DPM Repair Manual

For

Blueline models:

ABKFD, KFD, KFDC Penetration Fittings

MEMBER PEI PETROLEUM EQUIPMENT INSTITUTE

General Instructions

The intent of this document is provide written guidelines on how to repair Bluelines family of “Kwik Fit” double sided penetration fittings.

- All penetration fittings to be repaired using DPM’s split repair products follow a number of basic steps.
- The installing personnel should review DPM’s Split Repair installation procedures, MSDS sheets and disposition procedures on DRP, DBF II, DBB III, Zip –Tite, DBB V, DBC and DAS prior to their first installation of these products.

A nationally recognized testing laboratory has tested Diversified’s:

Split Repair Products, DBB III, Zip-Tite and DBF II and DBC.

- The testing resulted in a listing for those products in 2005.
  - DPM does not currently subscribe to any follow up services for testing laboratories.

Sealers & Applicator Guns

- DPM uses 2 types of sealers in it's repair & installation process.
  - The 1st sealer is DRP – a twin tube 20 oz Polysulfide 50-50 mix
    - **DRP is used whenever a POLY style sump is used**
  - The 2nd sealer is DBB V – a twin tube 50ML Methyl Methacrylate mix
    - **DBB V is used whenever a FIBERGLASS sump is used**
- DRP & DBB V use different applicator guns to apply their products
  - See pictures below

DAG applicator gun for DRP & DBF II

DRP & DBF II use the same applicator gun

DAG III applicator gun for DBB V

The sealer to be used depends on the sump type:
POLY sumps use DRP
FIBERGLASS sumps use DBB V

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New Construction

Dual Cartridge Applicator Gun Used with DBF II & DRP

Warnings:

1. Read the installation instructions for your project before beginning these steps
2. Read MSDS sheet for this product
3. Use appropriate eye and skin protection

Put on safety glasses or goggles and rubber gloves.

Cut off tip of static mixing tube one or two steps up tapered portion of tip.

Remove cap and plugs, save them. Attach static mixer and nut.

Install cartridge into gun.

Purge air and some material into waste container before using.

Turn gun down to dispense product. When finished, remove and discard static mixing tube.

Install plugs and cap to preserve remaining product for future use.

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DAG III – DBB V Applicator Gun

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New Construction

Dual Cartridge Applicator Gun used with DBB V

Warnings:

1. Read the installation instructions for your project before beginning these steps
2. Read MSDS sheet for this product
3. Use appropriate eye and skin protection

Put on safety glasses or goggles and rubber gloves.

Remove cap and save. Attach static mixer.

Install cartridge into gun.

Purge air and some material into waste container before using.

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Turn gun down to dispense product. When finished, remove and discard static mixing tube.

Install cap to preserve remaining product for future use.

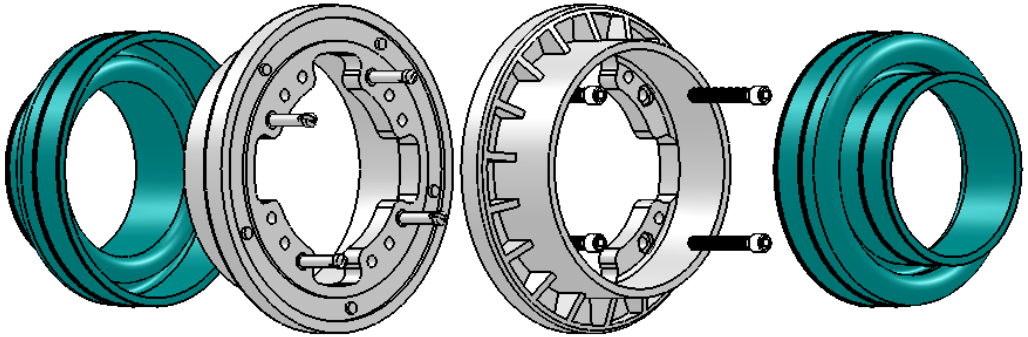
Step 1 – Clean the Sump

A "Clean" sump is very important to the repair process.

- Before beginning the repairs:
  - Drain or pump out all liquids
  - Remove all dirt & debris
  - Thoroughly dry the interior areas around the fittings to be repaired.
- **It is recommended that the sumps to be repaired be cleaned & wiped down with Acetone and vacuumed prior to starting the repairs.

Step 2 – Identify BL Boot to be repaired

- Identify the existing product and determine what repair products will be needed.
- Select the proper products from the following instructions and from the matrix provided at the end of these instructions.



Example of BlueLine ABKFD, KFD, or KFDC penetration fittings

Note:
All Kwik Fit Products may be repaired without encapsulating the entire fitting.
Determine if the fitting to be repaired is a small, medium, or large housing.
The steps to repair are the same for all three housings.

- Prior Blueline products were a direct knock off of the **Weaver Studded Product line** and can be repaired by replacing the inner boot with a studded repair boot of the same number of studs and pipe size.

Step 3 – Stop Water Flow

- Stop all water from entering the sump while the repairs are being performed.
  - Where water is actively entering the sump use Diversified Aqua Seal (DAS) to stop the water from entering the sump while repairs are being completed.
- Drill 3 or more holes
  - inside the perimeter of the final repair boot
- Inject the DAS into the water saturated soils.
  - Use a standard, single tube, type caulking gun

The DAS creates a foam activated by the water and provides a temporary barrier blocking the water from entering the sump.

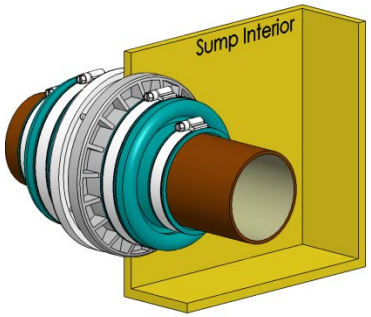
It may take 10 minutes or longer for the foam to create a seal.

Liberally inject the foam to be sure there is enough to create a seal from 3 or more opposing locations on the boot to be repaired.

