

PEM

WIRING DEVICES FOR SUBMERSIBLE LIGHTFIXTURES

INDEX 2008-1

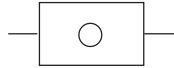
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PEM CONDUIT MOUNTED SUBMERSIBLE JUNCTION BOXES U.L. & CSA

PEM Junction Boxes are of cast bronze, stainless steel fitted and with a Neoprene cover gasket. They are NPT tapped for mounting upon PEM J60 Series Pool Conduits. Outlets are NPT tapped for PEM 1/2" or 3/4" NPT Cordseals and for Internal and External ground (earth) connections.

PEM Junction Boxes must be installed in conformance with all applicable electrical codes. For NEMA installations, the junction box cavity must be filled with a UL listed compound (3M or other). All supply conduits into a pool must be self draining in a visible location outside of the pool. All threaded conduit connection(s) as well as all cordseals must be installed with an approved watersealing thread seal.

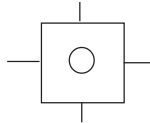
J 1



#363-1110, CSA / UL
Max. 2 x 1/2" Outlets
1 x Max. 3/4" Conduit

#363-1120*
1 x 3/4" Outlet
1 x Max. 3/4" Conduit

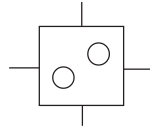
J 2



#363-1210, CSA / UL
Max. 4 x 1/2" Outlets
1 x Max. 3/4" Conduit

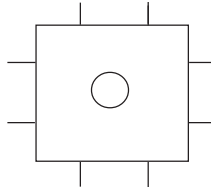
#363-1220 *
Max. 4 x 3/4" Outlets
1 x Max. 3/4" Conduit

J 2-2



#363-1310, CSA / UL
Max. 4 x 1/2" Outlets
2 x Max. 3/4" Conduits

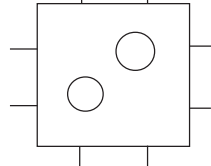
J 3



#363-1410, CSA / UL
Max. 8 x 1/2" Outlets
Max 1 x 1" Conduit

#363-1420 *
Max. 4 x 3/4" Outlets
Max. 2 x 1" Outlets
1 x Max. 1" Conduit

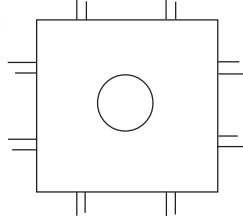
J 4



#363-1510, CSA / UL
Max. 8 x 1/2" Outlets
2 x Max. 1" Conduit

#363-1520 *
Max. 4 x 3/4" Outlets
2 x Max. 1" Conduit

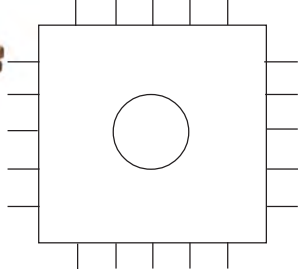
J 5



#363-1610, CSA / UL
Max. 16 x 1/2" Outlets
Max. 1 x 2" Conduit

#363-1620 *
Max. 8 x 3/4" Outlets
1 x Max. 3" Conduit

J 6



#363-1710, CSA / UL
Max. 20 x 1/2" Outlets
1 x Max. 2" Conduit

#363-1720 *
Max. 12 x 3/4" Outlets
Max. 1 x 4" Conduit

#363-1730*
Max. 4 x 1 1/2" Outlets
Max. 1 x 4" Conduit

Max.

ALL TAPPINGS ARE NPT UNLESS SPECIFIED OTHERWISE.

All Boxes have 1 (one) internal ground (earth) connection for each conduit connection & 1 (one) external ground connection. Conduit number and size must be specified. Outlets must be specified as to number and size (1/2" or 3/4").

Orders without outlet specifications will be supplied with maximum number of 1/2" NPT outlets. Unused openings must be closed with brass or stainless steel NPT threaded plugs.

Custom bored and threaded boxes can be made.

NEMA Cubic Content Requirements per conductor:	
#16 AWG =	1.75 in.3
#14 AWG =	2.0 in.3
#12 AWG =	2.25 in.3
#10 AWG =	2.5 in.3
#8 AWG =	3.0 in.3
#6 AWG =	5.0 in.3
in.3 = Cubic Inch	

Dimensions

(OD) : Outside Dimensions

PEM	Length (OD)	Width (OD)	Height (OD)	Cubic Content
J1	108mm 4.25"	83mm 3.25"	83mm 3.25"	160 cm3 11.0 in.3
J2	111mm 4.375"	111mm 4.375"	83mm 3.25"	260 cm3 17.0 in.3
J2-2	111mm 4.375"	111mm 4.375"	83mm 3.25"	279 cm3 17.0 in.3
J3	143mm 5.625"	143mm 5.625"	86mm 3.375"	590 cm3 36.0 in.3
J4	143mm 5.625"	143mm 5.625"	86mm 3.375"	590 cm3 36.0 in.3
J5	179mm 7.0"	179mm 7.0"	140mm 5.5"	1852 cm3 113.0 in.3
J6	203mm 8.0"	203mm 8.0"	114mm 4.5"	2245 cm3 137.0 in.3

In cold freezing climates:

For winterizing submersible lights, do not disconnect but place light fixtures and/or small submersible pump close around box and cover all with a plywood box, bolted to pool floor. Ascertain that the pool can drain off rain & melting snow

PEM CABLE ENTRIES

FOR ELECTRICAL CABLE CONNECTIONS FROM OUTSIDE OF A POOL TO THE INSIDE

PEM J Series Cable Entries are designed to provide sealed cable sleeve terminations for electrical cable(s) that are to be submersed. Cable sleeves carry the electrical cable outside of the pool to the junction boxes or directly to the power control / supply center.

PEM J Series Cable Entries are made of cast bronze, brass and stainless steel fitted.

For **PEM** Cable Entries the cordseals are extra to permit choice of cable size. Select cordseals from **PEM Cordseals**.

It must be noted that Cable Entries are NOT junction boxes. Their sole purpose is to seal the end of a sleeve carrying single or multiple electrical cable(s) from the pool to the power supply. The electrical cable(s) are fed through the cordseal and cable entry into the carrying sleeve.

Cordseals are normally not installed into the cable entry prior to feeding the cable through but are slipped onto the cable to the approximate point of entry or the threaded part facing toward the cable entry. It must be remembered, that cordseals consist of 4 parts that must fit together properly to seal. The thread of the cordseal(s) must be taped up with teflon thread tape to provide a water tight connection.

NOTE:

When using American type (5MA) ground fault (earth leakage) protection (GFCI). The massing of cables in a long sleeve can cause nuisance tripping due to inductance interaction between the cables. To overcome this, cables must be separated by spacers or grounded foil shielding. The current load of each cable must be well within its limits to avoid overheating and deterioration of cables in the sleeve.

Sleeves are usually plastic pipe with long radius bends. A sleeve must always terminate into the bottom of the control or power supply to prevent water falling on the electrical gear in case of accident or negligence during installation or servicing.

PEM J41, J53, J54 and J56 Cable entries are normally installed into pool walls. **PEM J58 and J59** are installed into the pool floor.

Where required suitable (CONDUIT SIZE), standard PEM J type submersible junction boxes can be used to serve as pool bottom mounted cable entries without internal splicing.

Submerged electrical cable exposed to Ozone Water Purification might be affected by same. No warranty applies to Ozone Water Purification caused equipment damages.

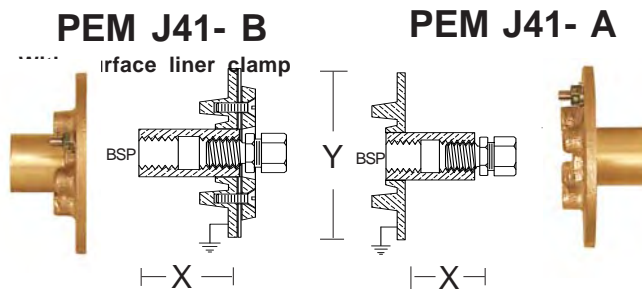
The installation of the cable entries and cable sleeves must conform to all applicable electrical codes.

