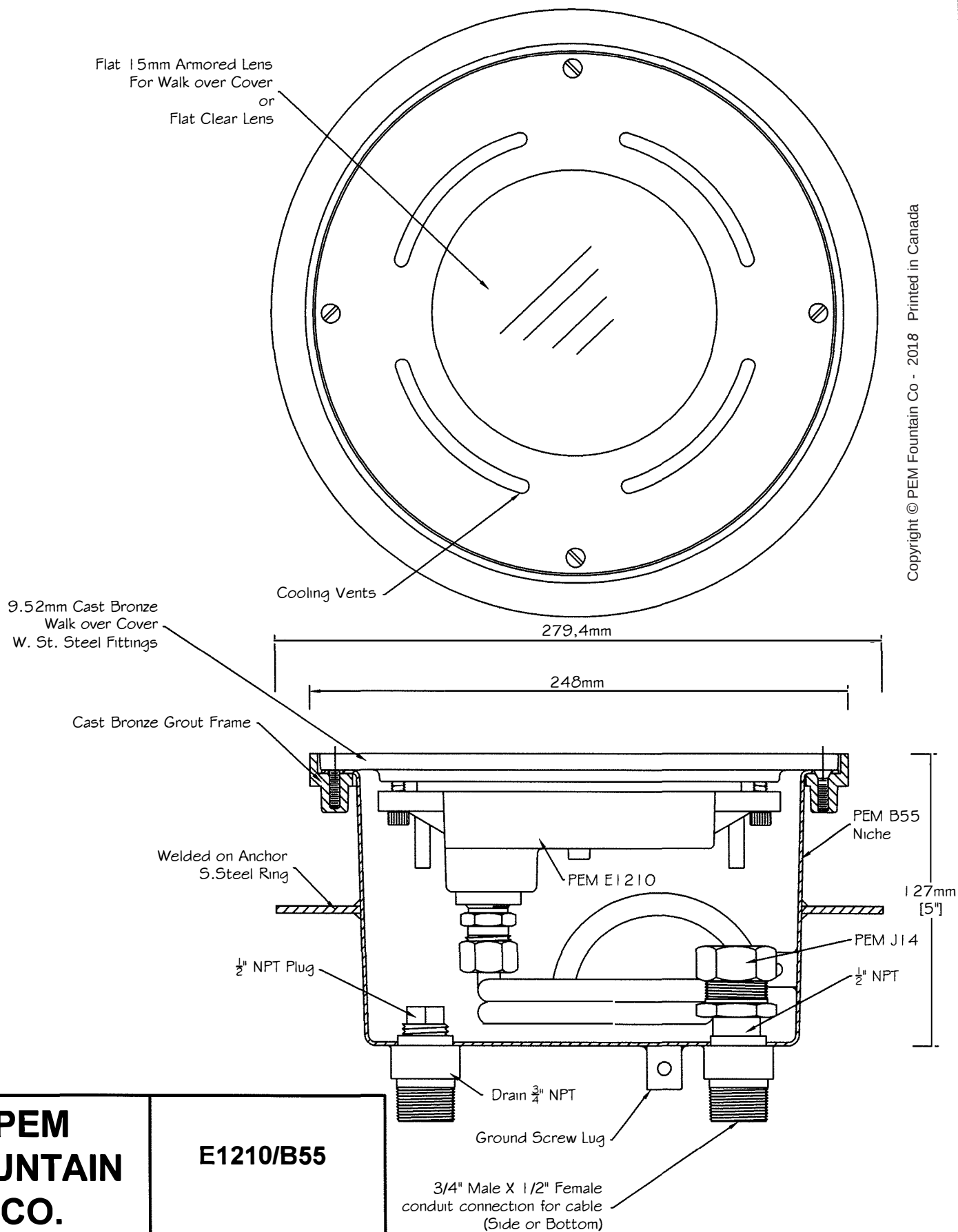
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B50A**

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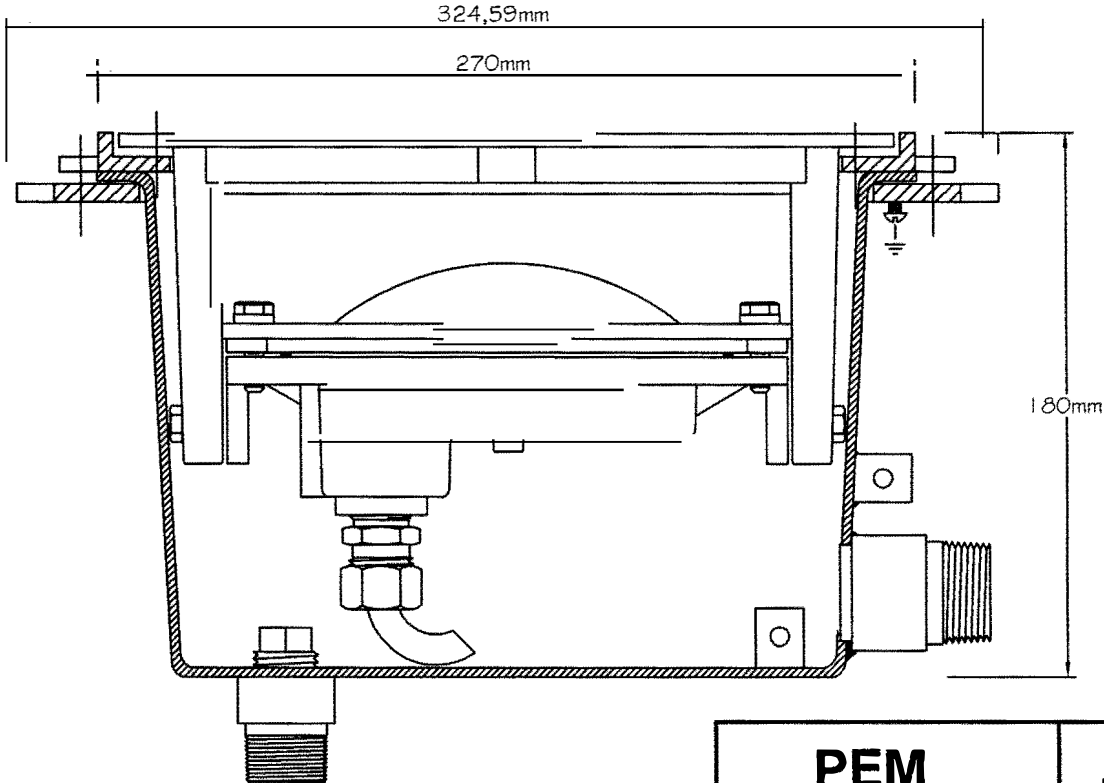
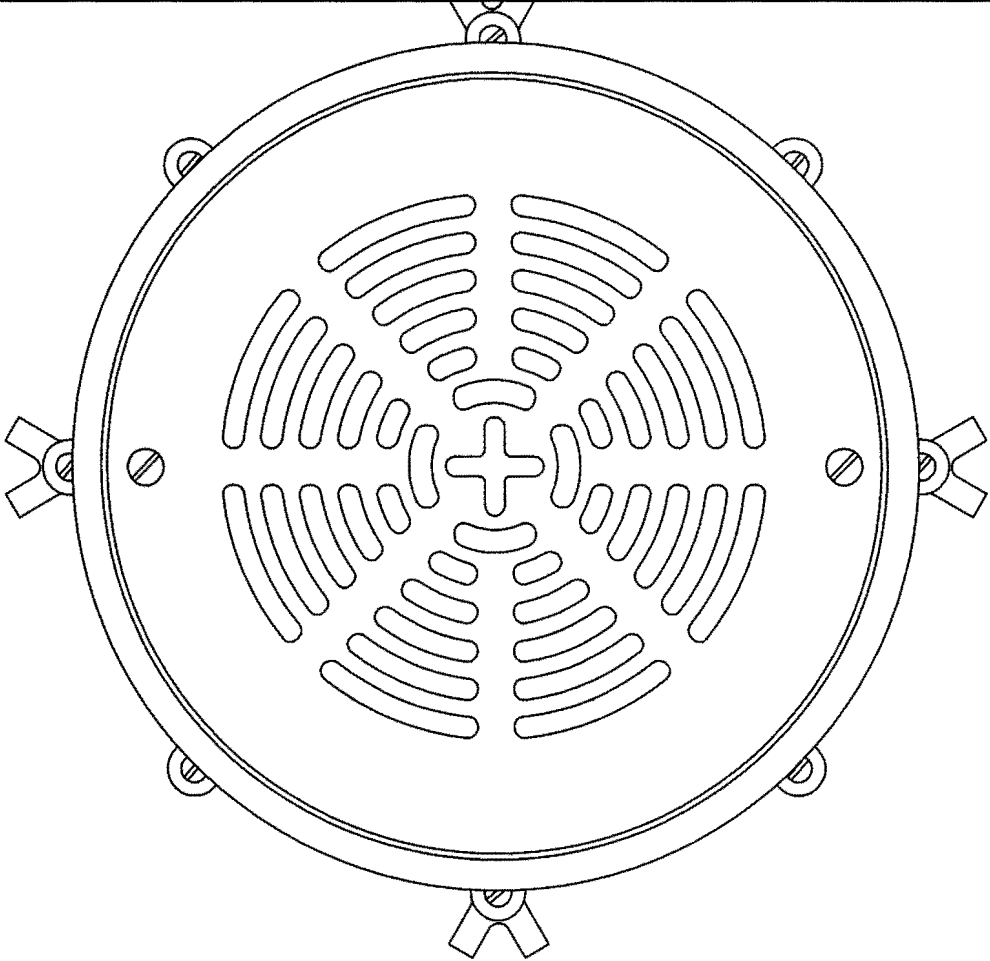
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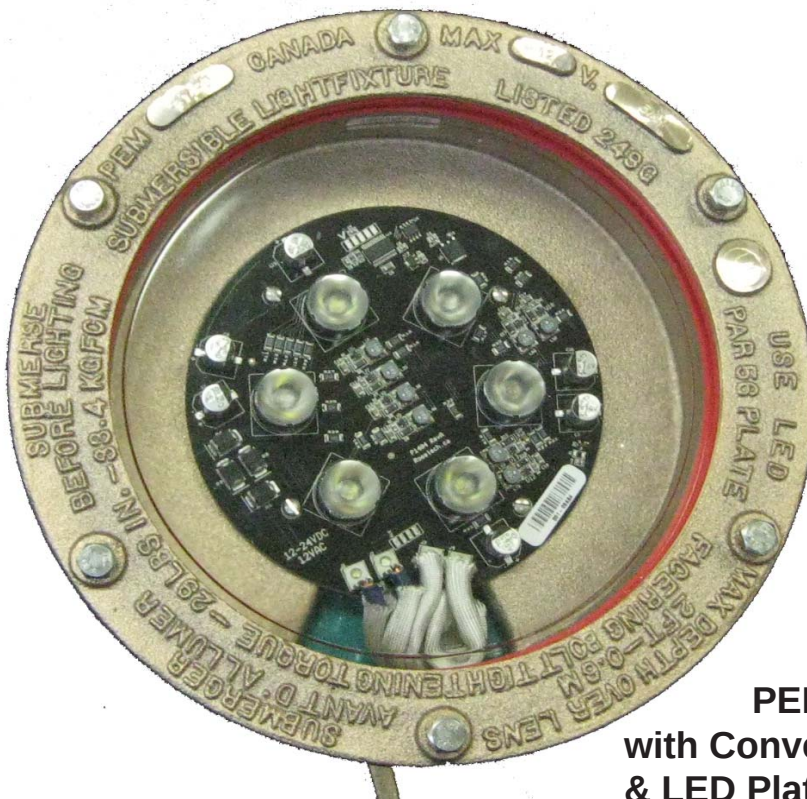
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PEM E 1450

SUBMERSIBLE LED LIGHT FIXTURE, VOLTAGE: 12 VAC, 12 VDC OR 24 VDC



Certified for CE



**PEM E1450
with Convex Lens
& LED Plate**

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SUBMERSIBLE LIGHT FIXTURE FOR LOW VOLTAGE.

PEM E 1450-3 RGB - 6 x 7.5W - 45W , For DMX, 3 Channel Control with 5 Cable conductors.

PEM E 1450-4 RGBW - 6 x 10W - 60W , For DMX, 4 Channel Control with 5 Cable conductors.

PEM E 1450-6 ,warm White, 6 x 10W - 60W for direct switching, with 3 cable conductors.

PEM E 1450-6A, warm White, 6 x 10W - 60W for DMX 1 Channel Control with 5 cable conductors.

PEM E 1450-8, cold White, 6 x 10W - 60W for direct switching, with 3 cable conductors.

PEM E 1450-8A, cold White, 6 x 10W - 60W for DMX 1 Channel Control with 5 cable conductors, **FIXTURE HOUSING & FACERING:**

PEM E1450-5 & E 1450-5,6,6A, 8 & 8A Light Fixtures are for fresh water in Bronze ,Stainless Steel fitted.

PEM E1450-5 & E1450-5,6 & 8 Light Fixtures (Marked:SW) for saltwater are available, please enquire.

LENS: 213mm / 8.375" Diameter. Convex clear cast glass,heat resistant and tempered.

OPTIONAL FLAT CLEAR GLASS LENS, heat resistant and tempered.

OPTIONAL LENS ROCK GUARD, required in USA .

LENS GASKET : High Temperature Silicone Rubber, 'U' shaped gasket with unique safety sealing lips .

ELECTRICAL CABLE: Standard 2.7M - 9 Feet.

Approved for the purpose with epoxy encapsulated, compression type cable entry (PEM J Type Cordseal) in factory assembled fixtures are supplied with Type SOW / SOOW AWG Cable for UL & cUL areas or with HORN-F-1mm² - Cable with CE Declaration (when required) for other than UL areas.

Longer cable (also with SHIELDED CONDUCTORS) available at extra cost, please enquire.

LED PLATE ASSEMBLIES connecting in fixture to power supply & DMX control conductors are included in fixture at published terms / conditions of sale for: 'Lamps'.

NOTE: "For supply connection, use only an isolating low voltage power supply or transformer with ungrounded output".

For Fixture Parts SEE PAGE 3 of this brochure.