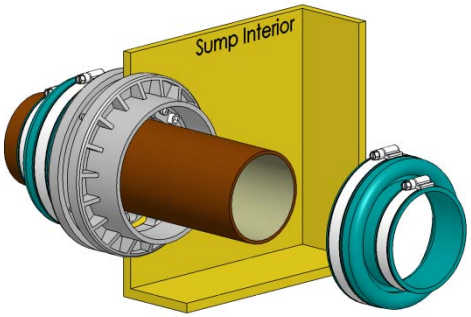
Step 4 – Remove BlueLine Boot

The following procedure is for repairing a BlueLine penetration fitting on a single wall sump.
**See Steps 4A – 10A for repairing a double walled monitored sump.

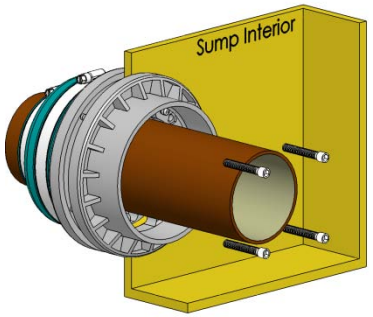
- Remove the existing Blueline Boot per the following instructions.



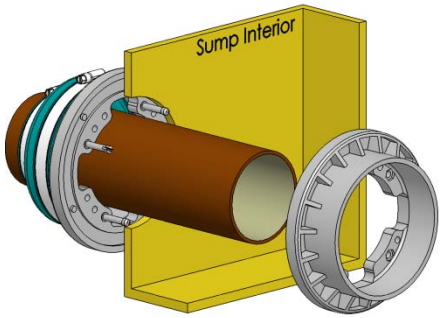
Fitting as installed



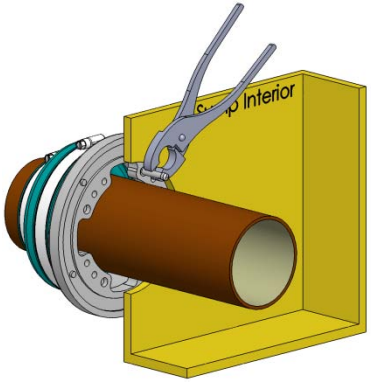
Loosen band clamps
Remove reducer



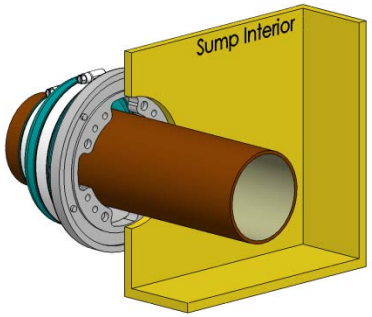
Remove the 4 bolts holding the fitting together



Remove internal plate & seal



Remove pressed in holding studs



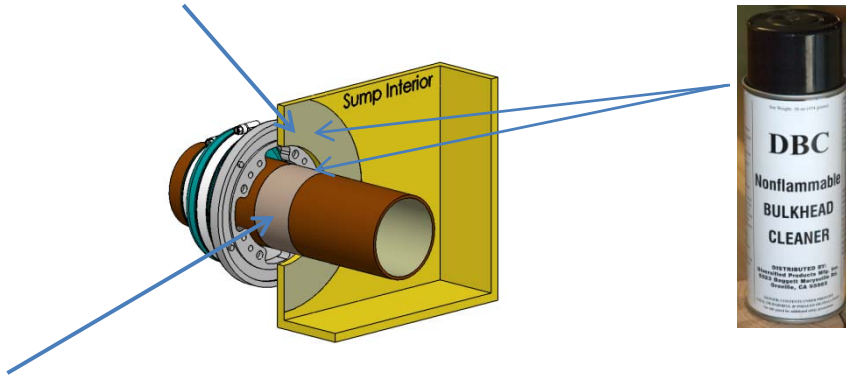
Fitting is now ready to have a DPM repair system installed

Step 5 – Sand & Clean

- Sand and clean all surfaces to be bonded.
  - It is suggested that a ring approximately 2” wide be sanded until all foreign matter is removed on both poly and fiberglass sumps.
  - Also sand a 2” band around the pipe where the band clamps will be clamped
- All gel coating on fiberglass sumps must be thoroughly roughed before bonding.
- Use Diversified Bulkhead Cleaner (DBC) to spray all surfaces to be bonded.
  - Excess liquid may be removed with a clean cloth or allowed to air dry.

Sand & Clean a band approximately 2” wide around the pipe on the repair side of the sump wall and on the pipe where the clamps will attach

Sand ~2” wide band around the pipe on the sump wall



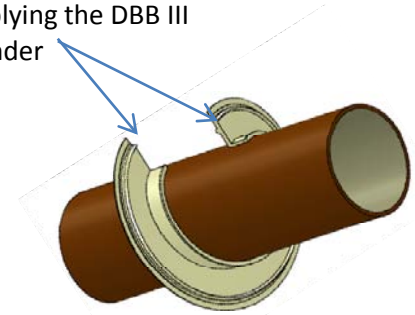
Sand ~2” wide band around the pipe where the clamps will attach

The sanded area should extend out far enough away from the pipe so that when the repair boot is in place it will rest inside the sanded area.
The same applies to sanding the pipe. Sand out far enough to extend out past where the clamps will attach.

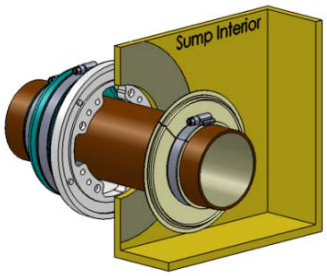
Step 6 – Install Inner MIS Seal & Solvent Weld

- Clean surfaces to be bonded with DBC
- Wrap the inner MIS Seal around the pipe.
- Solvent weld the split together using Diversified Bulkhead Bonder (DBB III) or Zip-Tite (DGK).
  - DBB III & Zip-Tite are the same product,
  - Zip-Tite is sold in a 4 oz of fluid canister
  - DBB III is sold in 16 oz of fluid bottles
- Use the band clamps provided to hold the seam tightly together while the solvent weld is curing.
- Allow 30 to 60 minutes for curing.