It is recommended to lubricate all cables with an approved for the purpose pulling lubricant, also to put identifying numbers on each cable within the cable entry and at its termination point to permit the identification of individual cables should the need arise.

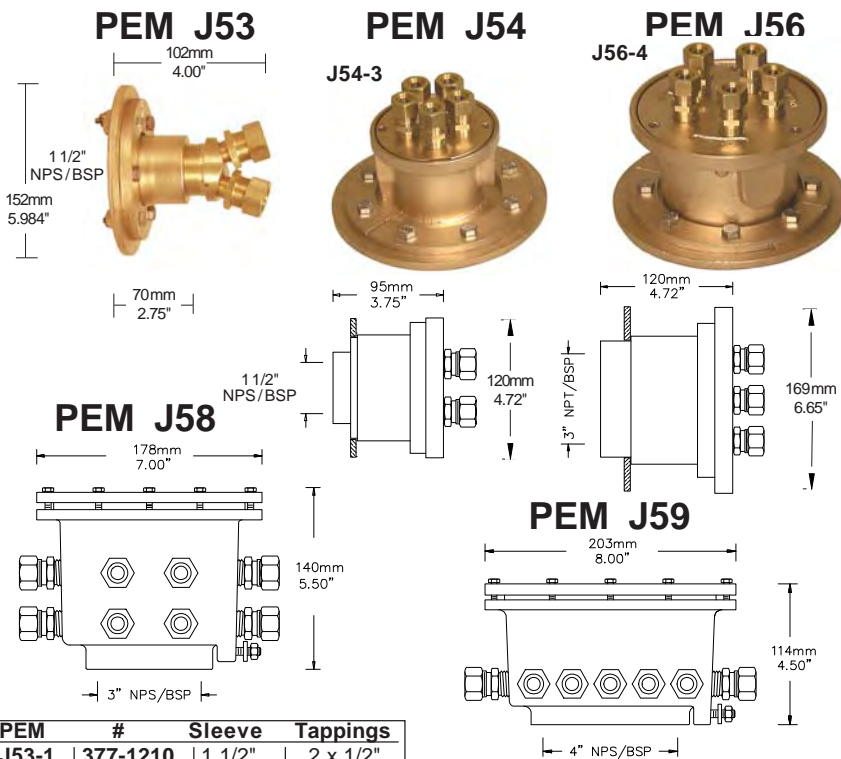
For **PEM J58 and J59** cables are usually drawn single or in pairs into the sleeve. Care is to be taken that the cable(s) is (are) not forced over the right angle turns when entering the sleeve.

For **PEM J54 and J56** Cable entries the cover must be slipped over the cable(s) as all cables are drawn at once into the sleeve.

Cordseals extra, not included !



PEM	#	TYPE	BSP	'X'	'Y'
J41-10	377-0010	A	1/2"	40mm	102mm
J41-11	377-0020	B	1/2"	40mm	102mm
J41-12	377-0040	A	3/4"	42mm	102mm
J41-13	377-0050	B	3/4"	42mm	102mm
J41-14	377-0070	A	1"	45mm	134mm
J41-15	377-0080	B	1"	45mm	134mm
J41-16	377-0100	A	1 1/4"	50mm	134mm
J41-17	377-0110	B	1 1/4"	50mm	134mm
J41-20	377-0120	A	1 1/2"	60mm	152mm
J41-21	377-0140	B	1 1/2"	60mm	152mm
J41-23	377-0160	A	2"	80mm	152mm
J41-24	377-0170	B	2"	80mm	152mm



PEM	#	Sleeve	Tappings
J53-1	377-1210	1 1/2"	2 x 1/2"
J53-3*	377-1220	1 1/2"	2 x 1/2"
J54-1	377-1310	1 1/2"	5 x 1/2"
J54-3*	377-1320	1 1/2"	5 x 1/2"
J54-4	377-1330	1 1/2"	3 x 3/4"
J54-5*	377-1340	1 1/2"	3 x 3/4"
J56-1	377-1410	3"	9 x 1/2"
J56-3*	377-1420	3"	9 x 1/2"
J56-4	377-1430	3"	5 x 3/4"
J56-5*	377-1440	3"	5 x 3/4"
J58-1	377-2210	3"	16 x 1/2"
J58-2*	377-2230	3"	8 x 3/4"
J59-1	377-2610	4"	20 x 1/2"
J59-2*	377-2630	4"	12 x 3/4"

* with membrane clamp

TILE MASKS
Natural bronze or brass
Approx. 25mm / 1.0" wide
x 3mm / 0.125" high
To be Epoxy fitted to tiles

J41-10-9	377-0019
J41-12-9	377-0049
J41-14-9	377-0079
J41-16-9	377-0109
J41-20-9	377-0129
J41-23-9	377-0169
J53-9	377-1209
J54-9	377-1309
J56-9	377-1409

PEM J11

363-30050 SERIES



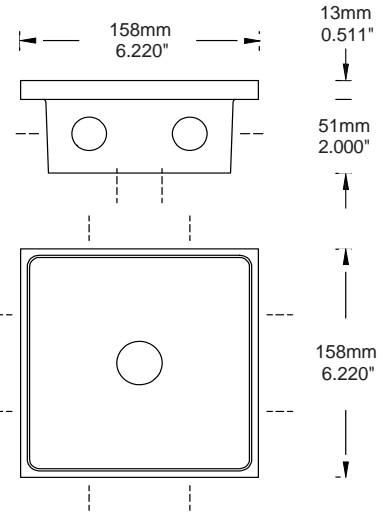
Cubic Content of J11 = 540 cm³ / 33 cubic inches

SUBMERSIBLE, SHALLOW, FLUSH MOUNTED JUNCTION BOX

The PEM J11 JUNCTION BOX is very shallow and has a square grout frame to permit best integration into ornamental square tiled surfaces. The power supply can enter the box from the bottom or the side. (Junction Box inter-connection of several boxes is possible with 20mm / 3/4" PVC conduit.) The PEM J11 JUNCTION BOX is made of cast bronze and is stainless steel fitted. Each has a cast gasket in place and internal and external ground / earth connections. The Junction box is equipped with grout frame for flush surface installation. Chrome-plating of box is available at extra cost.

BOTTOM TAPPING - 1 Hole
CONDUIT INLET - 1/2", 3/4", 1" or 1 1/2"
SIDE TAPPINGS - Max. of 8 but not adjacent to a conduit
Max. 8 x 1/2" NPT / BSP SIDE OUTLETS
Max. 8 x 3/4" NPT / BSP SIDE OUTLETS
SPECIAL TAPPING FOR METRIC ELECTRICAL THREADS OF SIMILAR SIZE - SPECIFY SIZE

IMPORTANT:
All tappings should be specified.
 All connected supply conduits must be self draining in visible locations.
 All threaded connections must have a suitable watertight thread sealant.



PEM J34 UL

363-40000 SERIES



Cubic Content of J 34 = 700 cm³ \ 42.72 Cubic Inches

SUBMERSIBLE, FLUSH MOUNTED JUNCTION BOX

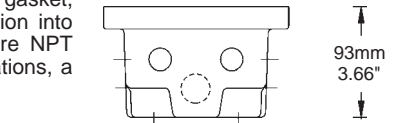
The PEM J34 JUNCTION BOX is made of cast bronze, with a Neoprene cover gasket, and is stainless steel fitted. It is equipped with a grout frame for flush installation into concrete and a separate grounding connection for each outlet. All tappings are NPT unless specified otherwise. When box is ordered without tapping specifications, a blank box without tappings will be supplied (PEM #375-4000).

