Prime Conduit, Inc.

# PVC MULTI-GARD®
# MULTI-CELL RACEWAY


Schedule 40

Type C

Type 40

Type 80

Bends

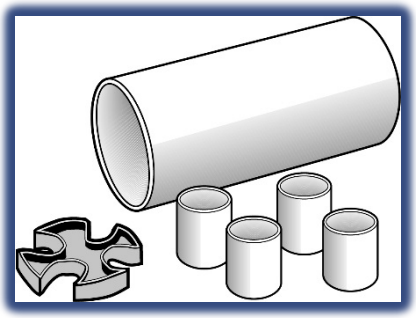
Terminators

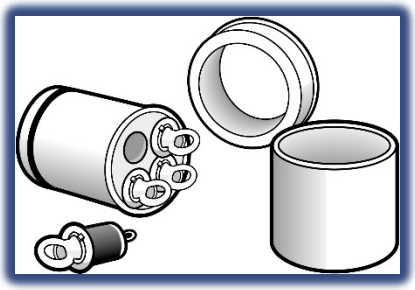
Couplings

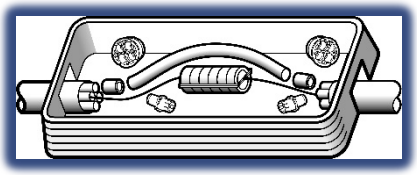
Adapters

Expansion Joints

Repair Kits







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# PVC Multi-Gard®

PVC Multi-Gard® is a multi-cell raceway system specifically designed for use in direct bury and concrete encased applications. PVC Multi-Gard is available in Schedule 40, Type C, Type 40 and Type 80 outer shells with 3-way or 4-way innerduct configurations. PVC Multi-Gard is manufactured in convenient 20ft. lengths for easy handling and transportation, and is ideal for jetting or pulling cable.


## Type C, Type 40 and Type 80

**Applications:** Outdoor Direct Bury and Concrete Encasement
**Wall Types:** Type C, Type 40 and Type 80
**Innerducts:** 3-Way 1-1/2" or 4-Way 1-1/4" Installation
**Method:** Trenching, Plowing, Concrete Encased

## Schedule 40

**Applications:** Outdoor Direct Bury and Concrete Encasement. For use on TX DOT projects only.
**Wall Type:** Schedule 40
**Innerducts:** 4-Way 1-1/4" Installation
**Method:** Trenching, Plowing, Concrete Encased
**Outer Duct Color:** Gray
**Inner Duct Colors:** M40SS4STX-020 - Yellow, White, Orange, Red
M40SS4STX1-020 - Yellow, Black, Orange, Red

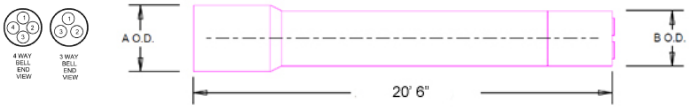
## Features:

- Pre-lubricated innerducts provide very low coefficient of friction for easy pulls, and PVC innerducts expand and contract at the same rate as outerduct.
- Anti-reversing gaskets on coupling body allow for easy joining. Eliminates need for cementing joints.
- Jettable using high speed air blowing systems.
- O-ring gasket at base of bell reduces risk of water entering system.
- Inward tapering holes on coupling body give quick and easy innerduct alignment.
- Print line on outer duct states “Install Print Line Up” to keep system straight during installation.
- Marked innerduct and marked hole on coupling body ensure proper innerduct alignment and allow crews to work from opposite directions.
- 6" deep bell provides strong joint for field bends.
- Internal spacers maintain straight innerduct path.
- End caps are provided on each 20 ft. section.
- Staging materials to job site is simplified.
- Patented flexible bends allow changes in direction

NOTE: Always install Bell End onto Spigot End

# PVC Multi-Gard®

## 20’ Lay Length PVC Multi-Gard with Bell End




| Part No. | Description | Bell (A) | Outerduct (B) | Innerduct O.D. | Innerduct I.D. | Pkg. Qty. | Wt. per 100 ft. |
|---|---|---|---|---|---|---|---|
| MXSS4S-020 | 4-Way Type C | 4.67 | 4.35 | 1.31 | 1.19 | 1060' | 245 |
| MXSS3S-020 | 3-Way Type C | 4.67 | 4.35 | 1.66 | 1.5 | 1060' | 256 |
| MFSS4S-020 | 4-Way Type 40 | 5 | 4.5 | 1.31 | 1.19 | 960' | 338 |
| MFSS3S-020 | 3-Way Type 40 | 5 | 4.5 | 1.66 | 1.5 | 960' | 348 |
| ●♦MDSS4S-020 | 4-Way Type 80 | 5.5 | 4.75 | 1.31 | 1.19 | 760' | 450 |
| ●♦MDSS3S-020 | 3-Way Type 80 | 5.5 | 4.75 | 1.66 | 1.5 | 760' | 460 |
| ♦M40SS4STX-020 | 4-Way Sch 40 | 5.035 | 4.5 | 1.31 | 1.19 | 960’ | 343 |
| ♦M40SS4STX1-020 | 4-Way Sch 40 | 5.035 | 4.5 | 1.31 | 1.19 | 960’ | 343 |
| ●♦MDSS4STX-020 | 4-Way Type 80 | 5.5 | 4.75 | 1.31 | 1.19 | 760' | 450 |