**For colour & numerical coding of conductors in supply cable of light fixture,
SEE PAGE 4 of this brochure.**

SPRAYS AT 2.00m / 6.56 Feet :

PEM : 954

954

952

952

952

952

PEM

E1450-3, RGB-DMX

E1450-4, RGBW-DMX

E1450-6, warm White
Direct Switching

E1450-6A, Dimming
warm White DMX

E1450-8, cold White
Direct Switching

E1450-6A, Dimming
cold White DMX



E1450-8
E1450-8A

E1450-6
E1450-6A

E1450-3-1
E1450-4-1
RGB/W-RED

E1450-3-2
E1450-4-2
RGB/W-Green

E1450-3-3
E1450-4-3
RGB/W-Blue

E1450-4-4
RBGW-White

PEM E 1450 LIGHT FIXTURES & CONTROLS :

PEM E 1450-3 : DMX 3 CHANNEL RGB Control

PEM E 1450-4 : DMX 4 CHANNEL RGBW Control

PEM E1450-6 & 8 : Direct Switching

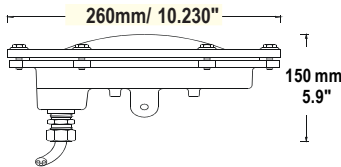
PEM E1450-6A & 8A : DMX Dimming control

PEM CABLE CONDUCTORS

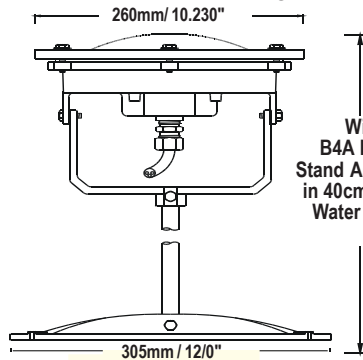
COLOUR OR NUMERICAL CODING :see Page 4

DIMENSIONS:

PEM E 1450-5-6-8 Basic Light Fixture



PEM E 1450
with Convex Lens, & B4 Ring Stand



For more Light Fixture Combinations see Page 3

AVERAGE, EFFECTIVE LIGHT OUTPUT

Distance
4.0m / 13.3'
Diam
1.60m / 5.25'

E1450-8 + 8A
COLD-WHITE, 60W, DIRECT
63.49 CD./sqft - 683.15 Lux./ m2
E1450-6 + 6A
WARM-WHITE, 60W,
53.04 CD./sqft - 570.71 Lux./ m2
E1450-3 + 4 - DMX / 3 / 4
CHANNEL 1 / 3 + 4 - RGB / RED
1.6 CD./sqft - 33.25 Lux./m2
CHANNEL 2 / 3 + 4 - RGB /
GREEN 3.09 CD./sqft - 32.28
Lux./m2 CHANNEL 3 / 3 + 4
RGB / BLUE 0.17 CD./sqft - 1.83
Lux./ m2 CHANNEL 4 / 4
WARM WHITE 3.96 CD./sqft -
41.96 Lux./ m2

Distance
3.0m / 10.0'
Diam
1.23m / 3.84'

E1450-8 + 8A
COLD-WHITE, 60W, DIRECT
116.64 CD./sqft - 1255.04 Lux./ m2
E1450-6 + 6A
WARM-WHITE, 60W, DIRECT
97.2 CD./sqft - 1045.87 Lux./ m2
E1450 - 3 + 4 DMX
CHANNEL 1 / 3 + 4 RGB / RED
1.8 CD./sqft - 58.85 Lux./m2
CHANNEL 2 / 3 + 4 - RGB GREEN
5.47 CD./sqft - 58.85 Lux./m2
CHANNEL 3 / 3 + 4 - RGB / BLUE
0.37 CD./sqft - 1.83Lux./ m2
CHANNEL 4 / 4 - WARM WHITE
7.04 CD./sqft - 75.75 Lux./ m2

Distance
2m / 6.56'
Diam
0.7m / 27"

E1450-8 + 8A
COLD-WHITE, 60W, DIRECT
297.71 CD./sqft - 3203.35 Lux./ m2
E1450-6 + 6A
WARM-WHITE, 60W, DIRECT
206.4 CD./sqft - 2220.08 Lux./ m2
E1450 - 3 + 4 DMX
CHANNEL 1 / 3 + 4 RGB / RED
4.1 CD./sqft - 132.03 Lux./m2
CHANNEL 2 / 3 + 4 - RGB GREEN
12.27 CD./sqft - 132.02 Lux./m2
CHANNEL 3 / 3 + 4 - RGB / BLUE
0.62 CD./sqft - 6.45 Lux./ m2
CHANNEL 4 / 4 WARM WHITE
16.12 CD./sqft - 118.36 Lux./ m2

Distance
1m / 3.28'
Diam
0.4m / 16"

E1450-8 + 8A
COLD-WHITE, 60W, DIRECT
1045.44 CD./sqft - 683.15 Lux./ m2
E1450-6 + 6A
WARM-WHITE, 60W, DIRECT
871.2 CD./sqft - 9374.11 Lux./ m2
E1450-3 + 4 DMX
CHANNEL 1 / 3 + 4 - RGB / RED
17.04 CD./sqft - 183.25 Lux./m2
CHANNEL 2 / 3 + 4 RGB / GREEN
56.61 CD./sqft - 609.01 Lux./m2
CHANNEL 3 / 3 + 4 - RGB / BLUE
2.41 CD./sqft - 25.82 Lux./ m2
CHANNEL 4 / 4 WARM WHITE
67.04 CD./sqft - 721.0 Lux./ m2

SERIAL #	PEM ORDER	LED FIXTURES (12VA /12VDC/24VDC) - (This Pricelist supersedes all previous prices!)	W.
PEM:	#	LED Plates with 20 degrees light spread are included in price of Light Fixtures.	Kg
		LED Plates are warranted for one year from date of purchase for failure in normal usage.	
		LED failures due to faulty installation and/or usage are NOT warranted.	
		LED Plates are identified with registered Serial Number, which is required for any claim.	
		Lightfixture are installed & pre-tested at factory for normal usage .	
E1450-3	E1450-3	DMX-3 Channel, RGB Control required: (For creation of CUSTOM COLOUR ILLUMINATION)	5.2
		R.G.B. (Red/Green/Blue), 45W (12VAC,12VDC or 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 18-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 5 x 1 mm2 Conductors	
E1450-4	E1450-4	DMX-4 Channel, RGBW Control required: (For creation of CUSTOM COLOUR ILLUMINATION)	5.2
		R.G.B.W. (Red/Green/Blue + warm White), 60W (12VAC,12VDC or 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 18-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 5 x 1 mm2 Conductors	
E1450-6	E1450-6	Direct switching by remote Control, NO DMX connection in fixture	5.2
		Warm White Colour in 6 clusters of 10W = 60W (at 12VAC, 12VDC OR 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 18-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 3 x 1 mm2 Conductors	
E1450-6A	E1450-6A	Dimming by DMX - 1 Channel Control	5.2
		Warm White Colour in 6 clusters of 10W = 60W (at 12VAC,12VDC OR 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 18-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 5 x 1 mm2 Conductors	
E1450-8	E1450-8	Direct switching by remote Control, NO DMX connection in fixture	5.2
		Cold White Colour in 6 clusters of 10W = 60W (at 12VAC,12VDC OR 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 18-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 3 x 1 mm2 Conductors	
E1450-8A	E1450-8A	Dimming by DMX - 1 Channel Control	5.2
		Cold White Colour in 6 clusters of 10W = 60W (at 12VAC,12VDC OR 24VDC)	
		U.L: Electric Cable SOW, 9.0' / 2.7m x 18-5 AWG, H0R7N-F, CE:(decl.) H0R7N-F, 5 x 1 mm2 Conductors	
		ADD ONS TO PEM E1450B FIXTURES	
350-0003	+/-30-3	213mm Clear Flat Lens (0903 required)	1.10
350-1113	+/-10-9	PEM -10-9 Hinged Rock Guard	0.70
350-11232	+/-B7S-B	B7S Yoke	0.80
391-3026	-B06	150mm / 6.0" x 15.9mm / 0.625"- brass stand rod	0.30
391-3001	+/-B1	B1, Tripod Stand Base,	1.40
391-3002	+/-B4	B4 Ring Stand Base	2.60
391-3003	+/-B4A	B4A Heavy Duty Tripod Stand Base	3.90
350-1133	+/-B6-2	B6-2 Stand Brackets	0.90
334-3922	+/-B69-1	B69-1 Stainless Steel Niche,with 4.50m / 15' of cable	7.00
350-11110	+/-10-8	Lensguard (In Addition To Lightfixture Only)	1.00
350-0035	+/-B70A	Walk Over Stainless Steel Niche with 4.50m / 15' of cable	11.5
350-0026	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted with 4.50m / 15' of cable	3.70
350-0200	+/-B76	B76 Walk OverSlab Hanger,with 4.50m / 15' of cable	5.40
350-0220	+/-B76A	B76A Slab Hanger with Locks,with 4.50m / 15' of cable	6,20

PEM E 2100-3-4-6-8 LED Ring Lights

SUBMERSIBLE LIGHT FIXTURES WITH CANADIAN ASSEMBLED LED COMPONENTS

UNI-VOLTAGE: 12 VAC, 12 VDC OR 24 VDC



E2100-4 : 20 Degree = 7.5 Watts, each R.G. B. + warm WHITE = DMX - 4 Channel Total 30W

E2100-8
DIRECT-cold WHITE
DIRECT - 30W



E2100-6
DIRECT-warm WHITE
DIRECT - 30W

PEM E 2100 SUBMERSIBLE RING LIGHT FIXTURE for low voltages of 12VAC,12VDC or 24VDC. FIXTURE HOUSING & FACERING:

PEM E2100 Light Fixtures for fresh water in 85-5-5-5 Bronze Casting, #18-8 Stainless Steel fitted.

PEM E2100 Light Fixtures (Marked:SW) for saltwater are available, please enquire.

PEM E2100 Light Fixtures for structural insertion, walk over type spray pads, are available with surface construction of #18-8 Stainless Steel including PEM W 933-WO Spray Plates.

All PEM E2100's, 1 1/2" Pipe size (male NPT/BSPT) can be supplied with sprayplate W933 , to create a coloured spray effect. (Extra & additional). In Brass for E2100, in 18-8 Stainless Steel for others. CLAMP ON, pass through opening for:1 1/2" NPT - BSPT size Pipe Schedule 40 (60mm - 2.44" diameter) LENS made of Optical Clear12mm (0.5") Poly. Carbonate Plastic - LENS GASKET made of EPDM flat rubber LENS CLAMPS & Bolts made of 18-8 Stainless Steel.

CABLE attached to Light Fixture: 9 Feet / 2.7m Standard Length, longer lengths extra.

PEM E 2100 Ring Lights are available as:

PEM E 2100-3 (7.5W-Red,7.5W-Green,7.5W-Blue-Total 22.5W,DMX 3 Channel,5 Conductor Cable)

PEM E 2100-4 (RGBW - DMX, Requires 4 Channel Control)

Red - Green - Blue - White , Each 7.5 Watt. total of 30 Watt

White = warm White, recommended to preserve colour full surroundings.

FIXTURE CABLE: 5 Conductor Type:SOW/SOOW-18-5 Conductor Cable/ H0R7N-F- 5 x 1mm2

PEM E 2100-6

Requires Direct remote Control - NO direct DMX

Warm White - 30 Watt, recommended to preserve colour full surroundings.

FIXTURE CABLE: 3 Conductor Type:SOW/SOOW-16-3 Conductor Cable/ H0R7N-F- 3 x1.5mm2

PEM E 2100-8

Requires Direct remote Control - NO direct DMX

Cold White - 30 Watt, NOT recommended to preserve colour full surroundings.

FIXTURE CABLE: 3 Conductor Type:SOW/SOOW-16-3 Conductor Cable/ H0R7N-F- 3 x 1.5mm2

Do not use Ground / Earth conductor in DC & DMX power supply cable!

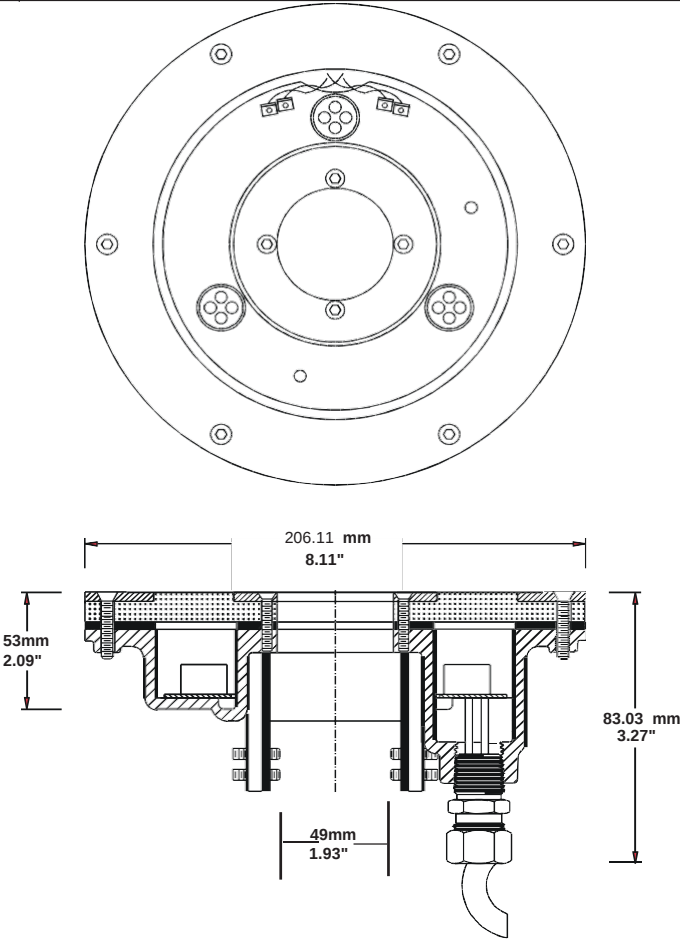
NOTE: "For supply connection, use only an isolating low voltage power supply or transformer with ungrounded output".

PEM[®]E2100

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Sample Applications of PEM [®] E2100 Ring Light	4
PEM [®] E 2100, Basic Types 01 & 02 Dimensions	5
PEM [®] E2100 ORDER PAGE	6

PEM^{reg} E2101

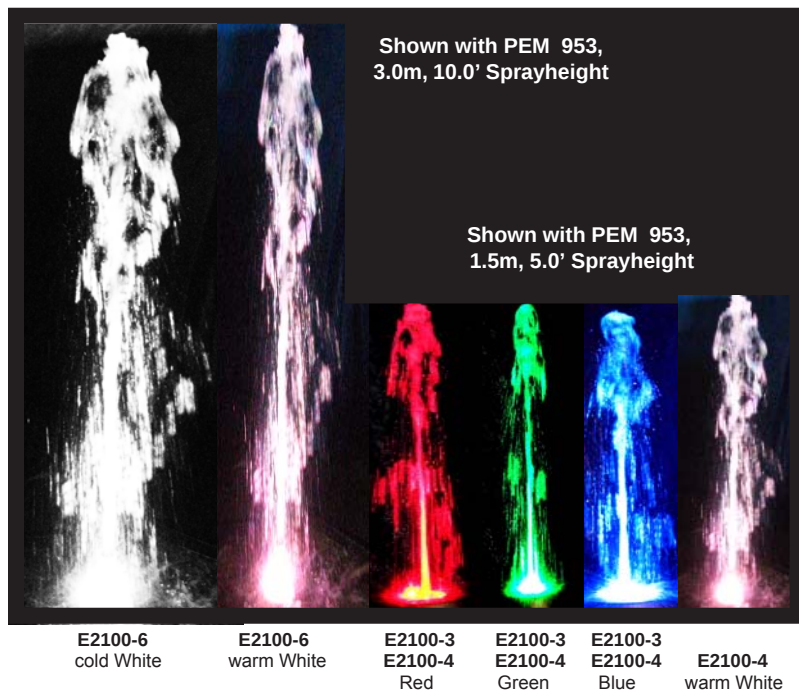
BASIC FIXTURE
TYPE:
E2101



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SUBMERSIBLE LED LIGHT FIXTURES
by PEM FOUNTAIN CO.

104 NEWKIRK RD, RICHMOND HILL, ONTARIO, CANADA, L4C 3G3
Tel: 800-387-3600 - Email: sales@pemfountain.ca - www.pemfountain.ca



PEM

LED RING LIGHTS

E2100-3-RGB-DMX,22.5W

E2100-4-RGBW-DMX,30W

E21006,30w, w.WhiteDirect

E21006 A,30w, w.WhiteDimming

E21008 ,30w, c.w.WhiteDimming

E2100-8 A, 30w, c.w.White-Direct

**10 W warm WHITE
LED RING LIGHT FIXTURES
DIRECT SWITCHING
BY REMOTE CONTROL**

PEM E 2100 - SUBMERSIBLE RING LIGHT FIXTURES for :

Common Voltage of 12 VAC - 12VDC - 24VDC .

FIXTURE COMPONENTS:PEM 2100 RING Light Fixtures are for fresh water in 85-5-5 bronze casting, #18-8 Stainless Steel fitted.

PEM 2100-SW- RING Light Fixtures for saltwater in saltwater bronze, #3-16 Stainless Steel fitted, enquire!

LENS: Optical Clear 12mm (0.5")Poly. Carbonate Plastic.

LENS GASKET to fixture body is of flat EPDM Rubber.

LED RING PLATES are included in offered lightfixtures at terms and conditions of sale for 'Lamps'.