POSSIBLE TAPPINGS
9/8"-18 SIDE (PEM Cordseal J13-8)
 Max. of 8 but not adjacent to a conduit.
1/2" SIDE (PEM J14 Cordseals)
 Max. of 8 in any position but not adjacent to a conduit.
3/4" SIDE (PEM J13-4 Cordseals)
 Max. of 8 in any position but not adjacent to a conduit.
1" SIDE (PEM J13-6 Cordseals)
 Max. of 4 : # 9, 10, 14 and / or 17 with bottom inlet
BOTTOM - Max. 1"
 Max. of 4 : # 1, 3, 4, 6
SPECIAL TAPPING FOR METRIC ELECTRICAL THREADS OF SIMILAR SIZE - SPECIFY SIZE

Requirements per conductor:

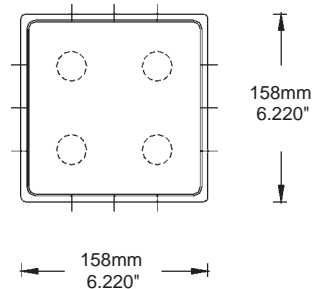
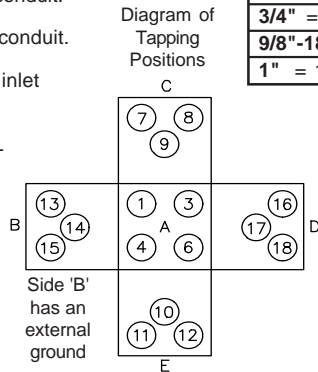
16 AWG = 1.75 Cubic Inches
14 AWG = 2.0 Cubic Inches
12 AWG = 2.25 Cubic Inches
10 AWG = 2.5 Cubic Inches
8 AWG = 3.0 Cubic Inches
6 AWG = 5.0 Cubic Inches
For # 6 AWG use as terminal

Cordseals are additional & extra



PEM J34 SUGGESTED TAPPINGS

1/2" = Any position
3/4" = Any position
9/8"-18 = 7,8,11,12,13,15,16 and / or 18
1" = 1, 3, 4, 6, 9, 10, 14 and / or 17



PEM J35

363-50000 SERIES



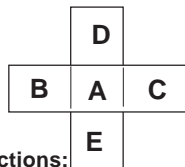
SUBMERSIBLE, FLUSH MOUNTED JUNCTION OR PULL BOX

The PEM J35 JUNCTION BOX is custom made of cast bronze, is stainless steel fitted and comes with a Neoprene cover gasket. It is equipped with a grout frame for flush installation into concrete. The PEM J35 Submersible Pull or Junction Box is designed for flush installation into concrete pool floors, walls or decks. The design of the junction box permits a great variety of custom made inlet and outlet combinations.

IMPORTANT:
 All threaded connections must have a suitable watertight thread sealant.
 All connected supply conduits must be self draining in visible locations.

All tappings must be specified.
 When box is ordered without tapping specifications a blank box without tappings will be supplied (PEM #375-5000).

See diagram below for tapping positions

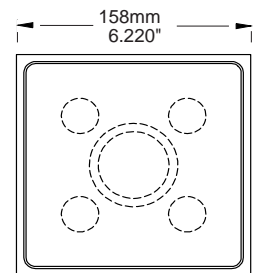
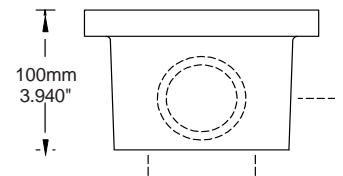


Ground (Earth) Connections:
 x External & 4 x Internal

PEM J35 SUGGESTED TAPPINGS

Maximum number of conduit connections per side

Size	Side	No. of Holes
1/2"	B, C, D, E	3
3/4"	A	3
1"	A	4
1"	B, C, D, E	2
1 1/4"	A, B, C, D, E	1 (centered)
1 1/2"	A, B, C, D, E	1 (centered)
2"	A, B, C, D, E	1 (centered)

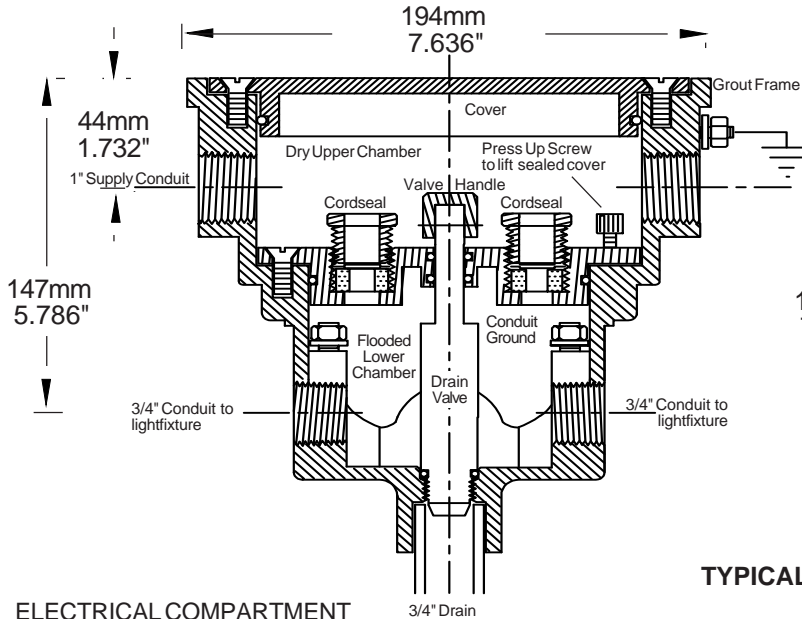


Cubic Content of J 35: 806 cm³ / 49.19 Cubic Inches

PEM J36 SUBMERSIBLE ELECTRICAL JUNCTION BOX

SUBMERSIBLE ELECTRICAL JUNCTION BOX WITH DRAINABLE CONDUIT COMPARTMENT FOR IN-FLOOR MOUNTED, UP-LIGHTING WITH NON METALLIC CONDUIT CONNECTIONS

376-1010 SERIES

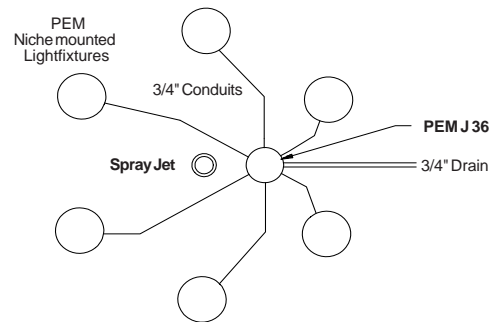
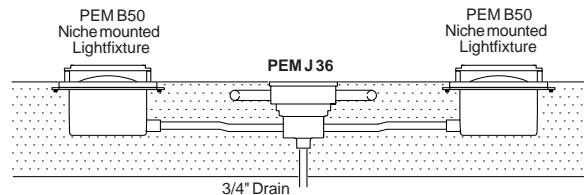


UL Listed

ELECTRICAL COMPARTMENT (Dry upper chamber)