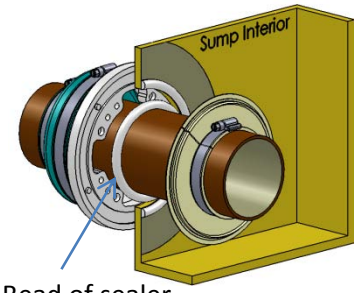
Spray and clean these edges with DBC. Let dry before applying the DBB III bonder



MIS Seal

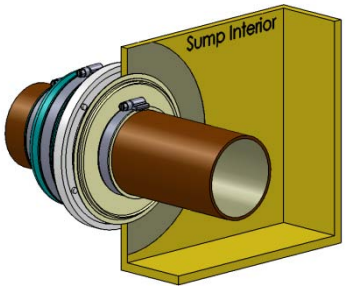


MIS Seal
Bonded & Clamped



Bead of sealer

Apply thick bead of sealer to sump wall and to the pipe where the clamp will sit

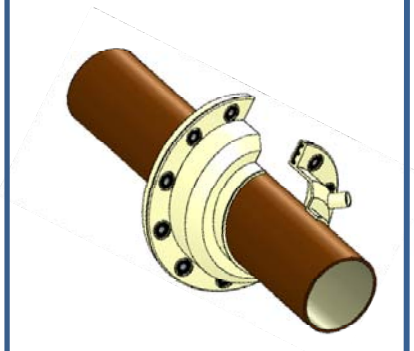


Loosen clamp and slide MIS Seal into place up against the sump wall.
Retighten clamp

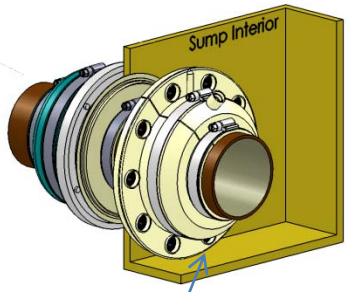
Be sure to clean the all the bonding surfaces before doing the solvent weld process

Step 7 – Install Repair Boot & Clamp

- Install the repair boot around the pipe.
  - **Follow the same steps outlined in step 6 to clean & solvent weld the repair boot**
- After curing time, remove &/or loosen the band clamps used in step 6 (keep the clamp that will attach to the pipe)
- Apply sealer around pipe and to repair boot surface
  - Use DRP on Poly sumps or DBB V for fiberglass sumps.
- Press the repair boot snugly against the sump wall and tighten the clamp around the pipe
  - Slide the Repair boot over the sleeve so that the sleeve nests into the repair boot
- Tek screw the repair boot to the sump wall.

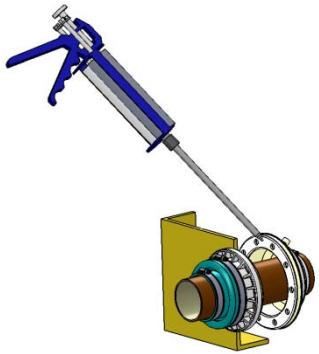


Wrap repair boot around pipe & clean with DBC



Solvent weld repair boot & set clamps in place for curing

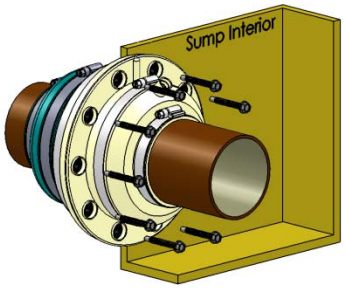
Use "Popsicle Stick" to evenly spread sealer



Apply enough DRP or DBB V to completely cover the sealing surface of the bonded repair boot before you push it into place

Position repair boot so that the fill & vent ports are at the top

Push repair boot into place and tighten clamp



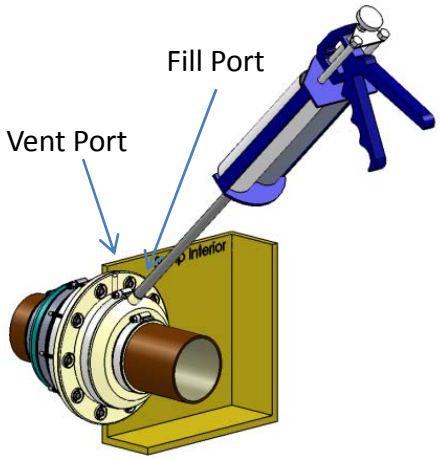
Install the tek screws. Do not over tighten the tek screws. Snug & firm to the sump wall is ok. The sealer should be pushing out around the edges.

The inner MIS sleeve reduces the amount of fill required by more than 50%.
Fill volumes in the attached matrix are less than half those recommended by Blueline for an equivalent filled repair fitting.

Step 8 – Fill & Done

- Fill the repair boot with Diversified Bulkhead Fill (DBF II).
- DBF II is a 2 part polysulfide liquid that generally will cure within two hours of installation.
- Curing of the polysulfide stops below approximately 50 deg F.
- When the temperature rises the process starts curing again.
- See instructions on the use of the fill applicator gun (DAG)

This product may be installed in sub zero conditions without damaging the product or process.
Should the installer be called away from the installation when the repair boot is partially filled, the filling may be completed at the later time without affecting the integrity of the repair.



Warning
Fill slowly at the end of the process.
Fill pressure will cause excess “fill” to exit at the vent port.
Excessive pressure at the completion of the filling process will bleed out the fill port as well.
A filled boot may have a small void at the top of the fill area.
A plug may be used to stopper the fill port (pn: RF-xPlug)

The next section shows:

- Repairing Blueline Monitored Fitting in a double wall sump

  - ✓ without breaking concrete or breaking pipe

Step 4A – Remove BlueLine “Monitored” Boot

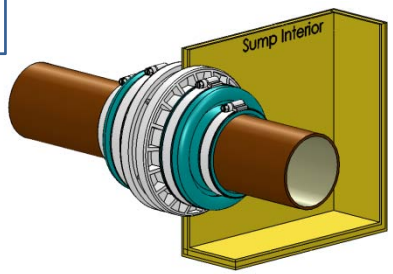
The following procedure is for repairing a BlueLine “Monitored” penetration fitting on a double wall sump.