MOUNTING OPTIONS: Clamp on to a 1 1/2" Stand Pipe (48mm (1.89") 1 1/2" Brass pipe) with

PASS-THROUGH OPENING with triple PIPE CLAMP.

See page 4 for suggested applications.

FIXTURE TYPES available:

PEM E2100- 3 RING LIGHT

LED Illumination in colour controllable RGB, Red, Blue & Green each 7.5W, total 22.5W by remote DMX - 3 Channel control.

Lightfixture has 5 electrical conductors (2 for power & 2 for DMX) **PEM**

E2100- 4 RING LIGHT

LED Illumination in colour controllable RGBW, Red, Blue, Green & Warm White, each 7.5W, total 30W by remote DMX- 4 Channel controls.

Lightfixture has 5 electrical conductors (2 for power & 2 for DMX) **PEM**

E2100- 6 RING LIGHT

LED Illumination : Warm White , 30W, for direct ON / OFF switching .

Lightfixture has 3 electrical conductors.

PEM E2100- 6 A , RING LIGHT

LED Illumination : Warm White , 30W, for DMX Dimming . Lightfixture has 5 electrical conductors.

PEM E2100- 8 RING LIGHT

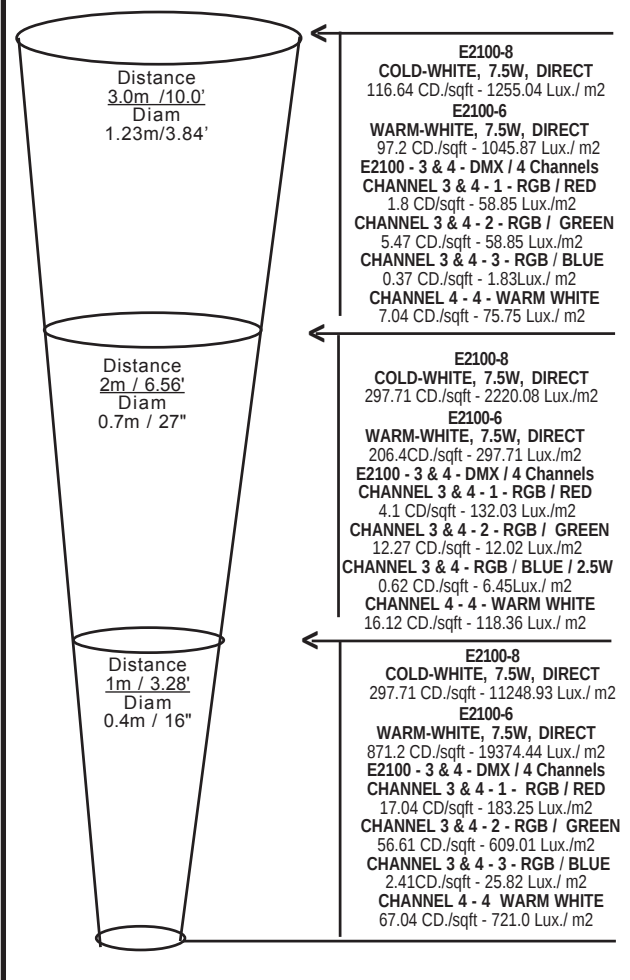
LED Illumination : Warm White , 30W, for direct ON / OFF switching .

Lightfixture has 3 electrical conductors.

PEM E2100- 8 A , RING LIGHT

LED Illumination : Warm White , 30W, for DMX Dimming . Lightfixture has 5 electrical conductors.

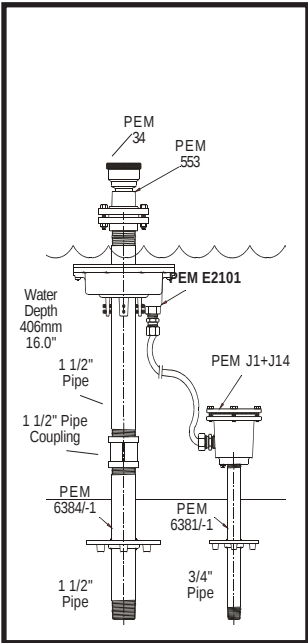
AVERAGE, EFFECTIVE LIGHT OUTPUT



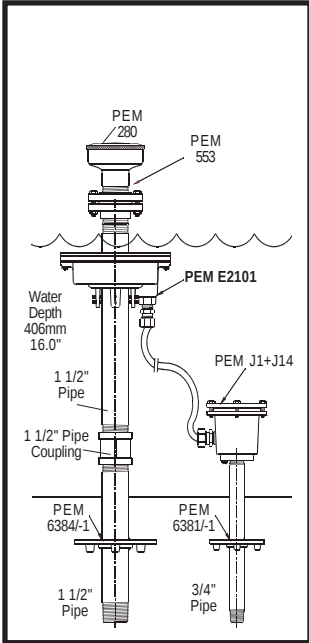
Do not use Ground/Earth conductor in DC & DMX power supply cable!
See page 8 for PEM electrical cable conductor identification.

SOME PEM_{reg} E2101 APPLICATIONS

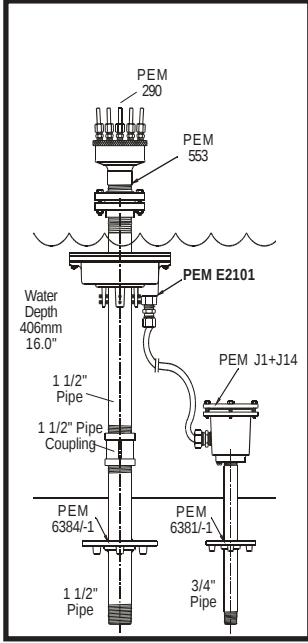
PEM_{reg} 34



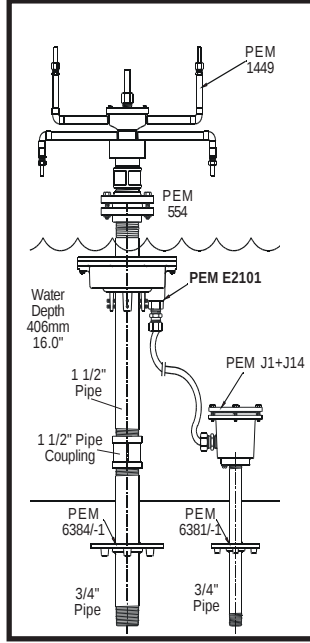
PEM_{reg} 280



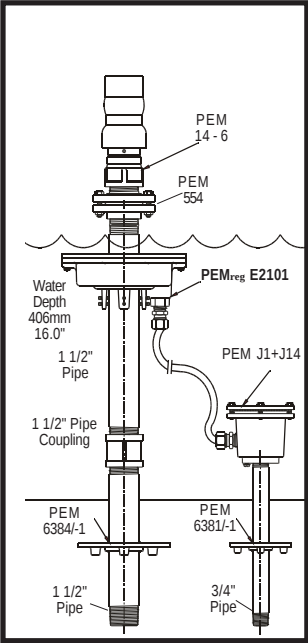
PEM_{reg} 290



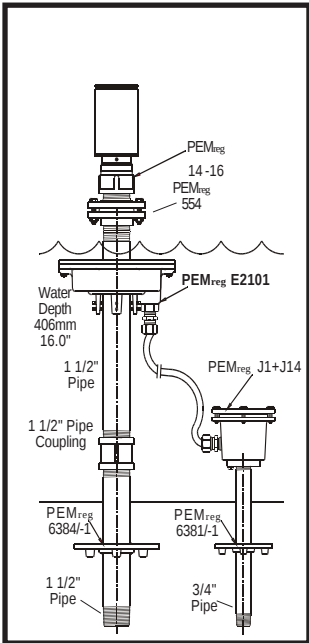
PEM_{reg} 1449



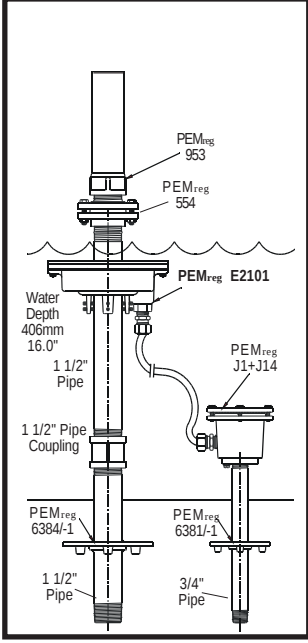
PEM_{reg} 14 - 6



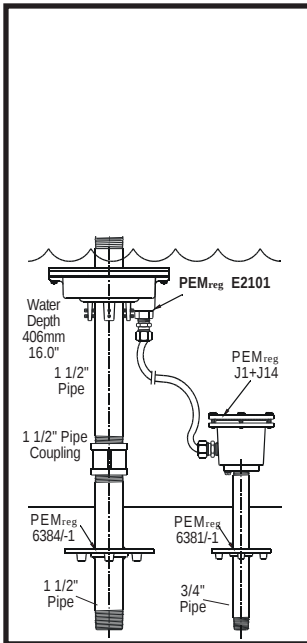
PEM_{reg} 14 - 6



PEM_{reg} 953



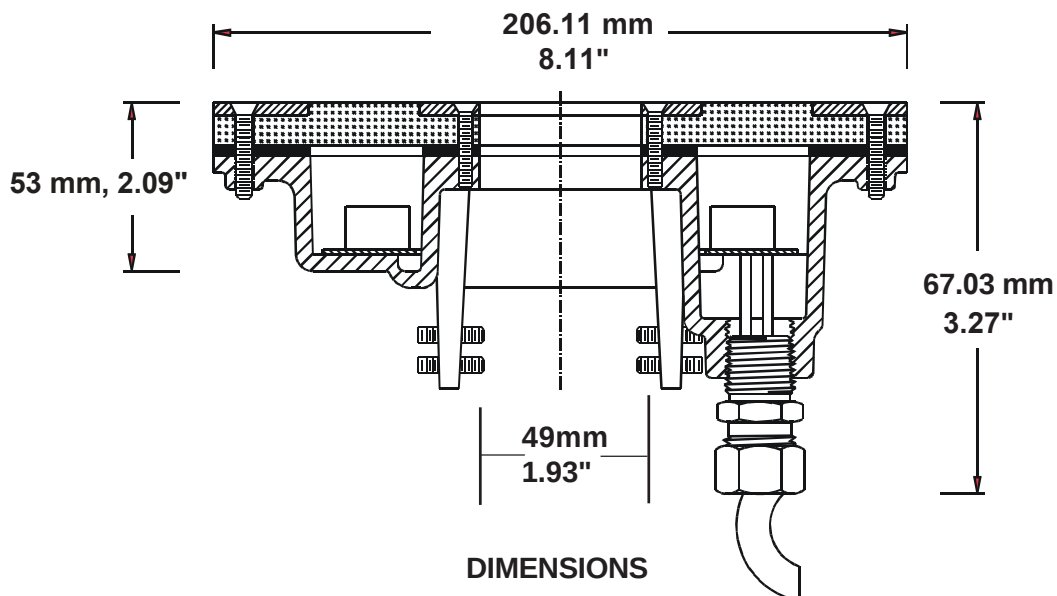
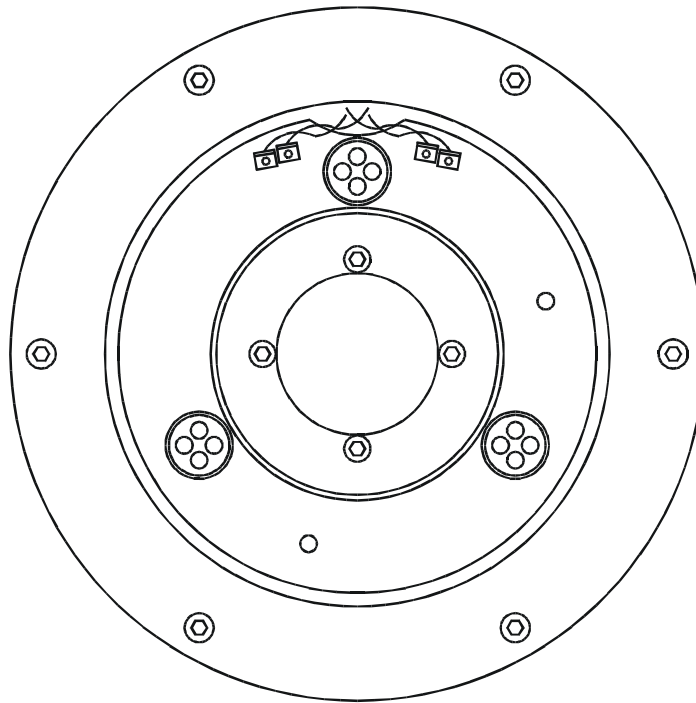
PEM_{reg} 320-45



**SUBMERSIBLE
LED RING LIGHT FIXTURE**

**PEME2101
BASIC FIXTURE
TYPE: E2101**

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SERIAL	PEM ORDER	PEM E2100 RING LIGHTS - 2016 - 09 - 15	W.
		LED plates in this list are uni-voltage 12VAC, 12VDC & 24VDC	
		LED plates in this list have 20 degrees light output, for other outputs - please enquire	
		LED plates in this list are of canadian assembled components	
#	#	Clamps to Stand Pipe, 1 1/2" NPT/BSPT	Kg
E15--21003	E2100-3	For:RGB (7.5W-Red,7.5W-Green,7.5W-Blue-Total 22.5W, DMX 3 - 4 Channel, 5 Conductor Cable	
		12 VAC/12 VDC/24 VDC, DMX , Electrical Cable, 9.0' / 2.7m x 18-5 AWG, H0R7N-F - 4 X 1.5mm2	4.3
E15-21004	E2100-4	For:RGBW (7.5W-Red,7.5W-Green,7.5W-Blue-7.5W Warm White Total 30w, DMX 4 Channel, 5 Conductor Cable	
		12 VAC/12 VDC/24 VDC, DMX , Electrical Cable, 9.0' / 2.7m x 18-5 AWG, H0R7N-F - 4 X 1.5mm2	4.3
E15-21006	E2100-6	For: Warm White, 30W, No DMX, 3 Conductors Cable	
		24 VDC, No DMX, Electric Cable SOW, 9.0' / 2.7m x 18-3 AWG, H0R7N-F - 2 x 1.5 mm2	3.8
E15-21006A	E2100-6A	For: Warm White, 30W, DMX, Dimming, 5 Conductor Cable	
		24 VDC, DMX Parallel, Electrical Cable, 9.0' / 2.7m x 18-5 AWG, H0R7N-F - 4 X 1.5mm2	4.3
E15-21008	E2100-8	For: Cold White,30W, No DMX, 3 Conductor Cable	
		24 VDC, No DMX, Electric Cable SOW, 9.0' / 2.7m x 18-3 AWG, H0R7N-F - 2 x 1.5 mm2	3.8
E15-21008A	E2100-8A	For: Cold White, 30W ,DMX Dimming, 5 Conductor Cable	
		24 VDC, DMX Parallel, Electrical Cable, 9.0' / 2.7m x 18-5 AWG, H0R7N-F - 4 X 1.5mm2	4.3
	Add to Above		
	Order #	SPRAY PLATE (Also available custom made at extra cost.)	
E15-21020	E2100-20	IN PIPE INSTALLABLE & REMOVABLE WITH PEM E2500-25 INSERTION KEY WRENCH	
		9" / 229mm long, 2" Brass Pipe with Coupling (NPT/BSP), with into pipe threaded spray plate	
		with 24 x 0.125" / 3.0mm orifices in 38.2mm/1.5" Diam. Circle with 5 degree outside drop .	2.7
E15-21025	E2100-25	PEM E2500-25 INSERTION / REMOVE/ CLEANING (2 point) KEY WRENCH	0.3
	Add to Above		
	Order #	Cast Bronze Fixture Additions for other than on stand pipe installation	
E15-2100-231	E2500-231	Narrow Grout Frame Mounting, 242mm - 9.53" OD	3.8
E15-2100-232	E2500-232	Wide Grout Frame Mounting, 292mm - 11.50" OD	4.7
E15-2100-237	E2500-237	Square 279.4mm/11.001" Slab Clamp for 254mm -10.0"Opening in 76.2 mm-3"Concrete Slab	8.9
E15-2100-239	E2500-239	Circular 279.4mm/11.001" Slab Clamp for 254mm -10.0"Opening in 76.2 mm-3"Concrete Slab	8.7
		Please contact PEM Sales Department for recommendations about:	
		Cast Bronze Fixture Additions for other than on stand pipe installation	
		PEM LED Lightfixture Junction or Deck Boxes,	
		In Pool Stand Pipe and PEM Penetration Fittings,	
		All PEM LED Lightfixtures shown herein include specialized canadian assembled LED	
		components requiring up to date LED - DMX (512) Controls to function properly!	