TYPICAL INSTALLATION FOR 6 LIGHTS AROUND A SPRAY JET



PEM J36 Submersible Junction Box is designed for use with non-metallic conduits for submersible lightfixture niches installed into pool floors. It permits internal in conduit bonding of fixtures / fixture niches to the main ground in addition to internal fixture grounding. The junction box receives open 3/4" conduits (max. of 6) with fixture cable and bare ground wire providing connection for the ground wires in the flooded lower chamber conduit compartment and for the electrical cables to the power supply in the dry sealed watertight upper compartment. There is an internal drain valve for the conduit compartment with an operating handle extending into the upper electrical compartment permitting the draining of the flooded conduit compartment. This permits fixture replacement or service work without water entering the electrical junction box and supply conduit. To operate = Drain the pool. The area around the junction box cover must be dry. Open junction box and open the drain valve with a screw driver. Observe water in niches draining out. Once dry, open all cordseals, disconnect grounds, then with lift bolts open the conduit compartment. Test completed replacement, then close the cover. If necessary grease the 'O' ring seal, close the cordseals, re-connect the grounds, make the electrical connections and close the cover. A 3/4" female NPT / BSP drain connection is provided. The drain pipe shall be 1 1/2" or larger. The supply conduit(s) shall be self-draining in a visible location. The threaded NPT supply conduit connections must be made watertight with suitable thread sealant or teflon tape. Potting compounds must be the approved non shrinking and completely removable type. In freezing climates the conduits from the niches, the lower part of the PEM J36 Junction box and the drain to below frost level must be heat wire traced. **(For winter maintenance -drain the pool, open the junction box, open the drain and then close junction box, DO NOT FORGET TO CLOSE THE DRAIN AGAIN IN THE SPRING!)**

PEM J36 is custom made to given specifications:

Specify: Number and size of supply conduits (Max. 1") / number of niche conduits (Max. of 6). If less than 6 niche conduits are specified please specify C ... numbers for location of conduits. Non-corrosive NPT plugs must be used to close unused cordseal openings.

NOTE: The installation of this junction box must conform to all electrical codes applicable.

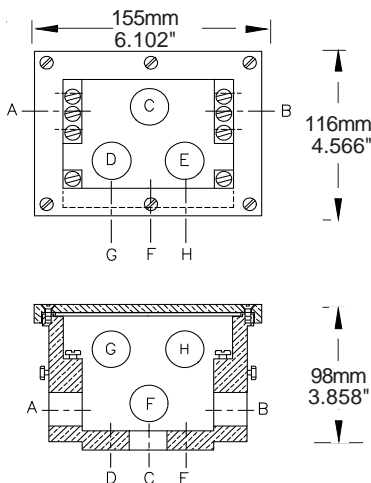
PEM A470/480

DECK / JUNCTION BOXES

The installation of deck boxes must conform with all electrical codes applicable.

Not available for USA

PEM A480 CSA *
 376-52200 SERIES
 SUBMERSIBLE
 FLUSH MOUNTED JUNCTION BOX
 2 X CONDUITS / 4 X LIGHTFIXTURES

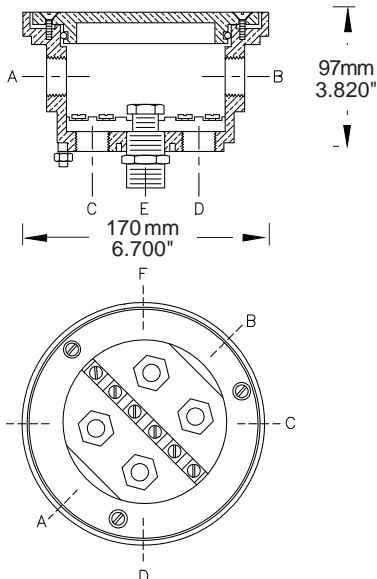
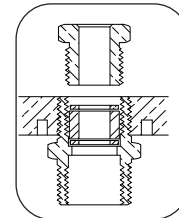


PEM A470
 376-51100 SERIES
 ABOVE GROUND JUNCTION BOX
 2 X CONDUIT / 6 X LIGHTFIXTURES



A470

PEM 13-5
 Conduit Seal

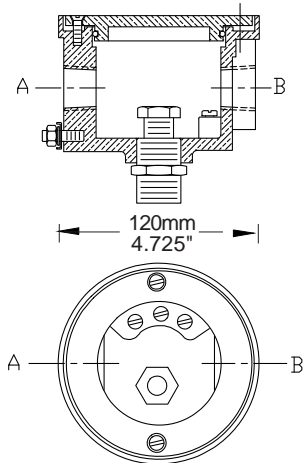


PEM A470
 Tappings are custom made.
Location, size and number of tappings must be specified otherwise box will be shipped blank - without any tappings.
 Tappings are normally NPT unless specified otherwise.
 For conduits leading into pool use (Optional) PEM J13-5 Conduit seals with 3/4" male and 1/2" female NPT Connections.
Conduit: A & B - Maximum 1" NPT / BSP.
Outlets: C to H - 3/4" female NPT.

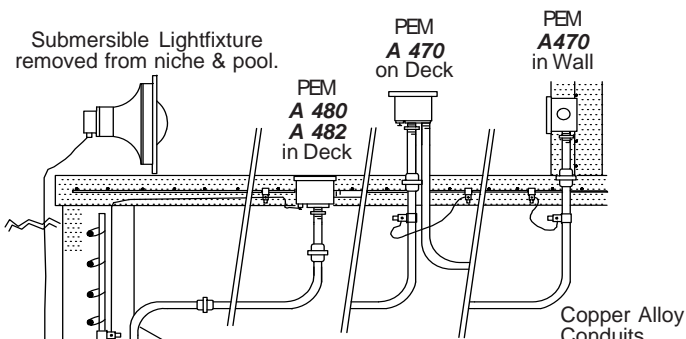
PEM A480
 Conduit tapping (A & B) is standard: 1" NPT / BSP.
 4 x 3/4" NPT Standard Bottom Outlets for optional conduit seals (J13-5) for 16/3 AWG size cable are standard.
 (Deck Boxes for niche connections with cable and the #8 Ground. See PEM J34 / J13-8).
 Bottom connections with J13-5 conduit seals are 3/4" male and 1/2" female NPT.
 CSA approved PEM A482 has 3 bottom connections of 3/4" female NPS.

PEM A482
 Conduit tapping (A & B) is standard 3/4" NPT (Maximum is 1").
 1 x 3/4" NPT Standard Bottom Outlet for optional conduit seal (J13-5) for 16/3 AWG size cable is standard. Bottom connection with J13-5 conduit seal is 3/4" male and 1/2" female NPT.
 Optional & extra is 9/8 x 18 niche plastic conduit connection with J13-8 cordseal for cable and separate #8 ground wire. CSA approved PEM A 482 has 3/4" female NPS bottom connection.

PEM A482, CSA,
 376-53400 SERIES
 SUBMERSIBLE, FLUSH MOUNTED JUNCTION BOX,
 2 X CONDUITS / 1 X LIGHTFIXTURE



APPLICATION SUGGESTIONS:



CONSTRUCTION DETAILS
 PEM A400 Series Junction or Deck Boxes are made of cast bronze with neoprene cover gasket and stainless steel bolts. A ground (earth / mass) connection is provided for each circuit connection. In addition boxes have external ground (earth / mass) connections for use when inserted into concrete. The installation of these boxes must comply with all applicable electrical codes. Potting compounds must be self sealing and cleanly removable.
 A470 is for installation above grade. A480 and A482 are for flush installation into deck or submerged in the pool floor or wall. Maximum submersion is 2 ft / 60 cm.

