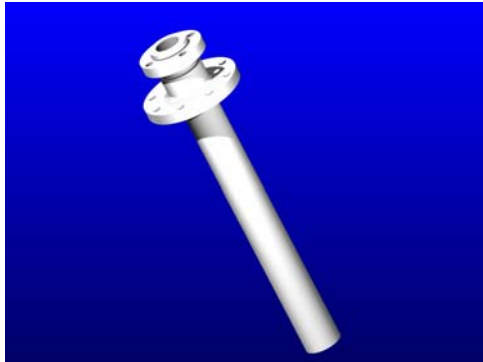


FLUOR-O-FLO®
Dip Pipes & Spargers
PTFE Lined and Jacketed Steel

Product Specifications 5.1-2



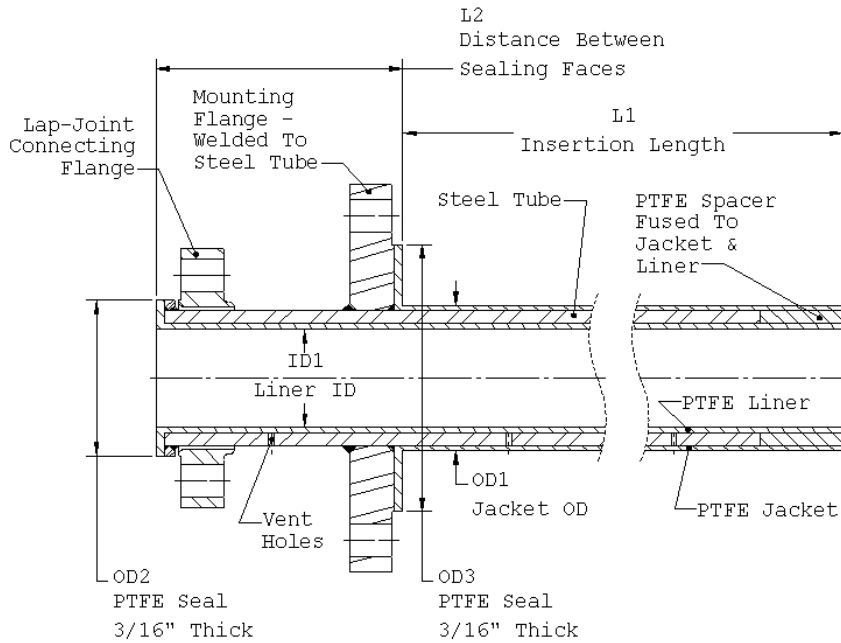
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High Quality Materials

Only pure virgin PTFE is used. No FEP, PFA, or other welding aids are employed. Our standard Sch. 40 and Sch. 80 steel pipe conforms to grade ASTM A106B. We also offer options such as DOM high strength steel conforming to AISI 1026, Type 316 Stainless Steel, as well as Monel® and other less commonly used metals.

Call today for our
PTFE Lined & Jacketed
Steel Dip Pipe & Spargers
Sales Bulletin and
Technical Bulletins

DDF Series Double Flanged Dip Pipes



Product Specifications 5.1-2

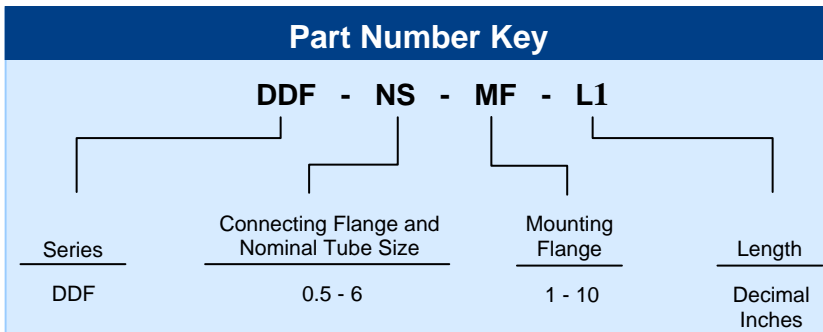
Standard Double-Flanged Dip Pipes

PART NUMBER: The PART NUMBER (DDF-NS-MF-L1) defines the series (first three characters), the nominal tube and connecting flange size **NS**, the mounting (or nozzle) flange size **MF**, and the insertion length **L1**. Use a decimal number to indicate **NS**. Then, replace **MF** with the decimal number to indicate the nominal size of the mounting flange and replace **L1** with the insertion length in inches.

