



Submittal - 024 Pump Station

SIGMA ONE-LOK Ductile Iron Mechanical Joint Flanges (Submittal on the following page(s), this sheet is the response page)

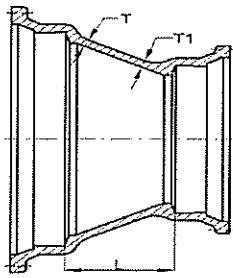
Response:

MKEC ENGINEERING, INC.
411 North Webb Road - Wichita KS 67206

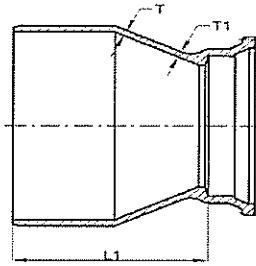
Reviewed Reviewed As Noted
 Revise and Resubmit Rejected
 Not Required by the Contract Documents

Reviewed for conformance with the design concept of the project and compliance with the information given in the contract documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site, information that pertains solely to the fabrication process or to techniques of construction, and coordination of work of all other trades if "Resubmit" or "Rejected" are not checked resubmission is neither desired or required

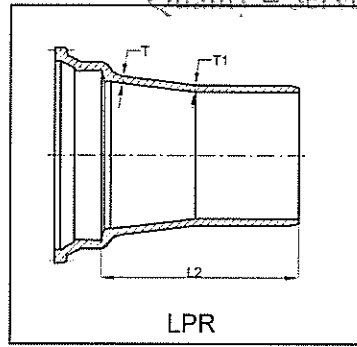
By: Bob Hull Date: 6-28-16



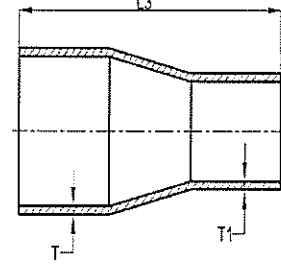
DMR



SPR



LPR



PPR

Reducers

| Size | MJ x MJ | | | PE x MJ (Small End MJ) | | | MJ X PE (Large End MJ) | | | PE x PE | | | | |
|---------|----------|-----|-------|------------------------|-----|-------|------------------------|-----|-------|----------|-----|-------|------|------|
| | Item No. | Wt. | L | Item No. | Wt. | L1 | Item No. | Wt. | L2 | Item No. | Wt. | L3 | T | T1 |
| 3 x 2 | DMR32 | 14 | 2.50 | | | | | | | | | | 0.33 | 0.30 |
| 4 x 2 | DMR42 | 16 | 2.50 | SPR42 | 14 | 8.00 | | | | | | | 0.34 | 0.30 |
| 4 x 3 | DMR43 | 18 | 3.00 | SPR43 | 17 | 8.50 | LPR43 | 18 | 8.50 | PPR43 | 14 | 14.00 | 0.34 | 0.33 |
| 6 x 3 | DMR63 | 22 | 5.00 | SPR63 | 24 | 10.50 | LPR63 | 19 | 10.50 | PPR63 | 19 | 16.00 | 0.36 | 0.33 |
| 6 x 4 | DMR64 | 24 | 4.00 | SPR64 | 25 | 9.50 | LPR64 | 25 | 9.50 | PPR64 | 22 | 15.00 | 0.36 | 0.34 |
| 8 x 3 | DMR83 | 30 | 5.00 | | | | | | | | | | 0.38 | 0.33 |
| 8 x 4 | DMR84 | 32 | 5.00 | SPR84 | 30 | 10.50 | LPR84 | 34 | 10.50 | PPR84 | 30 | 16.00 | 0.38 | 0.34 |
| 8 x 6 | DMR86 | 36 | 4.00 | SPR86 | 35 | 9.50 | LPR86 | 32 | 9.50 | PPR86 | 30 | 15.00 | 0.38 | 0.36 |
| 10 x 4 | DMR104 | 46 | 7.00 | SPR104 | 43 | 12.50 | LPR104 | 43 | 12.50 | PPR104 | 46 | 18.00 | 0.40 | 0.34 |