PEM A483 SUBMERSED OR DRY INSTALLATION DECK BOX



Internal volume of wiring chamber: 24.10 Cubic inches, (395 cm³)

PEM A483 Submersible Deck Boxes are designed to provide a safe electrical power supply and its grounding to a submersible light fixture and wet niche when properly installed. This deck box permits the use of non metallic electrical conduit with internal, in conduit bonding (grounding) of a fixture wet niche ground to the junction box in addition to the internal in cable fixture grounding of supply and light fixture. The junction box has one 1" conduit NPT connections in the bottom and the side to connect a non metallic conduit to a wet niche fixture that contains STWA / SOW fixture cable and a #6 to #8 AWG size stranded bare copper ground wire. This deckbox provides separate chambers for the connection of the wet niche ground wire (within the flooded lower chamber conduit compartment) and for the electrical cable to the power supply in the dry sealed watertight upper compartment. The supply conduit to this deckbox shall be self-draining in a visible location. 2 x 1" NPT supply conduit connections on opposite sides are provided for through wiring of supply. The threaded 1" NPT connections must be made watertight with suitable thread sealant. Potting compounds in upper chamber must be of the approved non shrinking and completely removable type. In freezing climates the niche, the conduit from the niche and the lower part of the PEM A483 Deckbox must be drained or freeze protected. The installation of this deck box must conform to all electrical codes applicable. A torque socket wrench set for for 30 Lbs Inch (3.3NM) is mandatory for installation of deck box.

PEM A 483 DECK BOX

Size of supply conduit connections

(2): 1" NPT

Size of niche conduit connections

(2): 1" NPT

2 x 1" NPT threaded bronze plugs are provided with Deck Box to close unused openings.

To connect smaller size conduit use NPT threaded reducer bushing(s).

TYPES OF PEM A 483 U.L. DECK BOXES

PEM A483 - 3-16 AWG, #376-2001

For 16/3 STWA or SOW cable (9 / 11 mm OD.)

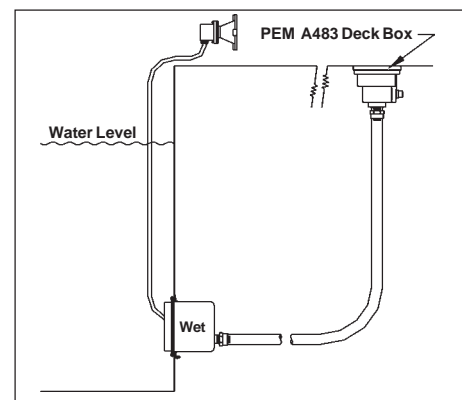
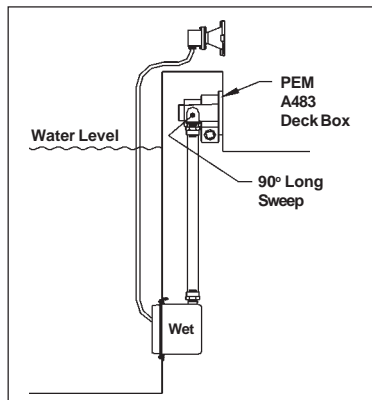
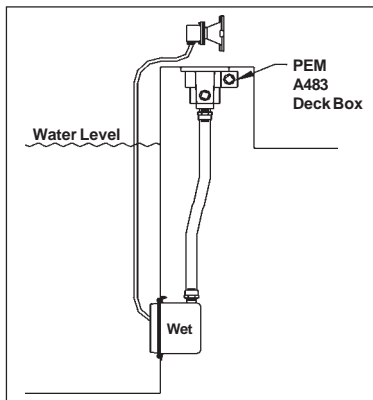
PEM A483 - 3-12 AWG, #376-2012

For 12/3 STWA or SOW cable (12.7 / 15.9 mm O.D)

PEM A483 - 3-10 AWG, #376-2023

For 10/3 STWA or SOW cable (15.9 / 19 mm O.D)

APPLICATIONSUGGESTIONS:



PEM A460-1 & A460-2

376-3100 SERIES
376-3120 SERIES



A460-1 Submersible Junction Box
with leg bolts for height elevation / anchoring adjustments

SUBMERSIBLE JUNCTION BOXES FOR INTO POOL FLOOR INSTALLATION, TO CONNECT TO POWER SUPPLY PEM SUBMERSIBLE LIGHTFIXTURES WITH PEM B30-1 or B32-1 SHALLOW NICHE MOUNTING

PEM A 460-1 & A460-2 Junction Boxes are custom made for installation into the concrete floor finishing of fountain ponds above concrete base slabs, installed flush with the floor surface of the pond.

PEM A 460-1 & A460-2 Junction Boxes are made of cast bronze with stainless steel fasteners, Neoprene O'ring seal, include

(4) 1/4-20 UNC x 3" - 75mm height adjustable Stainless Steel leg bolts / anchors with lock nuts for precise height elevation adjustment and/or anchoring

PEM A 460-1 Junction Box is available as standard with 4 x maximum size 3/4" NPT side conduit connections and 1 x 3/4" NPT maximum size bottom conduit connection.

PEM A 460-1 Junction Box requires: (4) **PEM J13-5 Conduit Seals** to connect incoming 1/2" electrical Conduits from shallow niches with female NPT threaded PVC adapter .

Conduit number and size when other than standard, must be specified as to number, size & location (1/2" or 3/4").

Orders without Conduit Connection specifications will be supplied with maximum number of 5 x 3/4" NPT connection outlets.

Unused openings must be closed with brass (were approved) or stainless steel (NEMA) with NPT threaded plugs (supplied by others).

PEM A 460-2 Junction Box is available as standard with 4 x maximum size 1" NPT side conduit connections and 1 x 1" NPT maximum size bottom conduit connection.

PEM A 460-2 Junction Box requires: (4) **PEM J13-5 Conduit Seals** to connect incoming 3/4" electrical Conduits from shallow niches with female NPT threaded PVC adapter .

Conduit number and size when other than standard, must be specified as to number, size & location (1/2", 3/4" or 1").

Orders without Conduit Connection specifications will be supplied with maximum number of 5 x 1" NPT connection outlets.

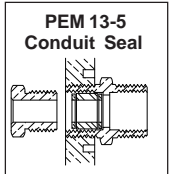
Unused openings must be closed with brass (were approved) or stainless steel (NEMA) with NPT threaded plugs (supplied by others).

PEM A 460-1 & A460-2 Junction Boxes have 6 (six) internal ground (earth) connections, sufficient for each conduit connection plus one spare & 1 (one) external ground (earth) connection

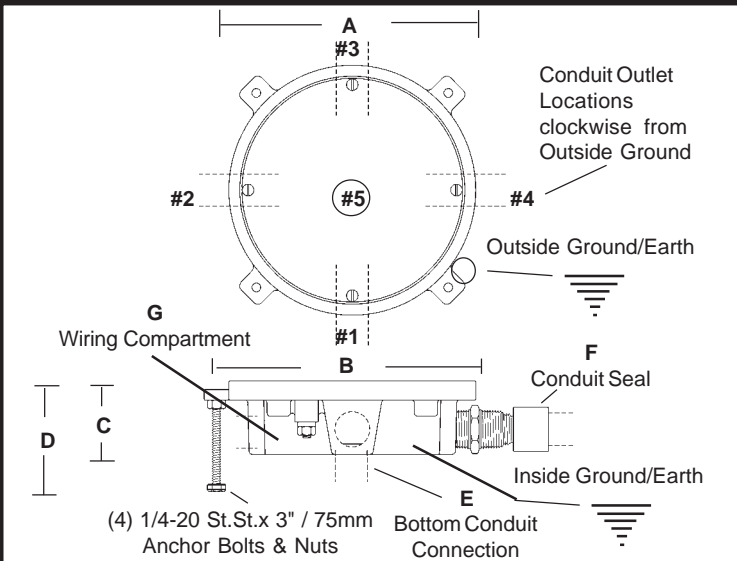
PEM A460-1 & A460-2 Junction Boxes must be installed in conformance with all applicable electrical codes. For NEMA installations, the junction box cavity must be filled with a UL listed compound. All supply conduits into a pool must be self draining in a visible location outside of the pool. All threaded conduit connection(s) as well as all cordseals must be installed with water sealing thread sealant (Teflon Tape)

OPTIONAL : Conduit Seals (at extra cost)
PEM J13-5-0, # 378-0150, Brass
PEM J13-5-1, # 378-0151 Stainless Steel (NEMA) 3/4" x 1/2" NPT, conduit seal for 0.435" size cable in 1/2" (0.5") electrical conduit

CONDUCTOR COUNT IN JUNCTION BOX (AS PER NEMA)
3 x (+), (-) & Ground (Earth) for Supply
2 x (+), (-) For each Light Fixture. (Ground (Earth) of Light fixtures is not counted as connected into box. For 4 light fixtures the total number of conductors to be accounted for = 11.