For example, a 1-1/2" Double-Flange Dip Pipe with a 4" mounting flange x 60" insertion length would be **DDF-1.5-4-60**

NOTES

1. Standard flanges have ANSI Class 150 drilling. Class 300 and other sizes available.
2. Standard tolerance on inserted length is $\pm 1/2"$. Closer tolerances available, contact factory.
3. Standard distance (L2) between flange sealing faces is 5". Spacing is increased when a reinforcing collar is used, see table on the next page. To order non-standard spacing, contact the factory.
4. Most dimensions are governed by connecting flange size as shown in the Standard Dimension table on the next page.
5. Maximum standard overall length is 16 feet. For longer lengths, contact factory.
6. For service conditions exceeding 350 F°, or 150 PSI, or vacuum service, contact factory.



STANDARD DIMENSIONS

| Connecting Flange & Nominal Tube Size | PTFE Jacket OD (OD1) | PTFE Liner ID (ID1) | PTFE Seal OD Minimum (OD2) | Steel Tube ⁶ |
|---------------------------------------|----------------------|---------------------|----------------------------|-------------------------|
| 1/2" ¹ | 1" | 7/16" | 1-1/4" | Sch. 40 |
| 3/4" | 1-1/4" | 5/8" | 1-9/16" | Sch. 40 |
| 1" ² | 1-1/2" | 3/4" | 1-7/8" | Sch. 80 |
| 1-1/2" ³ | 2" | 1" | 2-11/16" | Sch.40 |
| 1-1/2" | 2-1/4" | 1-1/8" | 2-11/16" | Sch. 80 |
| 2" | 2-3/4" | 1-5/8" | 3-7/16" | Sch.80 |
| 3" ⁴ | 3-3/4" | 2-1/2" | 4-5/8" | DOM |
| 3" ⁵ | 3-15/16" | 2-1/2" | 4-5/8" | Sch. 80 |
| 4" | 5-1/8" | 3-1/2" | 5-15/16" | Sch. 80 |
| 6" | 6" | 4" | 8" | DOM |

Note 1: This size used with nozzles that are 1.049" ID or greater.
 Note 2: This size used with nozzles that are 1.610" ID or greater.
 Note 3: This size used with nozzles that are 2.067" ID or greater.
 Note 4: This size used with nozzles that are 3.826" ID or greater.
 Note 5: This size used with nozzles that are 4.000" ID or greater.
 Note 6: Steel tubes:

- Sch. 40 and Sch.80 steel pipe conforms to grade ASTM A106B (Refer to Technical Bulletin 5.1-3a)
- DOM steel tubes conform to A513 grade 1020 or 1026 high strength steel (Refer to Technical Bulletin 5.1-3a).

Reinforcing Collar

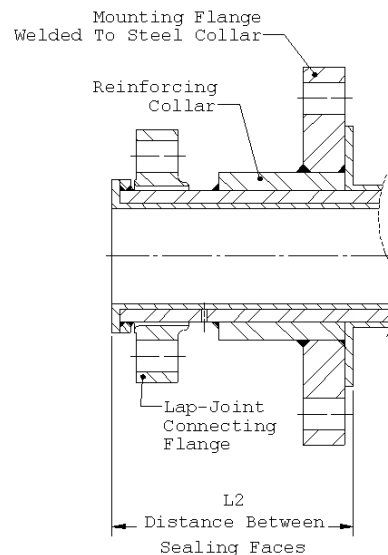
Our reinforcing collar is a special feature for double-flanged dip pipes and spargers where the length to diameter ratio is high. The collar eliminates the welds that weaken the steel tube at the point where it is normally joined to the mounting flange. The collar also serves to reinforce the connection between the mounting flange and the steel tube. Dimension L2 is lengthened to accommodate the collar.

SIZES FOR DIP TUBES WITH COLLARS

| Nominal Tube Size | Collar Used On Dip Pipes Where Insertion Length (L1) Exceeds | Distance Between Sealing Faces (L2) |
|-------------------|--|-------------------------------------|
| 1/2" | 24" | 6" |
| 3/4" | 36" | 6" |
| 1" | 48" | 6" |
| 1-1/2" | 60" | 7" |
| 2" | 72" | 7" |
| 3" | 96" | 8" |
| 4" | 120" | 9" |

MOUNTING FLANGE SEAL DIAMETERS

| Flange Size | PTFE Seal OD Minimum (OD3) |
|-------------|----------------------------|
| 1" | 1-7/8" |
| 1-1/2" | 2-11/16" |
| 2" | 3-7/16" |
| 3" | 4-5/8" |
| 4" | 5-15/16" |
| 6" | 8" |
| 8" | 10-1/16" |
| 10" | 12-1/4" |