Except where noted by ●

Except where noted by ♦

Standard Multi-Gard (*S-020) supplied with grey and one white tracer innerduct.
M40SS4STX-020 innerducts are PVC yellow, white, orange, red. For use on TX DOT projects only.
M40SS4STX1-020 innerducts are PVC yellow, black, orange, red. For use on TX DOT projects only.
MDSS4STX-020 innerducts are PVC black, orange, red, yellow. For use on TX DOT projects only.
**Custom Orders:** * Custom innerduct colors available upon request * Minimum order quantity required * Custom orders non-returnable, non-refundable and non-cancelable
Use Type 40 Multi-Gard fittings with Schedule 40 Multi-Gard conduit.

## Fixed Bends with Bell

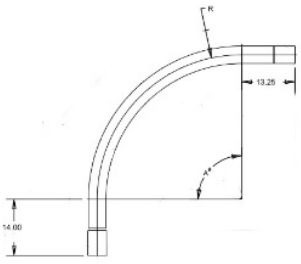
Multi-Gard fixed bends use the same coupling design as straight sections. All bends are provided with engineered plastic innerducts to avoid rope burn-through. These fixed bends are jettable.

| Pos. 1 Product | Position 2 Outerduct | Pos. 3 Degree | Pos. 4 Radius | Pos. 5 O.D. | Pos. 6 Innerduct | Pos. 7 Innerduct Wall Type | *Pos. 8 PVC Innerducts |
|---|---|---|---|---|---|---|---|
| M = Multi-Cell | X = Type C | 3 = 11¼º | F = 3 ft. | N = 4” | 4 = 4-Way | S = Smooth | TX |
| | F = Type 40 | 5 = 22 ½ º | H = 4 ft. | | 3 = 3-Way | | TX1 |
| | D = Type 80 | 7 = 45 º | J = 6 ft. | | | | |
| | 40 = Sch 40 | 9 = 90 º | M = 9 ft. | | | | |
| | 80 = Type 80 | | | | | | |

* “80” and “40” bends are manufactured with PVC Innerducts only.
Use “TX” when installing M40SS4STX-020 and MDSS4STX-020; “TX1” when installing M40SS4STX1-020.

**Part Number Example: MX7HN4S**

| Position: | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Example: | M | X | 7 | H | N | 4 | S |
| Description: | Multi-Cell | Type C | 45º | 4 ft. | 4” | 4-Way | Smooth |



**Part Number Example: M409FN4STX1**

| Position: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Example: | M | 40 | 9 | F | N | 4 | S | TX1 |
| Description: | Multi-Cell | Sch 40 | 90º | 3 ft. | 4” | 4-Way | Smooth | Use with M40SS4STX1-020 |

**Part Number Example: M805JN4STX**

| Position: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Example: | M | 80 | 5 | J | N | 4 | S | TX |
| Description: | Multi-Cell | Type 80 | 22 ½ º | 6 ft. | 4” | 4-Way | Smooth | Use with MDSS4STX-020 |

# Prime Conduit, Inc.

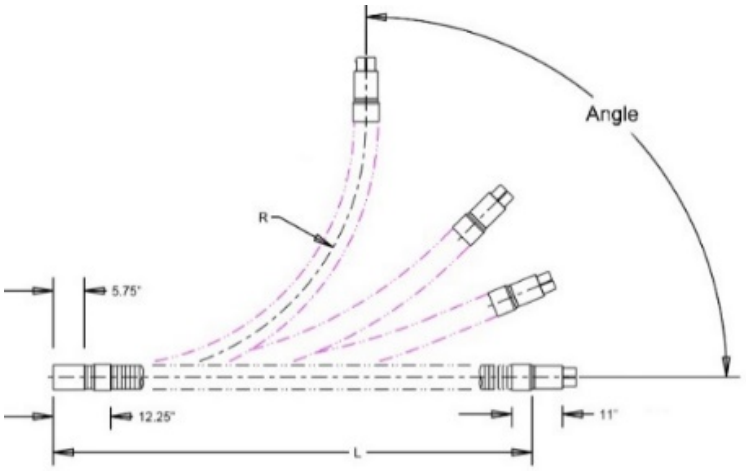
## Flexible Bends with Bell

Multi-Gard flexible bends use a patented design capable of a 4' minimum bend radius and use the same coupling design as straight sections and fixed bends. All bends are provided with an exclusive, patented engineered plastic innerducts to avoid rope burn-through. NOTE: After positioning the bend in its application, it is necessary to cut off the excess innerduct material flush to pipe and deburr both the I.D. and O.D. of the innerduct to remove snags.