| 10 x 6 | DMR106 | 47 | 5.00 | SPR106 | 46 | 10.50 | LPR106 | 42 | 10.50 | PPR106 | 46 | 16.00 | 0.40 | 0.36 |
| 10 x 8 | DMR108 | 50 | 4.00 | SPR108 | 42 | 9.50 | LPR108 | 50 | 9.50 | PPR108 | 47 | 15.00 | 0.40 | 0.38 |
| 12 x 4 | DMR124 | 58 | 9.00 | SPR124 | 60 | 14.50 | LPR124 | 60 | 14.50 | PPR124 | 58 | 20.00 | 0.42 | 0.34 |
| 12 x 6 | DMR126 | 58 | 7.00 | SPR126 | 58 | 12.50 | LPR126 | 58 | 12.50 | PPR126 | 57 | 18.00 | 0.42 | 0.36 |
| 12 x 8 | DMR128 | 57 | 5.00 | SPR128 | 54 | 10.50 | LPR128 | 55 | 10.50 | PPR128 | 54 | 16.00 | 0.42 | 0.38 |
| 12 x 10 | DMR1210 | 61 | 4.00 | SPR1210 | 59 | 9.50 | LPR1210 | 59 | 9.50 | PPR1210 | 54 | 15.00 | 0.42 | 0.40 |
| 14 x 6 | DMR146 | 100 | 9.00 | SPR146 | 100 | 16.90 | LPR146 | 104 | 14.50 | PPR146 | 93 | 22.30 | 0.47 | 0.36 |
| 14 x 8 | DMR148 | 100 | 7.00 | SPR148 | 98 | 14.90 | LPR148 | 98 | 12.40 | PPR148 | 94 | 20.30 | 0.47 | 0.38 |
| 14 x 10 | DMR1410 | 100 | 5.00 | SPR1410 | 94 | 12.90 | LPR1410 | 92 | 10.40 | PPR1410 | 90 | 18.30 | 0.47 | 0.40 |
| 14 x 12 | DMR1412 | 100 | 4.00 | SPR1412 | 90 | 11.90 | LPR1412 | 92 | 9.40 | PPR1412 | 88 | 17.30 | 0.47 | 0.42 |
| 16 x 6 | DMR166 | 124 | 11.00 | SPR166 | 125 | 18.90 | LPR166 | 136 | 16.50 | PPR166 | 93 | 24.30 | 0.50 | 0.36 |
| 16 x 8 | DMR168 | 124 | 9.00 | SPR168 | 121 | 16.90 | LPR168 | 128 | 14.40 | PPR168 | 119 | 22.30 | 0.50 | 0.38 |
| 16 x 10 | DMR1610 | 124 | 7.00 | SPR1610 | 105 | 15.00 | LPR1610 | 123 | 12.50 | PPR1610 | 119 | 20.50 | 0.50 | 0.40 |
| 16 x 12 | DMR1612 | 112 | 5.00 | SPR1612 | 109 | 12.90 | LPR1612 | 108 | 10.50 | PPR1612 | 99 | 18.30 | 0.50 | 0.42 |
| 16 x 14 | DMR1614 | 140 | 4.00 | SPR1614 | 126 | 12.00 | LPR1614 | 132 | 12.00 | PPR1614 | 129 | 19.70 | 0.50 | 0.47 |
| 18 x 4 | DMR184 | 170 | 11.00 | | | | | | | | | | 0.54 | 0.34 |
| 18 x 6 | DMR186 | 194 | 13.00 | | | | | | | | | | 0.54 | 0.36 |
| 18 x 8 | DMR188 | 190 | 13.00 | SPR188 | 170 | 20.00 | LPR188 | 195 | 19.50 | PPR188 | 170 | 27.40 | 0.54 | 0.38 |
| 18 x 10 | DMR1810 | 195 | 10.00 | SPR1810 | 165 | 18.00 | LPR1810 | 185 | 17.40 | PPR1810 | 160 | 25.50 | 0.54 | 0.40 |
| 18 x 12 | DMR1812 | 180 | 7.00 | SPR1812 | 150 | 15.50 | LPR1812 | 175 | 14.00 | PPR1812 | 150 | 19.50 | 0.54 | 0.42 |