The service technician needs to be capable of shutting down the alarm systems during the repair process

- Where double walled sumps are filled with liquid, provisions for draining the liquids, storing , & filling the systems after must be made prior to beginning the repairs.
- To perform a repair on a Monitored BlueLine fitting, there must be access to the exterior of the sump. In most cases, concrete & gravel must be removed to expose the piping & penetration fittings

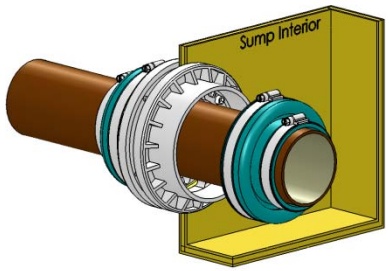
- Remove the existing Blueline fitting per the following instructions.

1



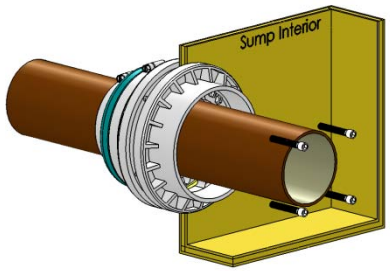
Fitting as installed

2



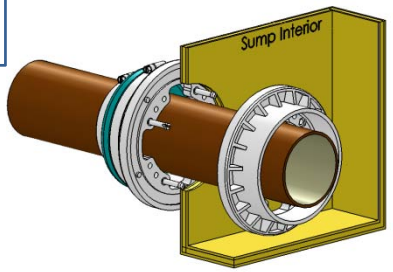
Loosen band clamps & remove inside reducer

3



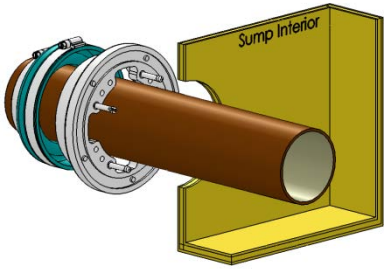
Remove the 4 bolts holding the fitting together

4



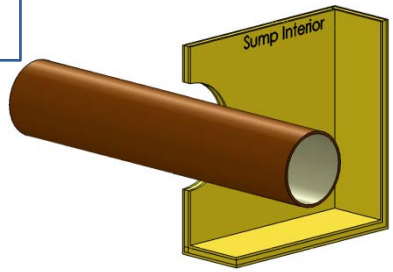
Remove internal plate & seal

5



Remove outer reducer & plate

6



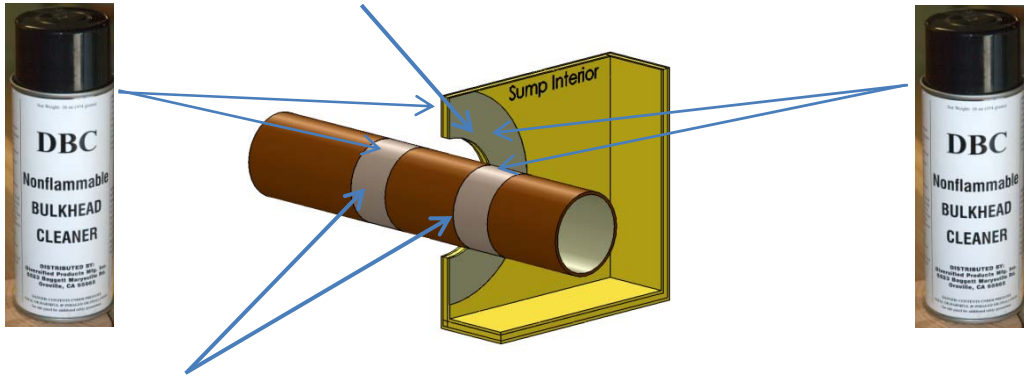
Fitting is now ready to have a DPM repair system installed

Step 5A – Sand & Clean

- Sand and clean all surfaces to be bonded.
  - It is suggested that a ring approximately 2” wide be sanded until all foreign matter is removed on both poly and fiberglass sumps.
  - Also sand a 2” band around the pipe where the band clamps will be clamped
- All gel coating on fiberglass sumps must be thoroughly roughed before bonding.
- Use Diversified Bulkhead Cleaner (DBC) to spray all surfaces to be bonded.
  - Excess liquid may be removed with a clean cloth or allowed to air dry.

Sand & Clean a band approximately 2” wide around the pipe on the **BOTH** sides of the sump wall and on the pipe where the clamps will attach

Sand ~2” wide band around the pipe on both sides of the sump wall



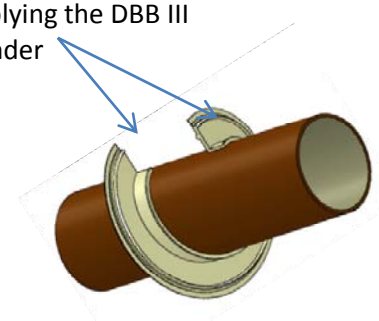
Sand ~2” wide band around the pipe where the clamps will attach

The sanded area should extend out far enough away from the pipe so that when the repair boot is in place it will rest inside the sanded area.
The same applies to sanding the pipe. Sand out far enough to extend out past where the clamps will attach.