| Pos. 1<br>Product | Position 2<br>Outerduct | Pos. 3<br>Description | Pos. 4<br>Degree & Radius | Pos. 5<br>Innerducts | Pos. 6<br>Jettable |
|---|---|---|---|---|---|
| M = Multi-Cell | X = Type C | F = Flexible | B = 124" (Length)<br>4' x 90º | 4 = 4-Way | J = Jettable |
| | F = Type 40 | | C = 190" (Length)<br>6' x 90º | 3 = 3-Way | |
| | D = Type 80 | | | | |

**Part Number Example: MXFB4J**

| Position: | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Example: | M | X | F | B | 4 | J |
| Description: | Multi-Cell | Type C | Flexible | 124"<br>4' x 90º | 4-Way | Jettable |

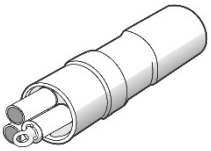


# PVC Multi-Gard®

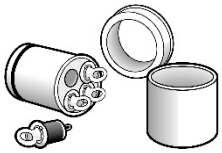
## Terminators

Termination kits allow for sealing inner and outer ducts. Each kit contains innerduct sealing plugs with rope tie. Standard terminators allow for end terminations, and pass-through (jet-through) terminators allow for bridging innerducts across a vault to allow for unassisted pulling (or jetting) of cable through the vault. Box terminators allow end terminations into above ground cabinets.

Jet-Through M_T93



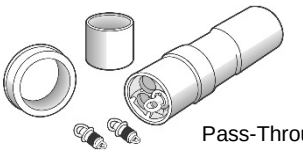
| Pos. 1 Product | Position 2 Outerduct | Pos. 3 Description | Pos. 4 Type | Pos. 5 Innerducts |
|---|---|---|---|---|
| M = Multi-Cell | X = Type C | T = Terminator | 1=Standard w/plugs | 3 = 3-Way |
| | F = Type 40 | | 2=Pass-through w/plugs | 4 = 4-Way |
| | D = Type 80 | | 6=Enclosure Terminator w/plugs | |
| | | | 9=Jetting Terminator w/plugs | |



Standard M_T14

**Part Number Example: MXT14**

| Position: | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Example: | M | X | T | 1 | 4 |
| Description: | Multi-Cell | Type C | Terminator | Standard w/plugs | 4-Way |

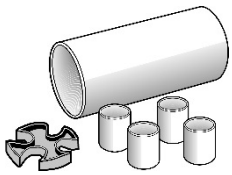


Pass-Through M_T23

## Couplings

Couplings are provided in standard sleeve for joining two uninstalled plain ends and slip couplings for male/male connections and repair of unoccupied Multi-Gard.

| Pos. 1 Product | Position 2 Outerduct | Pos. 3 Description | Pos. 4 Type | Pos. 5 Innerducts |
|---|---|---|---|---|
| M = Multi-Cell | X = Type C | C = Std. Coupling | C = Coupling | 3 = 3-Way |
| | F = Type 40 | S = Slip | | 4 = 4-Way |
| | D = Type 80 | | | |



Standard M_CC4

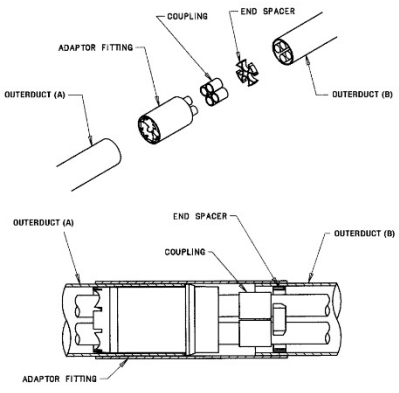
**Part Number Example: MXCC4**

| Position: | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Example: | M | X | C | C | 4 |
| Description: | Multi-Cell | Type C | Std. Coupling | Coupling | 4-Way |

## Transition Adapters

Transition adaptors (spigot to spigot) allow different outerducts to be coupled together while maintaining same innerduct. Part numbers configured from smaller duct to larger duct.

| Pos. 1 Product | Position 2 Outerduct | Pos. 3 Description | Pos. 4 Outerduct | Pos. 5 Innerducts |
|---|---|---|---|---|
| M = Multi-Cell | X = Type C | A = Adapter | E = EMT | 3 = 3-Way |
| | F = Type 40 | | R = Galv. Steel | 4 = 4-Way |
| | D = Type 80 | | B = F/G BR | |
| | | | H = F/G HW | |
| | | | F = Type 40 PVC | |
| | | | D = Type 80 PVC | |
| | | | X = Type C PVC | |




**Part Number Example: MXAD4**

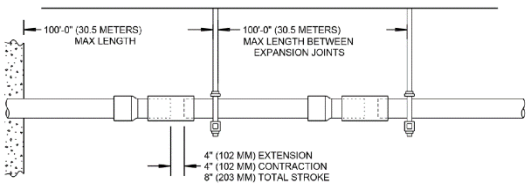
| Position: | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Example: | M | X | A | D | 4 |
| Description: | Multi-Cell | Type C | Adapter | Type 80 PVC | 4-Way |

# PVC Multi-Gard®

## Expansion Joints

Expansion joints allow for thermal expansion and contraction of outerduct. PVC expansion joints are recommended every 100 feet on bridge crossings applications.
*Must use split stop rings with expansion joints.
*Expansion joints are not required in underground applications.