| 18 x 14 | DMR1814 | 190 | 6.00 | SPR1814 | 175 | 15.00 | LPR1814 | 190 | 15.00 | PPR1814 | 160 | 23.00 | 0.54 | 0.47 |
| 18 x 16 | DMR1816 | 195 | 5.00 | SPR1816 | 170 | 12.50 | LPR1816 | 190 | 12.50 | PPR1816 | 145 | 18.00 | 0.54 | 0.50 |
| 20 x 6 | DMR206 | 232 | 16.00 | SPR206 | 201 | 22.00 | LPR206 | 231 | 19.00 | PPR206 | 106 | 27.50 | 0.57 | 0.36 |
| 20 x 8 | DMR208 | 227 | 16.00 | SPR208 | 198 | 27.00 | LPR208 | 227 | 19.00 | PPR208 | 106 | 27.50 | 0.57 | 0.38 |
| 20 x 10 | DMR2010 | 220 | 14.00 | SPR2010 | 200 | 22.00 | LPR2010 | 210 | 19.00 | PPR2010 | 180 | 27.50 | 0.57 | 0.40 |
| 20 x 12 | DMR2012 | 205 | 12.00 | SPR2012 | 170 | 17.50 | LPR2012 | 205 | 16.00 | PPR2012 | 190 | 21.50 | 0.57 | 0.42 |
| 20 x 14 | DMR2014 | 200 | 10.00 | SPR2014 | 190 | 18.00 | LPR2014 | 205 | 17.90 | PPR2014 | 195 | 26.00 | 0.57 | 0.47 |
| 20 x 16 | DMR2016 | 200 | 7.00 | SPR2016 | 185 | 13.50 | LPR2016 | 200 | 13.50 | PPR2016 | 170 | 19.00 | 0.57 | 0.50 |
| 20 x 18 | DMR2018 | 225 | 4.00 | SPR2018 | 200 | 12.00 | LPR2018 | 215 | 12.00 | PPR2018 | 190 | 20.00 | 0.57 | 0.54 |
| 24 x 6 | DMR246 | 322 | 16.00 | SPR246 | 284 | 21.50 | LPR246 | 320 | 21.00 | PPR246 | 283 | 22.50 | 0.61 | 0.36 |
| 24 x 8 | DMR248 | 318 | 16.00 | SPR248 | 282 | 21.50 | LPR248 | 316 | 21.00 | PPR248 | 281 | 22.50 | 0.61 | 0.38 |
| 24 x 10 | DMR2410 | 312 | 16.00 | SPR2410 | 276 | 21.50 | LPR2410 | 310 | 21.00 | PPR2410 | 274 | 22.50 | 0.61 | 0.40 |
| 24 x 12 | DMR2412 | 305 | 16.00 | SPR2412 | 275 | 21.50 | LPR2412 | 290 | 21.00 | PPR2412 | 240 | 22.50 | 0.61 | 0.42 |
| 24 x 14 | DMR2414 | 310 | 14.00 | SPR2414 | 310 | 22.00 | LPR2414 | 315 | 21.90 | PPR2414 | 295 | 25.00 | 0.61 | 0.47 |
| 24 x 16 | DMR2416 | 320 | 12.00 | SPR2416 | 285 | 17.50 | LPR2416 | 285 | 17.50 | PPR2416 | 285 | 23.00 | 0.61 | 0.50 |
| 24 x 18 | DMR2418 | 305 | 10.00 | SPR2418 | 300 | 18.00 | LPR2418 | 310 | 18.00 | PPR2418 | 290 | 21.00 | 0.61 | 0.54 |
| 24 x 20 | DMR2420 | 300 | 7.00 | SPR2420 | 270 | 13.50 | LPR2420 | 275 | 13.50 | PPR2420 | 240 | 19.00 | 0.61 | 0.57 |
| 30 x 12 | DMR3012 | 499 | 30.00 | | | | | | | | | | 0.66 | 0.42 |