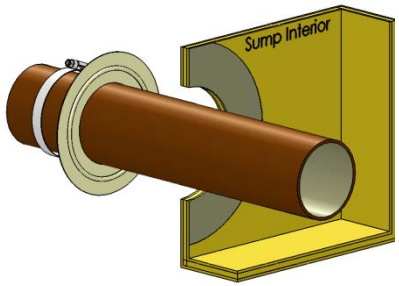
Step 6A – Install Outer MIS Seal & Solvent Weld

- Wrap the outer MIS Seal over the pipe on the outside of the sump.
- Clean surfaces to be bonded with DBC
- Solvent weld the split together using Diversified Bulkhead Bonder (DBB III) or Zip-Tite (DGK).
  - DBB III & Zip-Tite are the same product,
  - Zip-Tite is sold in a 4 oz of fluid canister
  - DBB III is sold in 16 oz of fluid bottles
- Use the band clamps provided to hold the seam tightly together while the solvent weld is curing.
- Allow 30 minutes to one hour for curing.
- Apply a thick bead of sealer to the outside sump wall and to the pipe area where the MIS Seal's clamp sits
- Push MIS Seal into place up against the sump wall and tighten the clamps.

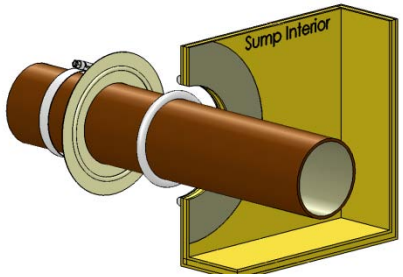
Spray and clean these edges with DBC. Let dry before applying the DBB III bonder



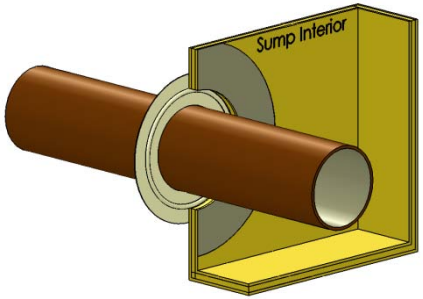
MIS Seal



MIS Seals Bonded & Clamped



Apply thick bead of DBB V to sump wall and to the pipe where the clamp will sit



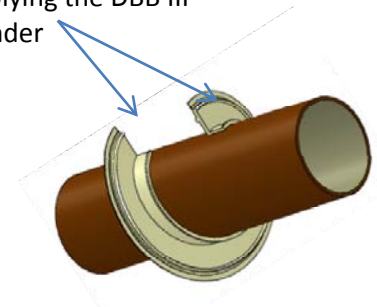
Loosen clamp and slide MIS Seal into place up against the sump wall.
Retighten clamp

Be sure to clean the all the bonding surfaces before doing the solvent weld process

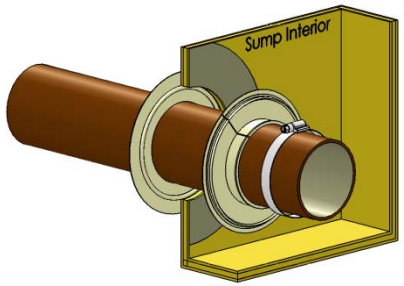
Step 6B – Install Inner MIS Seal & Solvent Weld

- Wrap the Inner MIS Seal over the pipe on the inside of the sump.
- Clean surfaces to be bonded with DBC
- Solvent weld the split together using Diversified Bulkhead Bonder (DBB III) or Zip-Tite (DGK).
  - DBB III & Zip-Tite are the same product,
  - Zip-Tite is sold in a 4 oz of fluid canister
  - DBB III is sold in 16 oz of fluid bottles
- Use the band clamps provided to hold the seam tightly together while the solvent weld is curing.
- Allow 30 minutes to one hour for curing.
- Apply a thick bead of sealer to the inside sump wall and to the pipe area where the MIS Seal's clamp sits
- Push MIS Seal into place up against the sump wall and tighten the clamps.

Spray and clean these edges with DBC. Let dry before applying the DBB III bonder

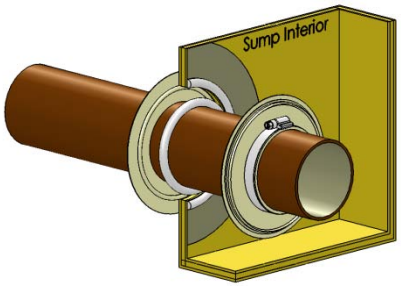


MIS Seal

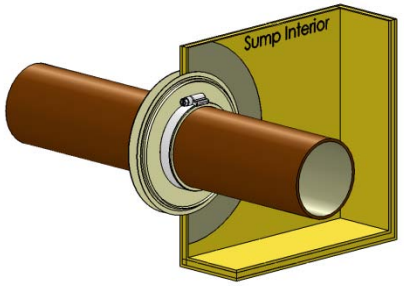


Inner MIS Seal Bonded & Clamped

See note on single wall on page 9



Apply thick bead of sealer to sump wall and to the pipe where the clamp will sit



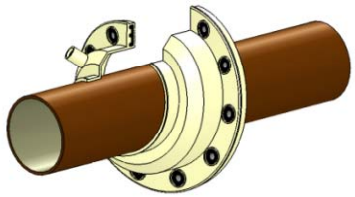
Loosen clamp and slide MIS Seal into place up against the sump wall.
Retighten clamp

Be sure to clean the all the bonding surfaces before doing the solvent weld process

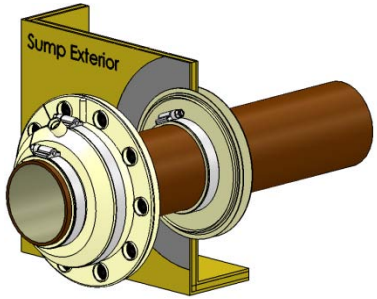
Step 7A – Install Outside Repair Boot & Drill Mounting Holes

- Wrap with the outside boot around the pipe, clean, & solvent weld edges together
  - Follow the same steps outlined in step 6 to clean & solvent weld the repair boot
- Now push the outer repair boot up against the sump wall and tek screw 2 opposing holes to hold boot in place for drilling the stud holes.
  - Make sure the position of the vent & fill port is at the top
- Now drill the remaining holes for the studs.
  - Remove the tek screws & re-drill those holes.