| Pos. 1 Product | Position 2 Outerduct | Pos. 3 Degree | Pos. 4 Type | Pos. 5 Innerduct |
|---|---|---|---|---|
| M = Multi-Cell | X = Type C | E = Expansion Joint | C = Couplings | 4 = 4-Way |
| | F = Type 40 | | | 3 = 3-Way |
| | D = Type 80 | | | |



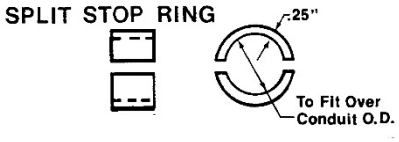

**Part Number Example: MXEC4**

| Position: | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Example: | M | X | E | C | 4 |
| Description: | Multi-Cell | Type C | Expansion Joint | Coupling | 4-Way |

## Split Stop Ring

Use split stop rings on either side of support anchors to keep Multi-Gard stationary.
*Must use Split Stop Rings with Expansion Joints.

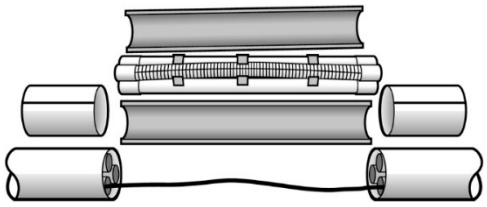
| Part Number: | Description: |
|---|---|
| MFSSR | Type 40 Split Stop Ring |
| MDSSR | Type 80 Split Stop Ring |




## Repair Kits – 10 Feet

Repair kits allow for Multi-Gard repair without disrupting a live cable.

| Pos. 1 Product | Position 2 Outerduct | Pos. 3 Description | Pos. 4 No. of Cables | Pos. 5 Innerduct | Pos. 6 Innerduct Wall Type |
|---|---|---|---|---|---|
| M = Multi-Cell | X = Type C | R = Repair | 1 = 1 Cable | 4 = 4-Way | S = Smooth |
| | F = Type 40 | | 2 = 2 Cables | 3 = 3-Way | |
| | | | 3 = 3 Cables | | |
| | | | 4 = 4 Cables | | |

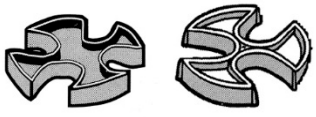


**Part Number Example: MFR24S**

| Position: | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Example: | M | F | R | 2 | 4 | S |
| Description: | Multi-Cell | Type 40 | Repair | 2 Cables | 4-Way | Smooth |

## Spare Spacers

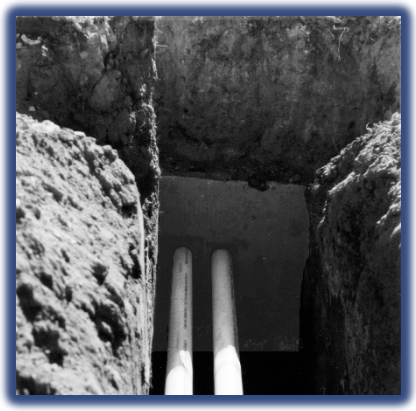
| Part Number: | Description: |
|---|---|
| MAES4 | 4-Way End Spacers |
| MAES3 | 3-Way End Spacers |



# PVC Multi-Gard®

## Assembly

**1.** Distribute Multi-Gard sections along the sides of the trench with male ends pointing towards starting vault entrance.

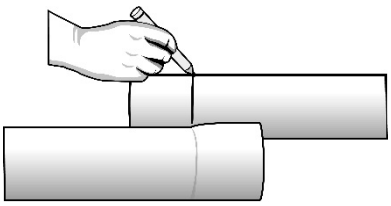


**2.** Remove protective cap and install Multi-Gard terminator on male end. Install first section into vault opening or enclosure making sure the print line is on the top stating “INSTALL PRINT LINE UP.” (See next page for terminations.)

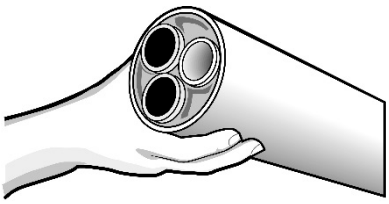
**3.** Each consecutive 20' section can now be placed by inserting the male end into the gasketed belled end 1/2" to the gasket depth. Make sure the print line is upright. (If not, rotate the outer duct until it is.) Now push the sections together with a firm push until belled end seats against insertion line.

## Field Cuts

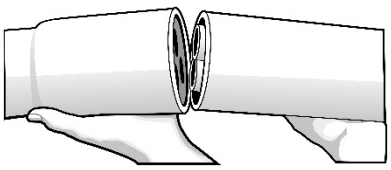
### Joining Male and Female Ends



**1.** Lay the Multi-Gard sections side by side and mark the male end at the base of the bell on the female end. Make a straight cut using a standard carpenter saw.



**2.** A spare spacer may be installed to align the innerducts if they seem loose.



**3.** Raise both ends and align the innerducts on the male end into the coupling body on the female end. Lower both ends and the innerducts will automatically return to their original position as the joints are forced together.