NEMA Cubic Content Per conductor:	
#16 AWG =	1.75 in.3
#14 AWG =	2.0 in.3
#12 AWG =	2.25 in.3
#10 AWG =	2.5 in.3
# 8 AWG =	3.0 in.3
# 6 AWG =	5.0 in.3
in.3 = Cubic Inch	
1 x in.3 = 6.45 cm3	



PEM A 460-1 JUNCTION BOX

DIMENSIONS

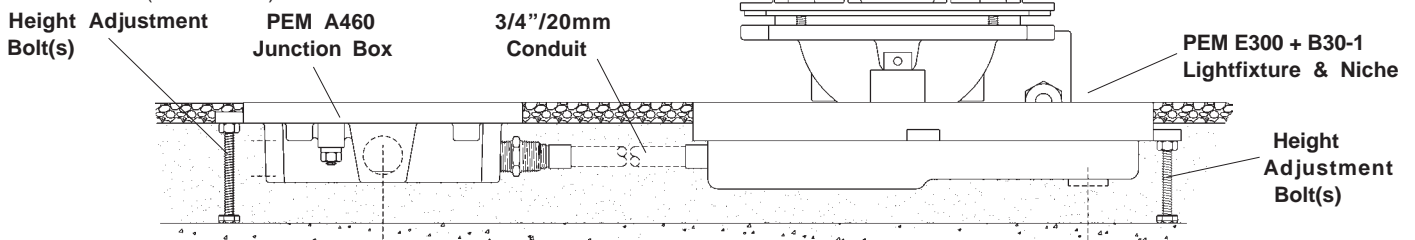
- A Outside Diameter of Junction Box 170 mm / 6.70"
- B C. x C. Diameter of 4 Leg Bolts 187 mm / 7.36 "
- C Height from Bottom of Box to Top of Box: 51mm / 2.00"
- D Height, Top of Box: Adjustable with bolts above base surface:
- E Bottom Conduit Connection: 3/4" NPT
- F Side Conduit Connection: 3/4" NPT x 1/2" NPT
- G Wiring Compartment Cubic Volume: 375 cm³ / 22.9 Cubic Inches

PEM A 460-2 JUNCTION BOX

DIMENSIONS

- A Outside Diameter of Junction Box 170 mm / 6.70"
- B C. x C. Diameter of 4 Leg Bolts 187 mm / 7.36 "
- C Height from Bottom of Box to Top of Box: 60mm / 2.362"
- D Height, Top of Box: Adjustable above base surface.
- E Bottom Conduit Connection: 1" NPT
- F Side Conduit Connection: 1" NPT x 3/4" NPT
- G Wiring Compartment Cubic Volume: 468 cm³ / 28.6 Cubic Inches

INSTALLATION (Not to Scale)



PEM B30-1 & B32-1 Custom Made Shallow Niches are designed to retain the connecting electrical cable of the lightfixture beneath the same in order to prevent the unsightly (*for some*) mess of electrical cable and stubbed up junction boxes in the bottom of an ornamentally finished fountain pond but also to prevent possible injury and or damage to equipment by the exposed cable and junction boxes. Niches are normally supplied with brass conduit & drain connection. For NEMA - USA requirements. Stainless Steel connections are supplied at extra cost.

SHALLOW NICHES PEM B 30-1 & B32-1 CONSTRUCTION

Cast bronze with Epoxy joined Molded Kydex 100 Niche, Brass or Stainless Steel (NEMA) connections , including: PEM 13 Series Conduit seal, (4) 1/4"-20 UNC x 3" / 76mm Stainless Steel Bolts w. Locknuts for legs and/or anchors and precise elevation adjustment prior to pouring of concrete (Surplus length of Stainless Steel leg bolts to be cut off flush at top surface of niche bracket after adjustment)

LIGHTFIXTURE LOCKABLE DIRECTIONAL ADJUSTMENT ON NICHE:

After Installation, the lightfixture can be tilted up to a limited angular position, depending on fixture and exposed cable in niche. Lightfixture can also be rotated horizontally by appr. 45° after installation and locked into position.

OPTIONAL, EXTRA & ADDITIONAL:

NICHE DRAIN, side mounted, only supplied when specified with order!

Requires self draining tube system connection to 1/2" NPT/ BSP (specify) at niche!
 Drain tubing must be heat traced for outdoor ponds in freezing climates to prevent wa freeze up in niches & drains with consequent possible structural damages.

CONDUIT & DRAIN CONNECTION, 304 Stainless Steel (NEMA,USA requirement.



PEM E B30-1 + E300F w. 16/3 AWG Cable



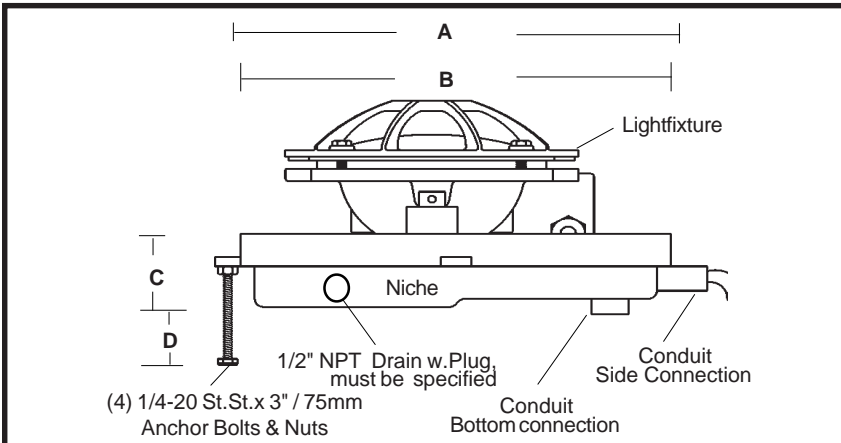
PEM E B30-1 + E500 w. 16/3 AWG Cable



PEM B32-1 + C 133-1 w. 10/3 AWG Cable



PEM B32-1 + C 133-6 w. 16/9 AWG Cable



PEM B 30-1 SHALLOW NICHE

DIMENSIONS

A	Outside Diameter of Niche	273mm / 10.750"
B	C. x C. Diameter of 4 Leg Bolts	288mm / 11.375"
C	Height, Bottom to Top of Niche :	51mm / 2.000"
D	Height,Top of Niche : Adjustable with bolts above base surface:	

For PEM Standard Yoke Mountable Lightfixtures with
 Fixture Cable Outside Diameter of maximum 0.435" / 11 mm
 Conduit Connection, Side or Bottom = 1/2" NPT (Female)
 Drain Connection at side of niche, 1/2" NPT (female) with 3/8"NPT Plug
 To conduit connect to: PEM A 460-1 Junction Box

PEM B 32-1 SHALLOW NICHE

DIMENSIONS

A	Outside Diameter of Niche	273mm / 10.750"
B	C. x C. Diameter of 4 Leg Bolts	288mm / 11.375"
C	Height, Bottom to Top of Niche :	60mm / 2.362"
D	Height,Top of Niche : Adjustable with bolts above base surface:	

For PEM Standard Yoke Mountable Lightfixtures with
 Fixture Cable Outside Diameter maximum 0.625" / 15.9mm
 Conduit Connection, Side or Bottom = 3/4" NPT(male)
 Drain Connection at side of niche, 1/2" NPT (female) with 3/8"NPT Plug
 To conduit connect to: PEM A 460-2 Junction Box

FOR DIMENSIONAL DETAIL DRAWINGS OF THE VARIOUS CUSTOM MADE NICHE AND LIGHTFIXTURE COMBINATIONS:
 Contact supplier and request quotation stating: Quantity, Model of Lightfixture, Voltage, Cable Type & Length

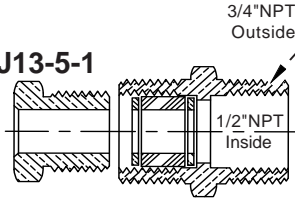
An epoxy type, non releasing thread sealant is recommended for all cordseal NPT threads.