Position of the vent & fill port at the top before inserting tech screws

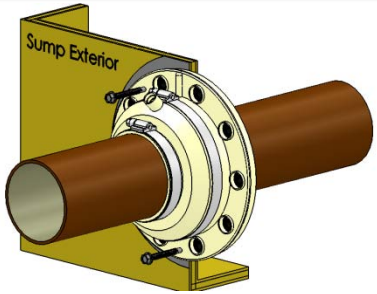


Wrap repair boot around pipe & clean with DBC



Solvent weld repair boot & set clamps in place for curing

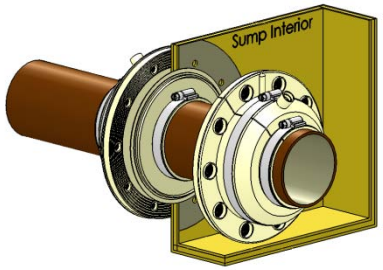
Position fill port at the top



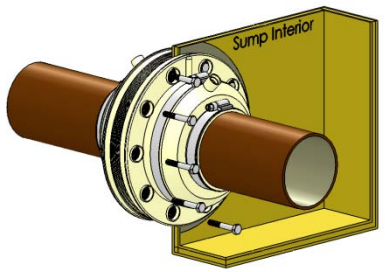
Screw in teck screws to hold repair boot in place.
Drill remaining holes with 5/16” drill bit
Remove teck screws & drill with5/16” bit

Step 7B – Install Inner & Outer Repair Boots

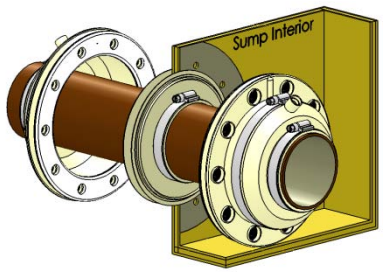
- Wrap with the inside boot around the pipe, clean, & solvent weld edges together
  - Follow the same steps outlined in step 6 to clean & solvent weld the repair boot
- After curing, "DRY FIT" the 2 repair boots to make sure they fit properly. (Re-Drill as needed to get a good fit.)
  - Note: fill ports should be at the top
  - Bolts go from inside to outside. The plastic nuts will attach on the outside of the sump
- Remove the studs & pull the repair boots back far enough to apply the sealer to the sealing surface of both repair boots
- Apply sealer to the sealing surface of both repair boots [see page 3 to determine which sealer to use]
- Apply sealer around the pipe on both sides of the sump where the repair boot clamps will clamp
- Install the inside repair boot 1st
  - Align so that the vent port is on top and the holes in the repair boot match up with the holes in the sump wall
  - Slide the Repair boot over the sleeve so that the sleeve nests into the repair boot
  - Press the repair boot snugly against the sump wall (move as needed to line up the holes)
  - Then push thru the bolts, with head on the inside of the sump
  - Then tighten the clamp around the pipe.
- Now push the outer repair boot onto the bolts coming thru from the inner repair boot, with the vent port on top
- Screw in the stud nuts and tighten evenly around the boot in a star pattern
- Attach the stud covers over the stud bolt heads (inside the sump) and bond in place



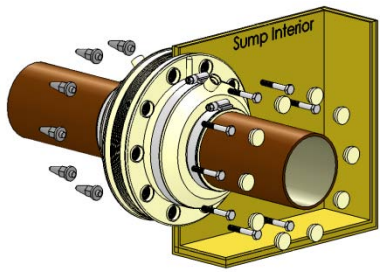
Repair Boot bonded and ready to be pushed into place for "Dry-Fit"



"Dry-Fit" Repair Boots and re-drill if needed so that parts can be easily pushed into place.



Apply enough sealer to completely cover the sealing surface of the bonded repair boot before you push it into place



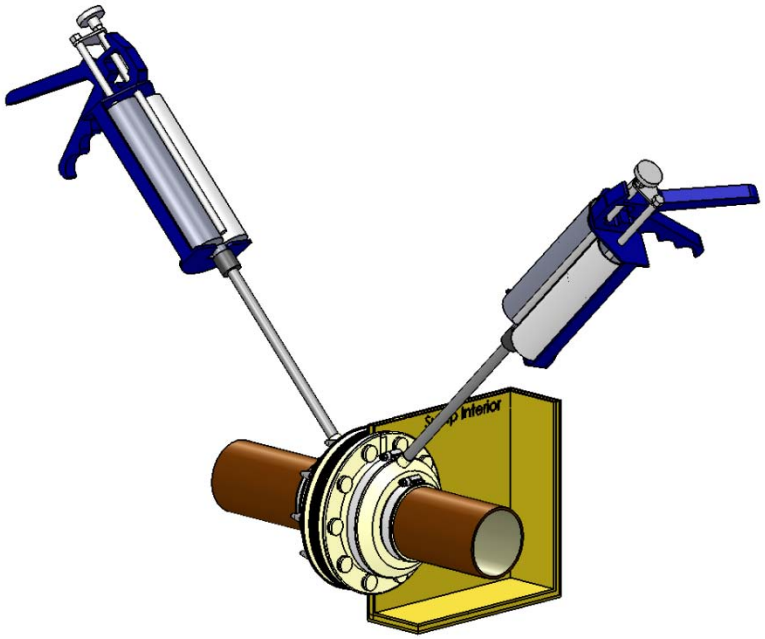
Do not over tighten the stud nuts. Snug & firm to the sump wall is ok. The sealer should be pushing out around the edges. Bond & attach stud covers over stud bolt head

The DPM "Stud Covers" are bonded over the "Stud Bolt Heads" to completely ENCAPSULATE the metal bolt heads.
Apply DBB III to stud cover and then place over the stud bolt head. Apply more DBB III if needed to completely seal the metal heads.

Step 8A – Fill the Boots

- Fill both the repair boots with Diversified Bulkhead Fill (DBF II).
  - The polysulfide is a two part liquid that generally will cure within two hours of installation.
  - Curing of the polysulfide stops below approximately 50 deg F.
  - When the temperature rises the process starts curing again.
  - See instructions on the use of the fill applicator gun (DAG)

This product may be installed in sub zero conditions without damaging the product or process.
Should the installer be called away from the installation when the repair boot is partially filled, the filling may be completed at the later time without affecting the integrity of the repair.