### Joining Two Male Ends

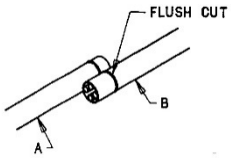



Figure 1

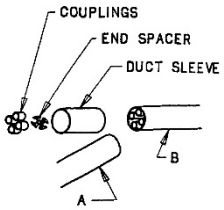



Figure 2

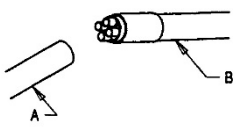
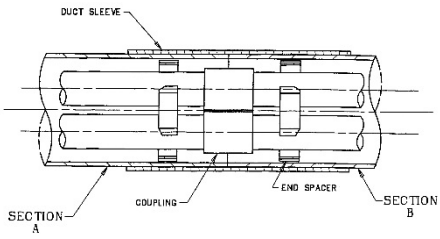



Figure 3

**1.** Flush cut Multi-Gard sections “A” + “B” as shown in figure 1. Slide outerduct sleeve over Multi-Gard section “B” as shown in figure #2. Insert end spacer into Multi-Gard plain end (chamfer side in) as shown in figure #2. Press couplings onto innerducts of Multi-Gard section “B” as shown in figure #3.

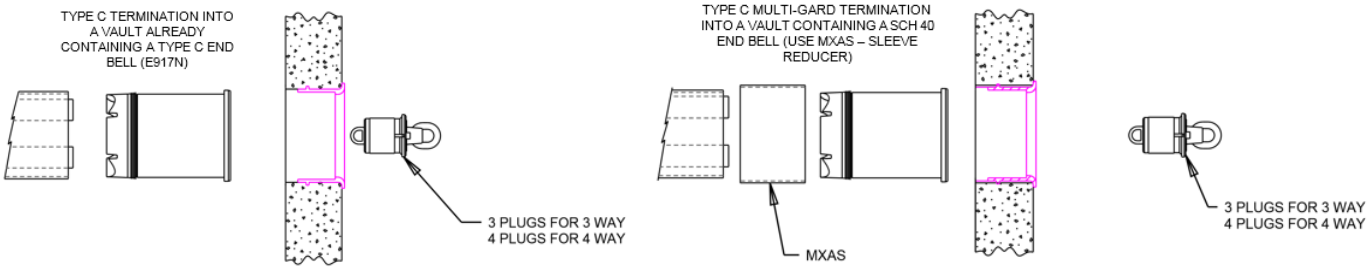



**2.** Align innerducts on Multi-Gard section “A” with couplings on section “B”. Solvent cement each coupling for air tight seal and push until both ends are flush. Apply solvent cement to both ends of Multi-Gard and slide sleeve until it is centered on both sections.

# PVC Multi-Gard® - Terminations

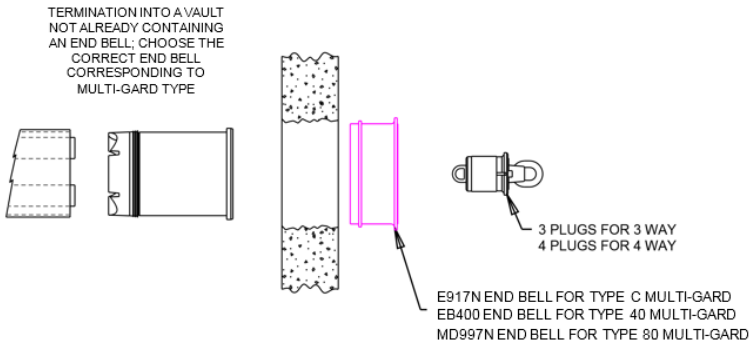
## Type 1 – Standard Terminators

***Use with a pre-cast termination.***




1. Remove watertight plugs in order to assure total insertion of the Multi-Gard innerducts.
2. Install terminators into male end of Multi-Gard to full depth.
3. Replace watertight plugs into the terminator and tighten.
4. Insert prepared male end into the pre-cast terminator with print line facing upward. Solvent cement into place.
5. Use a shim for terminator requiring a connection of Type C into a Type 40 termination.

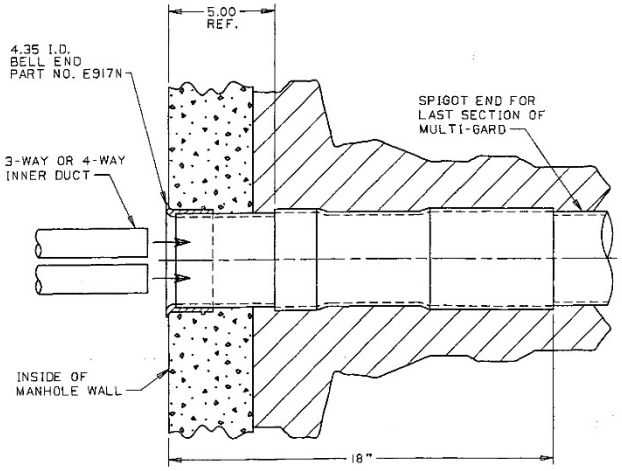
***Use with an entrance where a pre-cast terminator is not available or a knockout is used.***




1. Insert the male end section of Multi-Gard 4 inches past the inside wall of the vault with print line facing upward.
2. Remove the protective cap from the male end of the Multi-Gard.
3. Remove the watertight plugs and insert the terminator to full depth.
4. Install bell fitting over the end of Multi-Gard using solvent cement, and replace plugs.
5. Slide Multi-Gard section until bell fitting is flush with inside, and then seal entrance as required by job specifications.