PEM E 2500-3-4-6-6A-8-8A LED Ring Lights

SUBMERSIBLE LIGHT FIXTURES WITH CANADIAN ASSEMBLED LED COMPONENTS
UNI-VOLTAGE: 12 VAC, 12 VDC OR 24 VDC



E2500-3/4
15 WATTS/Color
20 Degrees



E2500-3/4
15 WATTS/Color
20 Degrees



E2500-3/4
15 WATTS/Color
20 Degrees



E2500-4
15 WATTS/Color
20 Degrees



E2500-6/6A
60 WATTS
20 Degrees



E2500-8/8A
60 WATTS
20 Degrees

PEM E 2500 SUBMERSIBLE RING LIGHT FIXTURE for 12VAC,12VDC or 24VDC.

FIXTURE HOUSING & FACERING:

PEM E2500 Light Fixtures for fresh water in 85-5-5-5 Bronze Casting, #18-8 Stainless Steel fitted.

PEM E2500 Light Fixtures (Marked:SW) for saltwater are available, please enquire.

PEM E2500 Light Fixtures for structural insertion, walk over type spray pads, are available with surface construction of #18-8 Stainless Steel.

CLAMP ON: Pass through opening for: 2" NPT - BSPT size Pipe (60mm - 2.44" outside diameter)

LENS: Made of Optical Clear 12mm (0.5") Poly. Carbonate Plastic (**LEXAN**)

LENS GASKET: Made of EPDM flat rubber

LENS CLAMPS & Bolts: Made of 18-8 Stainless Steel.

CABLE attached to Light Fixture: 9 Feet / 2.7m Standard Length, longer lengths extra.

PEM E 2500 Ring Lights are available as:

PEM E 2500-3

RGB - DMX, 3 Channel Control

Red - Green - Blue, Each 15 Watt. total of 45 Watt

FIXTURE CABLE: 5 Conductor Type:SOW/SOOW-18-5 Conductor Cable/ H0R7N-F- 4 x 1mm2

PEM E 2500-4

RGBW - DMX, 4 Channel Control

Red - Green - Blue - White, Each 15 Watt. total of 60 Watt

White = warm White, recommended to preserve colourful surroundings.

FIXTURE CABLE: 5 Conductor Type:SOW/SOOW-18-5 Conductor Cable/ H0R7N-F- 4 x 1mm2

PEM E 2500-6

Direct remote Control - Direct ON/OFF Control required

Warm White - 60 Watt, recommended to preserve colour full surroundings.

FIXTURE CABLE: 3 Conductor Type:SOW/SOOW-16-3 Conductor Cable/ H0R7N-F- 2 x1.5mm2

PEM E 2500-6A

DMX Control - DMX-Dimming Control required

Warm White - 60 Watt, might affect colour full surroundings.

FIXTURE CABLE: 3 Conductor Type:SOW/SOOW-18-3 Conductor Cable/ H0R7N-F- 4 x1.5mm2

PEM E 2500-8

Direct remote Control - Direct ON/OFF Control required

Cold White - 60 Watt, recommended to preserve colour full surroundings.

FIXTURE CABLE: 3 Conductor Type:SOW/SOOW-16-3 Conductor Cable/ H0R7N-F- 3 x1.5mm2

PEM E 2500-8A

DMX Control - DMX-Dimming Control required

Cold White - 60 Watt, might affect colour full surroundings.

FIXTURE CABLE: 5 Conductor Type:SOW/SOOW-18-5 Conductor Cable/ H0R7N-F- 4 x1.5mm2

NOTE: "For supply connection, use only an isolating low voltage power supply or transformer with ungrounded output".

PEM® E2500 RING LIGHTS

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E2500 Order List	7
E2500 Detailed Picture	8

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Please note:

Previous PEM E2500-431, 432, 437 & 439 HAVE BEEN DISCONTINUED.

**SUBMERSIBLE LED LIGHT FIXTURES
by PEM FOUNTAIN COMPANY.**

104 NEWKIRK RD, RICHMOND HILL, ONTARIO, CANADA, L4C 3G3

Tel: 800-387-3600 - Email: sales@pemfountain.ca - www.pemfountain.ca

PEM

LED RING LIGHTS

E2500-3-RGB-DMX

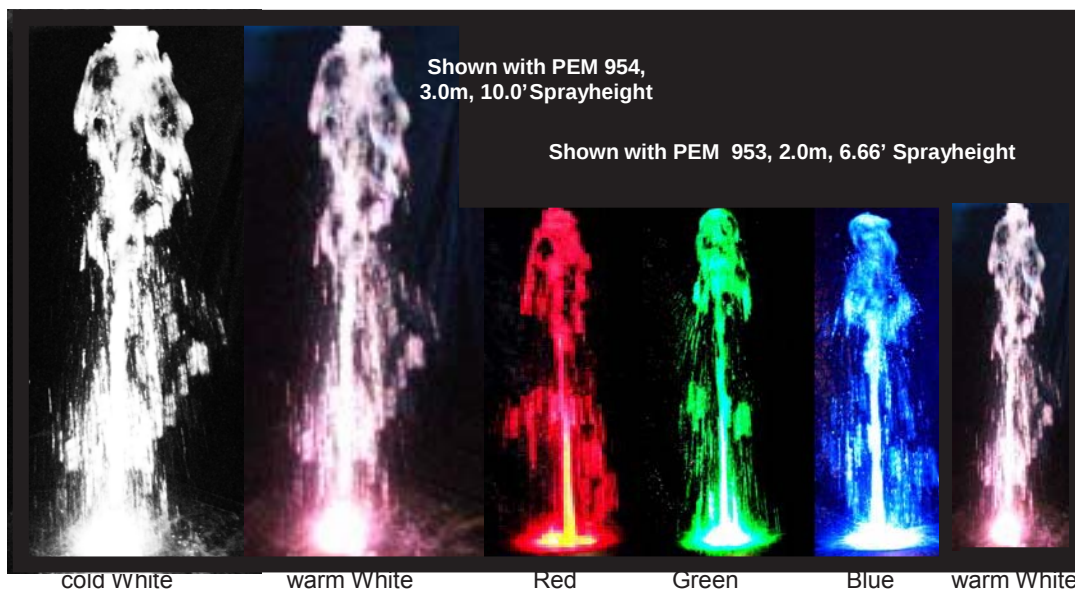
E2500-4-RGBW-DMX

E2500-6-w.White-Direct

E2500-6A-w.White-Dimming

E2500-8-c.White-Direct

E2500-8A-c.White-Dimming



cold white

warm white

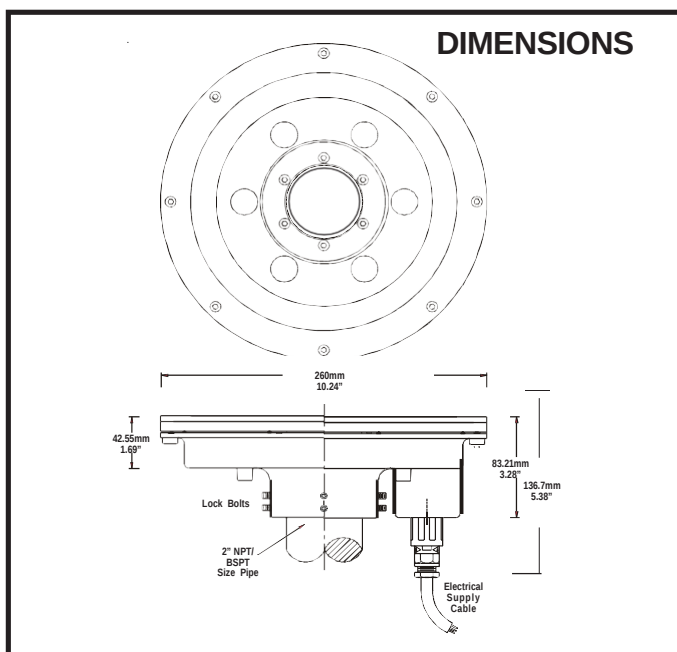
Red

Green

Blue

warm white

DIMENSIONS



SUBMERSIBLE LIGHT FIXTURE WITH CANADIAN ASSEMBLED LED COMPONENTS. (Submitted to UL for listing)

FOR: UNI VOLTAGE: 12 VAC, 12 VDC OR 24 VDC

Models Available:

- E2500-3 :20 Degrees, (3x15w = Total 45w) R.G.B. DMX, 3 Channels
- E2500-3 :20 Degrees, (4x15w = Total 60w) R.G.B.W DMX, 4 Channels
- E2500-6: 20 Degree, (60 Watts), warm WHITE, direct switching
- E2500-6A: 20 Degrees, (60Watts), warm White, DMX Dimming
- E2500-8: 20 Degree, 60 Watts, cold WHITE, DMX direct switching
- E2500-8A 20 Degrees, (60Watts), cold White, DMX Dimming

PEM E 2500 SUBMERSIBLE LED RING LIGHT FIXTURE will pass through its lockable center opening of 61mm (2.40") a 2" NPT/BSPT #40 metal pipe.

LENS: Optical Clear Poly. Carbonate Cover with EPDM flat Seals to body.

FIXTURE HOUSING & FACERING:

PEM E2500 RING LIGHT for Fresh Water.

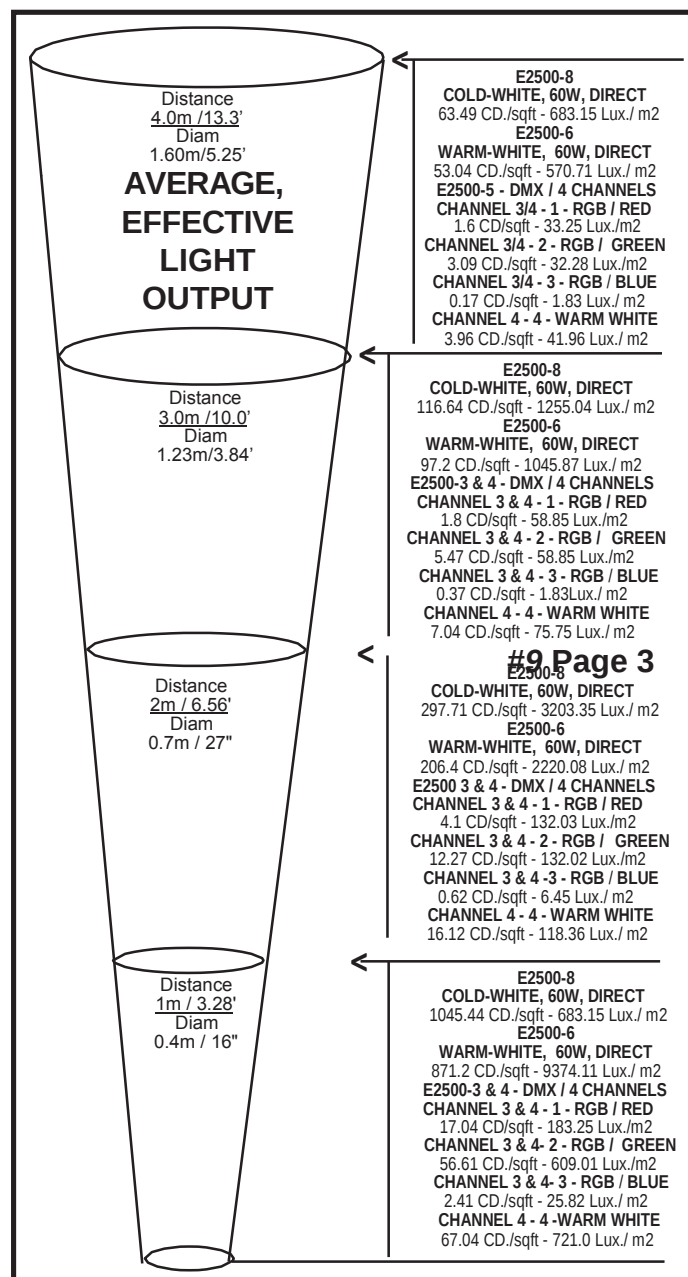
Salt Water Construction available, please enquire !