Warning
Fill slowly at the end of the process.
Fill pressure will cause excess “fill” to exit at the vent port.
Excessive pressure at the completion of the filling process will bleed out the fill port as well.
A filled boot may have a small void at the top of the fill area.
A plug may be used to stopper the fill port (pn: RF-Plug)

Step 9A – Recharge System, Test, & Register

- Recharge the sump using the original materials you saved in step 3A
  - Add more material if needed
- Look for leaks for 24 hours
- Activate the alarm system
- If desired, register the site for 5 year parts & labor warranty.
- 5 year warranty registration form can be obtained from DPM's website at
  - www.dpm-llc.com/DPM Literature

How to load the DAG for DRP or DBF II

Gloves are very important

DBF II & DRP are smelly and sticky

Don’t get this stuff on your clothes - If won’t come off

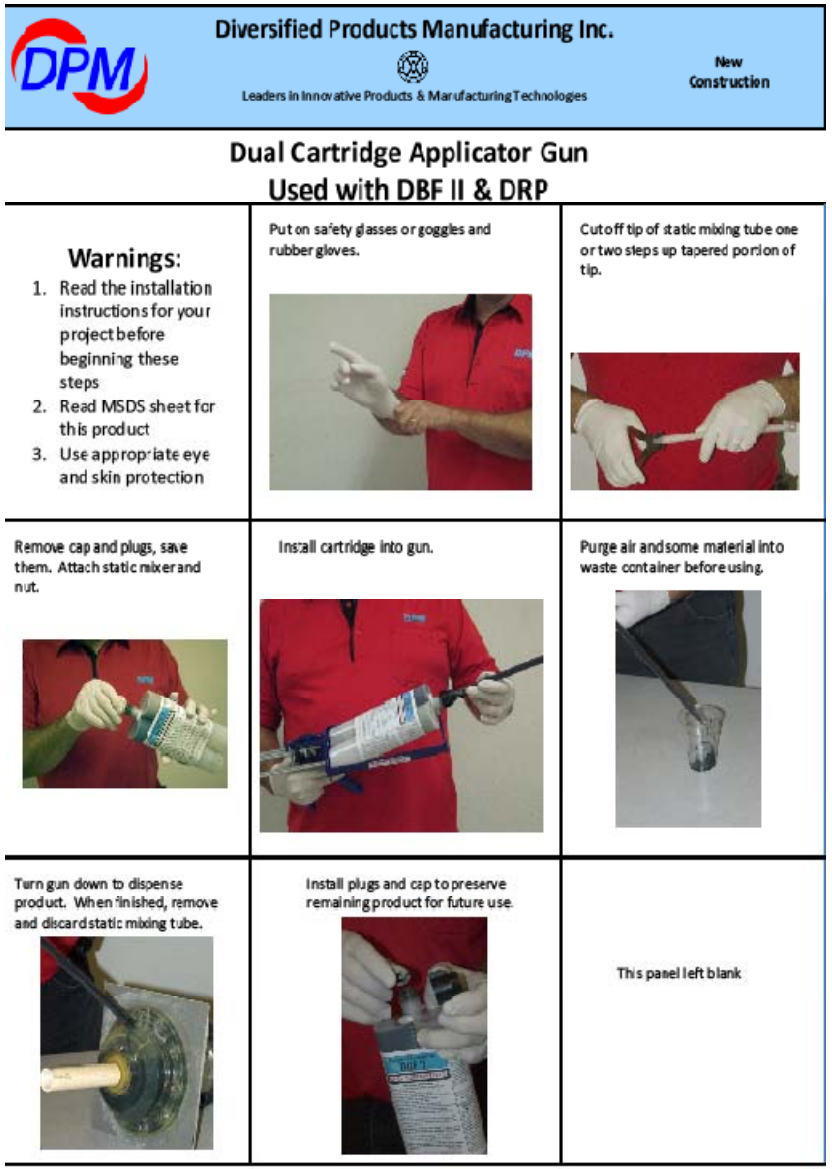
You may want to were an apron or “throw-away clothes”

It will clean up with DBC, but be careful where you use DBC. It will soften & deform most plastics

The separate parts WILL NOT CURE until mixed

Unused product can be held for a very long time without degrading as long as unused tubes are stored horizontally

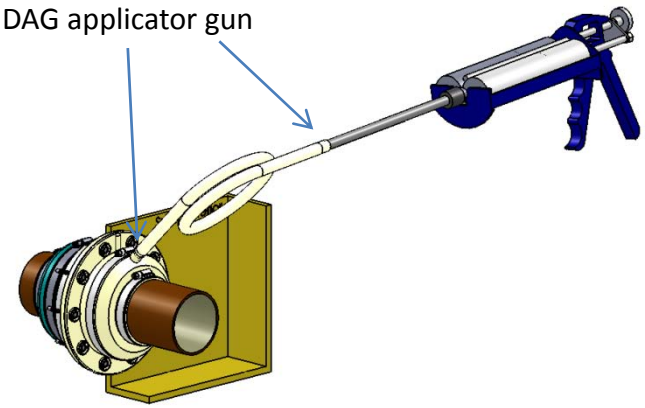
To dispose, mix unused materials together, let cure, and throw away in your trash after mixture has hardened



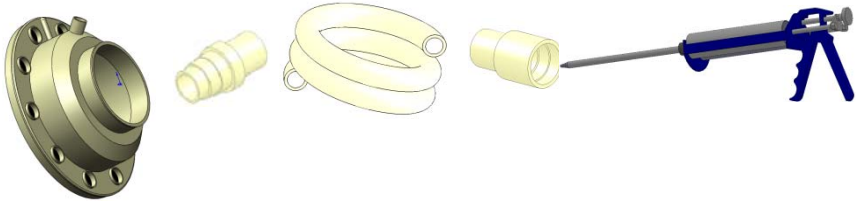
Remote Fill Accessories

- In some applications it is difficult for the repair technician to reach the repaired fitting to fill it with the DBF II.
- In those cases Diversified offers a remote fill option.
- Remote Fill fittings are available & must be ordered separately.