## Type 2 – Pass-Through Terminators

***Use to allow for continuous ducts through the vault or hand hole for cable pulling.***



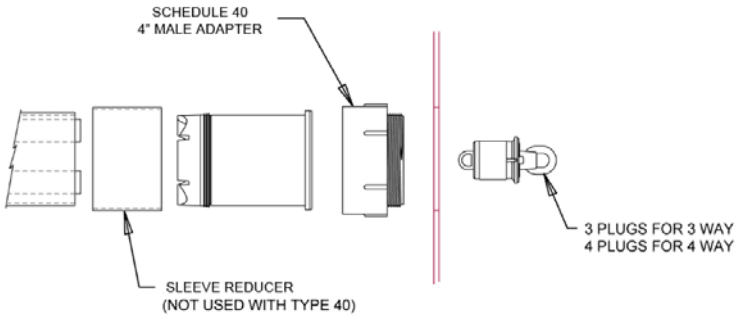

1. Install terminator into vault following steps 1 through 5 for standard Type 1 terminator.
2. Cut innerduct of pass through kit 10" longer than the width of the manhole. Add spacers as needed.
3. Upon completion, remove the watertight plugs and install innerducts to traverse manhole/handhole by cutting to length inserting into one side of handhole and raising or bowing center of innerduct span to insert into the pass-through terminator on the opposite side.

# PVC Multi-Gard® - Terminations

## Type 6- Enclosure Terminators

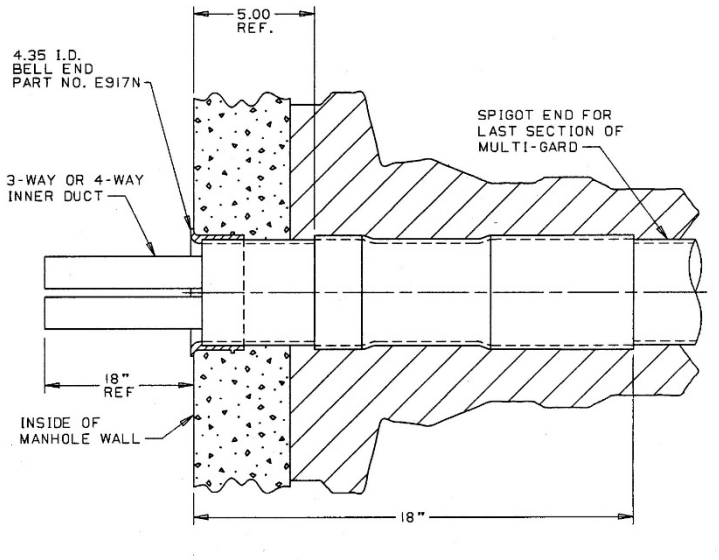
***Use for entrances into metal or non-metallic enclosures above ground.***

1. Remove watertight plugs in order to assure total insertion of the Multi-Gard innerducts.
2. Install terminators into male end of Multi-Gard to full depth.
3. Replace watertight plugs into the terminator and tighten.
4. Install threaded adapter over end of Multi-Gard using solvent cement. Insert adapter through enclosure hole and provide 4" locking ring.




## Type 9 – Jetting Terminators

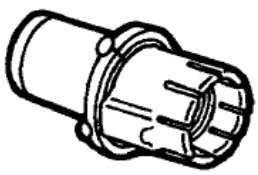
***Use with jetting operations.***




1. Remove watertight plugs in order to assure to total insertion.
2. Apply standard grade solvent cement to male end of Multi-Gard. Install jet terminator to insertion line.
3. Replace watertight plugs into terminator and tighten.
4. Apply standard grade solvent cement to terminator male end and insert into pre-cast bell end. (Install PVC bell fitting in kit if precast bell end is not available).
5. Use shim enclosed for terminator requiring a connection of Type C into a Type 40 termination.
6. Measure between ends of terminators on opposite ends of vault, and cut innerduct to length.
7. Solvent cement each coupling into place or use mechanical coupling rated for use with high speed air blowing systems.

## Simplex Plugs

***Use Simplex split plugs for sealing Multi-Gard cells where cable has been installed.***



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# PVC Multi-Gard® - Installation

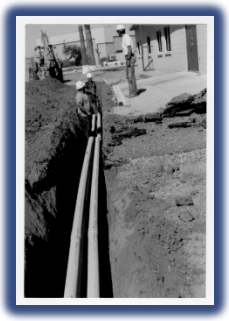
## Trenching

All PVC Trenching installation allows Multi-Gard to be placed in the trench one section at a time or over the trencher for continuous feed. Open trenching with Type C Multi-Gard is recommended for direct burial or concrete encased applications.