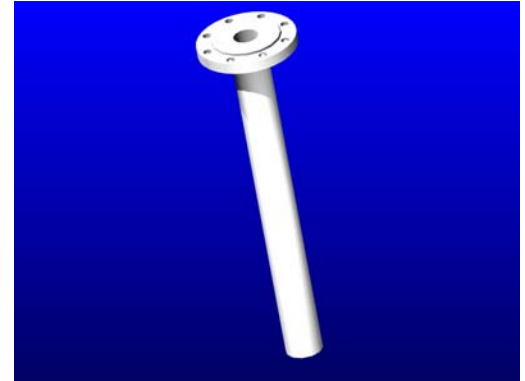
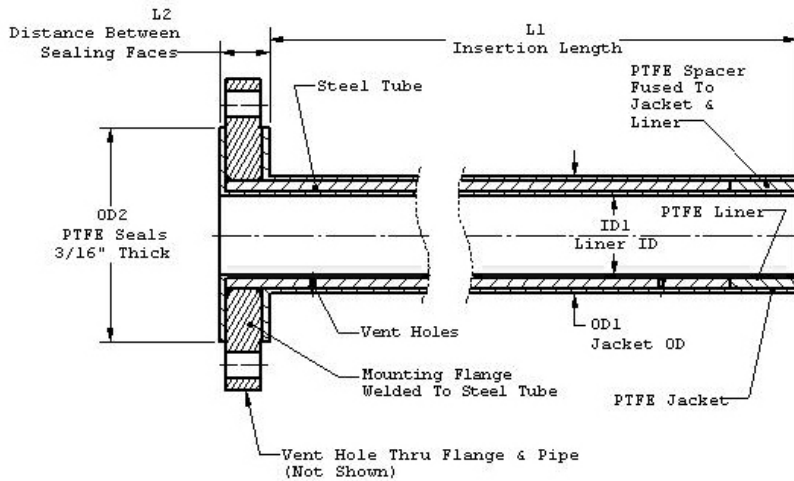


Product Specifications 5.1-2



DSF Series Single-Flanged Dip Pipes

Product Specifications 5.1-2



Standard Single-Flanged Dip Pipes

PART NUMBER: The PART NUMBER (DSF-NS-MF-L1) defines the series (first three characters), the nominal tube size NS, the mounting (or nozzle) flange size MF and the insertion length L1. Use a decimal number to indicate the NS. Then, replace the MF with the decimal number to indicate the nominal size of the mounting flange and replace L1 with the insertion length in inches. For example, a 3/4" Single-Flange Dip Pipe with a 2" flange x 30" insertion length would be **DSF-0.75-2-30**

Notes

1. Standard flanges have ANSI Class 150 drilling. Class 300 and other sizes available.
2. Standard tolerance on inserted length is $\pm 1/2"$. Closer tolerances available, contact factory.
3. Most dimensions are governed by connecting flange size as shown in the Standard Dimension table on the next page.
4. Maximum standard overall length is 16 feet. For longer lengths, contact factory.
5. For service conditions exceeding 350 F°, or 150 PSI, or vacuum service, contact factory.

Part Number Key

DSF - NS - MF - L1

| Series | Nominal Tube Size | Connecting/ Mounting Flange | Length |
|--------|-------------------|-----------------------------------|-------------------|
| DSF | 0.5 - 6 | 1 - 10 | Decimal Inches |