MOUNTING : Clamp on to 2" NPT/BSPT, #40 Pipe

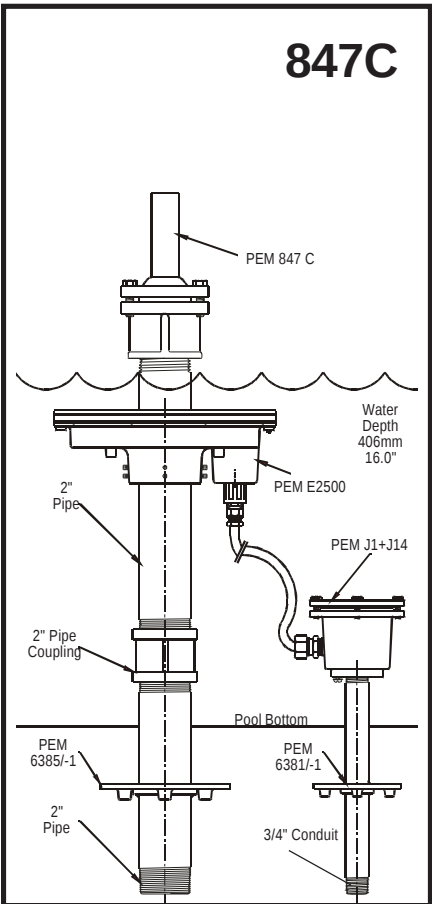
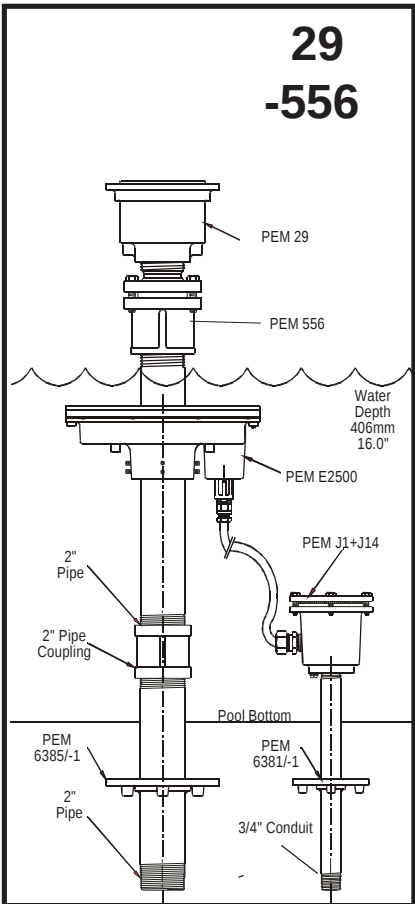
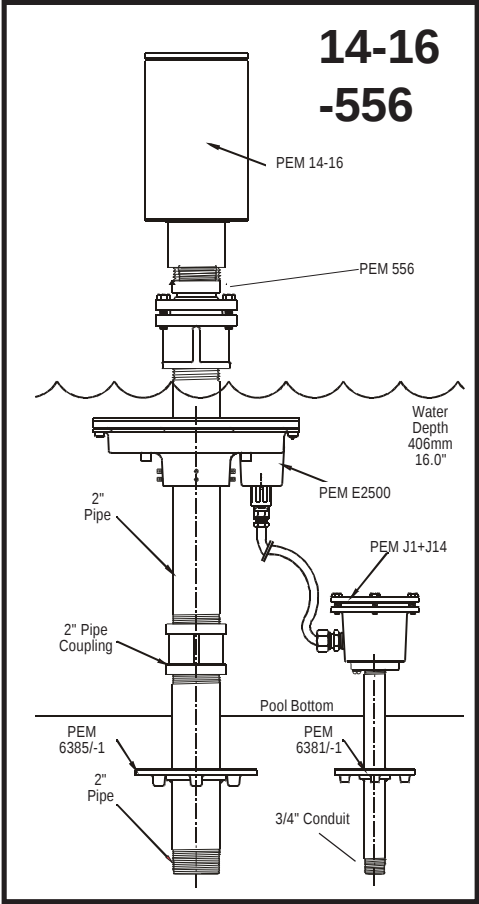
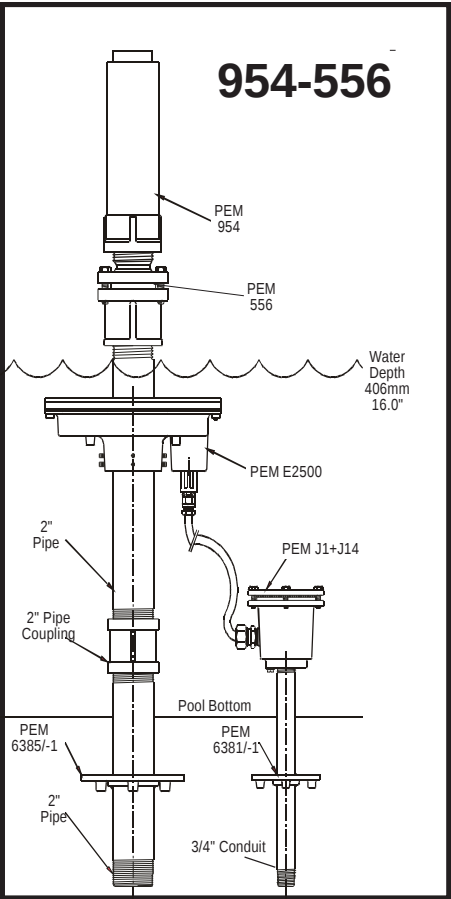
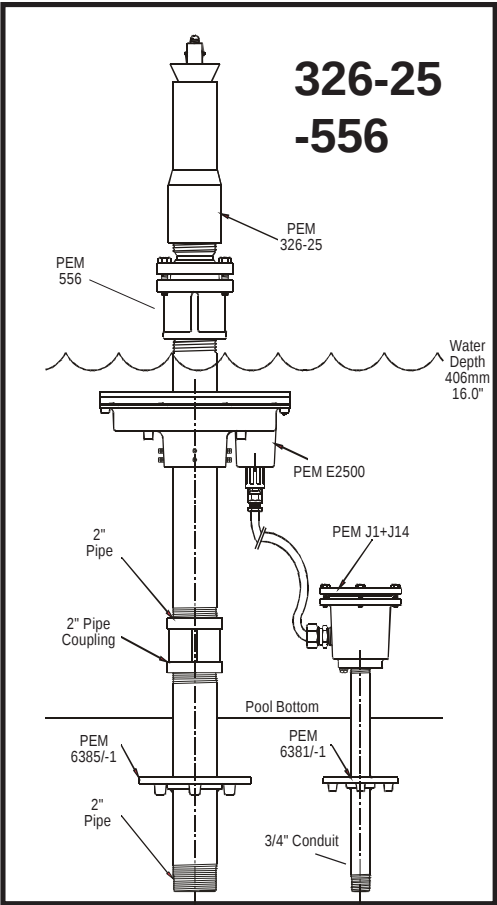
LENS: Optical Clear 12mm (0.5") Poly. Carbonate with EPDM flat Seal

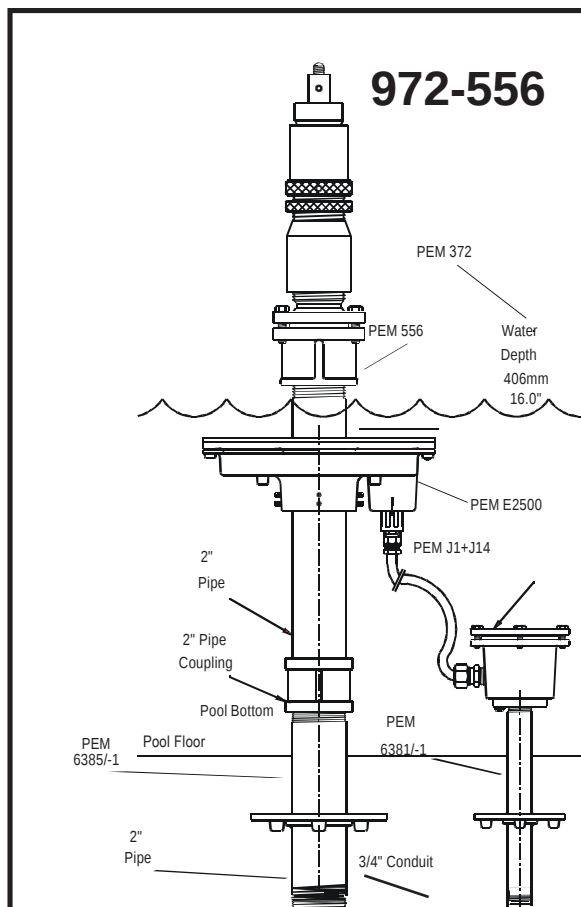
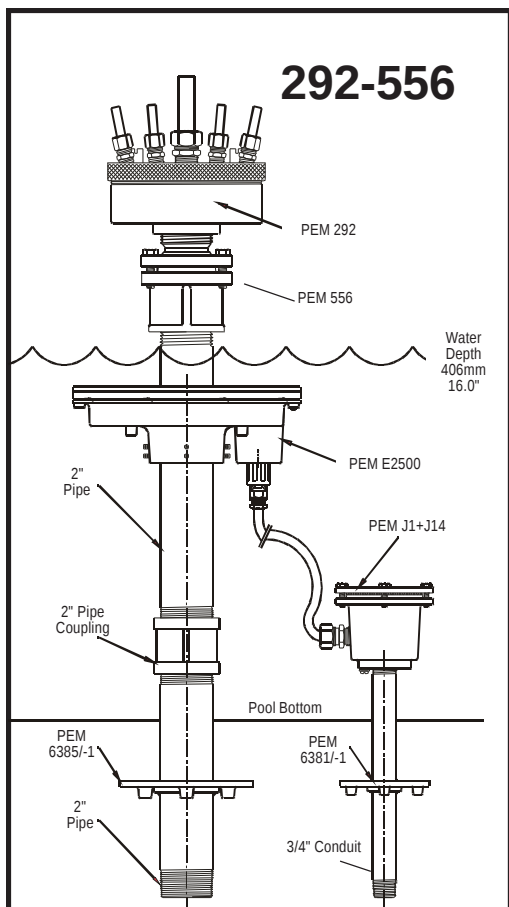
CABLE: See above. Longer cable might require shielded conductors (extra)

LED RING PLATE included in Lightfixture.

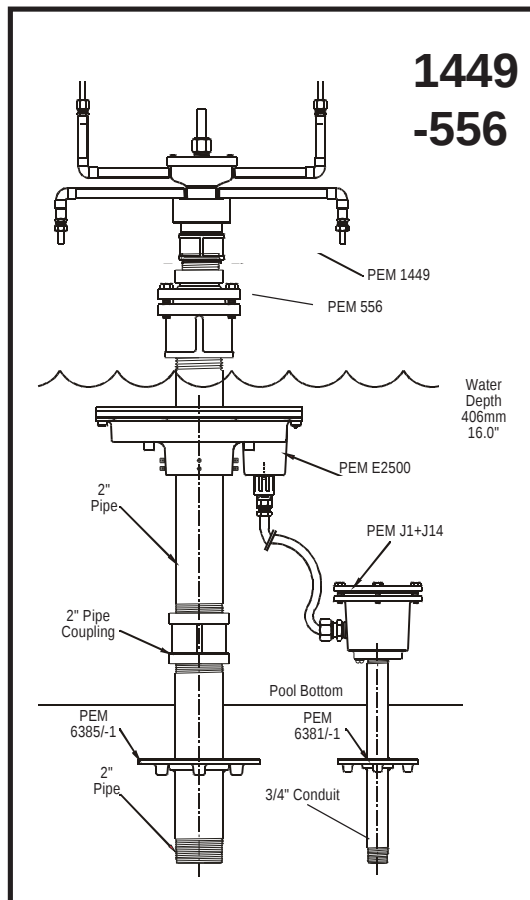
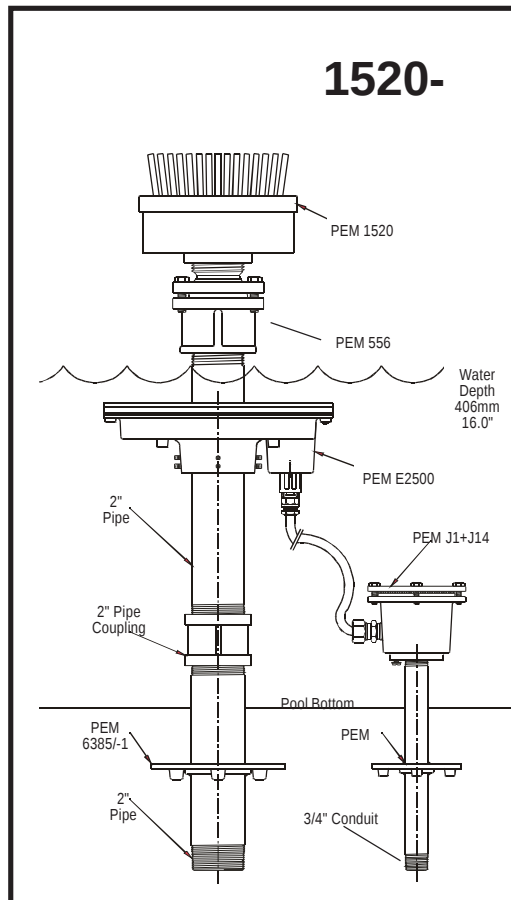


PEM_{reg.}E2500
RING LIGHT
SAMPLE
APPLICATIONS
WITH
PEM SPRAY
EQUIPMENT
PAGE 'A'

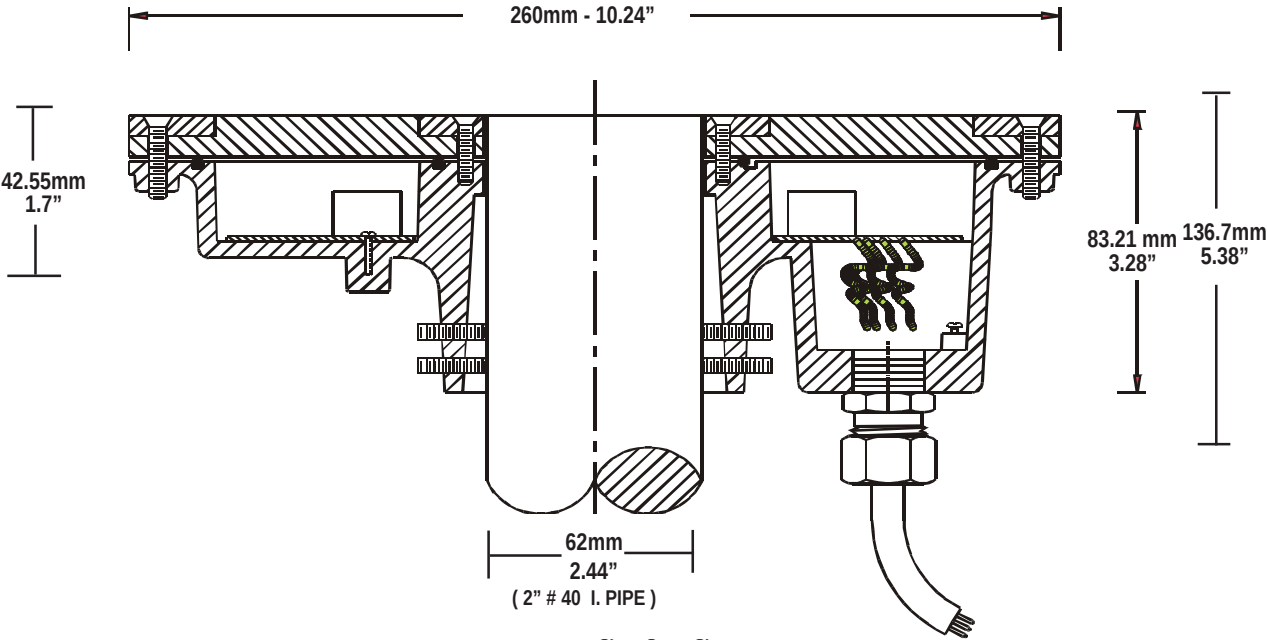
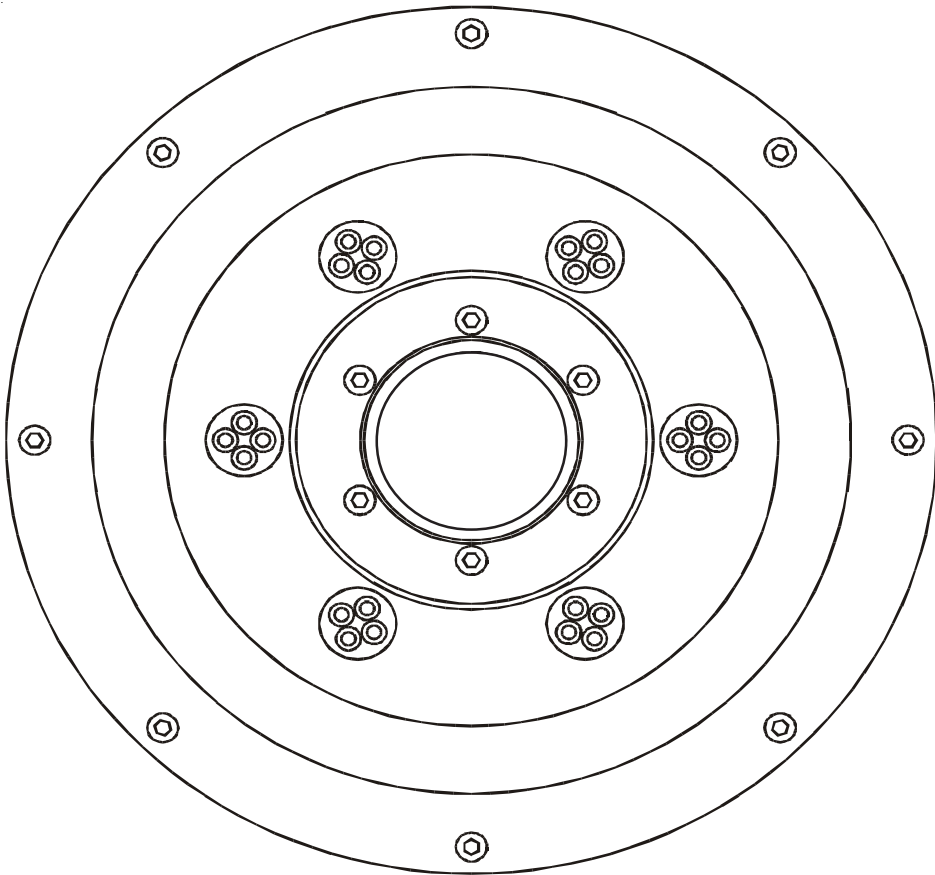