PEM J Series Cordseals are made of brass or 304 Stainless Steel and fitted with Neoprene glands.
 All Cordseals can be supplied at extra cost in 316 Stainless Steel for use in seawater / saltwater.
 Stainless Steel Cordseals are mandatory for USA. Be aware of grounding regulations for Wet Niches in USA.
 Electrical cable must be lubricated for slipping through cordseal gland.

J13-5 Conduit Cordseal for 10mm Cable

In Brass #378-0150, J13-5-0

In 304 Stainless Steel #378-0151, J13-5-1

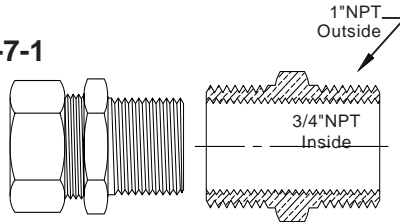


Combination Seal for sealing of brass or copper conduit entries carrying 16/3, 12/2 or 3 x 1.5mm size niche cable into junction or deck boxes with an internal (in box) compression seal. Available in 1/2" female or 3/4" male NPT threads on both sides. Will fit 3/4" NPT tappings of junction box or niche.
 For 3/4" unsealed plastic conduit use brass coupling to connect but remove cordseal parts to permit passage of ground wire.
 For 3/4" sealed plastic conduit see PEM 13-8.

J13-7 Conduit Cordseal for 17mm Cable

In Brass #378-0170, J13-7-0

In 304 Stainless Steel #378-0171, J13-7-1



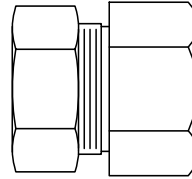
Combination Seal for sealing of brass or copper conduit entries carrying niche cable into junction or deck boxes with internal (in box) compression seal. Available in 3/4" female or 1" male NPT threads on both sides.
 Tappings into junction box are 1". For 1" unsealed plastic conduit use brass coupling to connect removed cordseal parts (E500-LV / UL and CSA-12V max. 300W).
 Assembly includes PEM J15-42 Cordseal.

J13-8 Conduit Cordseal for 10mm Cable

In Brass #378-0210

In 304 Stainless Steel #378-0211

with additional #8 AWG insulated or bare ground wire.

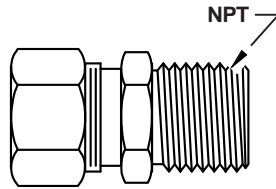


Combination Seal for the sealing with an internal (in box) compression seal of 3/4" plastic conduits into junction or deck boxes carrying 16/3 AWG cable to niches with required additional #8 AWG size solid bare or insulated ground wire. Conduit Cordseal has 9/8"-18TPI connection. Used in boxes A480 / max. 4 x A482 / max. 1 x J34 / max. 8 x and J35 / max. 8x.
 Also used in all corresponding niches to seal conduit / cable entries.

J14 UL & CSA listed Cordseal for 10mm Cable

In Brass #378-1100

In 304 Stainless Steel #378-1101



PEM J14 Cordseals are used to connect most PEM submersible lightfixtures with 16/3, 12/2 and 3 x 1.5mm cable to junction boxes or cable lead-outs.

PEM	#	Cable O.D.in.	Cable O.D.mm	NPT
J14	378-1100	0.350" / 0.435"	9 to 11mm	1/2"

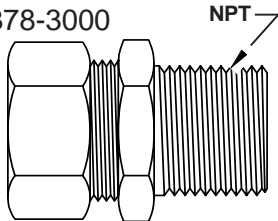
J15 Cordseals for various Cable Sizes

In Brass #378-2000

In 304 Stainless Steel #378-3000



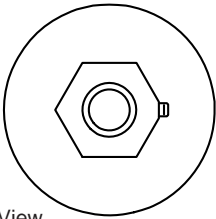
J15-32



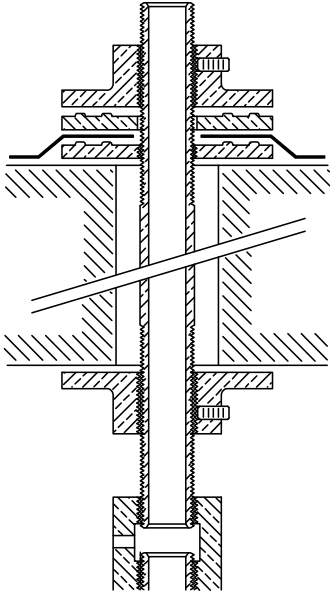
Exact Cable Outside Diameter must be stated when ordering J15 Cordseals. m * = Normally for 3 x 2.5mm H0R7N-F cable
 ** = Normally for PEM E500A-LV with 10/3 cable.

PEM	#	Cable O.D. in.	Cable O.D.mm.	NPT	MATERIAL
J15-21*	378-2210	0.394" / 0.470"	10.0 / 12.0mm	1/2"	Brass
	378-3210	"	"	"	St.St.
J15-32	378-2320	0.500" / 0.625"	12.7 / 15.9mm	3/4"	Brass
	378-3320	"	"	"	St.St.
J15-42**	378-2420	0.625" / 0.750"	15.9 / 19.0mm	3/4"	Brass
	378-3420	"	"	"	St.St.
J15-52	378-2520	0.750" / 0.875"	19.0 / 22.23mm	1"	Brass
	378-3520	"	"	"	St.St.
J15-62	378-2620	0.875" / 0.995"	22.23 / 25.3mm	1 1/2"	Brass
	378-3620	"	"	"	St.St.
J15-64	378-2640	1.000" / 1.187"	25.4 / 30.0mm	1 1/2"	Brass
	378-3640	"	"	"	St.St.
J15-72	378-2720	1.125" / 1.375"	28.6 / 35.0mm	2"	Brass
	378-3720	"	"	"	St.St.

For custom made CORD SEAL sizes or configurations not shown, please enquire with specifications.



Top View



WATER PROOFING PIPE PENETRATIONS

PEM 6370

611-1300 SERIES

RETROFIT PIPE PENETRATIONS, 3/4" & 1" NPT/BSP RED BRASS PIPE.

3/4" & 1" RETROFIT

BRONZE FITTINGS with red brass pipe, for core drilled holes in existing concrete slabs.

PEM 6370A & B can be used as electrical conduit or water pipe penetration through water proofing membranes. Care is to be taken to use a suitable pipe thread sealant on the submerged liner side.

Overall Lengths other than shown above can be custom made to given specification. Overall outside diameter of fittings: 102mm \ 4.0".

Fittings are NPS/BSP threaded. Connections are NPT/BSP.



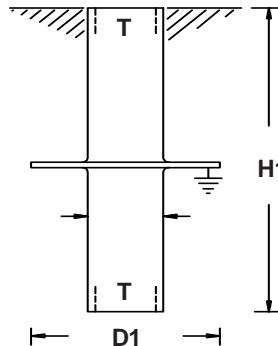
PEM 6372A

#	PEM	Pipe Size	Hole Size	Overall Length
611-1301	6371	3/4"	30mm\1.25"	Fittings only
611-1303	6371A	3/4"	30mm\1.25"	355mm\14"
611-1306	6371B	3/4"	30mm\1.25"	457mm\18"
611-1322	6372	1"	40mm\1.50"	Fittings only
611-1324	6372A	1"	40mm\1.50"	355mm\14"
611-1326	6372B	1"	40mm\1.50"	457mm\18"

ALL CAST BRONZE NO LEAK PIPE COUPLINGS FOR CONCRETE POOLS

PEM 6373 Series No Leak Pipe Couplings are made of pressure tested cast bronze.