STANDARD DIMENSIONS

| Nominal Tube Size | Connecting Flange Size | PTFE Jacket OD (OD1) | PTFE Liner ID (ID1) | PTFE Seals OD Minimum (OD2) | Steel Tube ⁵ Thickness |
|---------------------|------------------------|----------------------|---------------------|-----------------------------|-----------------------------------|
| 1/2" ¹ | 1" | 1" | 7/16" | 1-7/8" | Sch. 40 |
| 1/2" | 1-1/2" | 1" | 7/16" | 2-11/16" | Sch. 40 |
| 1/2" | 2" | 1" | 7/16" | 3-7/16" | Sch. 40 |
| 1/2" | 3" | 1" | 7/16" | 4-5/8" | Sch. 40 |
| 1/2" | 4" | 1" | 7/16" | 5-15/16" | Sch. 40 |
| 1/2" | 6" | 1" | 7/16" | 8" | Sch. 40 |
| 1/2" | 8" | 1" | 7/16" | 10-1/16" | Sch. 40 |
| 1/2" | 10" | 1" | 7/16" | 12-1/4" | Sch. 40 |
| 3/4" | 1-1/2" | 1-1/4" | 5/8" | 2-11/16" | Sch. 40 |
| 3/4" | 2" | 1-1/4" | 5/8" | 3-7/16" | Sch. 40 |
| 3/4" | 3" | 1-1/4" | 5/8" | 4-5/8" | Sch. 40 |
| 3/4" | 4" | 1-1/4" | 5/8" | 5-15/16" | Sch. 40 |
| 3/4" | 6" | 1-1/4" | 5/8" | 8" | Sch. 40 |
| 3/4" | 8" | 1-1/4" | 5/8" | 10-1/16" | Sch. 40 |
| 3/4" | 10" | 1-1/4" | 5/8" | 12-1/4" | Sch. 40 |
| 1" ² | 1-1/2" | 1-1/2" | 3/4" | 2-11/16" | Sch. 80 |
| 1" | 2" | 1-1/2" | 3/4" | 3-7/16" | Sch. 80 |
| 1" | 3" | 1-1/2" | 3/4" | 4-5/8" | Sch. 80 |
| 1" | 4" | 1-1/2" | 3/4" | 5-15/16" | Sch. 80 |
| 1" | 6" | 1-1/2" | 3/4" | 8" | Sch. 80 |
| 1" | 8" | 1-1/2" | 3/4" | 10-1/16" | Sch. 80 |
| 1" | 10" | 1-1/2" | 3/4" | 12-1/4" | Sch. 80 |
| 1-1/2" ³ | 2" | 2" | 1" | 3-7/16" | Sch. 40 |
| 1-1/2" | 3" | 2-1/4" | 1-1/8" | 4-5/8" | Sch. 80 |
| 1-1/2" | 4" | 2-1/4" | 1-1/8" | 5-15/16" | Sch. 80 |
| 1-1/2" | 6" | 2-1/4" | 1-1/8" | 8" | Sch. 80 |
| 1-1/2" | 8" | 2-1/4" | 1-1/8" | 10-1/16" | Sch. 80 |
| 1-1/2" | 10" | 2-1/4" | 1-1/8" | 12-1/4" | Sch. 80 |
| 2" | 3" | 2-3/4" | 1-5/8" | 4-5/8" | Sch. 80 |
| 2" | 4" | 2-3/4" | 1-5/8" | 5-15/16" | Sch. 80 |
| 2" | 6" | 2-3/4" | 1-5/8" | 8" | Sch. 80 |
| 2" | 8" | 2-3/4" | 1-5/8" | 10-1/16" | Sch. 80 |
| 2" | 10" | 2-3/4" | 1-5/8" | 12-1/4" | Sch. 80 |
| 3" ⁴ | 4" | 3-3/4" | 2-1/2" | 5-15/16" | DOM |
| 3" | 6" | 3-15/16" | 2-1/2" | 8" | Sch. 80 |
| 3" | 8" | 3-15/16" | 2-1/2" | 10-1/16" | Sch. 80 |
| 3" | 10" | 3-15/16" | 2-1/2" | 12-1/4" | Sch. 80 |
| 4" | 6" | 5-1/8" | 3-1/2" | 8" | Sch. 80 |
| 4" | 8" | 5-1/8" | 3-1/2" | 10-1/16" | Sch. 80 |
| 4" | 10" | 5-1/8" | 3-1/2" | 12-1/4" | Sch. 80 |
| 6" | 8" | 6" | 4" | 10-1/16" | DOM |
| 6" | 10" | 6" | 4" | 12-1/4" | DOM |

Note 1: This size used with nozzles that are 1.049" ID or greater.

Note 2: This size used with nozzles that are 1.610" ID or greater.

Note 3: This size used with nozzles that are 2.067" ID or greater.

Note 4: This size used with nozzles that are 3.826" ID or greater.