**PEM_{reg.}E2500
RING LIGHT
SAMPLE
APPLICATIONS
WITH
PEM SPRAY
EQUIPMENT
PAGE 'B'**



SUBMERSIBLE RING LIGHT FIXTURE
PEM_{reg.} E2500
BASIC FIXTURE FOR 2" STAND PIPE MOUNTING



DIMENSIONS

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SERIAL	PEM ORDER	PEM E2500 RING LIGHTS 2015 - 09 - 15	W.
		LED plates in this list are uni-voltage 12VAC, 12VDC & 24VDC	
		LED plates in this list have 20 degrees light output, for other outputs - please enquire	
		LED plates in this list are of canadian assembled components	
#	#	Clamps to Stand Pipe, 2" NPT/BSPT	Kg
E15-334-500641	E2500-3	For:RGB (15W-Red,15W-Green,15W-Total 15w-Blue-15W, DMX 3 - 4 Channel, 5 Conductor Cable	
		12 VAC/12 VDC/24 VDC, DMX , Electrical Cable, 9.0' / 2.7m x 18-5 AWG, H0R7N-F - 4 X 1.5mm2	5.3
E15-334-500642	E2500-4	For:RGB (15W-Red,15W-Green,15W-Blue-15W Warm White, DMX 4 Channel, 5 Conductor Cable	
		12 VAC/12 VDC/24 VDC, DMX , Electrical Cable, 9.0' / 2.7m x 18-5 AWG, H0R7N-F - 4 X 1.5mm2	5.3
E15-334-500643	E2500-6	For: Warm White, 60W, No DMX, 3 Conductors Cable	
		24 VDC, No DMX, Electric Cable SOW, 9.0' / 2.7m x 18-3 AWG, H0R7N-F - 2 x 1.5 mm2	5.0
E15-334-500645	E2500-6A	For: Warm White, 60W, DMX, Dimming, 5 Conductor Cable	
		24 VDC, DMX Parallel, Electrical Cable, 9.0' / 2.7m x 18-5 AWG, H0R7N-F - 4 X 1.5mm2	5.3
E15-334-500644	E2500-8	For: Cold White, 60W, No DMX, 3 Conductor Cable	
		24 VDC, No DMX, Electric Cable SOW, 9.0' / 2.7m x 18-3 AWG, H0R7N-F - 2 x 1.5 mm2	5.0
E15-334-500646	E2500-8A	For: Cold White, 60W ,DMX Dimming,5 Conductor Cable	
		24 VDC, DMX Parallel, Electrical Cable, 9.0' / 2.7m x 18-5 AWG, H0R7N-F - 4 X 1.5mm2	5.3
	Add to Above		
	Order #	SPRAY PLATE (Also available custom made at extra cost.)	
E15-334-4340-20	E2500-20	IN PIPE INSTALLABLE & REMOVABLE WITH PEM E2500-25 INSERTION KEY WRENCH	
		9" / 229mm long, 2" Brass Pipe with Coupling (NPT/BSP), with into pipe threaded spray plate	
		with 24 x 0.125" / 3.0mm orifices in 38.2mm/1.5" Diam. Circle with 5 degree outside drop .	2.7
E15-334-4340-25	E2500-25	PEM E2500-25 INSERTION / REMOVE (2 point) KEY WRENCH	0.3
	Add to Above		
	Order #	Cast Bronze Fixture Additions for other than on stand pipe installation	
E15-334-4306-231	E2500-231	Narrow Grout Frame Mounting, 285.75mm - 9.53" OD	3.8
E15-334-4305-232	E2500-232	Wide Grout Frame Mounting, 309.88mm - 11.50" OD	4.7
E15-334-4305-237	E2500-237	Square 279.4mm/11.001" Slab Clamp for 254mm -10.0"Opening in 76.2 mm-3"Concrete Slab	8.9
E15-334-4305-239	E2500-239	Circular 279.4mm/11.001" Slab Clamp for 254mm -10.0"Opening in 76.2 mm-3"Concrete Slab	8.7
		Please contact PEM Sales Department for recommendations about:	
		Cast Bronze Fixture Additions for other than on stand pipe installation	
		PEM LED Lightfixture Junction or Deck Boxes,	
		In Pool Stand Pipe and PEM Penetration Fittings,	
		All PEM LED Lightfixtures shown herein include specialized canadian assembled LED	
		components requiring up to date LED - DMX (512) Controls to function properly!	

PEM E 2500 LED Ring Light



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LIGHTFIXTURE TYPES with approvals:

C 131-1

1 x AR111 Lamp (UL/cUL & CE)
Max. 12V, Submerged - 100W, - Dry - 20W

C 131-3

3 x MR16 Lamps (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 3 x 65W, Dry 3 x 20W

C 131-4

3 x MR16 Lamps (UL/cUL & CE) 3 Circuits
Max. 12V*, 4 x 50W for 3 COLOUR CHANGING

C 131-5

3 or 4 x GU10 Lamps, Single Circuit, UL/cUL
Max. 120V, Submerged 4 x 50W, Dry 3 x 20W

C 131-6

3 or 4 x GU10 Lamps (UL/cUL) 4 Circuits, UL/cUL
Max. 120V, 4 x 50W for 3 COLOUR CHANGING

C 131-7 (UL/cUL)

3 x MR16 Lamps, (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 4 x 75W, Dry 4 x 20W

C 131-8 (UL/cUL) Submerged

4 x MR16 Lamps, (UL/cUL & CE) 4 Circuits
Max. 12V*, 4 x 1 x 50W for 4 COLOUR CHANGING

C 131-9

3 x GU10 Lamps, single Circuit
Max. 240V, Submerged 3 x 50W, Dry 3 x 20W

C 131-10

3 x GU10 Lamps Submerged, 3 Circuits
Max. 240V, 3 x 1 x 50W for 3 COLOUR CHANGING

* = Outside North America Max. 24 VAC / 24 VDC

CONSTRUCTION OF LIGHTFIXTURES

LAMP(S as per Type): Not part of fixture.

PAR36 or AR111 Lamps, Spring Ring

MR 16 Lamps, LED/Halogen, GX 5.3

MR 11 Lamps, LED/Halogen, GX 5.3

GU10 Lamps, LED/Halogen, GZ10

LAMP HOLDERS: Lamp to be specified w. order

Spring Ring for PAR 36/AR111, GX 5.3 or GZ10

Clamp Ring for 3W and 5W LED Lamps

STANDARD LENSES:

See Lightfixture Supplements Section, ' Lenses & Gaskets'

CONVEX LENSES, Clear

5 colors (convex colour lenses for submersible use only).

OPTIONAL LENSES:

FLAT CLEAR LENSES.

FLAT DICHRO COLOUR LENSES. Choice of 10 colors.

FLAT, CLEAR ARMoured LENSES. 15mm thickness.

Replaces rockguard in certain applications.

LENS GASKET :

High Temperature Silicone Rubber. A single 'U' shaped gasket with unique safety sealing lips and contours.

ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated, compression type cable entry.

See Lightfixture Supplements Section for cable sizing

LENSGUARD:

Not Available, use Armor Lens

CONSTRUCTION OF LIGHTFIXTURE & NICHE

FIXTURE HOUSING:

All cast bronze body and facering with machined face .
Stainless Steel fitted.

NICHE :

All cast bronze construction with machined joints.
Vertical installed Niches must have bottom drain in freezing climates.

Directional adjustable ball joint mounting of light fixture.

SEALED CONDUIT ENTRY INTO NICHE : Standard

3/4" NPT / BSP Conduit entry in side or bottom (specify)

FOR FIXTURE OPTIONS & PARTS:

See Opposite Page

SUBMERSIBLE LIGHTFIXTURE



US Certified for CE

PEM C131

NICHE MOUNTED



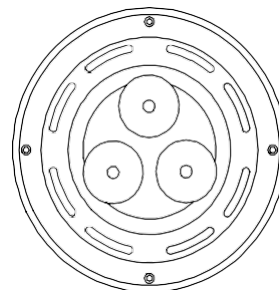
C131-3



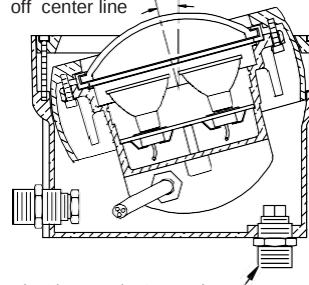
C131-1

C131-3

227mm
8.940"



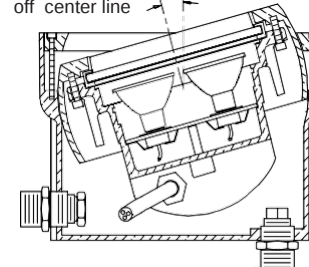
Adjustable after
Installation to 18°
off center line



Optional 3/4"NPT / BSP Drain

C131-3+ 14-9

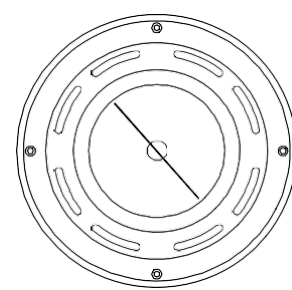
Adjustable after
Installation to 18°
off center line



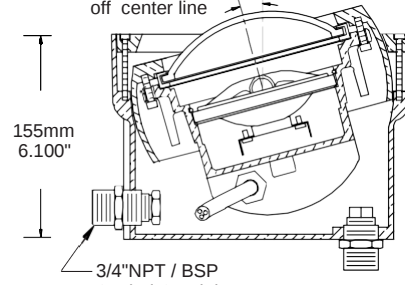
Optional 3/4"NPT / BSP Drain

C131-1

227mm
8.940"



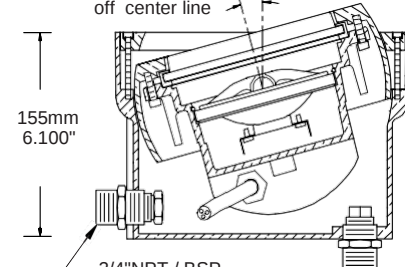
Adjustable after
Installation to 18°
off center line



3/4"NPT / BSP
Sealed Conduit

C131-1 + 14-9

Adjustable after
Installation to 18°
off center line



3/4"NPT / BSP
Sealed Conduit

PEM 131



C131 + 14-2-9



C131 + 14-2-9, Full Tilt



C131-1+14-2-9



C131-3 & -4 + 14-2-9



C131-7 & -8 + 14-2-9

SERIES	PEM	For Halogen or LED MR16/GU10 Lamps	CABLE	W.
307-27000	Cat.		Length & Size	Kg
	FOR LAMPS AS INDICATED (Not included)			
	Select cable size to suit lamp(s) wattage (Amperage)			
FIXTURES W. CAST BRONZE NICHE, SWIVEL MOUNTED, Cord & Niche Seal & Cable				
307-27813	C131-1-3	For 1 x 12V, AR111/PAR 36	5.0m x 2 x 2.5mm2	4.9
307-27815	C131-1-5	For 1 x 12V, AR111/PAR 36	5.0m x 2 x 4mm2	5.7
307-27819	C131-1-9	For 1 x 12V, AR111/PAR 36	15' / 4.5m x 16/3 AWG	6.2
307-27832	C131-3-2	For 3 x 12V, MR16, single circuit	5.0m x 2 x 2.5mm2	4.8
307-27833	C131-3-3	For 3 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	5.2
307-27835	C131-3-5	For 3 x 12V, MR16, single circuit	5.0m x 2 x 6mm2	6
307-27837	C131-3-7	For 3 x 12V, MR16, single circuit	15' / 4.5m x 12/3 AWG	7.3
307-27841	C131-4-1	For 3 x 12V, MR16, 3 circuits	5.0m x 5 x 1.5mm2	5.2
307-27842	C131-4-2	For 3 x 12V, MR16, 3 circuits	5.0m x 5 x 2.5mm2	5.7
307-27844	C131-4-4	For 3 x 12V, MR16, 3 circuits	15' / 4.5m x 16/7 AWG	4.6
307-27853	C131-5-3	For 3 x 120V, GU-10 , single circuit	5.0m x 3 x 1.5mm2	5.2
307-27863	C131-6-3	For 3 x 120V, GU-10 , 3 circuits	5.0m x 5 x 1.5mm2	5.2
307-27865	C131-6-5	For 3 x 120V, GU-10 , 3 circuits	15' / 4.5m x 16/7 AWG	4.8
307-27872	C131-7-2	For 4 x 12V, MR16, single circuit	5.0m x 2 x 2.5mm2	4.8
307-27873	C131-7-3	For 4 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	5.2
307-27875	C131-7-5	For 4 x 12V, MR16, single circuit	5.0m x 2 x 6mm2	6
307-27877	C131-7-7	For 4 x 12V, MR16, single circuit	15' / 4.5m x 10/3 AWG	7.3
307-27881	C131-8-1	For 4 x 12V, MR16, 4 circuits	5.0m x 5 x 1.5mm2	5.3
307-27882	C131-8-2	For 4 x 12V, MR16, 4 circuits	5.0m x 5 x 2.5mm2	5.7
307-27884	C131-8-4	For 4 x 12V, MR16, 4 circuits	15' / 4.5m x 16/7 AWG	4.6
307-27891	C131-9-1	For 3 x 240V, GU-10 , single circuit	5.0m x 3 x 1.5mm2	5.2
307-27901	C131-10-3	For 3 x 240V, GU-10 , 3 circuits	5.0m x 5 x 1.5mm2	5.2
		ADD ON TO STANDARD FIXTURES		
391-1998	+/-30-1	Installation Cover with Bolts	Request:Spec.Sheet	1.7
391-2001	+/-30-2	143mm Clear Flat Lens	See: Supplement	
391-2000	+/-35-2-?	143mm Flat Dichro Color Lens. Color ?	See: Supplement	
391-0114	+/- 14-2-9	143mm x 15mm Clear Flat Armored Lens	See: Supplement	
391-0431	+/-C40	143mm LensGasket, Silicone Rubber	See: Supplement	
350-4164	+/- -63	Surface Liner Clamp	Request:Spec.Sheet	2.3
350-4890	+/- -58-09	Tile Mask	Request:Spec.Sheet	1.9
385-3330	T 301	Transformer 240V,50Hzx12V/24V,300VA	CE / IP23	2.2

LIGHTFIXTURE TYPES with approvals:

C 133-1 + B46

1 x AR111 Lamp (UL/cUL & CE)
Max. 12V, Submerged - 100W, - Dry - 20W

C 133-3 + B46

3 x MR16 Lamps (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 3 x 65W, Dry 3 x 20W

C 133-4 + B46

3 x MR16 Lamps (UL/cUL & CE) 3 Circuits
Max. 12V*, 3 x 50W for 3 COLOUR CHANGING

C 133-5 + B46

3 x GU10 Lamps, Single Circuit, UL/cUL
Max. 120V, Submerged 3 x 50W, Dry 3 x 20W

C 133-6 + B46

3 x GU10 Lamps (UL/cUL) 3 Circuits, UL/cUL
Max. 120V, 3 x 50W for 3 COLOUR CHANGING

C 133-7 + B46 (UL/cUL)

4 x MR16 Lamps, (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 4 x 75W, Dry 4 x 20W

C 133-8 + B46 (UL/cUL) Submerged

4 x MR16 Lamps, (UL/cUL & CE) 4 Circuits
Max. 12V*, 4 x 1 x 50W for 4 COLOUR CHANGING

C 133-9 + B46

3 x GU10 Lamps, single Circuit
Max. 240V, Submerged 3 x 50W, Dry 3 x 20W

C 133-10 + B46

3 x GU10 Lamps Submerged, 3 Circuits
Max. 240V, 3 x 1 x 50W for 3 COLOUR CHANGING

12V * = Outside North America Max. 24 VAC / 24 VDC

CONSTRUCTION OF LIGHTFIXTURES

For use in fresh water, for seawater use, please enquire
FACEPLATE for flush into concrete surface installation
within grout frame. Bronze Casting with natural finish.
Stainless Steel fitted.