## Features

- Install one section at a time.
- Multiple-cells are installed as soon as product is placed.
- Economical installation with installation speed as fast as the trencher.
- Easy installation with standard equipment.
- Gasketed coupling body prevents conduit pulling apart during installation.
- Industry standard outer duct in Type C is suitable for direct burial.
- Type 40 outershell and Type 80 outershell are available where extra protection is necessary.
- Spacers inside outershell allow PVC innerduct internal movement allowing for more flexibility.

## Procedures



**Paved Areas**
In paved areas, the surface should be carefully cut to prevent unnecessary excessive width at the top of the trench and help reduce the amount of surface to be repaved.

**Trench Width**
For economical operation, particularly where paving is involved, the trench width should be no greater than is needed to provide adequate working space. Generally, this dimension is controlled by the types of excavating equipment used. As a minimum, the trench must be 5 inches wider than the width of the conduit structure where backfill will be used and 3 inches wider where concrete encasement will be used. Individual job specifications will dictate trench width.

**Trench Bed**
Grade and level the trench bed. Where necessary, provide sand and/or other granular backfill as bedding material so the conduit will be evenly supported over the length of each section.

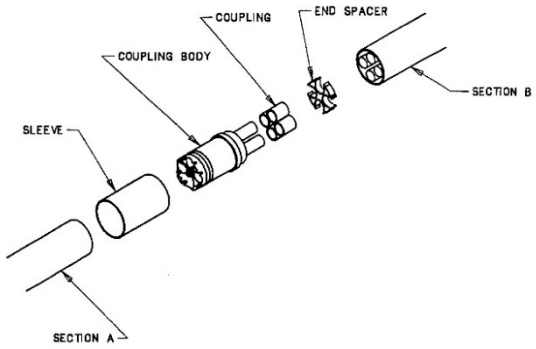
**Assembly on Top of the Trench**
After preparing the trench, the Multi-Gard can be assembled on top of the ground outside of the trench by following the directions described on page 5. Once joined together, the Multi-Gard can then be laid gently into the trench. Backfill according to the job specifications.

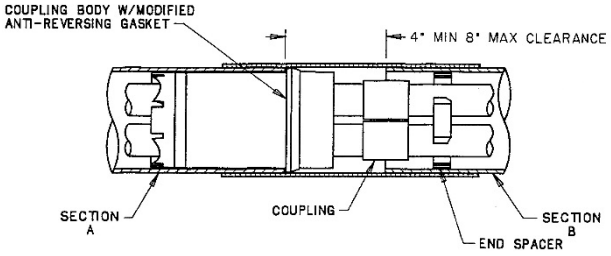
**Trench Feeding Multi-Gard Using Rollers**
This procedure involves assembling the Multi-Gard above the ground. After the first four or five lengths are assembled, place on top of the trenching machine. The remainder of the duct can be attached to the first section and assembled ahead of the trencher on the ground directly above the intended place for the trench. As the trencher advances forward, the Multi-Gard will lay itself into the trench behind. Once placed in the trench, backfill according to the job specification.

# PVC Multi-Gard® - Repairs

## Repairing Vacant Multi-Gard

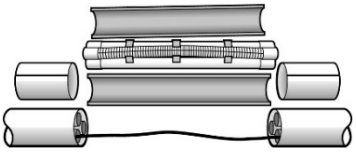
1. Cut out the damaged section and insert a belled short section (4" shorter than damaged section) of Multi-Gard onto either one of the ends (section A).
2. Apply 2" of cement on ends of spigots of coupling body, press couplings onto spigots.
3. Slide innerduct sleeve over Multi-Gard plain end (section A). Insert end spacer into Multi- Gard plain end (section B).
4. Insert female end of slip coupling into Multi-Gard plain end (section A). Align sections A and B. Apply cement to couplings. Slide slip coupling back onto innerducts in Multi-Gard (section B) until seated.
5. Apply cement to both plain ends of Multi-Gard and slide sleeve until centered on both sections.



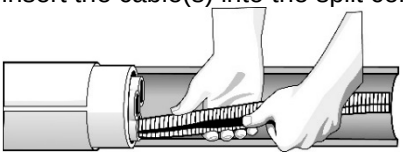




## Repairing Multi-Gard Containing Cable(s)

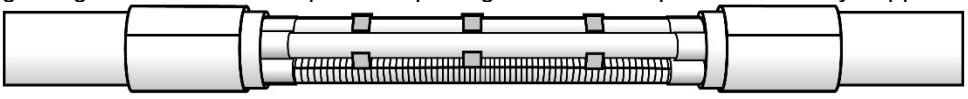
**1.** Carefully cut out damaged section up to 10 feet. Larger sections can be accommodated using multiple repair kits.



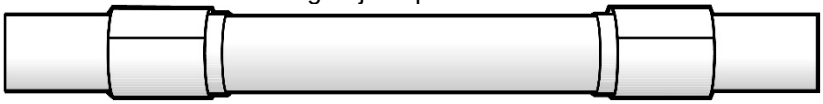
**2.** Install the 4" split sleeve couplings over the existing Multi-Gard. Slide the smaller split couplings onto the individual innerduct, fitting the cable into the split coupling. Repeat this process on opposite side. Carefully insert the cable(s) into the split corrugated innerduct.