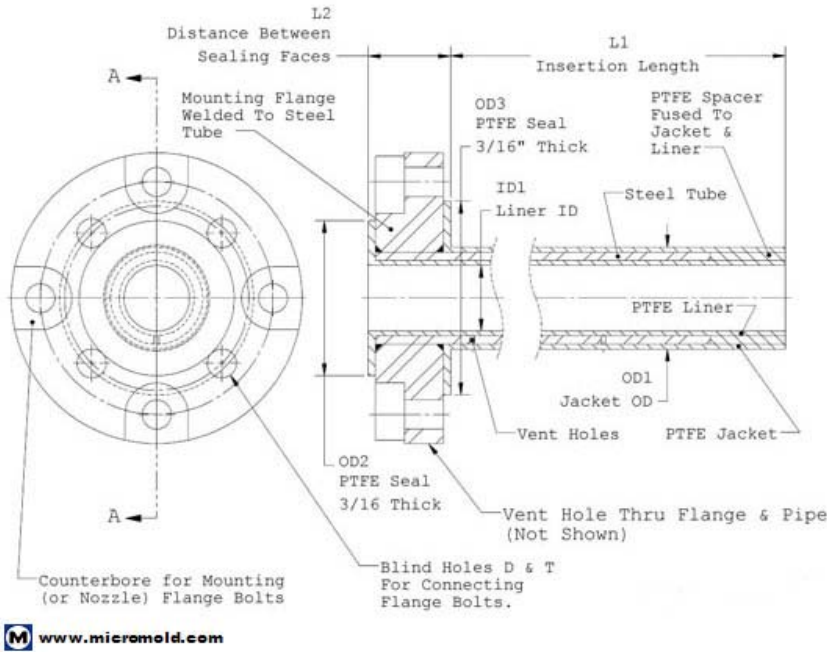
Note 5: Steel tubes:

- Sch. 40 and Sch.80 steel pipe conforms to grade ASTM A106B (Refer to Technical Bulletin 5.1-3a)
- DOM steel tubes conform to A513 grade 1020 or 1026 high strength steel (Refer to Technical Bulletin 5.1-3a).



DRF Series Reducing Flange Dip Pipes

Product Specifications 5.1-2



Standard Reducing-Flanged Dip Pipes

PART NUMBER: The PART NUMBER (DRF-NS-MF-L1) defines the series (first three characters), the nominal tube and connecting flange size NS, the mounting (or nozzle) flange size MF and the insertion length L1. Use a decimal number to indicate the NS. Then, replace the MF with a decimal number to indicate the nominal size of the mounting flange and replace L1 with the insertion length in inches.

For example, a 3/4" Reducing-Flange Dip Pipe with a 2" mounting flange x 30" insertion length would be **DRF-0.75-2-30**

Notes

1. Standard flanges have ANSI Class 150 drilling, Class 300 and other sizes available.
2. Standard tolerance on inserted length is $\pm 1/2"$. Closer tolerances available, contact factory.
3. Distance (L2) between sealing faces is determined by combination of Nominal Size and Mounting Flange Size. Contact factory for details..
4. Most dimensions are governed by connecting flange size as shown in the Standard Dimension table on the next page.
5. Maximum standard overall length is 16 feet. For longer lengths, contact factory.
6. For service conditions exceeding 350 F°, or 150 PSI, or vacuum service, contact factory.

| Part Number Key | | | |
|--------------------|---|-----------------|----------------|
| DRF - NS - MF - L1 | | | |
| Series | Connecting Flange and Nominal Tube Size | Mounting Flange | Length |
| DRF | 0.5 - 6 | 1 - 10 | Decimal Inches |



STANDARD DIMENSIONS

| Connecting Flange & Nominal Tube Size | PTFE Jacket OD (OD1) | PTFE Liner ID (ID1) | PTFE Seal OD Minimum (OD2) | Steel Tube ⁵ |
|---------------------------------------|----------------------|---------------------|----------------------------|-------------------------|
| 1/2" ¹ | 1" | 7/16" | 1-1/4" | Sch. 40 |
| 3/4" | 1-1/4" | 5/8" | 1-9/16" | Sch. 40 |
| 1" ² | 1-1/2" | 3/4" | 1-7/8" | Sch. 80 |
| 1-1/2" ³ | 2" | 1" | 2-11/16" | Sch.40 |
| | | | | |
| 1-1/2" | 2-1/4" | 1-1/8" | 2-11/16" | Sch. 80 |
| 2" | 2-3/4" | 1-5/8" | 3-7/16" | Sch.80 |
| 3" ⁴ | 3-3/4" | 2-1/2" | 4-5/8" | DOM |
| 3" | 3-15/16" | 2-1/2" | 4-5/8" | Sch. 80 |
| | | | | |
| 4" | 5-1/8" | 3-1/2" | 5-15/16" | Sch. 80 |
| 6" | 6" | 4" | 8" | DOM |

Note 1: This size used with nozzles that are 1.049" ID or greater.

Note 2: This size used with nozzles that are 1.610" ID or greater.

Note 3: This size used with nozzles that are 2.067" ID or greater.

Note 4: This size used with nozzles that are 3.826" ID or greater.