NICHE: 304 Stainless Steel, Stainless Steel fitted

SEALED CONDUIT ENTRY INTO NICHE:

3/4" NPT / BSP Conduit entry with suitable cordseal.
See opposite page.

(-B11A) FLOOR INSTALLATION FACEPLATE OF NICHE.

(Optional & Extra) (Re-useable)
Made for flush floor installation, to permit surface finishing.

NICHE DRAIN (Optional & Extra), 1/2" NPT/BSP with Plug

Niches must have bottom drain in freezing climates.

(-B11B) WALL INSTALLATION OF NICHE

(Optional & Extra) (Re-useable)

For bolting to concrete wall form.

FIXTURE HOUSING :

Cast bronze body and facering. Stainless Steel fitted.

LAMP(S) as per Type : Not part of fixture.

PAR36 or AR111 Lamps
MR 16 Lamps , LED/Halogen, GX 5.3
MR 11 Lamps, LED/Halogen, GX 5.3
GU10 Lamps, LED/Halogen , GZ10

LAMP HOLDERS: Lamp(s) to be specified w. order

Spring Ring for PAR 36/AR111, GX 5.3 or GZ10
Clamp Ring for 3W and 5W LED Lamps

STANDARD LENS:

See Lightfixture Supplements Section, ' Lenses'

CONVEX LENS, Clear

5 colors (convex colour lenses for submersible use only).

OPTIONAL LENS:

FLAT CLEAR LENS.

FLAT DICHRO COLOUR LENS. Choice of 10 colors.

FLAT, CLEAR ARMoured LENS. 15mm thickness.

Replaces rockguard in certain applications.

LENS GASKET :

High Temperature Silicone Rubber. A single 'U' shaped gasket
with unique safety sealing lips and contours.

ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated,
compression type cable entry.

See Lightfixture Supplements Section for cable sizing

STAND ASSEMBLIES: OPTIONAL

See selection of stand assemblies on opposite page.

Lensguard: OPTIONAL (Not for 14-9 Armoured Lens)

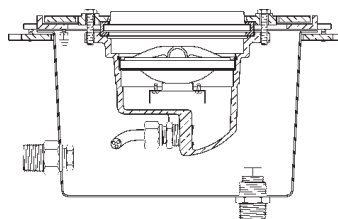
See opposite page

Not intended for or to be used
in Swimming Pools !

PEM C133 + B46

STAINLESS STEEL WET NICHE MOUNTED & DIRECTIONAL ADJUSTABLE SUBMERSIBLE LIGHT FIXTURES

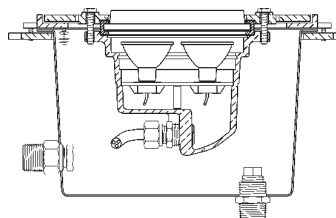
C133-1 + B46



C133-1 + B46 (Tilt to 15°)



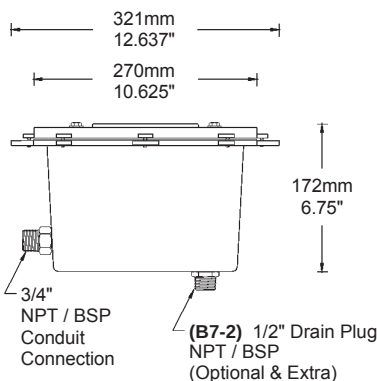
C133- 3 to 8 + B46



C133-1 + B46



C133 + 46

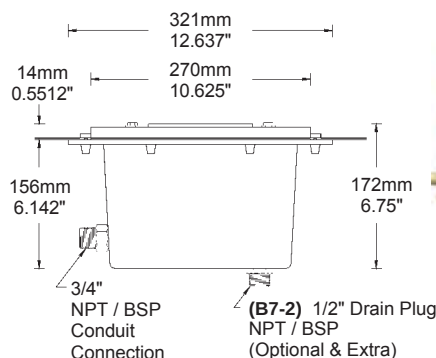


C133- 3 & 6 + B46



C133 + B46-63

WITH SURFACE MEMBRANE CLAMP
(Optional & Extra)



C133- 7 & 8 + B46



PEM C133 + B46



C133+B46



C133+B46



C133-1+B46-13



C133-3+B46-32



C133-7+B46-73



C133-10-7-B46

SERIAL	PEM		Cable	W.
307-29000	Cat.		Length & Size	Kg
	FOR LAMPS AS INDICATED (Not included)			
	Select cable size to suit lamp(s) wattage (Amperage)			
	FIXTURES W. CAST BRONZE NICHE, Cord, Niche Seal & Cable			
307-29113	C133-1+B46-13	For 1 x 12V, AR111/PAR 36	5.0m x 2 x 2.5mm2	4.9
307-29115	C133-1+B46-15	For 1 x 12V, AR111/PAR 36	5.0m x 2 x 4mm2	5.7
307-29118	C133-9+B46-19	For 1 x 12V, AR111/PAR 36 UL, cUL	15/4.5m x 16/3 AWG	6.2
307-29132	C133-3+B46-32	For 3 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	4.8
307-29133	C133-3+B46-33	For 3 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	5.2
307-29135	C133-3+B46-35	For 3 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	6
307-29136	C133-3+B46-35	For 3 x 12V, MR16, single circuit	5.0m x 2 x 6mm2	6
307-29138	C133-3+B46-36	For 3 x 12V, MR16, single circuit,UL,cUL	15/4.5m x 12/3 AWG	6
307-29142	C133-4+B46-42	For 3 x 12V, MR16, 3 circuits	5.0m x 5 x 1.5mm2	5.7
307-29143	C133-4+B46-43	For 3 x 12V, MR16, 3 circuits	5.0m x 5 x 2.5mm2	5.3
307-29148	C133-4+B46-44	For 3 x 12V, MR16, 3 circuits,UL,cUL	15/4.5m x 16/7 AWG	4.6
307-29155	C133-5+B46-55	For 3 x 120, GU-10 , single circuit	5.0m x 3 x 1.5mm2	4.8
307-29163	C133-6+B46-63	For 3 x 120, GU-10 , 3 circuits	5.0m x 5 x 1.5mm2	5.2
309-29168	C133-6+B46-65	For 3 x 120, GU-10 , 3 circuits, UL,cUL	15/4.5m x 16/7 AWG	4.8
307-29173	C133-7+B46-73	For 4 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	5.2
307-29175	C133-7+B46-75	For 4 x 12V, MR16, single circuit	5.0m x 2 x 4mm2	6
307-29176	C133-7+B46-75	For 4 x 12V, MR16, single circuit	5.0m x 2 x 6mm2	6
307-29178	C133-7+B46-76	For 4 x 12V, MR16, single circuit,UL,cUL	15/4.5m x 10/3 AWG	6
307-29182	C133-8+B46-82	For 4 x 12V, MR16, 4 circuits	5.0m x 5 x 1.5mm2	5.7
307-29183	C133-8+B46-83	For 4 x 12V, MR16, 4 circuits	5.5m x 5 x 2.5mm	5.4
307-29188	C133-8+B46-84	For 4 x 12V, MR16, 4 circuits,UL,cUL	15/4.5m x 16/9 AWG	4.6
307-29192	C133-9+B46-82	For 3 x 240V, GU-10 , single circuit	5.0m x 3 x 1.5mm2	4.8
307-291202	C133-10+B46-84	For 3 x 240V, GU-10 , 3 circuits	5.0m x 5 x 1.5mm2	6.8
	ADD ON TO STANDARD FIXTURES			
391-1999	+/-B11a	Installation Cover with bolts	Request Spec Sheet	2.7
391-2001	+/-30-2	143mm Clear Flat Lens	See Lightfixture Supplements	0.1
391-2000	+/-35-2-?	143mm Flat Dichro Color Lens. Color ?	See Lightfixture Supplements	0.1
391-0114	+/-B2214-2-9	143mm x 15mm Clear Flat Armored Lens	See Lightfixture Supplements	1.2
391-0431	+13-2	143mm LensGasket, Silicone Rubber	See Lightfixture Supplements	0.1
350-0029	+/-10-7	Lensguard (In Addition To Lightfixture Only)	Request Spec Sheet	0.7
350-4164	+/-63	Surface Liner Clamp	Request Spec Sheet	2.3
350-4890	+/-58-09	Tile Mask	Request Spec Sheet	1.9
385-3330	T 301	Transformer 240V,50Hz x 12V/24V, 300VA	IP23	2.2

LIGHTFIXTURE TYPES**C 133-1**

1 x AR111 LED/HALOGEN Lamp (UL/cUL & CE)
Max. 12V, Submerged - 100W, - Dry - 20W

C 133-3

3 x MR16 LED/HALOGEN Lamps (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 3 x 65W, Dry 3 x 20W

C 133-4

3 x MR16 LED/HALOGEN Lamps (UL/cUL & CE) 3 Circuits
Max. 12V*, 3 x 50W for 3 COLOUR CHANGING

C 133-5

3 x GU10 LED/HALOGEN Lamps, Single Circuit, UL/cUL
Max. 120V, Submerged 3 x 50W, Dry 3 x 20W

C 133-6

3 x GU10 LED/HALOGEN Lamps (UL/cUL) 3 Circuits, UL/cUL
Max. 120V, 3 x 50W for 3 COLOUR CHANGING

C 133-7 (UL/cUL)

4 x MR16 LED/HALOGEN Lamps, (UL/cUL & CE) Single Circuit
Max. 12V*, Submerged 4 x 75W, Dry 4 x 20W

C 133-8 (UL/cUL) Submerged

4 x MR16 LED/HALOGEN Lamps, (UL/cUL & CE) 4 Circuits
Max. 12V*, 4 x 1 x 50W for 4 COLOUR CHANGING

C 133-9

3 x GU10 LED/HALOGEN Lamps, single Circuit
Max. 240V, Submerged 3 x 50W, Dry 3 x 20W

C 133-10

3 x GU10 LED/HALOGEN Lamps Submerged, 3 Circuits
Max. 240V, 3 x 1 x 50W for 3 COLOUR CHANGING

12V * = Outside North America Max. 24 VAC / 24 VDC

CONSTRUCTION OF LIGHTFIXTURES**FIXTURE HOUSING :**

Cast bronze body and facering. Stainless Steel fitted.

LAMP(S) as per Type : Not part of fixture.

PAR36 or AR111 Lamps

MR 16 Lamps, LED/Halogen, GX 5.3

MR 11 Lamps, LED/Halogen, GX 5.3

GU10 Lamps, LED/Halogen, GZ10

LAMP HOLDERS: Lamp(s) to be specified w. order

Spring Ring for PAR 36/AR111, GX 5.3 or GZ10

Clamp Ring for 3W and 5W LED Lamps

STANDARD LENS:

See Lightfixture Supplements Section, ' Lenses & Gaskets'

CONVEX LENS, Clear

5 colors (convex colour lenses for submersible use only).

OPTIONAL LENS:**FLAT CLEAR LENS.**

FLAT DICHRO COLOUR LENS. Choice of 10 colors.

FLAT, CLEAR ARMoured LENS. 15mm thickness.

Replaces rockguard in certain applications.

LENS GASKET :

High Temperature Silicone Rubber. A single 'U' shaped gasket with unique safety sealing lips and contours.

ELECTRICAL CABLE:

Approved for the purpose with integral epoxy encapsulated, compression type cable entry.

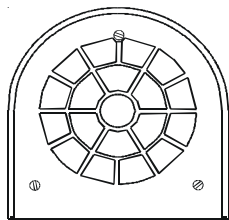
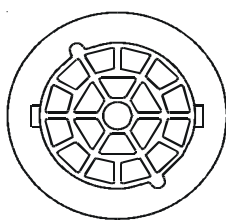
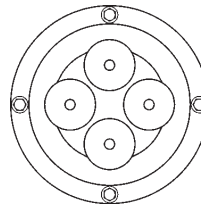
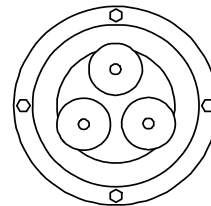
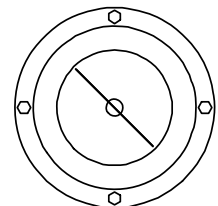
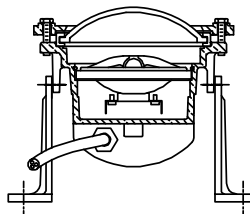
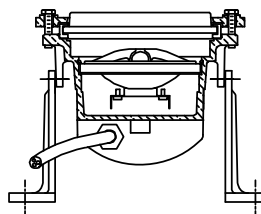
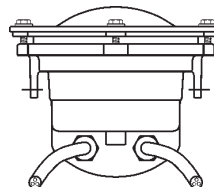
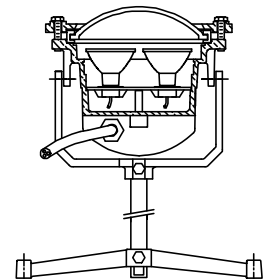
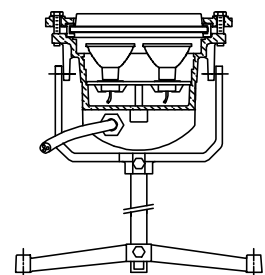
See Lightfixture Supplements Section for cable sizing

STAND ASSEMBLIES: OPTIONAL

See selection of stand assemblies on opposite page.

ROCKGUARD: OPTIONAL (Not for 14-9 Armoured Lens)

See selection on opposite page

**C133 + B57****C133 + B56****SUBMERSIBLE OR DRY LIGHTFIXTURE PEM C133****CAST BRONZE LED / HALOGEN LIGHTFIXTURES****C133 -3 to -6
+ B1S****C133 -1
+ B1S****C133 -7 & -8
+ B1S****C133-7/8****C133-3/4/5/6****C133-1**191mm
7.500"**C133-1 + B6-2**183mm
7.20"**C133-1 + 14-9 + B6-2**167mm
6.58"**C133-2****C133-3, / -8 + B1S**356mm
14.00"
to
420mm
16.50"**C133-3, / -8 + 14-9 + B1S**343mm
13.50"
to
406mm
16.00"

254mm / 10.0"