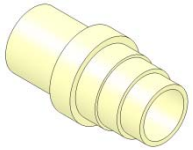
Remote fill tube connected to fill port and to DAG applicator gun



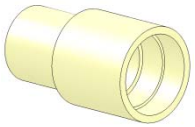
Example remote fill process



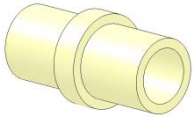
Remote Fill fittings



RF-MxTube
Used to connect to fill port on one end & to the RF-Tube on the other end



RF-FxTube
Used to connect to RF-Tube on one end & to the DAG on the other end



RF-TubexTube
Used to extend the length of the fill tube

RF-xPlug
Used to plug the fill port after filling with DBF II

RF-Tube (2’ long)
Stocked as standard 2’ long
Available in any length

DPM part# matrix for BlueLine repairs

Repair Type Part Number XXX = ABKFD or KFD or KFDC	ABKFD Series (Flat or Curved Sumps), KFD Series (Flat Sumps) or KFDC (Curved Sumps)	DPM Repair Boot Kit Part Number	DBF II Fill Oz	DBB V Bonder Oz or DRP Bonder Oz	DPM Repair Boot Kit Part Number	DBF II Fill Oz	DBB V Bonder Oz Or DRP Bonder Oz
Small	**Pipe Size & Type**	**For Single-sided repairs**	**Single**	**Single**	**For Monitored repairs**	**Monitored**	**Monitored**
XXX1.4	3/4 or 1" Conduits	**URBK8 BLS-41**	<8	1	**URBK8 BLS-41M**	<16	2
XXX1.6	3/4 or 1" PVC Coated Conduits	**URBK8 BLS-42**	<8	1	**URBK8 BLS-42M**	<16	2
Medium							
XXX2.0	50 MM Pipe	**URBK10 BLM-2.0**	<20	2	**URBK10 BLM-2.0M**	<40	4
XXX2.5	2" FRP	**URBK10 BLM-2.4**	<19	2	**URBK10 BLM-2.4M**	<38	4
XXX2.5	63 MM Pipe	**URBK10 BLM-2.5**	<19	2	**URBK10 BLM-2.5M**	<38	4
XXX2.7	2" LCX	**URBK10 BLM-2.7**	<19	2	**URBK10 BLM-2.7M**	<38	4
XXX3.0	75 Mm Pipe	**URBK10 BLM-3.0**	<19	2	**URBK10 BLM-3.0M**	<38	4
XXX3.5	3" FRP & 90 MM Pipe	**URBK10 BLM-3.6**	<15	2	**URBK10 BLM-3.6M**	<30	4
XXX3.5x2.4	3" FRP over 2" FRP	**URBK10 BLM-3.6**	<15	2	**URBK10 BLM-3.6M**	<30	4
XXX3.7	3" LCX	**URBK10 BLM-3.8**	<15	2	**URBK10 BLM-3.8M**	<30	4
XXX4.8x2.0	Corrugated Ducting over 1 1/2" Flex	**URBK10 BLM-4.6x2.0**	<12	2	**URBK10 BLM-4.6x2.0M**	<24	4
XXX4.8x2.5	Corrugated Ducting over 1 1/2" Flex	**URBK10 BLM-4.6x2.5**	<12	2	**URBK10 BLM-4.6x2.5M**	<24	4
large							
XXX3.5	3"FRP & 90 MM Pipe	**URBK12 BLL-3.6**	<35	3	**URBK12 BLL-3.6M**	<70	6
XXX4.5x3.5	4" over 3" FRP	**URBK12 BLL-4.5**	<35	3	**URBK12 BLL-4.5M**	<70	6
XXX4.8	4" LCX	**URBK12 BLL-4.8**	<35	3	**URBK12 BLL-4.8M**	<70	6
XXX4.8x1.9x1.4	4" Corrugated Ducting over two pipes	**URBK12 BLL-4.8**	<35	3	**URBK12 BLL-4.8M**	<70	6
XXX4.8x2.0	4" Corrugated Ducting over 1 1/2" Flex Pipe	**URBK12 BLL-4.6x2.0**	<35	3	**URBK12 BLL-4.6x2.0M**	<70	6
XXX4.8x2.5	4" Corrugated Ducting over 2" Flex Pipe	**URBK12 BLL-4.6x2.5**	<35	3	**URBK12 BLL-4.6x2.5M**	<70	6
XXX4.8x3.0	4" Corrugated Ducting over 3.0" Pipe	**URBK12 BLL-4.6x3.0**	<35	3	**URBK12 BLL-4.6x3.0M**	<70	6

Other Products	Description	Part Number
Remote Fill Tube	24" Long	**RF-Tube**
Male x Tube Adaptor	Fill port to tube fitting	**RF MxTube**
Female x Tube Adaptor	Applicator Gun to tube fitting	**RF FxTube**
Tube x Tube Adaptor	Tube extender fitting	**RF TubexTube**
Male Plug	Fill port plug	**RF x Plug**
Duplex Caulk Gun	for 20 oz dual cartridge sets for DBF II or DRP	**DAG**
MM-50ml applicator gun	applicator gun for 50ml MM cartridges	**DAG III**
MM-400ml applicator gun	applicator gun for 400ml MM cartridges	**DAG IV**

Other Products	Description	Part Number
Fill	PolySulfide liquid ,20 oz dual cartridge set	**DBF II**
Paste	PolySulfide Paste,20 oz dual cartridge set	**DRP**
MM-50ml	50 ml Methyl Methacrylate bonder	**DBB V -50**
MM-400ml	400 ml Methyl Methacrylate bonder	**DBB V -400**
DBB III Bonder	16 oz Bonder to solvent weld Fuel-Thane parts	**DBB III**
DGK Bonder	4 oz Bonder to solvent weld Fuel-Thane parts	**DGK**