Note 5: Steel tubes:

- Sch. 40 and Sch.80 steel pipe conforms to grade ASTM A106B (Refer to Technical Bulletin 5.1-3a)
- DOM steel tubes conform to A513 grade 1020 or 1026 high strength steel (Refer to Technical Bulletin 5.1-3a).

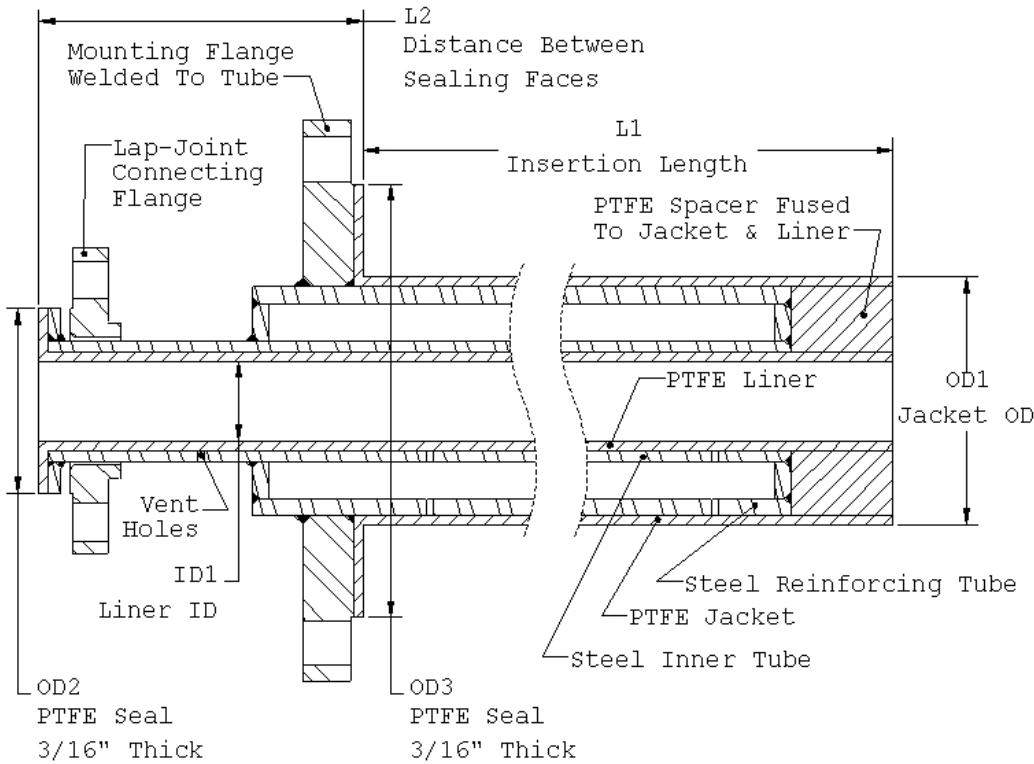
MOUNTING FLANGE SEAL DIAMETERS

| Flange Size | PTFE Seal OD Minimum (OD3) |
|-------------|----------------------------|
| 1" | 1-7/8" |
| 1-1/2" | 2-11/16" |
| | |
| 2" | 3-7/16" |
| 3" | 4-5/8" |
| 4" | 5-15/16" |
| | |
| 6" | 8" |
| 8" | 10-1/16" |
| 10" | 12-1/4" |



DDH Series Reinforced Dip Pipes

Product Specifications 5.1-2



Reinforced Dip Pipes

PART NUMBER: The PART NUMBER (DDH-NS-MF-L1) defines the series (first three characters), the nominal tube and connecting flange size **NS**, the mounting (or nozzle) flange size **MF**, and the insertion length **L1**. Use a decimal number to indicate **NS**. Then, replace **MF** with a decimal number to indicate the nominal size of the mounting flange and replace **L1** with the insertion length in inches.