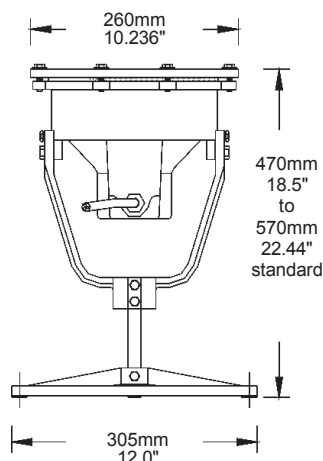
PEM C133

	SERIAL	PEM	CABLE	W.
	307-34000	Cat.	Length & Size	Kg
	FOR LAMPS AS INDICATED (Not included)			
	Select cable size to suit lamp(s) wattage (Amperage)			
	FIXTURES, NO STAND, NO LAMP(s) with Convex Lens			
	307-34813	C133-1-3	For 1 x 12V, AR111/PAR 36	2.7m x 2 x 2.5mm2 4.9
	307-34815	C133-1-5	For 1 x 12V, AR111/PAR 36	5.0m x 2 x 4mm2 5.7
	307-34817	C133-1-7	For 1 x 12V, AR111/PAR 36 UL, cUL	9' / 2.7m x 16/3 AWG 4.8
	307-34832	C133-3-2	For 3 x 12V, MR16, single circuit	2.7m x 2 x 4mm2 4.8
	307-34833	C133-3-3	For 3 x 12V, MR16, single circuit	5.0m x 2 x 4mm2 5.2
	307-34835	C133-3-5	For 3 x 12V, MR16, single circuit	2.7m x 2 x 4mm2 6
	307-34837	C133-3-7	For 3 x 12V, MR16, single circuit,UL,cUL	9' / 2.7m x 10/3 AWG 7.3
	307-34841	C133-4-1	For 3 x 12V, MR16, 3 circuits	2.7m x 5 x 1.5mm2 5.2
	307-34842	C133-4-2	For 3 x 12V, MR16, 3 circuits	5.0m x 5 x 1.5mm2 5.7
	307-34843	C133-4-2	For 3 x 12V, MR16, 3 circuits	2.7m x 5 x 2.5mm2 5.3
	307-34844	C133-4-4	For 3 x 12V, MR16, 3 circuits,UL,cUL	9' x 16/7 AWG 5.9
	307-34853	C133-5-3	For 3 x 120V, GU-10 , single circuit	2.7m x 3 x 1.5mm2 5.2
	307-34855	C133-5-5	For 3 x 120V, GU-10 , single circuit	5.0m x 3 x 1.5mm2 4.8
	307-34863	C133-6-3	For 3 x 120V, GU-10 , 3 circuits	2.7m x 5 x 1.5mm2 5.2
	307-34865	C133-6-5	For 3 x 120V, GU-10 , 3 circuits, UL,cUL	2.7m x 16/7 AWG 4.8
	307-34872	C133-7-2	For 4 x 12V, MR16, single circuit	2.7m x 2 x 4mm2 4.8
	307-34873	C133-7-3	For 4 x 12V, MR16, single circuit	5.0m x 2 x 4mm2 5.2
	307-34875	C133-7-5	For 4 x 12V, MR16, single circuit	2.7m x 2 x 4mm2 6
	307-34877	C133-7-7	For 4 x 12V, MR16, single circuit,UL,cUL	9' / 2.7m x 10/3 AWG 7.3
	307-34881	C133-8-1	For 4 x 12V, MR16, 4 circuits	2.7m x 5 x 1.5mm2 5.3
	307-34882	C133-8-2	For 4 x 12V, MR16, 4 circuits	5.0m x 5 x 1.5mm2 5.7
	307-34883	C133-8-3	For 4 x 12V, MR16, 4 circuits	5.0m x 2 x 2.5mm2 5.4
	307-34884	C133-8-4	For 4 x 12V, MR16, 4 circuits,UL,cUL	2.7m x 16/9 AWG 5.9
	307-34891	C133-9-1	For 3 x 240V, GU-10 , single circuit	2.7m x 3 x 1.5mm2 5.2
	307-34892	C133-9-2	For 3 x 240V, GU-10 , single circuit	5.0m x 3 x 1.5mm2 4.8
	307-27901	C133-10-3	For 3 x 240V, GU-10 , 3 circuits	2.7m x 5 x 1.5mm2 5.2
	307-27902	C133-10-4	For 3 x 240V, GU-10 , 3 circuits	5.0m x 5 x 1.5mm2 6.8
	ADD ON TO STANDARD FIXTURES			
	391-2001	30-2	143mm Clear Flat Lens	See Lightfixture Supplement 0.1
	391-2000	35-2-0000	143mm Flat Dichro Color Lens	See Lightfixture Supplement 0.1
	391-0114	14-2-9	143mm x 15mm Clear Flat Armored Lens	See Lightfixture Supplement 1.2
	350-1123	+/-2C	2 Cable entries, 2 x 6.0mm2 & 2 x 2.5mm2	Factory wired only +0.4
	350-1133	+/-2D	2 Cable entries, 2 x 6.0mm2 & 2 x 4.0mm2	Factory wired only +0.5
	334-3292	+/-6/-92	Brass Lens Shade for Dichro Color Lens	0.8
	350-0014	+/-10-2	Clip On Rockguard	0.8
	350-0026	+/-10-6	Swing Up Rockguard	0.7
	350-0029	+/-10-7	Lensguard (not for 14-2-9)	0.2
	350-0109	+/-B1	Tripod Stand, 40cm WD	1.4
	350-0110	+/-B1S	Tripod Stand, 25cm WD	1.2
	350-0130	+/-B4	Ring Stand, 60cm WD	2.8
	350-0270	+/-B6-2	Mounting Brackets,18cm WD	2.0
	350-0300	+/-B7S	Mounting Yoke	0.7
	350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length 3.7
	350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length 3.7
	350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length 3.7
	350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length 3.7
	385-3330	T 301	Transformer 240V,50Hzx12V/24V,300VA	IP23 2.2

SUBMERSIBLE LIGHTFIXTURE **PEM E600** FOR LED / HALOGEN LAMPS *

PEM E 600A Lightfixtures
are available:

For custom fitting of
PAR 56 Size Strobes
or
PAR 56 HID Lamps
Please enquire.



E600 A/-B4A

LAMPS: OPTIONAL

PAR LAMPS

See Lightfixture Supplements, Lamps

120V & 240V, PAR 56

Sealed Beam Lamps, Base (GX16d).

Max. 120V - 300W & 500W & 240V - 300W & 500W.

12V & 24V, PAR 56

Sealed Beam Lamps, Screw Connections.

Max. 24V - 250W, 12V - 120W, 240W & 300W.

MULTIPLE LED LAMPS

(8) MR 16, 12 VAC, 12VDC, 24VC. max .20W each

(8) GU 10, 12 VAC, 12VDC, 24VC. max .20W each

* Outside North America: 12VAC, 24VAC or 24VDC

CONSTRUCTION OF LIGHTFIXTURE:

HOUSING & FACERING:

Cast bronze (85/5/5/5 Copper Alloy) with stainless steel fasteners.

Facering has cast in tightening torque specification for facering bolts.

CABLE:

Approved for the purpose electrical cable with epoxy encapsulated compression type cable entry into housing.

See Lightfixtures Supplements for cable sizing

LAMP CONNECTOR:

120V / 240V : Ceramic, Mogul PAR connector GX 16d (flat pins) with high temperature leads and (3) holding clamps.

12V & 24V : Fork Connectors and (3) holding clamps.

LENS: 213mm / 8.375" diameter. See Lightfixtures Supplement, Lamps

STANDARD: CONVEX LENS.

OPTIONAL:

FLAT DICHRO COLOR LENS. Choice of 10 colors.

INTERNAL DICHRO COLOR FILTER ADAPTER

TYPE -2-1, for 161mm / 6.338" diameter x 2+mm Dichro Color Filter.

TYPE -2-2, for 168mm / 6.614" diameter x 2+mm Dichro Color Filter.

For internally mounted dichro color filters by various manufacturers.

Must be high heat resistant & tempered. Adapter has 3 point filter holding.

LENS GASKET:

Custom molded U shaped made of material approved for the application.

DICHROIC LENS SHADE: -0-5 Required for clean color illumination.

THERMAL CUT - OFF: OPTIONAL

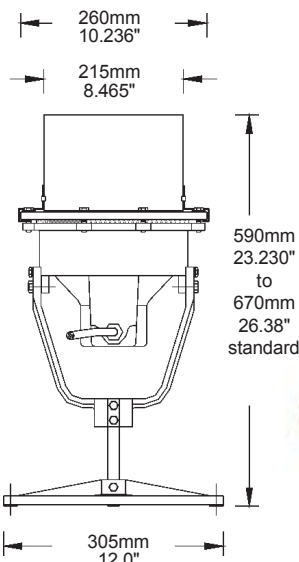
Factory installed integral thermal cut off for 240V, 120V, 24V & 12V.

ROCKGUARD: OPTIONAL. See opposite Page

LENSGUARD, PART OF FACERING: OPTIONAL. See opposite Page

Must be used if required with Niche B69. Optional for all others.

STAND OR MOUNTING ASSEMBLY: OPTIONAL. See opposite Page



E600 A/-0-5/-B4A
Fixture w.dichro lens shade

* Specify MR16 or GU 10 Lamps
max. 50W. 12VAC/12VDC/24VDC

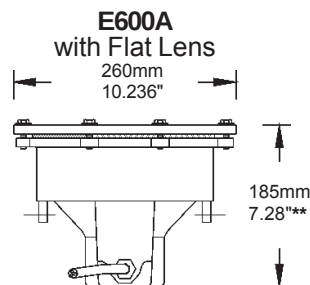
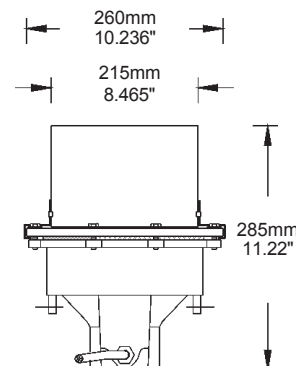


E600A / -B4A
Ring Stand Mounting
Higher Stands Optional & Extra



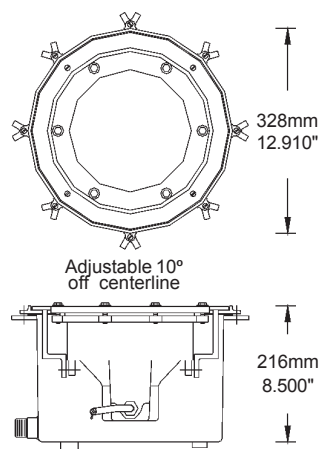
E600 A / -0-5/-B4A
Ring Stand Mounting
Higher Stands Optional & Extra

E600A/-0-5
with Dichro Lens Shade



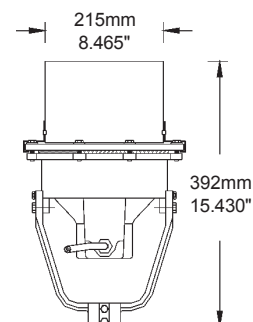
E600A
with Flat Lens
Higher Stands Optional & Extra

E600 A / -B69A
Niche Mounting



** = For Convex
Lens add:
20mm / 0.75"

E600 A / -0-5 / -B7A
Yoke Mounting



PEM E600



E600A



E600A+ 10-9



E600A-6



E600A+B30-1



E600A+B69A-1



E600A+B69A-1
tilted in Niche

SERIAL	PEM	FOR LAMPS as Indicated (Not Included)	Cable	W.
317-0000	Cat.	4 Circuits = Multiple Conductor Cable	Length & Size	Kg
Select cable size to suit wattage (Amperage) of lamp(s)				
FOR PAR 56 SINGLE LAMP W. CORDSEAL, NO STAND, NO CABLE				
317-0111	E600A-1-1	For 12VAC, max. 300W	2 x 6.0mm2	6.3
317-0211	E600A-1-2	For 24V, max. 250W	2 x 4.0mm2	5.4
317-0311	E600A-1-3	For 240V, max. 500W	3 x 1.5mm2	5.8
FOR PAR 56 SINGLE LAMP, NO STAND, WITH CABLE				
317-0211	E600A-2-1	For 12VAC, max. 300W	2.7m x 2 x 6.0mm2	6.3
317-0214	E600A-2-1	For 12VAC, max. 300W	5.0m x 2 x 6.0mm2	8.2
317-0221	E600A-2-3	For 24VAC, max. 250W	2.7m x 2 x 4.0mm2	5.4
317-0231	E600A-2-5	For 240VAC, max. 500W	2.7m x 3 x 1.5mm2	5.8
317-0241	E600A-2-6	For 12VAC, max. 300W, CSA, UL	2.7mx10/3 STWA/SOW	9.8
317-0251	E600A-2-7	For 24VAC, max. 250W, CSA, UL	2.7mx12/3 STWA/SOW	7.8
317-0261	E600A-2-8	For 120VAC, max. 500W, CSA, UL	2.7mx16/3 STWA/SOW	6.5
FOR 8 LAMPS W. CORDSEAL, NO STAND, NO CABLE				
317-0311	E600A-3-1-1	For 8 x GU10, 240V, Single Circuit	3 x 1.5mm2	5.3
317-0321	E600A-3-1-2	For 8 x GU10, 240V, Single Circuit	3 x 2.5mm2	5.3
317-0411	E600A-3-4-1	For 8 x GU10, 240V, 4 Circuits	6 x 1.5mm2	5.3
317-0421	E600A-3-4-2	For 8 x GU10, 240V, 4 Circuits	6 x 2.5mm2	5.3
317-0511	E600A-4-1-1	For 8 x MR16, 12VAC, Single Circuit	2 x 2.5mm2	5.3
317-0521	E600A-4-1-2	For 8 x MR16, 12VAC, Single Color Halogen	2 x 2 x 6.0mm2	6.3
317-0651	E600A-4-4-1	For 8 x MR16, 12VAC, 4 Circuits	16/6 AWG(6/2.5mm2)	5.3
317-0661	E600A-4-4-2	For 8 x MR16, 12VAC, 4 Circuits	16/9 AWG(9/2.5mm2)	5.3
FIXTURE W. CONVEX LENS, NO STAND, WITH CABLE				
317-0311	E600A-5-1-1	For 8 x GU10, 240V, Single Circuit	2.7m x 3 x 1.5mm2	5.3
317-0321	E600A-5-1-2	For 8 x GU10, 240V, Single Color	2.7m x 3 x 2.5mm2	5.3
317-0411	E600A-5-4-3	For 8 x GU10, 240V, 4 Circuits	2.7m x 16/6 AWG	6.4
	E600A-5-4-4	For 8 x GU10, 240V, 4 Circuits	2.7m x 16/9 AWG	7.8
317-0511	E600A-6-1-1	For 8 x MR16, 12VAC, Single Circuit	2.7m x 3 x 2.5mm2	5.3
317-0541	E600A-6-1-2	For 8 x MR16, 12VAC, Single Circuit	2 x 2.7m x 2 x 6.0mm2	8.9
317-0542	E600A-6-1-3	For 8 x MR16, 12VAC, Single Circuit	2 x 5.0m x 2 x 6.0mm2	9.6
317-0651	E600A-6-4-1	For 8 x MR16, 12VAC, 4 Circuits	2.7m x 16/6 AWG	6.4
317-0661	E600A-6-4-2	For 8 x MR16, 12VAC, 4 Circuits	2.7m x 16/9 AWG	7.8
ADD ON TO STANDARD FIXTURES				
391-3001	30-3	213mm Flat Clear Lens.	See: Lightfixture Supplement	1.1
391-3021/30	35-3-21/30	213mm Flat Dichro Color Lens.	See: Lightfixture Supplement	1.1
334-3593	+/-0-5	(B) Dichro Lens Shade		1.2
334-3548	+/-2-1	Internal Holder for 161mm Color Filters		1.3
334-3548	+/-2-2	Internal Holder for 168mm Color Filters		1.3
350-0003	+/-07	Thermal Cut Off for 120 / 240V only	Factory wired only	0.1
350-1111	+/-2A	2. Cable entry, 240V, 3 x 1.5mm2	Factory wired only	0.1
350-1113	+/-2B	2. Cable entry, 12V / 24V, 2 x 2.5mm2	Factory wired only	0.1
350-1123	+/-2C	2. Cable entry, 12V / 24V, 2 x 4mm2	Factory wired only	0.2
350-1133	+/-2D	2. Cable entry, 12V / 24V, 2 x 6mm2	Factory wired only	0.3
350-0014	+/-10-3	Bolt On Rock Guard		1.5
350-0035	+/-10-8	Lensguard (In Addition To Lightfixture Only)		1.0
350-0026	+/-10-9	Swing Up Rock Guard		0.7
350-0220	+/-B4A	B4A Ring Stand		7.2
350-4062	+/-B69A-1	B69A-1 Stainless Steel Niche	Requires extra cable length	9.0
350-0320	+/-B30-0	B 30 Niche, Side Conduit, Brass fitted	Requires extra cable length	3.7
350-0321	+/-B30-1	B 30 Niche, Side Conduit, St.St. fitted	Requires extra cable length	3.7
350-0324	+/-B30-4	B 30 Niche, Bottom Conduit, Brass fitted	Requires extra cable length	3.7
350-0325	+/-B30-5	B 30 Niche, Bottom Conduit, St.St. fitted	Requires extra cable length	3.7
362-20030	PAR56 FSP	Full Spot Lamp, 240V, 500W, 2000+ Hrs	GX16d	1
362-20051	PAR56 FSP	Full Spot Lamp, 24V, 250W, 2000+ Hrs	Bolt on connection	1
385-3330	T301	Transformer 240V, 50Hzx12V/24V, 300VA	P23	2.2

[illegible]