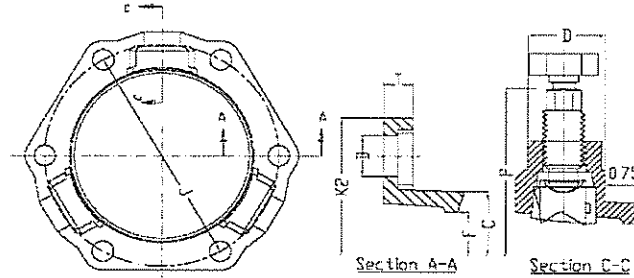


Weights in Pounds, Less Accessories / Dimensions in inches
Ductile Iron Class 350 per ANSI/AWWA C153/A21.53

SIGMA Corporation www.sigmaco.com | 13

ONE-LOK™ Series SLDE for Ductile Iron Pipe

ONE-LOK SLDE's unique wedge segment and actuating bolt design allows the two components to interface using a cam action principle, allowing the wedge segments to rock and increase their grip on the pipe wall as thrust on the assembled joint increases. This also allows improved resistance to subsidence, seismic forces, and other movement within the maximum deflection limitations of the mechanical joint under applicable AWWA standards.



Dimensions in Inches, Weights in Pounds

| Size | Item # | Weight (lbs) | Pipe OD | Dimensions | | | | | | | | Bolts and Inserts | | | Rating |
|------|--------|--------------|---------|------------|-------|------|-------|-------|-------|-------|-------|-------------------|-------|---------|--------|
| | | | | C | F | D | T | P* | B | J | K2 | No. | Size | Torque | |
| 3 | SLDE3 | 5.5 | 3.96 | 4.84 | 4.16 | 1.58 | 0.55 | 9.40 | 0.750 | 6.19 | 7.69 | 2 | 7/8 | 80-90 | 350 |
| 4 | SLDE4 | 6.5 | 4.80 | 5.92 | 5.00 | 1.58 | 0.55 | 10.24 | 0.875 | 7.50 | 9.12 | 2 | 7/8 | 80-90 | 350 |
| 6 | SLDE6 | 10.0 | 6.90 | 8.02 | 7.10 | 1.58 | 0.60 | 12.34 | 0.875 | 9.50 | 11.12 | 3 | 7/8 | 80-90 | 350 |
| 8 | SLDE8 | 14.5 | 9.05 | 10.17 | 9.25 | 1.63 | 0.75 | 14.32 | 0.875 | 11.75 | 13.37 | 4 | 7/8 | 80-90 | 350 |
| 10 | SLDE10 | 23.0 | 11.10 | 12.22 | 11.30 | 1.58 | 0.85 | 16.54 | 0.875 | 14.00 | 15.62 | 6 | 7/8 | 80-90 | 350 |
| 12 | SLDE12 | 29.0 | 13.20 | 14.32 | 13.40 | 1.58 | 0.85 | 18.80 | 0.875 | 16.25 | 17.88 | 8 | 7/8 | 80-90 | 350 |
| 14 | SLDE14 | 39.60 | 15.30 | 16.40 | 15.55 | 1.58 | 1.125 | 21.20 | 0.875 | 18.75 | 20.25 | 10 | 7/8 | 80-90 | 350 |
| 16 | SLDE16 | 49.67 | 17.40 | 18.50 | 17.54 | 1.77 | 1.21 | 23.74 | 0.875 | 21.00 | 22.50 | 12 | 7/8 | 80-90 | 350 |
| 18 | SLDE18 | 60.33 | 19.50 | 20.60 | 19.64 | 1.77 | 1.25 | 25.84 | 0.875 | 23.25 | 24.75 | 12 | 7/8 | 80-90 | 250 |
| 20 | SLDE20 | 69.00 | 21.60 | 22.70 | 21.74 | 1.87 | 1.25 | 27.94 | 0.875 | 25.50 | 27.00 | 14 | 7/8 | 80-90 | 250 |
| 24 | SLDE24 | 103.67 | 25.80 | 26.88 | 25.95 | 1.92 | 1.47 | 32.14 | 0.875 | 30.00 | 31.50 | 16 | 7/8 | 80-90 | 250 |
| 30' | SLDE30 | 158.67 | 32.00 | 33.29 | 32.17 | 2.13 | 1.65 | 39.30 | 1.125 | 36.88 | 39.12 | 20 | 1 | 115-125 | 250 |
| 36' | SLDE36 | 234.50 | 38.30 | 39.59 | 38.47 | 3.15 | 1.75 | 46.07 | 1.125 | 43.75 | 46.00 | 24 | 1 | 115-125 | 250 |
| 42' | SLDE42 | 344.0 | 44.50 | 45.79 | 44.67 | 3.56 | 2.25 | 53.25 | 1.38 | 50.62 | 53.38 | 28 | 1 1/4 | 115-125 | 250 |
| 48' | SLDE48 | 456.0 | 50.80 | 52.09 | 50.97 | 3.81 | 2.25 | 59.55 | 1.38 | 57.5 | 60.26 | 32 | 1 1/4 | 115-125 | 250 |