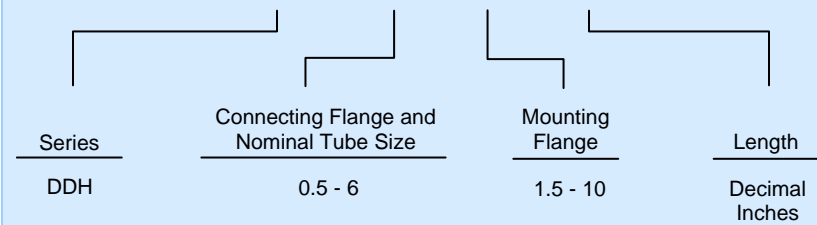
For example, a 1-1/2" Reducing-Flange Dip Pipe with a 6" mounting flange x 80" insertion length would be **DDH-1.5-6-80**

Notes

1. Standard flanges have ANSI Class 150 drilling. Class 300 and other sizes available.
2. Standard tolerance on inserted length is $\pm 1/2"$. Closer tolerances available, contact the factory.
3. Standard distance (L2) between flange sealing faces is shown in the L2 Distance table on the next page. To order non-standard spacing, contact the factory.
4. Most dimensions are governed by connecting flange size as shown in the Standard Dimension table on the next page.
5. Maximum standard overall length is 16 feet. For longer lengths, contact factory.
6. For service conditions exceeding 350 F°, or 150 PSI, or vacuum service, contact factory.

Part Number Key

DDH - NS - MF - L1



STANDARD DIMENSIONS

| Connecting Flange & Nominal Tube Size | PTFE Jacket OD (OD1) | PTFE Liner ID (ID1) | PTFE Seal OD Minimum (OD2) | Inner Steel Tube Thickness | Outer Steel Tube Thickness |
|---------------------------------------|----------------------|---------------------|----------------------------|----------------------------|----------------------------|
| 1/2" | 2-1/4" | 7/16" | 1-1/4" | Sch. 40 | 1-1/2" Sch. 80 |
| 3/4" | 2-1/4" | 5/8" | 1-9/16" | Sch. 40 | 1-1/2" Sch. 80 |
| 1" | 2-3/4" | 3/4" | 1-7/8" | Sch. 80 | 2" Sch. 80 |
| 1-1/2" | 2-3/4" | 1-1/8" | 2-11/16" | Sch. 80 | 2" Sch. 80 |
| 2" | 3-3/4" | 1-5/8" | 3-7/16" | Sch. 80 | DOM |
| 3" | 5-1/8" | 2-1/2" | 4-5/8" | DOM | 4" Sch. 80 |
| 4" | 6" | 3-1/2" | 5-15/16" | Sch. 80 | DOM |

L2 DISTANCE

| Connecting Flange Size | Minimum Distance Between Sealing Faces (L2) |
|------------------------|---|
| 1/2" | 6" |
| 3/4" | 6" |
| 1" | 6" |
| 1-1/2" | 7" |
| 2" | 7" |
| 3" | 8" |
| 4" | 9" |

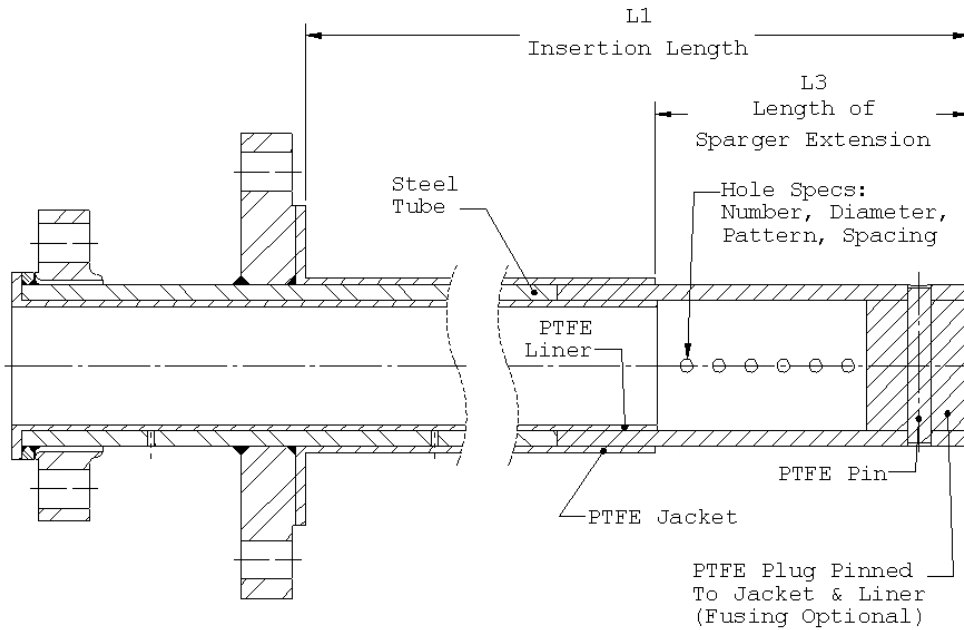
MOUNTING FLANGE SEAL DIAMETERS

| Flange Size | PTFE Seal OD Minimum (OD3) |
|-------------|----------------------------|
| 1-1/2" | 2-11/16" |
| 2" | 3-7/16" |
| 3" | 4-5/8" |
| 4" | 5-15/16" |
| 6" | 8" |
| 8" | 10-1/16" |
| 10" | 12-1/4" |



S Series Spargers

Product Specifications 5.1-2



Double-Flanged Sparger

(Spargers are also available in single-flanged and reducing-flanged.)