**3.** Install corrugated innerduct and remaining smooth innerduct into couplings by raising in the center and guiding them into their respective openings. Install the spacers to evenly support the innerduct.

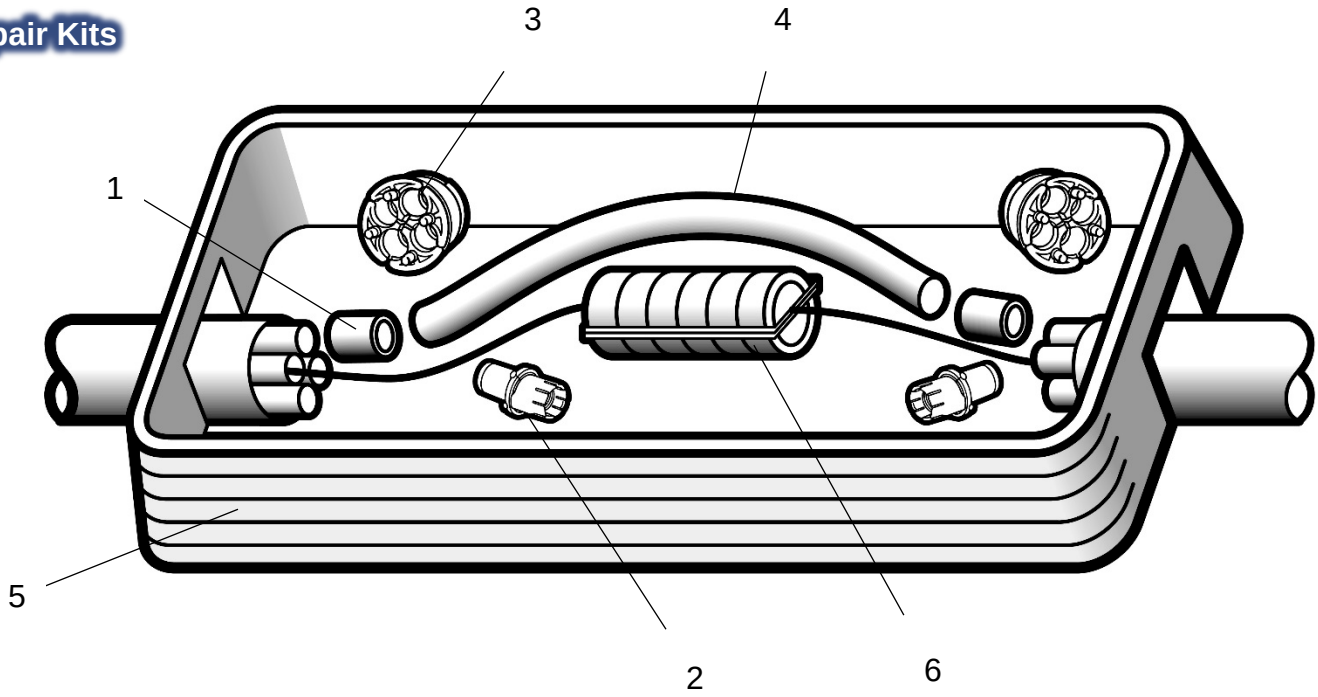


**4.** Lay one piece of split duct under the repaired section. Install the other piece of split duct onto the first piece and strap or tape in place. Apply cement onto each end and slide the slip sleeves until centered on both sections. Backfill according to job specifications.



# PVC Multi-Gard® - Repair Kits

## Repair Kits




## Repairing Multi-Gard with Damaged Cables

1. **PVC Coupling -** Couples PVC innerduct. Use standard grade solvent cement.
2. **Fiber Optic Simplex Plug -** Seals innerduct with cable installed.
3. **Fiber Optic Quadplex Plug (4 holes each) -** Seals outer shell and innerduct
4. **PVC Pass-through Kit (48808DK) -** (4 x 20' lengths) 20 foot lengths can be cut to length for continuous empty innerduct. (3-Way Multi-Gard Pass Through Kit: 48809DK)
5. **Underground Vault & Lid -** Choose size & construction based on dimensions of splice cases and weight requirements. (Allow 12" on either side of splice for bending innerduct)
6. **Splice Case**

## Repair Kit Instructions:

1. Dig around break area enough to allow vault to drop over the repair area and rest level when the mouse holes have been cut away for the duct.
2. Cut away and remove outer shell and any damaged inner-ducts, being careful to protect any exposed cables.
3. Cut back the outer duct to allow approximately 6" of inner-duct exposed.
4. Install the splice case per manufacturer’s or customer’s specifications, allowing enough cable slack so no tension is felt.
5. Install the quad plugs (Item #3) and single plugs (Item #2) in duct containing cable.
6. Install pass-through ducts (Item #4) with coupling (Item #1) sealing with solvent cement.
7. Set the enclosure base over the entire package and place cover on enclosure.
8. Refill hole as required.