ONE-LOK SLDE was previously referred to as model SLD

P* Dim shows OD after head is broken/removed.

Sizes 3"-12" is approved for thinnest class of DI pipe.

* Product is provided with SIGMASEAL™ improved mechanical joint gasket.



Sizes 3" - 16" are pressure rated and UL listed for 350 psi on DI pipe and 250 psi sizes 18" - 36".

Sizes 42" and 48" are pressure rated at 250 psi.

Sizes 4" - 12" are FM approved for 175 psi on DI pipe.



Quality – Service – Commitment – Delivered.

Sample Specification:

Restraint for standard mechanical joint fittings shall be incorporated in the design of the follower gland and shall utilize multiple wedge segments that act against the pipe, increasing their resistance as the line pressure increases. The assembled joint shall maintain the maximum flexibility and deflection of all nominal pipe sizes after burial. Restraining gland, wedge segments, and actuating bolts shall be manufactured of high strength ductile iron conforming to the requirements of ASTM A536, Grade 65-45-12. Wedge segments shall be heat treated to a hardness of 370 BHN minimum. Dimensions shall be compatible with standardized mechanical joints conforming to the requirements AWWA C111/ANSI A21.11 and AWWA C153/ANSI 21.53 through 24" (latest revision). Breakaway tops shall be incorporated in the design of the actuating bolts to visually ensure proper torque. The manufacturing of the actuating bolt must incorporate a quality control procedure that is deemed acceptable by the specifier and positively assures precise and consistent operating torque of the breakaway top. The mechanical joint restraining devices shall have a working pressure rating of 350psi (for sizes 3-16") and 250 psi (for sizes 18-48") minimum and provide no less than a safety factor of 2:1. Restraint shall be UL Listed and FM approved in applicable sizes. Restraining device shall be SIGMA ONE-LOK™ or approved equal.

Installation Instructions:

Note: This product is designed for use on ductile iron pipe. Contact SIGMA for use on plain end fittings.

1. Clean fitting socket and pipe end. Lubricate gasket and pipe end with soapy water (or approved pipe lubricant meeting AWWA C111). Install ONE-LOK™ restrainer on the pipe with the lip extension facing the pipe end, followed by the gasket, tapered side toward end of pipe.

NOTE: SIGMASEAL Gasket is recommended for ONE-LOK 30-48". When installing SIGMASEAL gasket, the tapered edges of the gasket must face away from the pipe wall.

2. Insert pipe into fitting outlet and seat the gasket firmly and evenly into the gasket cavity. Maintain a straight joint during assembly.

3. Push the ONE-LOK gland toward the fitting and center it around the pipe with the lip evenly against the gasket. Insert the T-bolts and hand tighten the nuts. If deflection is required, make up after joint assembly but before tightening T-bolts.

4. Tighten T-bolts in an alternating manner maintaining an even gap between the gland and the fitting face at all points around the socket. Repeat until all the T-bolts are within the recommended torque value of AWWA C111/C600.

5. Following proper assembly of the mechanical joint, hand tighten actuating bolts until all wedges make complete contact with the pipe.

6. Tighten each actuating bolt in a clockwise direction, alternating between the bolts in a star pattern, until the break-off tops have been removed. Never tighten a wedge bolt more than 180 degrees before moving to the next bolt.