#	PEM	T	H1 mm	D1 mm
611-1331	637311	1"	200	100
611-1332	637312	1 1/2"	200	100
611-1333	637313	2"	200	150
611-1334	637314	2 1/2"	200	150
611-1335	637315	3"	200	200
611-1336	637316	4"	200	200



PEM 63730

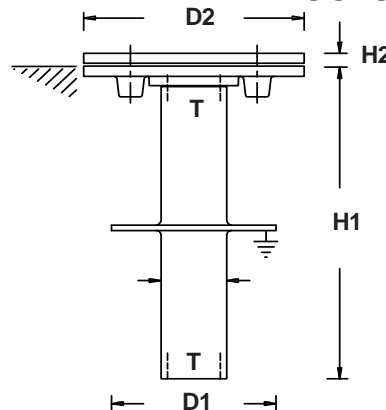
611-1330 SERIES



ALL CAST BRONZE NO LEAK PIPE COUPLINGS FOR LINER POOLS

PEM 6374 series No Leak Pipe Couplings with liner clamp are made of pressure tested cast bronze, stainless steel fitted, with Neoprene Gasket

#	PEM	T	H1 mm	H2 mm	D1 mm	D2 mm
611-1341	637421	1"	200	6	100	134
611-1342	637422	1 1/2"	200	10	100	152
611-1343	637423	2"	200	10	150	152
611-1344	637424	2 1/2"	200	10	150	203
611-1345	637425	3"	200	10	200	203
611-1346	637426	4"	200	10	200	203



PEM 63740

611-1340 SERIES



PEM 6380

6380-A Series, **STUB UPS** include 355mm \ 14" length of pipe with specified fitting or combination thereof or custom made length as specified. Normally used to extend plastic pipe through concrete and into pool

WATERPROOFING PENETRATION FITTINGS for BRASS PIPE 3/4" TO 4"

Also available custom made as **6390-A Series, STUB UPS** with 355mm\14" length of copper tube 'L', with specified fitting or combination thereof or custom made as specified. Normally used to extend plastic pipe through concrete and into pool. Available copper tube sizes up to 4.125"

NO LEAK FLANGES (BRAZE ON)

#	PEM	Pipe Size	O.D. of Flange	Thickness of Flange
611-1401	6381/-1	3/4"	102mm\4.00"	6mm\0.25"
611-1402	6382/-1	1"	134mm\5.25"	6mm\0.25"
611-1403	6383/-1	1 1/4"	134mm\5.25"	6mm\0.25"
611-1404	6384/-1	1 1/2"	152mm\6.00"	7mm\0.28"
611-1405	6385/-1	2"	152mm\6.00"	7mm\0.28"
611-1406	6386/-1	3"	203mm\8.00"	8mm\0.32"
611-1407	6387/-1	4"	203mm\8.00"	8mm\0.32"

FLANGES w. MEMBRANE CLAMP

#	PEM	Pipe Size	Type of clamp
611-1421	6381/-1/-2	3/4"	Solid
611-1422	6382/-1/-2	1"	Solid
611-1423	6383/-1/-2	1 1/4"	Solid
611-1424	6384/-1/-2	1 1/2"	Split
611-1425	6385/-1/-2	2"	Split
611-1426	6386/-1/-2	3"	Split
611-1427	6387/-1/-2	4"	Split

FLANGES w. UNDERDECK CLAMP

#	PEM	Pipe Size	Hole Size
611-1441	6381/-1/-3	3/4"	65mm\2.5"
611-1442	6382/-1/-3	1"	100mm\2.5"
611-1443	6383/-1/-3	1 1/4"	100mm\4.0"
611-1444	6384/-1/-3	1 1/2"	120mm\4.5"
611-1445	6385/-1/-3	2"	120mm\4.5"
611-1446	6386/-1/-3	3"	160mm\6.5"
611-1447	6387/-1/-3	4"	160mm\6.5"

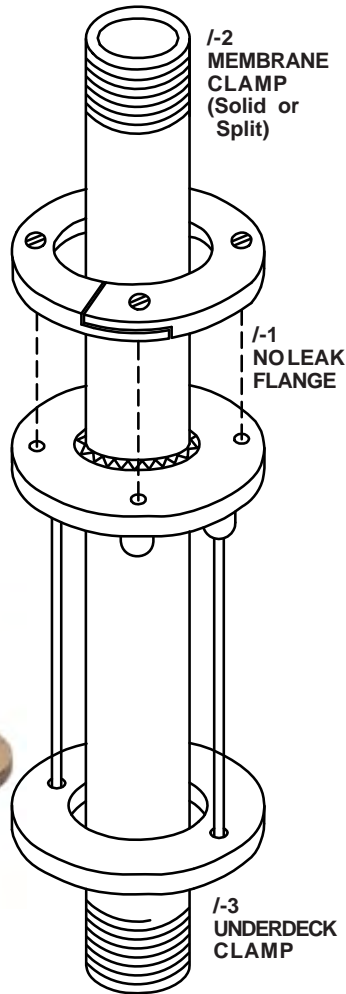
FLANGES w. MEMBRANE CLAMP & UNDERDECK CLAMP

#	PEM	Pipe Size	Hole Size
611-1461	6381/-1/-2/-3	3/4"	65mm\2.5"
611-1462	6382/-1/-2/-3	1"	100mm\2.5"
611-1463	6383/-1/-2/-3	1 1/4"	100mm\4.0"
611-1464	6384/-1/-2/-3	1 1/2"	120mm\4.5"
611-1465	6385/-1/-2/-3	2"	120mm\4.5"
611-1466	6386/-1/-2/-3	3"	160mm\6.5"
611-1467	6387/-1/-2/-3	4"	160mm\6.5"



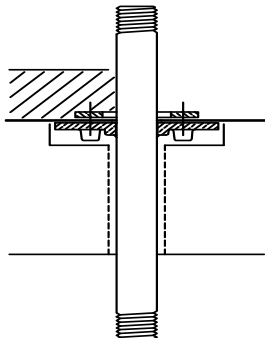
PEM 6384A-1

PEM 6387A-1-2
with custom length pipe

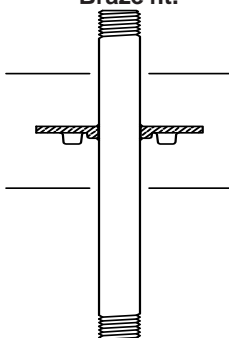


NOTE: Braze on brass pipe size fittings are used to provide watertight penetration of waterproofing membranes without joints within concrete. Fittings are made of cast bronze, stainless steel and brass fitted. Flanges are normally braze fit, flanges are also useable for braze on to stainless steel piping (specify exact O.D. of pipe).

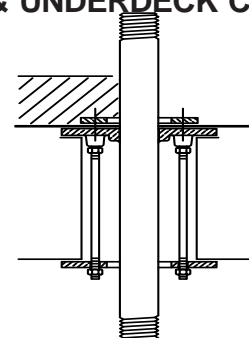
6380A/-1/-2 FLANGE w. MEMBRANE CLAMP



6380A/-1 NO LEAK FLANGE Braze fit.



6380A/-1/-2/-3 FLANGE w. MEMBRANE CLAMP & UNDERDECK CLAMP



1/-3 UNDERDECK CLAMP is standard for max. 200mm\8" deck, custom made for other dimensions.)