SPARGERS: For Spargers, add to a dip pipe PART NUMBER the suffix **S**.

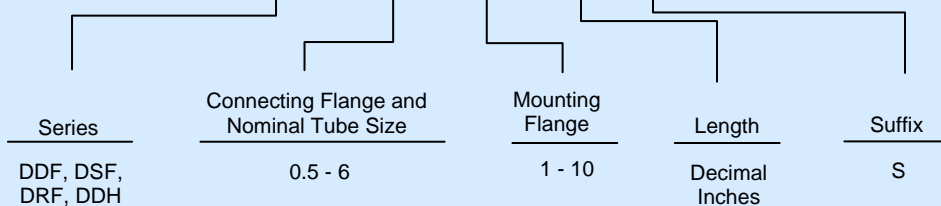
Note 1: Customer to specify hole pattern, size and configuration. For more than 20 holes, contact factory.

Note 2: Customer to specify sparger extension length (L3).

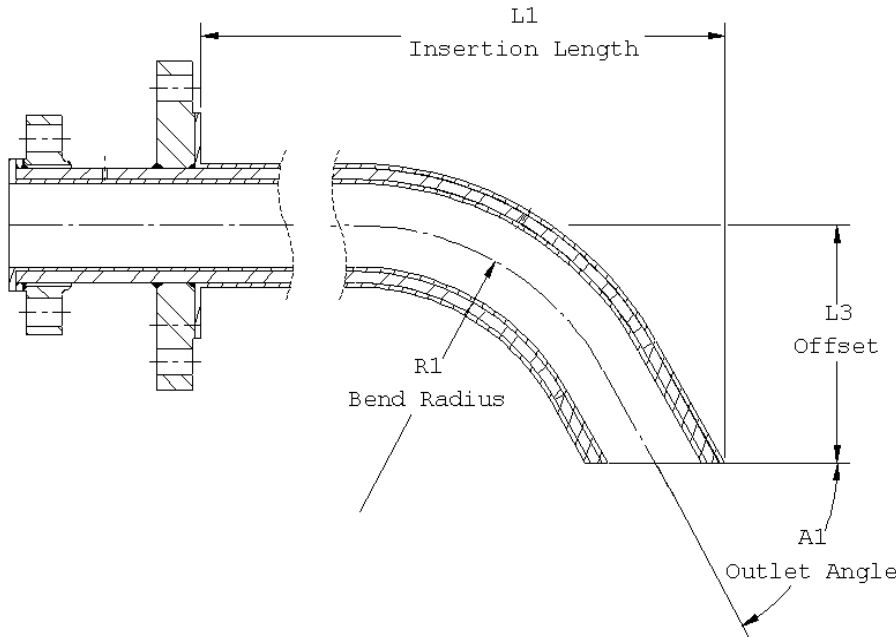
For example, a 3/4" Nominal Size Double-Flanged Sparger with a 1-1/2" mounting flange and a 6' length would be **DDF-0.75-1.5--72-S**

Part Number Key

DXX - NS - MF - L1 - S



C Series Curved Dip Pipes



Product Specifications 5.1-2

Double-Flanged Curved Dip Pipe

(Curved units are also available in single-flanged and reducing-flanged.)

For Curved Dip Pipes, add to a dip pipe PART NUMBER the suffix **C**. For example, a 3/4" Nominal Size curved, Double-Flanged Dip Pipe with a 1-1/2" mounting flange and 6' length would be **DDF-0.75-1.5-72-C**

Please supply the desired insertion length (L1), and the offset distance (L3). The factory will verify that the desired geometry can be achieved within the constraints of minimum bend radius shown below. You may also wish to provide us with the inner diameter and length of the tank nozzle. We will verify that the dip pipe will fit through it.

MINIMUM BEND RADII FOR CURVED DIP PIPES

| Nominal Tube Size | Minimum Bend Radius R1 |
|-------------------|------------------------|
| 1/2" | 5 |
| 3/4" | 7 |
| 1" | 7 |
| 1-1/2" | 8 |
| 2" | 12 |
| 3" | 15 |
| 4" | 20 |

